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HALOGEN-FREE available ✓

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physics with passion™ since 1985

TM

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Customized + Standard Power Devices
+ SiC-Modules and SiC-Rectifiers

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Customized Products not included in catalogue
Datasheets on our website

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Power Semiconductors

Made in Germany & Made in India

CERTIFICATE

This is to certify that

POWERSEM Gesellschaft für Halbleiterbauelemente und Elektronik mbH

Walpersdorferstraße 53
91126 Schwabach
Germany

has implemented and maintains a **Quality Management System**.

Scope:
Development, Production and Distribution of Power Semiconductor Modules like Diode-Modules, Thyristor-Modules, IGBT-Modules, MOSFET-Modules, SiC-Modules and Solid-State-Relays. Development, Production and Distribution of Power Semiconductor Components in discrete and transfer-moulded design.

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

ISO 9001 : 2015

Certificate registration no.	209348 QM15
Valid from	2021-07-18
Valid until	2024-07-17
Date of certification	2021-06-14

DAkkS
Deutsche Akkreditierungsstelle
D-ZM-15074-01-00

DQS GmbH

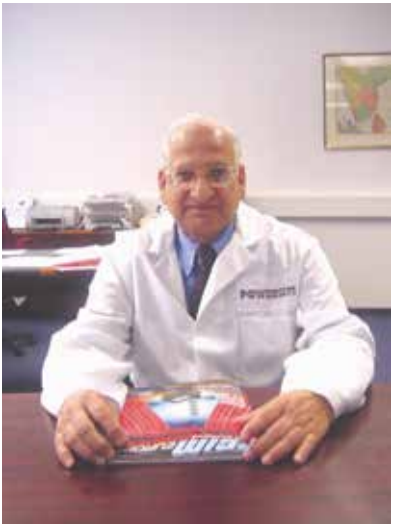
Markus Bleher
Managing Director

Accredited Body: DQS GmbH, August-Schanz-Straße 21, 60433 Frankfurt am Main, Germany

Founder of POWERSEM
a motor in progress of semiconductor technology and semiconductor devices

"**Madan** had realized his dreams building up a company in power electronics in Schwabach/Germany. His spirit and visions are on continuity by his daughter Kavita and his son Ashok."

Mr. Madan Mohan Chadda (1939-2002) was born in Amritsar, India. He was a renowned physicist and scientist - B. Sc. (Hons.); M. Sc. (Math.); M. Sc. (Phys.) -, educated in India and England, and worked for many established corporations in India, England, Switzerland and Germany until he settled down with his family in Germany. For his work as a physicist, **Mr. Chadda** obtained over 40 patents in his lifetime.



Mr. Chadda founded **POWERSEM GmbH** in Germany in 1985. The pinnacle of his remarkable career was the opening of a brand new, state-of-the art facility in 2000 utilizing clean and efficient hydrogen power. **POWERSEM** designs, develops and manufactures multiple chip semiconductor modules. Today, **POWERSEM** is considered a world leader in designing and manufacturing isolated base packaged modules for standard, fast single, three phase, half and full controlled power semiconductor modules in a compact package. **POWERSEM** has offices and representations throughout the entire world, with a new manufacturing unit founded by his son Ashok in Bangalore, India.

Mr. Chadda was a very well respected CEO and President of **POWERSEM** and business leader not only in the German industrial and political landscape, but, internationally recognized, especially, in Germany, India, United Kingdom and Switzerland where he was engaged in numerous projects and strategic alliances with large companies. He was a philanthropist, always believing in giving back to his community and country by constantly funding charitable projects.

Mr. Madan Mohan Chadda was truly a devoted husband and father, whose relentless energy and passion for power electronics helped him realize his dreams in building up his global company.

POWERSEM GmbH is now managed and led in the spirit of Mr. Chadda by his daughter Kavita and his son Ashok.

In 2005 **POWERSEM GmbH**, Germany, has formed its Subsidiary „**POWERSEM Semiconductors Pvt. Ltd.**" in Bangalore, India. In spirit of **Madan Mohan Chadda**, **POWERSEM Germany** and **POWERSEM India** wishes to serve its worldwide customers with newest innovations and latest technologies. **POWERSEM** hopes to be an essential help for the industrial and economical growth of the Indian Power Semiconductor Manufacturing Market.

Contents	Pages

Alphanumerical Index

Modules (P = Presspin, more Presspin-Modules in Eco-Pac™ Housing to follow)

* 17 mm Module-Height available. ⇒ PSBS / PSDS

POWERSEM reserves the right to change limits, test conditions and dimensions - www.POWERSEM.com

Alphanumerical Index

Modules (P = Presspin, more Presspin-Modules in Eco-Pac™ Housing to follow)

Stud Type Devices

Symbols and Terms

di/dt	Rate of change of current
$(dv/dt)_c$	Critical rate of rise of forward voltage
E_{ts}	Total switching energy
f	Frequency range
I_C	Collector current
I_{Cpuls}	Pulsed collector current
I_{cm}	Maximum collector current
I^2t	Fusing current
I_{DAV}	Average DC-output current
I_{DRM}	Off-state leakage current
$I_{D(cont)}$	Continuous drain current
I_F	Forward current
I_{FAV}	Maximum average forward current
I_{FRMS}	RMS forward current

Symbols and Terms

I_{FSM}	Peak one cycle surge forward current
I_H	Holding current
I_R	Maximum reverse current
I_{RMS}	RMS current
I_{TAV}	Maximum average on-state current
I_{TRMS}	RMS forward current
I_{FSM}, I_{TSM}	Maximum surge forward current
P_D	Power dissipation
P_N	Mains power
r_T	Slope resistance (for power loss calculations)
$R_{DS(on)}$	Static drain source on resistance
R_{thJS}	Thermal resistance junction to heatsink
R_{thCH}	Thermal resistance case to heatsink
R_{thJA}	Thermal resistance junction to ambient
R_{thJC}	Thermal resistance junction to case
R_{thJH}	Thermal resistance junction to heatsink
T_A	Ambient temperature or temperature of the cooling medium
T_C	Case temperature
T_J, T_{VJ}	Junction temperature
T_O	Operating temperature
T_{VJM}	Maximum junction temperature
$t_{d(off)}$	Turn-off delay time
$t_{d(on)}$	Turn-on delay time
t_f	Current fall time
t_q	Turn-off time
t_r	Current rise time
t_{rr}	Reverse recovery time
V_{CES}	Collector-emitter voltage (IGBT)
$V_{CE(sat)}$	Collector-emitter saturation voltage with IB and IC specified
V_{DRM}	Maximum repetitive off-state voltage
V_{DSS}	Drain source breakdown voltage
V_{FM}	Forward voltage drop
V_{vRMS}	Maximum allowed AC-voltage (RMS-value)
V_{RRM}	Maximum repetitive reverse voltage
V_{TM}	Zero turn-on voltage
V_{TO}	Threshold voltage (for power loss calculations only)

Ultrafast Epitaxial Diode Modules, released, E 148688

Part Number	V_{RRM}	V_{VRMS}	I_{FAV}	T_C	I_{FSM}	V_F	I_F	t_{rr}	R_{thJC} per Chip/ per Module	R_{thJH} per Chip/ per Module	Figure
					45°C 10ms	T_{VJ} 25°C		T_{VJ} 25°C			
	V	V	A	°C	A	V	A	ns	K/W	K/W	
PSKD 30E/02	200	60	25	85	400	1.25	30	60	1.0 /0.5	1.2 /0.6	1
PSKD 30E/04	400	125	25	85	400	1.25	30	60	1.0 / 0.5	1.2 /0.6	
PSKD 30E/06	600	200	25	85	400	1.25	30	60	1.0 / 0.5	1.2 /0.6	
PSKD 30E/08	800	250	25	85	300	2.00	30	100	1.0 /0.5	1.2 /0.6	
PSKD 30E/10	1000	312	25	85	300	2.00	30	100	1.0 /0.5	1.2 /0.6	
PSKD 30E/12	1200	400	25	85	300	2.00	30	100	1.0 /0.5	1.2 /0.6	
PSKD 50E/02	200	60	50	85	800	1.25	50	60	0.9 / 0.45	1.1 / 0.55	1
PSKD 50E/04	400	125	50	85	800	1.25	50	60	0.9 / 0.45	1.1 / 0.55	
PSKD 50E/06	600	200	50	85	800	1.25	50	60	0.9 / 0.45	1.1 / 0.55	
PSKD 50E/08	800	250	50	85	600	2.00	50	100	0.9 / 0.45	1.1 / 0.55	
PSKD 50E/10	1000	312	50	85	600	2.00	50	100	0.9 / 0.45	1.1 / 0.55	
PSKD 50E/12	1200	400	50	85	600	2.00	50	100	0.9 / 0.45	1.1 / 0.55	
PSKD 75E/02	200	60	75	85	1400	1.25	75	60	0.85 / 0.43	1.0 / 0.5	1
PSKD 75E/04	400	125	75	85	1400	1.25	75	60	0.85 / 0.43	1.0 / 0.5	
PSKD 75E/06	600	200	75	85	1400	1.25	75	60	0.85 / 0.43	1.0 / 0.5	
PSKD 75E/08	800	250	75	85	1000	2.00	75	100	0.85 / 0.43	1.0 / 0.5	
PSKD 75E/10	1000	312	75	85	1000	2.00	75	100	0.85 / 0.43	1.0 / 0.5	
PSKD 75E/12	1200	400	75	85	1000	2.00	75	100	0.85 / 0.43	1.0 / 0.5	
PSKD 100E/02	200	60	136	70	2000	1.25	100	60	0.65 / 0.33	0.84 / 0.42	2
PSKD 100E/04	400	125	136	70	2000	1.25	100	60	0.65 / 0.33	0.84 / 0.42	
PSKD 100E/06	600	200	136	70	2000	1.25	100	60	0.65 / 0.33	0.84 / 0.42	
PSKD 100E/08	800	250	104	70	1500	1.55	100	100	0.65 / 0.33	0.84 / 0.42	
PSKD 100E/10	1000	312	104	70	1500	1.55	100	100	0.65 / 0.33	0.84 / 0.42	
PSKD 100E/12	1200	400	104	70	1500	1.55	100	100	0.65 / 0.33	0.84 / 0.42	
PSKD 150E/02	200	60	272	70	3000	1.25	150	60	0.42 / 0.21	0.57 / 0.28	2
PSKD 150E/04	400	125	272	70	3000	1.25	150	60	0.42 / 0.21	0.57 / 0.28	
PSKD 150E/06	600	200	272	70	3000	1.25	150	60	0.42 / 0.21	0.57 / 0.28	
PSKD 150E/08	800	250	208	70	2500	1.55	150	100	0.42 / 0.21	0.57 / 0.28	
PSKD 150E/10	1000	312	208	70	2500	1.55	150	100	0.42 / 0.21	0.57 / 0.28	
PSKD 150E/12	1200	400	208	70	2500	1.55	150	100	0.42 / 0.21	0.57 / 0.28	

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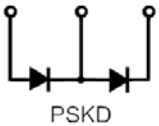
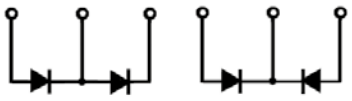


Ultrafast Epitaxial Diode Modules, released, E 148688

Part Number	V_{RRM} V	V_{VRMS} V	I_{FAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_F T_{VJ} 25°C V	I_F T_{VJ} 25°C A	t_{rr} T_{VJ} 25°C ns	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSKD 200E/02	200	60	408	70	4000	1.25	200	60	0.28 / 0.14	0.38 / 0.19	**2**
PSKD 200E/04	400	125	408	70	4000	1.25	200	60	0.28 / 0.14	0.38 / 0.19	
PSKD 200E/06	600	200	408	70	4000	1.25	200	60	0.28 / 0.14	0.38 / 0.19	
PSKD 200E/08	800	250	312	70	3200	1.55	200	100	0.28 / 0.14	0.38 / 0.19	
PSKD 200E/10	1000	312	312	70	3200	1.55	200	100	0.28 / 0.14	0.38 / 0.19	
PSKD 200E/12	1200	400	312	70	3200	1.55	200	100	0.28 / 0.14	0.38 / 0.19	
PSMD 30E/02	200	60	25	85	400	1.25	30	60	1.0 / 0.5	1.2 / 0.6	**1**
PSMD 30E/04	400	125	25	85	400	1.25	30	60	1.0 / 0.5	1.2 / 0.6	
PSMD 30E/06	600	200	25	85	400	1.25	30	60	1.0 / 0.5	1.2 / 0.6	
PSMD 30E/08	800	250	25	85	300	2.00	30	100	1.0 / 0.5	1.2 / 0.6	
PSMD 30E/10	1000	312	25	85	300	2.00	30	100	1.0 / 0.5	1.2 / 0.6	
PSMD 30E/12	1200	400	25	85	300	2.00	30	100	1.0 / 0.5	1.2 / 0.6	
PSMD 50E/02	200	60	50	85	800	1.25	50	60	0.9 / 0.45	1.1 / 0.55	**1**
PSMD 50E/04	400	125	50	85	800	1.25	50	60	0.9 / 0.45	1.1 / 0.55	
PSMD 50E/06	600	200	50	85	800	1.25	50	60	0.9 / 0.45	1.1 / 0.55	
PSMD 50E/08	800	250	50	85	600	2.00	50	100	0.9 / 0.45	1.1 / 0.55	
PSMD 50E/10	1000	312	50	85	600	2.00	50	100	0.9 / 0.45	1.1 / 0.55	
PSMD 50E/12	1200	400	50	85	600	2.00	50	100	0.9 / 0.45	1.1 / 0.55	
PSMD 75E/02	200	60	75	85	1400	1.25	75	60	0.85 / 0.43	1.0 / 0.5	**1**
PSMD 75E/04	400	125	75	85	1400	1.25	75	60	0.85 / 0.43	1.0 / 0.5	
PSMD 75E/06	600	200	75	85	1400	1.25	75	60	0.85 / 0.43	1.0 / 0.5	
PSMD 75E/08	800	250	75	85	1000	2.00	75	100	0.85 / 0.43	1.0 / 0.5	
PSMD 75E/10	1000	312	75	85	1000	2.00	75	100	0.85 / 0.43	1.0 / 0.5	
PSMD 75E/12	1200	400	75	85	1000	2.00	75	100	0.85 / 0.43	1.0 / 0.5	
PSMD 100E/02	200	60	136	70	2000	1.25	100	60	0.65 / 0.33	0.84 / 0.42	**2**
PSMD 100E/04	400	125	136	70	2000	1.25	100	60	0.65 / 0.33	0.84 / 0.42	
PSMD 100E/06	600	200	136	70	2000	1.25	100	60	0.65 / 0.33	0.84 / 0.42	
PSMD 100E/08	800	250	104	70	1500	1.55	100	100	0.65 / 0.33	0.84 / 0.42	
PSMD 100E/10	1000	312	104	70	1500	1.55	100	100	0.65 / 0.33	0.84 / 0.42	
PSMD 100E/12	1200	400	104	70	1500	1.55	100	100	0.65 / 0.33	0.84 / 0.42	



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Ultrafast Epitaxial Diode Modules, released, E 148688

Part Number	V_{RRM}	V_{VRMS}	I_{FAV}	T_C	I_{FSM}	V_F	I_F	t_{rr}	R_{thJC} per Chip/ per Module	R_{thJH} per Chip/ per Module	Figure
					45°C 10ms	T_{VJ} 25°C		T_{VJ} 25°C			
	V	V	A	°C	A	V	A	ns	K/W	K/W	
PSMD 150E/02	200	60	272	70	3000	1.25	150	60	0.42 / 0.21	0.57 / 0.28	2
PSMD 150E/04	400	125	272	70	3000	1.25	150	60	0.42 / 0.21	0.57 / 0.28	
PSMD 150E/06	600	200	272	70	3000	1.25	150	60	0.42 / 0.21	0.57 / 0.28	
PSMD 150E/08	800	250	208	70	2500	1.55	150	100	0.42 / 0.21	0.57 / 0.28	
PSMD 150E/10	1000	312	208	70	2500	1.55	150	100	0.42 / 0.21	0.57 / 0.28	
PSMD 150E/12	1200	400	208	70	2500	1.55	150	100	0.42 / 0.21	0.57 / 0.28	
PSMD 200E/02	200	60	408	70	4000	1.25	200	60	0.28 / 0.14	0.38 / 0.19	2
PSMD 200E/04	400	125	408	70	4000	1.25	200	60	0.28 / 0.14	0.38 / 0.19	
PSMD 200E/06	600	200	408	70	4000	1.25	200	60	0.28 / 0.14	0.38 / 0.19	
PSMD 200E/08	800	250	312	70	3200	1.55	200	100	0.28 / 0.14	0.38 / 0.19	
PSMD 200E/10	1000	312	312	70	3200	1.55	200	100	0.28 / 0.14	0.38 / 0.19	
PSMD 200E/12	1200	400	312	70	3200	1.55	200	100	0.28 / 0.14	0.38 / 0.19	
PSND 30E/02	200	60	25	85	400	1.25	30	60	1.0 / 0.5	1.2 / 0.6	1
PSND 30E/04	400	125	25	85	400	1.25	30	60	1.0 / 0.5	1.2 / 0.6	
PSND 30E/06	600	200	25	85	400	1.25	30	60	1.0 / 0.5	1.2 / 0.6	
PSND 30E/08	800	250	25	85	300	2.00	30	100	1.0 / 0.5	1.2 / 0.6	
PSND 30E/10	1000	312	25	85	300	2.00	30	100	1.0 / 0.5	1.2 / 0.6	
PSND 30E/12	1200	400	25	85	300	2.00	30	100	1.0 / 0.5	1.2 / 0.6	
PSND 50E/02	200	60	50	85	800	1.25	50	60	0.9 / 0.45	1.1 / 0.55	1
PSND 50E/04	400	125	50	85	800	1.25	50	60	0.9 / 0.45	1.1 / 0.55	
PSND 50E/06	600	200	50	85	800	1.25	50	60	0.9 / 0.45	1.1 / 0.55	
PSND 50E/08	800	250	50	85	600	2.00	50	100	0.9 / 0.45	1.1 / 0.55	
PSND 50E/10	1000	312	50	85	600	2.00	50	100	0.9 / 0.45	1.1 / 0.55	
PSND 50E/12	1200	400	50	85	600	2.00	50	100	0.9 / 0.45	1.1 / 0.55	
PSND 75E/02	200	60	75	85	1400	1.25	75	60	0.85 / 0.43	1.0 / 0.5	1
PSND 75E/04	400	125	75	85	1400	1.25	75	60	0.85 / 0.43	1.0 / 0.5	
PSND 75E/06	600	200	75	85	1400	1.25	75	60	0.85 / 0.43	1.0 / 0.5	
PSND 75E/08	800	250	75	85	1000	2.00	75	100	0.85 / 0.43	1.0 / 0.5	
PSND 75E/10	1000	312	75	85	1000	2.00	75	100	0.85 / 0.43	1.0 / 0.5	
PSND 75E/12	1200	400	75	85	1000	2.00	75	100	0.85 / 0.43	1.0 / 0.5	

Figure 1
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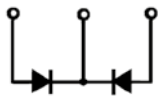

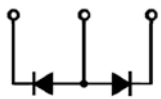

Ultrafast Epitaxial Diode Modules, released, E 148688

Part Number	V_{RRM}	V_{VRMS}	I_{FAV}	T_C	I_{FSM}	V_F	I_F	t_{rr}	R_{thJC} per Chip/ per Module	R_{thJH} per Chip/ per Module	Figure
					45°C 10ms	T_{VJ} 25°C		T_{VJ} 25°C			
	V	V	A	°C	A	V	A	ns	K/W	K/W	
PSND 100E/02	200	60	136	70	2000	1.25	100	60	0.65 / 0.33	0.84 / 0.42	**2**
PSND 100E/04	400	125	136	70	2000	1.25	100	60	0.65 / 0.33	0.84 / 0.42	
PSND 100E/06	600	200	136	70	2000	1.25	100	60	0.65 / 0.33	0.84 / 0.42	
PSND 100E/08	800	250	104	70	1500	1.55	100	100	0.65 / 0.33	0.84 / 0.42	
PSND 100E/10	1000	312	104	70	1500	1.55	100	100	0.65 / 0.33	0.84 / 0.42	
PSND 100E/12	1200	400	104	70	1500	1.55	100	100	0.65 / 0.33	0.84 / 0.42	
PSND 150E/02	200	60	272	70	3000	1.25	150	60	0.42 / 0.21	0.57 / 0.28	**2**
PSND 150E/04	400	125	272	70	3000	1.25	150	60	0.42 / 0.21	0.57 / 0.28	
PSND 150E/06	600	200	272	70	3000	1.25	150	60	0.42 / 0.21	0.57 / 0.28	
PSND 150E/08	800	250	208	70	2500	1.55	150	100	0.42 / 0.21	0.57 / 0.28	
PSND 150E/10	1000	312	208	70	2500	1.55	150	100	0.42 / 0.21	0.57 / 0.28	
PSND 150E/12	1200	400	208	70	2500	1.55	150	100	0.42 / 0.21	0.57 / 0.28	
PSND 200E/02	200	60	408	70	4000	1.25	200	60	0.28 / 0.14	0.38 / 0.19	**2**
PSND 200E/04	400	125	408	70	4000	1.25	200	60	0.28 / 0.14	0.38 / 0.19	
PSND 200E/06	600	200	408	70	4000	1.25	200	60	0.28 / 0.14	0.38 / 0.19	
PSND 200E/08	800	250	312	70	3200	1.55	200	100	0.28 / 0.14	0.38 / 0.19	
PSND 200E/10	1000	312	312	70	3200	1.55	200	100	0.28 / 0.14	0.38 / 0.19	
PSND 200E/12	1200	400	312	70	3200	1.55	200	100	0.28 / 0.14	0.38 / 0.19	

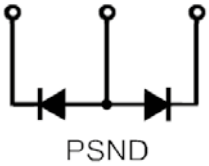

Figure 2
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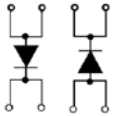
Fast Recovery Epitaxial Diode (FRED) Modules, released, E 148688

Part Number	V_{RRM} V	V_{VRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	t_{rr} typ. ns	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSEI 2x30/04	400	125	30	85	300	1.01	7.10	35	1.25 / 0.63	1.3 / 0.65	**3**
PSEI 2x30/06	600	200	30	85	300	1.01	7.10	35	1.25 / 0.63	1.3 / 0.65	
PSEI 2x30/10	1000	312	30	50	200	1.50	12.5	35	1.25 / 0.63	1.3 / 0.65	
PSEI 2x30/12	1200	400	28	50	200	1.65	18.2	40	1.25 / 0.63	1.3 / 0.65	
PSEI 2x31/04	400	125	30	85	300	1.01	7.10	35	1.25 / 0.63	1.3 / 0.65	**3**
PSEI 2x31/06	600	200	30	85	300	1.01	7.10	35	1.25 / 0.63	1.3 / 0.65	
PSEI 2x31/10	1000	312	30	50	200	1.50	12.5	35	1.25 / 0.63	1.3 / 0.65	
PSEI 2x31/12	1200	400	28	50	200	1.65	18.2	40	1.25 / 0.63	1.3 / 0.65	
PSEI 2x61/02	200	60	71	85	950	0.70	3.00	35	0.7 / 0.35	0.75 / 0.38	**3**
PSEI 2x61/04	400	125	60	70	550	1.13	4.70	35	0.7 / 0.35	0.75 / 0.38	
PSEI 2x61/06	600	200	60	70	550	1.13	4.70	35	0.7 / 0.35	0.75 / 0.38	
PSEI 2x61/10	1000	312	60	50	500	1.43	6.10	35	0.7 / 0.35	0.75 / 0.38	
PSEI 2x61/12	1200	400	52	50	450	1.65	8.30	40	0.7 / 0.35	0.75 / 0.38	
PSEI 2x101/06	600	200	96	70	1200	0.70	4.70	35	0.5 / 0.25	0.55 / 0.28	**4**
PSEI 2x101/12	1200	400	91	50	900	1.01	6.10	40	0.5 / 0.25	0.55 / 0.28	
PSEI 2x121/02	200	60	123	70	1200	0.70	2.10	35	0.7 / 0.35	0.8 / 0.4	**4**
PSEI 2x161/02	200	60	165	70	1200	0.53	2.6	35	0.29 / 0.15	0.49 / 0.25	**4**
PSEI 2x161/06	600	200	147	70	1200	0.85	2.7	35	0.29 / 0.15	0.49 / 0.25	
PSEI 2x161/12	1200	400	128	70	1200	1.16	3	40	0.29 / 0.15	0.49 / 0.25	

Figure 3
page 65



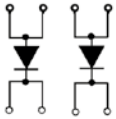
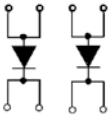
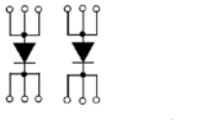


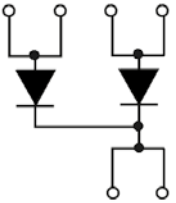
Figure 4
page 65





Fast Recovery Epitaxial Diode (FRED) Modules, released, E 148688

Part Number	V_{RRM} V	V_{VRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	t_{rr} typ. ns	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSEK 60/02	200	60	34	100	325	0.72	4.20	35	1.25 / 0.63	1.3 / 0.65	**3**
PSEK 60/06	600	200	30	70	300	1.01	7	35	1.25 / 0.63	1.3 / 0.65	
PSEK 60/12	1200	400	26	70	200	1.65	18.2	40	1.25 / 0.63	1.3 / 0.65	



PSEK

Figure 3
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Diode Modules, released, E 148688

Part Number	V_{RRM} V_{DRM}	I_{Tavm} I_{Favm}	T_C	I_{FSM} 45°C 10ms	V_{TO}	r_T	T_{VJM}	R_{thJC}	R_{thJH}	Figure
	V	A	°C	A	V	mΩ	°C	K/W	K/W	
PSVD 80/08	800	50	85	1200	0.8	5	150	0.9	1.08	**2**
PSVD 80/12	1200									
PSVD 80/14	1400									
PSVD 80/16	1600									
PSVD 80/18	1800									
PSVD 120/08	800	70	85	1800	0.8	3	150	0.65	0.83	**2**
PSVD 120/12	1200									
PSVD 120/14	1400									
PSVD 120/16	1600									
PSVD 120/18	1800									
PSVD 175/08	800	100	85	2800	0.8	2.2	150	0.45	0.6	**2**
PSVD 175/12	1200									
PSVD 175/14	1400									
PSVD 175/16	1600									
PSVD 175/18	1800									
PSWD 80/08	800	50	85	1200	0.8	5	150	0.9	1.08	**2**
PSWD 80/12	1200									
PSWD 80/14	1400									
PSWD 80/16	1600									
PSWD 80/18	1800									
PSWD 120/08	800	70	85	1800	0.8	3	150	0.65	0.83	**2**
PSWD 120/12	1200									
PSWD 120/14	1400									
PSWD 120/16	1600									
PSWD 120/18	1800									
PSWD 175/08	800	100	85	2800	0.8	2.2	150	0.45	0.6	**2**
PSWD 175/12	1200									
PSWD 175/14	1400									
PSWD 175/16	1600									
PSWD 175/18	1800									

PSWD/PSVD 80/120/175 = isolated base / PSYD/PSXD 80/120/175 = non isolated base

Figure 2
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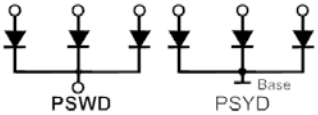

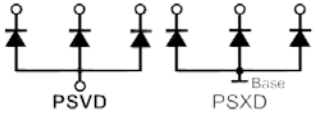

Diode Modules, released, E 148688

Part Number	V_{RRM} V_{DRM} V	I_{Tavm} I_{Favm} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Diode DC Current K/W	R_{thJH} per Diode DC Current K/W	Figure
PSKD 26/08	800	36	100	650	0.8	6.1	150	1.0	1.2	**7***
PSKD 26/12	1200									
PSKD 26/14	1400									
PSKD 26/16	1600									
PSKD 26/18	1800									
PSKD 44/08	800	59	100	1150	0.8	4.3	150	0.59	0.79	**7***
PSKD 44/12	1200									
PSKD 44/14	1400									
PSKD 44/16	1600									
PSKD 44/18	1800									
PSKD 56/08	800	71	100	1400	0.8	3.0	150	0.51	0.71	**7***
PSKD 56/12	1200									
PSKD 56/14	1400									
PSKD 56/16	1600									
PSKD 56/18	1800									
PSKD 72/08	800	99	100	1700	0.8	2.3	150	0.35	0.55	**7***
PSKD 72/12	1200									
PSKD 72/14	1400									
PSKD 72/16	1600									
PSKD 72/18	1800									
PSKD 95/08	800	120	105	2800	0.75	1.95	150	0.26	0.46	**7***
PSKD 95/12	1200									
PSKD 95/14	1400									
PSKD 95/16	1600									
PSKD 95/18	1800									
PSKD 142/08	800	165	100	4700	0.8	1.3	150	0.21	0.31	**8***
PSKD 142/12	1200									
PSKD 142/14	1400									
PSKD 142/16	1600									
PSKD 142/18	1800									
PSKD 172/08	800	190	100	6600	0.8	0.8	150	0.21	0.31	**8***
PSKD 172/12	1200									
PSKD 172/14	1400									
PSKD 172/16	1600									
PSKD 172/18	1800									
PSKD 220/08	800	270	100	8500	0.75	0.9	150	0.129	0.169	**9***
PSKD 220/12	1200									
PSKD 220/14	1400									
PSKD 220/16	1600									

* alternate types available with baseplates, HiPOR®-Modules, pages 88, 89, 90, 91.

Diode Modules, released, E 148688

Part Number	V_{RRM} V_{DRM} V	I_{Tavm} I_{Favm} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Diode DC Current K/W	R_{thJH} per Diode DC Current K/W	Figure
PSKD 250/08	800	290	100	11000	0.75	0.75	150	0.129	0.169	**9***
PSKD 250/12	1200									
PSKD 250/14	1400									
PSKD 250/16	1600									
PSKD 250/18	1800									
PSKD 255/12	1200	270	100	9500	0.8	0.6	150	0.14	0.18	**10**
PSKD 255/14	1400									
PSKD 255/16	1600									
PSKD 255/18	1800									
PSKD 310/08	800	305	100	11500	0.75	0.63	150	0.129	0.169	**9***
PSKD 310/12	1200									
PSKD 310/14	1400									
PSKD 310/16	1600									
PSKD 310/18	1800									
PSKD 312/12	1200	310	100	10500	0.8	0.68	150	0.12	0.16	**10**
PSKD 312/14	1400									
PSKD 312/16	1600									
PSKD 312/18	1800									
PSKD 312/20	2000									
PSKD 312/22	2200									

* alternate types available with baseplates, HiPOR®-Modules, pages 88, 89, 90, 91.

Figure 7
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Figure 8
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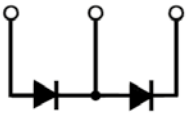

Figure 9
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Figure 10
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Thyristor / Diode Modules, released, E 148688

Part Number	V_{RRM} V_{DRM} V	I_{TAV} 180°C sine V	T_c °C	I_{TRMS} I_{FRMS} T_{VJ}= T_{VJM} A	I_{TRMS} I_{FRMS} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Figure
PSKH 26/08io8	800	27	85	50	520	0.85	11	125	0.88	1.08	**7***
PSKH 26/12io8	1200										
PSKH 26/14io8	1400										
PSKH 26/16io8	1600										
PSKH 44/08io8	800	49	85	80	1150	0.85	5.3	125	0.53	0.73	**7***
PSKH 44/12io8	1200										
PSKH 44/14io8	1400										
PSKH 44/16io8	1600										
PSKH 44/18io8	1800										
PSKH 56/08io8	800	60	85	100	1500	0.85	3.7	125	0.45	0.65	**7***
PSKH 56/12io8	1200										
PSKH 56/14io8	1400										
PSKH 56/16io8	1600										
PSKH 56/18io8	1800										
PSKH 72/08io8	800	85	85	180	1700	0.85	3.2	125	0.3	0.5	**7***
PSKH 72/12io8	1200										
PSKH 72/14io8	1400										
PSKH 72/16io8	1600										
PSKH 72/18io8	1800										
PSKH 94/20io1	2000	104	85	180	1700	0.85	3.2	125	0.22	0.42	**7***
PSKH 94/22io1	2200										
PSKH 95/08io8	800	116	85	180	2250	0.8	2.4	125	0.22	0.42	**7***
PSKH 95/12io8	1200										
PSKH 95/14io8	1400										
PSKH 95/16io8	1600										
PSKH 95/18io8	1800										
PSKH 132/08io1	800	130	85	300	4750	0.8	1.5	125	0.23	0.33	**8***
PSKH 132/12io1	1200										
PSKH 132/14io1	1400										
PSKH 132/16io1	1600										
PSKH 132/18io1	1800										
PSKH 161/20io1	2000	165	85	300	6000	0.8	1.6	125	0.155	0.225	**8***
PSKH 161/22io1	2200										
PSKH 162/08io1	800	181	85	300	6000	0.88	1.15	125	0.155	0.225	**8***
PSKH 162/12io1	1200										
PSKH 162/14io1	1400										
PSKH 162/16io1	1600										
PSKH 162/18io1	1800										

* alternate types available with baseplates, HiPOR®-Modules, pages 88, 89, 90, 91.

Thyristor / Diode Modules, released, E 148688

Part Number	V_{RRM} V_{DRM} V	I_{TAV} 180°C sine V	T_c sine °C	I_{TRMS} I_{FRMS} T_{VJ}= T_{VJM} A	I_{TRMS} I_{FRMS} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Figure
PSKH 220/08io1	800	250	85	400	8500	0.9	1.0	140	0.139	0.179	**9***
PSKH 220/12io1	1200										
PSKH 220/14io1	1400										
PSKH 220/16io1	1600										
PSKH 225/12io1	1200	221	85	400	8000	0.8	0.76	130	0.157	0.197	**10**
PSKH 225/14io1	1400										
PSKH 225/16io1	1600										
PSKH 225/18io1	1800										
PSKH 250/08io1	800	287	85	450	9000	0.85	0.82	140	0.129	0.169	**9***
PSKH 250/12io1	1200										
PSKH 250/14io1	1400										
PSKH 250/16io1	1600										
PSKH 255/12io1	1200	250	85	450	9000	0.8	0.68	130	0.14	0.18	**10**
PSKH 255/14io1	1400										
PSKH 255/16io1	1600										
PSKH 255/18io1	1800										
PSKH 310/08io1	800	320	85	500	9200	0.8	0.82	140	0.112	0.152	**9***
PSKH 310/12io1	1200										
PSKH 310/14io1	1400										
PSKH 310/16io1	1600										
PSKH 312/12io1	1200	320	85	520	9200	0.8	0.68	140	0.12	0.16	**10**
PSKH 312/14io1	1400										
PSKH 312/16io1	1600										
PSKH 312/18io1	1800										

* alternate types available with baseplates, HiPOR®-Modules, pages 88, 89, 90, 91.

Figure 7
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Figure 8
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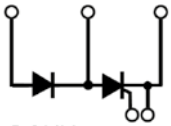

PSKH Version 1

io1

Figure 9
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Figure 10
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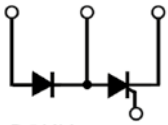

PSKH Version 8

io8

Thyristor Modules, released, E 148688

Part Number	V_{RRM} V_{DRM} V	I_{TAV} A	T_C °C	I_{TSM} 45°C 10ms per Chip A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Figure
PSVT 70/08	800	49	85	1150	0.85	5.3	125	0.35	0.55	**2**
PSVT 70/12	1200									
PSVT 70/14	1400									
PSVT 70/16	1600									
PSVT 90/08	800	70	85	1200	0.85	4.3	125	0.31	0.51	**2**
PSVT 90/12	1200									
PSVT 90/14	1400									
PSVT 90/16	1600									
PSVT 160/08	800	85	85	1700	0.85	3.2	125	0.3	0.5	**2**
PSVT 160/12	1200									
PSVT 160/14	1400									
PSVT 160/16	1600									
PSWT 70/08	800	49	85	1150	0.85	5.3	125	0.35	0.55	**2**
PSWT 70/12	1200									
PSWT 70/14	1400									
PSWT 70/16	1600									
PSWT 90/08	800	70	85	1200	0.85	4.3	125	0.31	0.51	**2**
PSWT 90/12	1200									
PSWT 90/14	1400									
PSWT 90/16	1600									
PSWT 160/08	800	85	85	1700	0.85	3.2	125	0.3	0.5	**2**
PSWT 160/12	1200									
PSWT 160/14	1400									
PSWT 160/16	1600									

PSWT/ PSVT 70/90/160 = isolated base / PSXT/ PSYT 70/90/160 = non isolated base

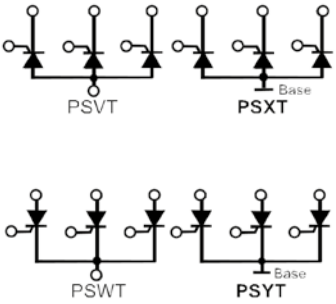

Figure 2
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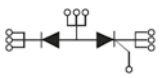
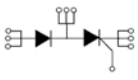
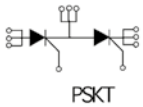
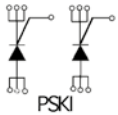
Part Number	V_{RRM} V	I_{TRMS} I_{FRMS} $T_{VJ=}$ T_{VJM} A	I_{TAV} I_{FAVM} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSKH 80/06	600	140	80	85	550	0.8	2.95	125	0.36 / 0.18	0.56 / 0.28	**4**
PSKH 80/08	800	140									
PSKH 80/12	1200	140									
PSKH 96/06	600	180	105	85	2250	0.8	2.4	125	0.26 / 0.13	0.46 / 0.23	**4**
PSKH 96/08	800	180									
PSKH 96/12	1200	180									
PSKH 96/14	1400	180									
PSKH 96/16	1600	180									
PSKH 96/18	1800	180									
PSKT 96/06	600	180	105	85	2250	0.8	2.4	125	0.26 / 0.13	0.46 / 0.23	**4**
PSKT 96/08	800	180									
PSKT 96/12	1200	180									
PSKT 96/14	1400	180									
PSKT 96/16	1600	180									
PSKT 96/18	1800	180									
PSKI 96/06	600	180	105	85	2250	0.8	2.4	125	0.26 / 0.13	0.46 / 0.23	**4**
PSKI 96/08	800	180									
PSKI 96/12	1200	180									
PSKI 96/14	1400	180									
PSKI 96/16	1600	180									
PSKI 96/18	1800	180									
PSET 132/08	800	300	132	85	3600	0.8	1.65	150 for 10 s	0.25 / 0.13	0.35 / 0.18	**4**
PSET 132/12	1200	300									
PSET 132/14	1400	300									
PSET 132/16	1600	300									
PSET 132/18	1800	300									
PSET 180/08	800	300	180	90	4500	0.75	1.23	150 for 10 s	0.17 / 0.09	0.23 / 0.12	**4**
PSET 180/12	1200	300									
PSET 180/14	1400	300									
PSET 180/16	1600	300									
PSET 180/18	1800	300									

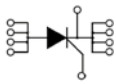
Figure 4
page 65











Thyristor Modules, released, E 148688

Part Number	V_{RRM} V_{DRM} V	I_{TAV} 180°C sine V	T_c °C	I_{TRMS} I_{FRMS} T_{VJ}= T_{VJM} A	I_{TRMS} I_{FRMS} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Figure
PSKT 19/08io1	800	18	85	40	400	0.85	18	125	1.3	1.5	**7***
PSKT 19/12io1	1200										
PSKT 19/14io1	1400										
PSKT 19/16io1	1600										
PSKT 19/08io8	800	18	85	40	400	0.85	18	125	1.3	1.5	**7***
PSKT 19/12io8	1200										
PSKT 19/14io8	1400										
PSKT 19/16io8	1600										
PSKT 26/08io1	800	27	85	50	520	0.85	11	125	0.88	1.08	**7***
PSKT 26/12io1	1200										
PSKT 26/14io1	1400										
PSKT 26/16io1	1600										
PSKT 26/08io8	800	27	85	50	520	0.85	11	125	0.88	1.08	**7***
PSKT 26/12io8	1200										
PSKT 26/14io8	1400										
PSKT 26/16io8	1600										
PSKT 44/08io1	800	49	85	80	1150	0.85	5.3	125	0.53	0.73	**7***
PSKT 44/12io1	1200										
PSKT 44/14io1	1400										
PSKT 44/16io1	1600										
PSKT 44/18io1	1800										
PSKT 44/08io8	800	49	85	80	1150	0.85	5.3	125	0.53	0.73	**7***
PSKT 44/12io8	1200										
PSKT 44/14io8	1400										
PSKT 44/16io8	1600										
PSKT 44/18io8	1800										
PSKT 56/08io1	800	60	85	100	1500	0.85	3.7	125	0.45	0.65	**7***
PSKT 56/12io1	1200										
PSKT 56/14io1	1400										
PSKT 56/16io1	1600										
PSKT 56/18io1	1800										
PSKT 56/08io8	800	60	85	100	1500	0.85	3.7	125	0.45	0.65	**7***
PSKT 56/12io8	1200										
PSKT 56/14io8	1400										
PSKT 56/16io8	1600										
PSKT 56/18io8	1800										

* alternate types available with baseplates, HiPOR®-Modules, pages 88, 89, 90, 91.

Thyristor Modules, released, E 148688

Part Number	V_{RRM} V_{DRM} V	I_{TAV} 180°C sine V	T_c °C	I_{TRMS} I_{FRMS} T_{VJ}= T_{VJM} A	I_{TRMS} I_{FRMS} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Figure
PSKT 72/08io1	800	85	85	180	1700	0.85	3.2	125	0.3	0.5	**7***
PSKT 72/12io1	1200										
PSKT 72/14io1	1400										
PSKT 72/16io1	1600										
PSKT 72/18io1	1800										
PSKT 72/08io8	800	85	85	180	1700	0.85	3.2	125	0.3	0.5	**7***
PSKT 72/12io8	1200										
PSKT 72/14io8	1400										
PSKT 72/16io8	1600										
PSKT 72/18io8	1800										
PSKT 94/20io1	200	104	85	180	1700	0.85	3.2	125	0.22	0.42	**7***
PSKT 94/22io1	2200										
PSKT 95/08io1	800	116	85	180	2250	0.8	2.4	125	0.22	0.42	**7***
PSKT 95/12io1	1200										
PSKT 95/14io1	1400										
PSKT 95/16io1	1600										
PSKT 95/18io1	1800										
PSKT 95/08io8	800	116	85	180	2250	0.8	2.4	125	0.22	0.42	**7***
PSKT 95/12io8	1200										
PSKT 95/14io8	1400										
PSKT 95/16io8	1600										
PSKT 95/18io8	1800										

* alternate types available with baseplates, HiPOR®-Modules, pages 88, 89, 90, 91.

Figure 7
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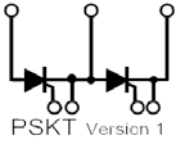
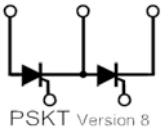


io1



io8

Thyristor Modules, released, E 148688

Part Number	V_{RRM} V_{DRM} V	I_{TAV} 180°C sine V	T_c °C	I_{TRMS} I_{FRMS} T_{VJ}= T_{VJM} A	I_{TRMS} I_{FRMS} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Figure
PSKT 132/08io1	800	130	85	300	4750	0.8	1.5	125	0.23	0.33	**8***
PSKT 132/12io1	1200										
PSKT 132/14io1	1400										
PSKT 132/16io1	1600										
PSKT 132/18io1	1800										
PSKT 161/20io1	2000	165	85	300	6000	0.8	1.6	125	0.155	0.225	**8***
PSKT 161/22io1	2200										
PSKT 162/08io1	800	181	85	300	6000	0.88	1.15	125	0.155	0.225	**8***
PSKT 162/12io1	1200										
PSKT 162/14io1	1400										
PSKT 162/16io1	1600										
PSKT 162/18io1	1800										
PSKT 170/12io1	1200	203	85	350	5400	0.8	1.0	130	0.164	0.204	**10**
PSKT 170/14io1	1400										
PSKT 170/16io1	1600										
PSKT 170/18io1	1800										
PSKT 220/08io1	800	250	85	400	8500	0.9	1.0	140	0.139	0.179	**9***
PSKT 220/12io1	1200										
PSKT 220/14io1	1400										
PSKT 220/16io1	1600										
PSKT 224/20io1	2000	240	85	400	8000	0.8	0.76	130	0.139	0.179	**10**
PSKT 224/22io1	2200										
PSKT 225/12io1	1200	221	85	400	8000	0.8	0.76	130	0.157	0.197	**10**
PSKT 225/14io1	1400										
PSKT 225/16io1	1600										
PSKT 225/18io1	1800										
PSKT 250/08io1	800	287	85	450	9000	0.85	0.82	140	0.129	0.169	**9***
PSKT 250/12io1	1200										
PSKT 250/14io1	1400										
PSKT 250/16io1	1600										
PSKT 250/18io1	1800										
PSKT 255/12io1	1200	250	85	450	9000	0.8	0.68	130	0.14	0.18	**10**
PSKT 255/14io1	1400										
PSKT 255/16io1	1600										
PSKT 255/18io1	1800										

* alternate types available with baseplates, HiPOR®-Modules, pages 88, 89, 90, 91.

Thyristor Modules, released, E 148688

Part Number	V_{RRM} V_{DRM} V	I_{TAV} T_c 180°C sine V	°C	I_{TRMS} I_{FRMS} T_{VJ}= T_{VJM} A	I_{TRMS} I_{FRMS} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Figure
PSKT 310/08io1	800	320	85	500	9200	0.8	0.82	140	0.112	0.152	**9***
PSKT 310/12io1	1200										
PSKT 310/14io1	1400										
PSKT 310/16io1	1600										
PSKT 310/18io1	1800										
PSKT 312/12io1	1200	320	85	520	9200	0.8	0.68	140	0.12	0.16	**10**
PSKT 312/14io1	1400										
PSKT 312/16io1	1600										
PSKT 312/18io1	1800										

* alternate types available with baseplates, HiPOR®-Modules, pages 88, 89, 90, 91.

Figure 8
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Figure 9
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Figure 10
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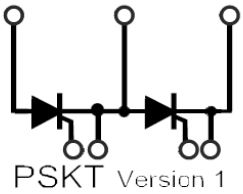

io1

Single Phase Rectifier Bridges, released, E 148688

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSB 15/06	600	180	21	100	100	0.8	40	150	2.3 / 0.58	2.8 / 0.7	**14**
PSB 15/08	800	250									
PSB 15/12	1200	400									
PSB 21/08	800	250	21	100	100	0.8	40	150	2.3 / 0.58	2.8 / 0.7	**3**
PSB 21/12	1200	400									
PSB 25T/08	800	250	21	63	380	0.85	12	150	8.2 / 2.05	9.4 / 2.35	**11**
PSB 25T/12	1200	400									
PSB 25T/14	1400	440									
PSB 25T/16	1600	500									
PSB 25T/18	1800	575									
PSB 31/08	800	250	38	100	450	0.8	10	150	1.55 / 0.388	2.1 / 0.525	**5**
PSB 31/12	1200	400									
PSB 31/14	1400	440									
PSB 31/16	1600	500									
PSB 31/18	1800	575									
PSB 35T/08	800	250	35	85	400	0.85	12	150	2.8 / 0.7	3.4 / 0.85	**12**
PSB 35T/12	1200	400									
PSB 35T/14	1400	440									
PSB 35T/16	1600	500									
PSB 35T/18	1800	575									
PSB 36T/08	800	250	30	62	550	0.8	5.8	150	6.2 / 1.55	7.4 / 1.85	**11**
PSB 36T/12	1200	400									
PSB 36T/14	1400	440									
PSB 36T/16	1600	500									
PSB 36T/18	1800	575									
PSB 41/08	800	250	45	100	550	0.8	8	150	1.45 / 0.363	1.9 / 0.475	**5**
PSB 41/12	1200	400									
PSB 41/14	1400	440									
PSB 41/16	1600	500									
PSB 41/18	1800	575									
PSB 50/08	800	250	72	100	675	0.8	5	150	1.1 / 0.275	1.52 / 0.38	**6**
PSB 50/12	1200	400									
PSB 50/14	1400	440									
PSB 50/16	1600	500									
PSB 50/18	1800	575									
PSB 51/08	800	250	55	100	750	0.8	6	150	1.3 / 0.325	1.6 / 0.4	**5**
PSB 51/12	1200	400									
PSB 51/14	1400	440									
PSB 51/16	1600	500									
PSB 51/18	1800	575									

Single Phase Rectifier Bridges, released, E 148688

	Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
	PSB 53/08	800	250	54	100	300	0.8	13	150	1.1 / 0.28	1.6 / 0.4	**14**
	PSB 53/12	1200	400									
	PSB 53/14	1400	440									
	PSB 53/16	1600	500									
	PSB 54/08	800	250	54	100	300	0.8	13	150	1.1 / 0.28	1.6 / 0.4	**3**
	PSB 54/12	1200	400									
	PSB 54/14	1400	440									
	PSB 54/16	1600	500									
	PSB 55T/08	800	250	50	64	750	0.85	8	150	2.6 / 0.65	2.84 / 0.71	**13**
	PSB 55T/12	1200	400									
	PSB 55T/14	1400	440									
	PSB 55T/16	1600	500									
	PSB 55T/18	1800	575									
	PSB 61/08	800	250	65	100	1000	0.8	5	150	1.12 / 0.28	1.5 / 0.375	**5**
	PSB 61/12	1200	400									
	PSB 61/14	1400	440									
	PSB 61/16	1600	500									
	PSB 61/18	1800	575									
30 mm	**PSB 62/08**	800	250	52	100	550	0.8	8	150	1.45 / 0.36	1.87 / 0.47	**1**
30 mm	**PSB 62/12**	1200	400									
30 mm	**PSB 62/14**	1400	440									
30 mm	**PSB 62/16**	1600	500									
30 mm	**PSB 62/18**	1800	575									
17 mm	**PSBS 62/08**	800	250	52	100	550	0.8	8	150	1.45 / 0.36	1.87 / 0.47	**23**
17 mm	**PSBS 62/12**	1200	400									
17 mm	**PSBS 62/14**	1400	440									
17 mm	**PSBS 62/16**	1600	500									
17 mm	**PSBS 62/18**	1800	575									

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Figure 23
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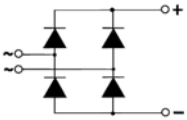

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Single Phase Rectifier Bridges, released, E 148688

	Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
30 mm	**PSB 63/08**	800	250	60	100	1000	0.8	8	150	0.58 / 0.145	0.825 / 0.206	**1**
	PSB 63/12	1200	400									
	PSB 63/14	1400	440									
	PSB 63/16	1600	500									
	PSB 63/18	1800	575									
17 mm	**PSBS 63/08**	800	250	60	100	1000	0.8	8	150	0.58 / 0.145	0.825 / 0.206	**23**
	PSBS 63/12	1200	400									
	PSBS 63/14	1400	440									
	PSBS 63/16	1600	500									
	PSBS 63/18	1800	575									
	PSB 68/08	800	250	68	90	530	0.8	7.5	150	1.2 / 0.3	1.5 / 0.375	**3**
	PSB 68/12	1200	400									
	PSB 68/14	1400	440									
	PSB 68/16	1600	500									
	PSB 75/08	800	250	70	85	1000	0.8	6	150	1.28 / 0.32	1.38 / 0.345	**15**
	PSB 75/12	1200	400									
	PSB 75/14	1400	440									
	PSB 75/16	1600	500									
	PSB 75/18	1800	575									
	PSB 78/08	800	250	78	100	750	0.8	6.0	150	1.2 / 0.3	1.5 / 0.375	**4**
	PSB 78/12	1200	400									
	PSB 78/14	1400	440									
	PSB 78/16	1600	500									
30 mm	**PSB 82/08**	800	250	72	100	750	0.8	5	150	1.1 / 0.28	1.52 / 0.38	**1**
	PSB 82/12	1200	400									
	PSB 82/14	1400	440									
	PSB 82/16	1600	500									
	PSB 82/18	1800	575									
17 mm	**PSBS 82/08**	800	250	72	100	750	0.8	5	150	1.1 / 0.28	1.52 / 0.38	**23**
	PSBS 82/12	1200	400									
	PSBS 82/14	1400	440									
	PSBS 82/16	1600	500									
	PSBS 82/18	1800	575									
30 mm	**PSB 83/08**	800	250	88	100	1200	0.8	5	150	0.58 / 0.145	0.825 / 0.206	**1**
	PSB 83/12	1200	400									
	PSB 83/14	1400	440									
	PSB 83/16	1600	500									
	PSB 83/18	1800	575									

Single Phase Rectifier Bridges, released, E 148688

	Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
17 mm	PSBS 83/08	800	250	88	100	1200	0.8	5	150	0.58 / 0.145	0.825 / 0.206	23
	PSBS 83/12	1200	400									
	PSBS 83/14	1400	440									
	PSBS 83/16	1600	500									
	PSBS 83/18	1800	575									
	PSB 88/08	800	250	92	100	900	0.8	4	150	0.85 / 0.212	1.15 / 0.288	4
	PSB 88/12	1200	400									
	PSB 88/14	1400	440									
	PSB 88/16	1600	500									
	PSB 95/08	800	250	95	85	1200	0.8	5	150	0.9 / 0.225	1.1 / 0.275	6
	PSB 95/12	1200	400									
	PSB 95/14	1400	440									
	PSB 95/16	1600	500									
	PSB 95/18	1800	575									
	PSB 105/08	800	250	107	85	1500	0.8	5	150	0.83 / 0.21	1.13 / 0.28	15
	PSB 105/12	1200	400									
	PSB 105/14	1400	440									
	PSB 105/16	1600	500									
	PSB 105/18	1800	575									
30 mm	PSB 112/08	800	250	84	100	1200	0.8	5	150	0.85 / 0.2125	1.05 / 0.263	2
	PSB 112/12	1200	400									
	PSB 112/14	1400	440									
	PSB 112/16	1600	500									
	PSB 112/18	1800	575									
17 mm	PSBS 112/08	800	250	84	100	1200	0.8	5	150	0.85 / 0.2125	1.05 / 0.263	22
	PSBS 112/12	1200	400									
	PSBS 112/14	1400	440									
	PSBS 112/16	1600	500									
	PSBS 112/18	1800	575									

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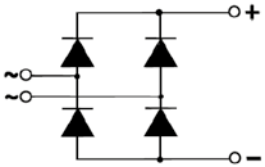

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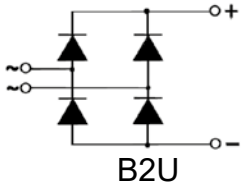
Single Phase Rectifier Bridges, released, E 148688

	Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
	PSB 125/08	800	250	124	85	1800	0.8	3	150	0.83 / 0.21	1.13 / 0.28	**15**
	PSB 125/12	1200	400									
	PSB 125/14	1400	440									
	PSB 125/16	1600	500									
	PSB 125/18	1800	575									
30 mm	**PSB 162/08**	800	250	122	100	1800	0.8	3	150	0.65 / 0.16	0.83 / 0.21	**2**
30 mm	**PSB 162/12**	1200	400									
30 mm	**PSB 162/14**	1400	440									
30 mm	**PSB 162/16**	1600	500									
30 mm	**PSB 162/18**	1800	575									
17 mm	**PSBS 162/08**	800	250	122	100	1800	0.8	3	150	0.65 / 0.16	0.83 / 0.21	**22**
17 mm	**PSBS 162/12**	1200	400									
17 mm	**PSBS 162/14**	1400	440									
17 mm	**PSBS 162/16**	1600	500									
17 mm	**PSBS 162/18**	1800	575									
30 mm	**PSB 192/08**	800	250	174	100	2800	0.8	2.2	150	0.45 / 0.11	0.6 / 0.15	**2**
30 mm	**PSB 192/12**	1200	400									
30 mm	**PSB 192/14**	1400	440									
30 mm	**PSB 192/16**	1600	500									
30 mm	**PSB 192/18**	1800	575									
17 mm	**PSBS 192/08**	800	250	174	100	2800	0.8	2.2	150	0.45 / 0.11	0.6 / 0.15	**22**
17 mm	**PSBS 192/12**	1200	400									
17 mm	**PSBS 192/14**	1400	440									
17 mm	**PSBS 192/16**	1600	500									
17 mm	**PSBS 192/18**	1800	575									



B2U


Figure 2
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Single Phase Half Controlled Rectifier Bridges, released, E 148688

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSBH 25/08	800	250	32	85	200	0.85	27	125	1.3 / 0.33	1.8 / 0.45	**3**
PSBH 25/12	1200	400									
PSBH 50/08	800	250	53	85	550	0.85	11	125	0.9 / 0.225	1.1 / 0.275	**5**
PSBH 50/12	1200	400									
PSBH 50/14	1400	440									
PSBH 50/16	1600	500									
PSBH 55/08	800	250	46	85	520	0.85	11	125	1.2 / 0.3	1.31 / 0.327	**6**
PSBH 55/12	1200	400									
PSBH 55/14	1400	440									
PSBH 55/16	1600	500									
PSBH 75/08	800	250	74	85	1150	0.85	5.33	125	0.66 / 0.165	0.93 / 0.233	**6**
PSBH 75/12	1200	400									
PSBH 75/14	1400	440									
PSBH 85/08	800	250	82	85	1150	0.85	3.7	125	0.65 / 0.163	0.8 / 0.2	**2**
PSBH 85/12	1200	400									
PSBH 85/14	1400	440									
PSBH 125/08	800	250	123	85	1500	0.85	3.2	125	0.46 / 0.115	0.55 / 0.138	**2**
PSBH 125/12	1200	400									
PSBH 125/14	1400	440									
PSBH 125/16	1600	500									

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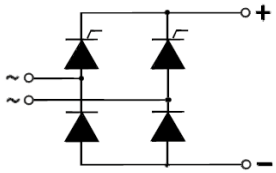
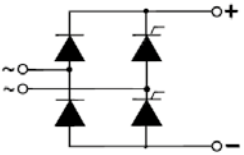


B2HK

Single Phase Half Controlled Rectifier Bridges, released, E 148688

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSBZ 36/08	800	250	36	85	320	0.85	13	125	1.4 / 0.35	2.0 / 0.5	**3**
PSBZ 36/12	1200	400									
PSBZ 36/14	1400	440									
PSBZ 36/16	1600	500									
PSBZ 50/08	800	250	53	85	550	0.85	11	125	0.9 / 0.225	1.1 / 0.275	**5**
PSBZ 50/12	1200	400									
PSBZ 50/14	1400	440									
PSBZ 50/16	1600	500									
PSBZ 55/08	800	250	46	85	520	0.85	11	125	1.2 / 0.3	1.31 / 0.327	**6**
PSBZ 55/12	1200	400									
PSBZ 55/14	1400	440									
PSBZ 55/16	1600	500									
PSBZ 75/08	800	250	74	85	1150	0.85	5.33	125	0.66 / 0.165	0.93 / 0.233	**6**
PSBZ 75/12	1200	400									
PSBZ 75/14	1400	440									
PSBZ 85/08	800	250	82	85	1150	0.85	3.7	125	0.65 / 0.163	0.8 / 0.2	**2**
PSBZ 85/12	1200	400									
PSBZ 85/14	1400	440									
PSBZ 125/08	800	250	123	85	1500	0.85	3.2	125	0.46 / 0.115	0.55 / 0.138	**2**
PSBZ 125/12	1200	400									
PSBZ 125/14	1400	440									
PSBZ 125/16	1600	500									



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Single Phase Half Controlled Rectifier Bridges, released, E 148688 With Freewheeling Diode

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSCH 25/08	800	250	32	85	200	0.85	27	125	1.3 / 0.26	1.8 / 0.36	**3**
PSCH 25/12	1200	400									
PSCH 50/08	800	250	53	85	550	0.85	11	125	0.9 / 0.18	1.1 / 0.22	**5**
PSCH 50/12	1200	400									
PSCH 50/14	1400	440									
PSCH 50/16	1600	500									
PSCH 55/08	800	250	46	85	520	0.85	11	125	1.2 / 0.24	1.31 / 0.262	**6**
PSCH 55/12	1200	400									
PSCH 55/14	1400	440									
PSCH 55/16	1600	500									
PSCH 75/08	800	250	74	85	1150	0.85	5.33	125	0.66 / 0.132	0.93 / 0.186	**6**
PSCH 75/12	1200	400									
PSCH 75/14	1400	440									
PSCH 85/08	800	250	82	85	1150	0.85	3.7	125	0.65 / 0.13	0.8 / 0.16	**2**
PSCH 85/12	1200	400									
PSCH 85/14	1400	440									
PSCH 125/08	800	250	123	85	1500	0.85	3.2	125	0.46 / 0.092	0.55 / 0.11	**2**
PSCH 125/12	1200	400									
PSCH 125/14	1400	440									
PSCH 125/16	1600	500									

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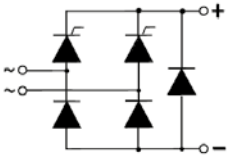

B2HKF

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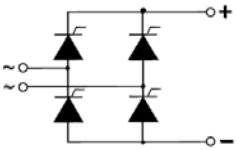
Single Phase Full Controlled Rectifier Bridges, released, E 148688

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSBT 25/08	800	250	32	85	200	0.85	27	125	1.3 / 0.33	1.8 / 0.45	**3**
PSBT 25/12	1200	400									
PSBT 50/08	800	250	53	85	550	0.85	11	125	0.9 / 0.225	1.1 / 0.275	**5**
PSBT 50/12	1200	400									
PSBT 50/14	1400	440									
PSBT 50/16	1600	500									
PSBT 55/08	800	250	46	85	520	0.85	11	125	1.2 / 0.3	1.31 / 0.327	**6**
PSBT 55/12	1200	400									
PSBT 55/14	1400	440									
PSBT 55/16	1600	500									
PSBT 75/08	800	250	74	85	1150	0.85	5.33	125	0.66 / 0.165	0.93 / 0.233	**6**
PSBT 75/12	1200	400									
PSBT 75/14	1400	440									
PSBT 85/08	800	250	82	85	1150	0.85	3.7	125	0.65 / 0.162	0.8 / 0.2	**2**
PSBT 85/12	1200	400									
PSBT 85/14	1400	440									
PSBT 125/08	800	250	123	85	1500	0.85	3.2	125	0.46 / 0.115	0.55 / 0.137	**2**
PSBT 125/12	1200	400									
PSBT 125/14	1400	440									
PSBT 125/16	1600	500									



B2C

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Single Phase Full Controlled Rectifier Bridges, released, E 148688 With Freewheeling Diode

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSCT 50/08	800	250	53	85	550	0.85	11	125	0.9 / 0.18	1.1 / 0.22	**5**
PSCT 50/12	1200	400									
PSCT 50/14	1400	440									
PSCT 50/16	1600	500									
PSCT 55/08	800	250	46	85	520	0.85	11	125	1.2 / 0.24	1.31 / 0.262	**6**
PSCT 55/12	1200	400									
PSCT 55/14	1400	440									
PSCT 55/16	1600	500									
PSCT 75/08	800	250	74	85	1150	0.85	5.33	125	0.66 / 0.132	0.93 / 0.186	**6**
PSCT 75/12	1200	400									
PSCT 75/14	1400	440									
PSCT 85/08	800	250	82	85	1150	0.85	3.7	125	0.65 / 0.13	0.8 / 0.16	**2**
PSCT 85/12	1200	400									
PSCT 85/14	1400	440									
PSCT 125/08	800	250	123	85	1500	0.85	3.2	125	0.46 / 0.092	0.55 / 0.11	**2**
PSCT 125/12	1200	400									
PSCT 125/14	1400	440									
PSCT 125/16	1600	500									

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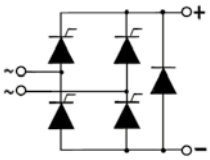

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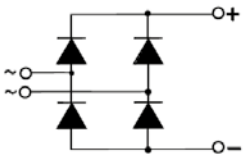
Single Phase Rectifier Bridges,
released, E 148688 With Fast Recovery Epitaxial Diodes

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	t_{rr} ns	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSB 19F/04	400	125	27	85	50	1.18	22	35	2.5 / 0.63	2.8 / 0.7	**3**
PSB 19F/06	600	200	27	85	50	1.18	22	35	2.5 / 0.63	2.8 / 0.7	
PSB 19F/08	800	250	19	85	40	1.32	30	40	2.5 / 0.63	2.8 / 0.7	
PSB 19F/12	1200	400	19	85	40	1.32	30	40	2.5 / 0.63	2.8 / 0.7	
PSB 33F/04	400	125	44	85	110	1.13	13	35	1.6 / 0.4	1.9 / 0.48	**3**
PSB 33F/06	600	200	44	85	110	1.13	13	35	1.6 / 0.4	1.9 / 0.48	
PSB 33F/08	800	250	32	85	90	1.32	30	40	1.6 / 0.4	1.9 / 0.48	
PSB 33F/12	1200	400	32	85	90	1.32	30	40	1.6 / 0.4	1.9 / 0.48	
PSB 71F/04	400	125	68	85	250	0.98	8	35	0.9 / 0.23	1.2 / 0.3	**3**
PSB 71F/06	600	200	68	85	250	0.98	8	35	0.9 / 0.23	1.2 / 0.3	
PSB 71F/08	800	250	59	85	200	1.31	15	40	0.9 / 0.23	1.2 / 0.3	
PSB 71F/12	1200	400	59	85	200	1.31	15	40	0.9 / 0.23	1.2 / 0.3	
PSB 100F/04	400	125	100	85	600	1.09	4.3	35	0.85 / 0.21	1.0 / 0.25	**4**
PSB 100F/06	600	200	100	85	600	1.09	4.3	35	0.85 / 0.21	1.0 / 0.25	
PSB 100F/08	800	250	100	75	500	1.12	5.7	40	0.85 / 0.21	1.0 / 0.25	
PSB 100F/12	1200	400	100	75	500	1.12	5.7	40	0.85 / 0.21	1.0 / 0.25	



B2U

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Three Phase Rectifier Bridges, released, E 148688

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSD 25T/08	800	250	25	63	380	0.85	12	150	9.3 / 1.55	10.2 / 1.70	**11**
PSD 25T/12	1200	400									
PSD 25T/14	1400	440									
PSD 25T/16	1600	500									
PSD 25T/18	1800	575									
PSD 27/06	600	180	28	100	100	0.8	40	150	2.3 / 0.38	2.8 / 0.47	**14**
PSD 27/08	800	250									
PSD 27/12	1200	400									
PSD 28/06	600	250	28	100	100	0.8	40	150	2.3 / 0.38	2.8 / 0.47	**3**
PSD 28/08	800	400									
PSD 28/12	1200	440									
PSD 31/08	800	250	60	100	450	0.8	10	150	1.55 / 0.258	2.1 / 0.35	**5**
PSD 31/12	1200	400									
PSD 31/14	1400	440									
PSD 31/16	1600	500									
PSD 31/18	1800	575									
PSD 35T/08	800	250	38	85	400	0.85	12	150	4.2 / 0.70	4.8 / 0.80	**12**
PSD 35T/12	1200	400									
PSD 35T/14	1400	440									
PSD 35T/16	1600	500									
PSD 35T/18	1800	575									

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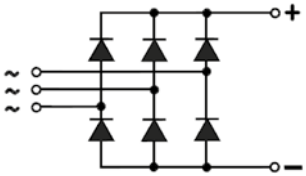

B6U

Three Phase Rectifier Bridges, released, E 148688

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSD 36T/08	800	250	35	62	550	0.8	7.4	150	7.5 / 1.25	8.4 / 1.40	**11**
PSD 36T/12	1200	400									
PSD 36T/14	1400	440									
PSD 36T/16	1600	500									
PSD 36T/18	1800	575									
PSD 41/08	800	250	70	100	550	0.8	8	150	1.45 / 0.242	1.9 / 0.317	**5**
PSD 41/12	1200	400									
PSD 41/14	1400	440									
PSD 41/16	1600	500									
PSD 41/18	1800	575									
PSD 50/08	800	250	80	110	675	0.8	5	150	1.1 / 0.183	1.52 / 0.253	**6**
PSD 50/12	1200	400									
PSD 50/14	1400	440									
PSD 50/16	1600	500									
PSD 50/18	1800	575									
PSD 51/08	800	250	85	100	750	0.85	6	150	1.3 / 0.22	1.6 / 0.27	**5**
PSD 51/12	1200	400									
PSD 51/14	1400	440									
PSD 51/16	1600	500									
PSD 51/18	1800	575									
PSD 55T/08	800	250	58	85	750	0.85	8	150	2.7 / 0.45	3.06 / 0.51	**13**
PSD 55T/12	1200	400									
PSD 55T/14	1400	440									
PSD 55T/16	1600	500									
PSD 55T/18	1800	575									
PSD 61/08	800	250	100	100	1000	0.80	5	150	1.12 / 0.187	1.5 / 0.25	**5**
PSD 61/12	1200	400									
PSD 61/14	1400	440									
PSD 61/16	1600	500									
PSD 61/18	1800	575									

Three Phase Rectifier Bridges, released, E 148688

	Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
30 mm	**PSD 62/08**	800	250	63	110	550	0.8	8	150	1.45 / 0.24	1.87 / 0.31	1
	PSD 62/12	1200	400									
	PSD 62/14	1400	440									
	PSD 62/16	1600	500									
	PSD 62/18	1800	575									
17 mm	**PSDS 62/08**	800	250	63	110	550	0.8	8	150	1.45 / 0.24	1.87 / 0.31	23
	PSDS 62/12	1200	400									
	PSDS 62/14	1400	440									
	PSDS 62/16	1600	500									
	PSDS 62/18	1800	575									
30 mm	**PSD 63/08**	800	250	75	100	1000	0.8	8	150	0.58 / 0.097	0.825 / 0.138	1
	PSD 63/12	1200	400									
	PSD 63/14	1400	440									
	PSD 63/16	1600	500									
	PSD 63/18	1800	575									
17 mm	**PSDS 63/08**	800	250	75	100	1000	0.8	8	150	0.58 / 0.097	0.825 / 0.138	23
	PSDS 63/12	1200	400									
	PSDS 63/14	1400	440									
	PSDS 63/16	1600	500									
	PSDS 63/18	1800	575									

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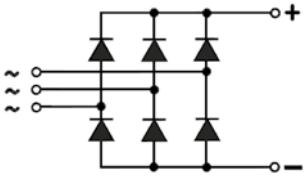

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Three Phase Rectifier Bridges, released, E 148688

	Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
	PSD 67/06	600	180	68	100	300	0.8	13	150	1.1 / 0.18	1.6 / 0.27	**14**
	PSD 67/08	800	250									
	PSD 67/12	1200	400									
	PSD 67/14	1400	440									
	PSD 67/16	1600	500									
	PSD 68/06	600	180	68	100	300	0.8	13	150	1.1 / 0.18	1.6 / 0.27	**3**
	PSD 68/08	800	250									
	PSD 68/12	1200	400									
	PSD 68/14	1400	440									
	PSD 68/16	1600	500									
	PSD 75/08	800	250	95	85	1000	0.8	6	150	1.28 / 0.213	1.38 / 0.23	**15**
	PSD 75/12	1200	400									
	PSD 75/14	1400	440									
	PSD 75/16	1600	500									
	PSD 75/18	1800	575									
30 mm	**PSD 82/08**	800	250	88	110	750	0.8	5	150	1.1 / 0.183	1.52 / 0.253	**1**
30 mm	**PSD 82/12**	1200	400									
30 mm	**PSD 82/14**	1400	440									
30 mm	**PSD 82/16**	1600	500									
30 mm	**PSD 82/18**	1800	575									
17 mm	**PSDS 82/08**	800	250	88	110	750	0.8	5	150	1.1 / 0.183	1.52 / 0.253	**23**
17 mm	**PSDS 82/12**	1200	400									
17 mm	**PSDS 82/14**	1400	440									
17 mm	**PSDS 82/16**	1600	500									
17 mm	**PSDS 82/18**	1800	575									
30 mm	**PSD 83/08**	800	250	100	100	1200	0.8	5	150	0.58 / 0.097	0.825 / 0.138	**1**
30 mm	**PSD 83/12**	1200	400									
30 mm	**PSD 83/14**	1400	440									
30 mm	**PSD 83/16**	1600	500									
30 mm	**PSD 83/18**	1800	575									
17 mm	**PSDS 83/08**	**800**	**250**	**100**	**100**	**1200**	**0.8**	**5**	**150**	**0.58 / 0.097**	**0.825 / 0.138**	**23**
17 mm	**PSDS 83/12**	**1200**	**400**									
17 mm	**PSDS 83/14**	**1400**	**440**									
17 mm	**PSDS 83/16**	**1600**	**500**									
17 mm	**PSDS 83/18**	**1800**	**575**									
Solder Pin Version	**PSD 86/06**	600	180	86	90	530	0.8	7.5	150	1.2 / 0.2	1.5 / 0.25	**3**
Solder Pin Version	**PSD 86/08**	800	250									
Solder Pin Version	**PSD 86/12**	1200	400									
Solder Pin Version	**PSD 86/14**	1400	440									
Solder Pin Version	**PSD 86/16**	1600	500									

Three Phase Rectifier Bridges, released, E 148688

		Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} T_C A °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
Press Pin Version	9 mm	PSD 86P9/06	600	180	86 90	530	0.8	7.5	150	1.2 / 0.2	1.5 / 0.25	24 A
		PSD 86P9/08	800	250								
		PSD 86P9/12	1200	400								
		PSD 86P9/14	1400	440								
		PSD 86P9/16	1600	500								
	17 mm	PSD 86P17/06	600	180	86 90	530	0.8	7.5	150	1.2 / 0.2	1.5 / 0.25	24 B
		PSD 86P17/08	800	250								
		PSD 86P17/12	1200	400								
		PSD 86P17/14	1400	440								
		PSD 86P17/16	1600	500								
		PSD 95/08	800	250	140 85	1200	0.8	5	150	0.9 / 0.15	1.1 / 0.183	6
		PSD 95/12	1200	400								
		PSD 95/14	1400	440								
		PSD 95/16	1600	500								
		PSD 95/18	1800	575								
		PSD 98/08	800	250	100 85	750	0.8	6	150	1.2 / 0.2	1.5 / 0.25	4
		PSD 98/12	1200	400								
		PSD 98/14	1400	440								
		PSD 98/16	1600	500								

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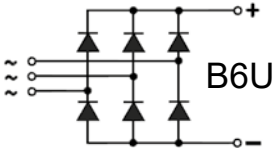

Figure 23
page 75

Figure 24A
page 75

Figure 24B
page 76

Three Phase Rectifier Bridges, released, E 148688

	Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
	PSD 105/08	800	250	160	85	1500	0.8	5	150	0.83 / 0.138	1.13 / 0.188	**15**
	PSD 105/12	1200	400									
	PSD 105/14	1400	440									
	PSD 105/16	1600	500									
	PSD 105/18	1800	575									
	PSD 108/08	800	250	117	100	900	0.8	4	150	0.85 / 0.142	1.15 / 0.192	**4**
	PSD 108/12	1200	400									
	PSD 108/14	1400	440									
	PSD 108/16	1600	500									
30 mm	**PSD 112/08**	800	250	127	90	1200	0.8	4	150	0.9 / 0.15	1.08 / 0.18	**2**
30 mm	**PSD 112/12**	1200	400									
30 mm	**PSD 112/14**	1400	440									
30 mm	**PSD 112/16**	1600	500									
30 mm	**PSD 112/18**	1800	575									
17 mm	**PSDS 112/08**	800	250	127	90	1200	0.8	4	150	0.9 / 0.15	1.08 / 0.18	**22**
17 mm	**PSDS 112/12**	1200	400									
17 mm	**PSDS 112/14**	1400	440									
17 mm	**PSDS 112/16**	1600	500									
17 mm	**PSDS 112/18**	1800	575									
	PSD 125/08	800	250	166	85	1800	0.8	3	150	0.83 / 0.138	1.13 / 0.188	**15**
	PSD 125/12	1200	400									
	PSD 125/14	1400	440									
	PSD 125/16	1600	500									
	PSD 125/18	1800	575									
30 mm	**PSD 162/08**	800	250	175	90	1800	0.8	3	150	0.65 / 0.108	0.83 / 0.138	**2**
30 mm	**PSD 162/12**	1200	400									
30 mm	**PSD 162/14**	1400	440									
30 mm	**PSD 162/16**	1600	500									
30 mm	**PSD 162/18**	1800	575									
17 mm	**PSDS 162/08**	800	250	175	90	1800	0.8	3	150	0.65 / 0.108	0.83 / 0.138	**22**
17 mm	**PSDS 162/12**	1200	400									
17 mm	**PSDS 162/14**	1400	440									
17 mm	**PSDS 162/16**	1600	500									
17 mm	**PSDS 162/18**	1800	575									

Three Phase Rectifier Bridges, released, E 148688

	Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} T_C A °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
30 mm	**PSD 192/08**	800	250	248 90	2800	0.8	2.2	150	0.45 / 0.075	0.6 / 0.1	**2**
	PSD 192/12	1200	400								
	PSD 192/14	1400	440								
	PSD 192/16	1600	500								
	PSD 192/18	1800	575								
17 mm	**PSDS 192/08**	800	250	248 90	2800	0.8	2.2	150	0.45 / 0.075	0.6 / 0.1	**22**
	PSDS 192/12	1200	400								
	PSDS 192/14	1400	440								
	PSDS 192/16	1600	500								
	PSDS 192/18	1800	575								

Figure 2
page 64

Figure 4
page 65

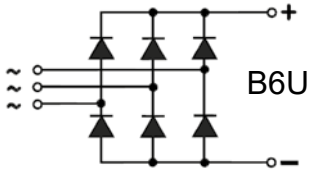

Figure 15
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Figure 22
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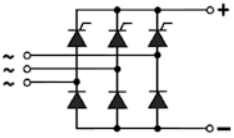
Three Phase Half Controlled Rectifier Bridges, released, E 148688

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSDH 39/08	800	250	39	85	200	0.85	27	125	1.3 / 0.22	1.8 / 0.3	**3**
PSDH 39/12	1200	400									
PSDH 70/08	800	250	70	85	550	0.85	11	125	0.9 / 0.15	1.1 / 0.183	**5**
PSDH 70/12	1200	400									
PSDH 70/14	1400	440									
PSDH 70/16	1600	500									
PSDH 75/08	800	250	75	85	520	0.85	11	125	0.9 / 0.15	1.1 / 0.183	**6**
PSDH 75/12	1200	400									
PSDH 75/14	1400	440									
PSDH 75/16	1600	500									
PSDH 90/08	800	250	100	85	1150	0.85	5.33	125	0.6 / 0.1	0.8 / 0.133	**6**
PSDH 90/12	1200	400									
PSDH 90/14	1400	440									
PSDH 110/08	800	250	110	85	1150	0.85	6	125	0.65 / 0.108	0.8 / 0.133	**2**
PSDH 110/12	1200	400									
PSDH 110/14	1400	440									
PSDH 175/08	800	250	167	85	1500	0.85	3.5	125	0.46 / 0.077	0.55 / 0.092	**2**
PSDH 175/12	1200	400									
PSDH 175/14	1400	440									
PSDH 175/16	1600	500									



B6HK

Figure 2
page 64

Figure 3
page 65

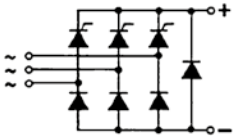
Figure 5
page 66

Figure 6
page 66

Three Phase Half Controlled Rectifier Bridges, released, E 148688 With Freewheeling Diode

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSFH 70/08	800	250	70	85	550	0.85	11	125	0.9 / 0.15	1.1 / 0.157	**5**
PSFH 70/12	1200	400									
PSFH 70/14	1400	440									
PSFH 70/16	1600	500									

Figure 5
page 66



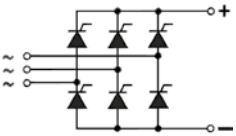
B6HKF

Three Phase Full Controlled Rectifier Bridges, released, E 148688

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSDT 39/08	800	250	39	85	200	0.85	27	125	1.3 / 0.22	1.8 / 0.3	**3**
PSDT 39/12	1200	400									
PSDT 70/08	800	250	70	85	520	0.85	11	125	0.9 / 0.15	1.1 / 0.183	**5**
PSDT 70/12	1200	400									
PSDT 70/14	1400	440									
PSDT 70/16	1600	500									

Figure 3
page 65

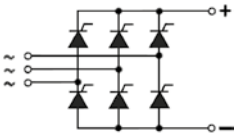
Figure 5
page 66



B6C

Three Phase Full Controlled Rectifier Bridges, released, E 148688

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSDT 75/08	800	250	75	85	550	0.85	11	125	0.9 / 0.15	1.1 / 0.183	**6**
PSDT 75/12	1200	400									
PSDT 75/14	1400	440									
PSDT 75/16	1600	500									
PSDT 90/08	800	250	100	85	1150	0.85	5.33	125	0.6 / 0.10	0.8 / 0.133	**6**
PSDT 90/12	1200	400									
PSDT 90/14	1400	440									
PSDT 110/08	800	250	110	85	1150	0.85	6	125	0.65 / 0.108	0.8 / 0.133	**2**
PSDT 110/12	1200	400									
PSDT 110/14	1400	440									
PSDT 175/08	800	250	167	85	1500	0.85	3.5	125	0.46 / 0.077	0.55 / 0.092	**2**
PSDT 175/12	1200	400									
PSDT 175/14	1400	440									
PSDT 175/16	1600	500									



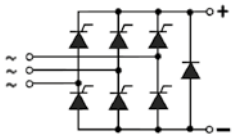
B6C

Figure 2 page 64

Figure 6 page 66

Three Phase Full Controlled Rectifier Bridges, released, E 148688 With Freewheeling Diode

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSFT 70/08	800	250	70	85	550	0.85	11	125	0.9 / 0.15	1.1 / 0.18	**5**
PSFT 70/12	1200	400									
PSFT 70/14	1400	440									
PSFT 70/16	1600	500									



B6CF

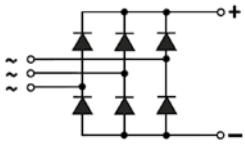
Figure 5 page 66

Three Phase Rectifier Bridges, released, E 148688

With Fast Recovery Epitaxial Diodes

Part Number	V_{RRM} V	V_{vRMS} V	I_{DAV} A	T_C °C	I_{FSM} 45°C 10ms A	V_{TO} V	r_T mΩ	t_{rr} ns	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSD 24F/04	400	125	34	85	50	1.18	22	35	2.5 / 0.42	2.8 / 0.47	**3**
PSD 24F/06	600	200	34	85	50	1.18	22	35	2.5 / 0.42	2.8 / 0.47	
PSD 24F/08	800	250	24	85	40	1.39	55	40	2.5 / 0.42	2.8 / 0.47	
PSD 24F/12	1200	400	24	85	40	1.39	55	40	2.5 / 0.42	2.8 / 0.47	
PSD 43F/04	400	125	56	85	110	1.13	13	35	1.6 / 0.27	1.9 / 0.32	**3**
PSD 43F/06	600	200	56	85	110	1.13	13	35	1.6 / 0.27	1.9 / 0.32	
PSD 43F/08	800	250	40	85	90	1.32	30	40	1.6 / 0.27	1.9 / 0.32	
PSD 43F/12	1200	400	40	85	90	1.32	30	40	1.6 / 0.27	1.9 / 0.32	
PSD 91F/04	400	125	86	100	250	0.98	8	35	0.9 / 0.15	1.2 / 0.2	**3**
PSD 91F/06	600	200	86	100	250	0.98	8	35	0.9 / 0.15	1.2 / 0.2	
PSD 91F/08	800	250	74	85	200	1.31	15	40	0.9 / 0.15	1.2 / 0.2	
PSD 91F/12	1200	400	74	85	200	1.31	15	40	0.9 / 0.15	1.2 / 0.2	
PSD 150F/04	400	125	130	85	600	1.09	4.3	35	0.85 / 0.14	1.0 / 0.17	**4**
PSD 150F/06	600	200	130	85	600	1.09	4.3	35	0.85 / 0.14	1.0 / 0.17	
PSD 150F/08	800	250	130	75	500	1.12	5.7	40	0.85 / 0.14	1.0 / 0.17	
PSD 150F/12	1200	400	130	75	500	1.12	5.7	40	0.85 / 0.14	1.0 / 0.17	

Figure 3
page 65



B6U

Figure 4
page 65

Single Phase AC Controller Modules, released, E 148688

Part Number	V_{RRM} V	I_{TAV} T_C 85°C A	I_{RMS} T_C 85°C A	I_{TMS} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} 10s °C	$\int I^2dt$ @ 45°C 10ms A^2s	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSW1H 110/08	800	51	112	1000	0.85	5.6	150	5000	0.8 / 0.4	0.9 / 0.45	**3**
PSW1H 110/12	1200										
PSW1H 110/14	1400										
PSW1H 140/08	800	58	130	1150	0.85	5.2	150	6600	0.7 / 0.35	0.8 / 0.4	**3**
PSW1H 140/12	1200										
PSW1H 140/14	1400										
PSW1H 140/16	1600										
PSW1H 140/18	1800										
PSW1H 175/08	800	80	175	1500	0.85	3.7	150	11200	0.5 / 0.25	0.65 / 0.33	**3**
PSW1H 175/12	1200										
PSW1H 175/14	1400										
PSW1H 175/16	1600										
PSW1H 175/18	1800										
PSW1H 205/08	800	105	230	2250	0.85	2.4	125	25300	0.26 / 0.13	0.46 / 0.23	**4**
PSW1H 205/12	1200										
PSW1H 205/14	1400										
PSW1H 205/16	1600										
PSW1H 205/18	1800										
PSW1C 25/06	600	17	26	250	0.90	18	125	310	1.42 / 0.71	1.75 / 0.88	**3**
PSW1C 25/08	800										
PSW1C 25/12	1200										
PSW1C 40/06	600	27	44	520	0.85	10.0	125	1350	0.88 / 0.44	1.1 / 0.55	**3**
PSW1C 40/08	800										
PSW1C 40/12	1200										
PSW1C 40/14	1400										
PSW1C 40/16	1600										
PSW1C 70/06	600	45	72	1100	0.85	4.6	125	6050	0.62 / 0.31	0.78 / 0.39	**3**
PSW1C 70/08	800										
PSW1C 70/12	1200										
PSW1C 100/06	600	53	96	1200	0.85	4.0	125	7200	0.53 / 0.27	0.73 / 0.37	**3**
PSW1C 100/08	800										
PSW1C 100/12	1200										
PSW1C 100/14	1400										
PSW1C 100/16	1600										
PSW1C 110/08	800	51	112	1000	0.85	5.6	150	5000	0.8 / 0.4	0.9 / 0.45	**3**
PSW1C 110/12	1200										
PSW1C 110/14	1400										

Single Phase AC Controller Modules, released, E 148688

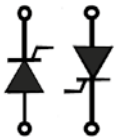
Part Number	V_{RRM} V	I_{TAV} T_C 85°C A	I_{RMS} T_C 85°C A	I_{TMS} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} 10s °C	$\int I^2dt$ @ 45°C 10ms A^2s	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSW1C 140/08	800	58	130	1150	0.85	5.2	150	6600	0.7 / 0.35	0.8 / 0.4	**3**
PSW1C 140/12	1200										
PSW1C 140/14	1400										
PSW1C 140/16	1600										
PSW1C 140/18	1800										
PSW1C 175/08	800	80	175	1500	0.8	3.7	150	11200	0.5 / 0.25	0.65 / 0.33	**3**
PSW1C 175/12	1200										
PSW1C 175/14	1400										
PSW1C 175/16	1600										
PSW1C 175/18	1800										
PSW1C 205/08	800	105	230	2250	0.85	2.4	125	25300	0.26 / 0.13	0.46 / 0.23	**4**
PSW1C 205/12	1200										
PSW1C 205/14	1400										
PSW1C 205/16	1600										
PSW1C 205/18	1800										

Figure 3
page 65

PSW1H

Figure 4
page 65

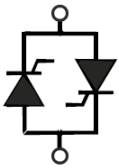
PSW1C110
PSW1C140
PSW1C175
PSW1C205



PSW1C25
PSW1C40
PSW1C70
PSW1C100

Single Phase AC Controller Subassemblies, released, E 148688

Part Number	V_{RRM} V	I_{TAV} T_C 85°C A	I_{RMS} T_C 85°C A	I_{FMS} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} 10s °C	$\int I^2dt$ @ 45°C 10ms A^2s	R_{thJC} per Chip/ per Module K/W	Figure
PSW1C 50/08	800	23	50	520	0.85	11	150	1350	1.1 / 0.55	**17**
PSW1C 50/12	1200									
PSW1C 50/14	1400									
PSW1C 50/16	1600									
PSW1C 75/08	800	39	86	1000	0.85	4	125	5000	0.8 / 0.4	**18**
PSW1C 75/12	1200									
PSW1C 75/14	1400									
PSW1C 112/08	800	51	112	1000	0.85	5.6	150	6000	0.8 / 0.4	**16**
PSW1C 112/12	1200									
PSW1C 112/14	1400									
PSW1C 142/08	800	58	130	1150	0.85	5.2	150	6600	0.7 / 0.35	**16**
PSW1C 142/12	1200									
PSW1C 142/14	1400									
PSW1C 142/16	1600									
PSW1C 142/18	1800									
PSW1C 176/08	800	80	175	1500	0.8	3.7	150	11200	0.5 / 0.25	**16**
PSW1C 176/12	1200									
PSW1C 176/14	1400									
PSW1C 176/16	1600									
PSW1C 176/18	1800									
PSW1C 206/08	800	105	230	2250	0.8	2.4	125	25300	0.26 / 0.13	**19**
PSW1C 206/12	1200									
PSW1C 206/14	1400									
PSW1C 206/16	1600									
PSW1C 206/18	1800									



W1C

Figure 16
page 71

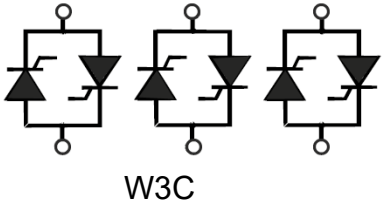
Figure 17
page 72

Figure 18
page 72

Figure 19
page 73

Three Phase AC Controller Subassemblies, released, E 148688

Part Number	V_{RRM} V	I_{TAV} T_C 85°C A	I_{RMS} T_C 85°C A	I_{FMS} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} 10s °C	$\int I^2dt$ @ 45°C 10ms A^2s	R_{thJC} per Chip/ per Module K/W	Figure
PSW3C 95/08	800	44	96	1150	0.85	4.8	125	6600	0.5 / 0.25	**20**
PSW3C 95/12	1200									
PSW3C 95/14	1400									
PSW3C 95/16	1600									

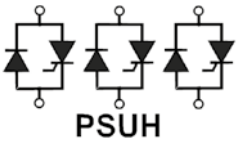


W3C

Figure 20
page 73

Three Phase AC Controller Modules,
released, E 148688

Part Number	V_{RRM} V	I_{TAV} T_C 85°C A	I_{RMS} T_C 85°C A	I_{TMS} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} 10s °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSUH 35/08	800	16	3x35	200	0.85	27	125	1.3 / 0.217	1.8 / 0.3	**3**
PSUH 35/12	1200									
PSUH 36/08	800	18	3x39	320	0.85	13	125	1.3 / 0.217	1.5 / 0.25	**21**
PSUH 36/12	1200									
PSUH 36/14	1400									
PSUH 36/16	1600									
PSUH 40/08	800	18	3x40	400	0.85	15	125	1.43 / 0.238	1.53 / 0.255	**6**
PSUH 40/12	1200									
PSUH 40/14	1400									
PSUH 40/16	1600									
PSUH 50/08	800	23	3x50	520	0.85	11	125	1.20 / 0.20	1.31 / 0.218	**6**
PSUH 50/12	1200									
PSUH 50/14	1400									
PSUH 50/16	1600									
PSUH 60/08	800	27	3x60	550	0.85	11	125	0.9 / 0.15	1.1 / 0.183	**21**
PSUH 60/12	1200									
PSUH 60/14	1400									
PSUH 60/16	1600									
PSUH 80/08	800	37	3x82	1000	0.85	5.2	125	0.81 / 0.135	1.0 / 0.167	**6**
PSUH 80/12	1200									
PSUH 80/14	1400									
PSUH 95/08	800	44	3x96	1150	0.85	4.8	125	0.66 / 0.11	0.93 / 0.155	**6**
PSUH 95/12	1200									
PSUH 95/14	1400									



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Three Phase AC Controller Modules, released, E 148688

Part Number	V_{RRM} V	I_{TAV} T_C 85°C A	I_{RMS} T_C 85°C A	I_{TMS} 45°C 10ms A	V_{TO} V	r_T mΩ	T_{VJM} 10s °C	R_{thJC} per Chip/ per Module K/W	R_{thJH} per Chip/ per Module K/W	Figure
PSUT 35/08	800	16	3x35	200	0.85	27	125	1.3 / 0.217	1.8 / 0.3	**3**
PSUT 35/12	1200									
PSUT 36/08	800	18	3x39	320	0.85	13	125	1.3 / 0.217	1.5 / 0.25	**21**
PSUT 36/12	1200									
PSUT 36/14	1400									
PSUT 36/16	1600									
PSUT 40/08	800	18	3x40	400	0.85	15	125	1.43 / 0.238	1.53 / 0.255	**6**
PSUT 40/12	1200									
PSUT 40/14	1400									
PSUT 40/16	1600									
PSUT 50/08	800	23	3x50	520	0.85	11	125	1.20 / 0.20	1.31 / 0.218	**6**
PSUT 50/12	1200									
PSUT 50/14	1400									
PSUT 50/16	1600									
PSUT 60/08	800	27	3x60	550	0.85	11	125	0.9 / 0.15	1.1 / 0.183	**21**
PSUT 60/12	1200									
PSUT 60/14	1400									
PSUT 60/16	1600									
PSUT 80/08	800	37	3x82	1000	0.85	5.2	125	0.81 / 0.135	1.0 / 0.167	**6**
PSUT 80/12	1200									
PSUT 80/14	1400									
PSUT 95/08	800	44	3x96	1150	0.85	4.8	125	0.66 / 0.11	0.93 / 0.155	**6**
PSUT 95/12	1200									
PSUT 95/14	1400									

Figure 3
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Figure 6
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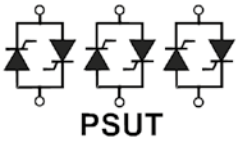

Figure 21
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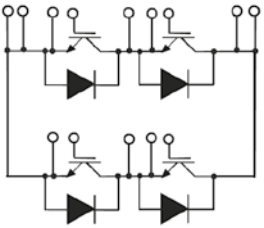
IGBT Modules, released, E 148688 ECO-PAC™ 2

IGBT Module (H-bridge configuration)

Part Number	V_{CES} Voltage Grade V	I_{C25} T_C 25°C IGBT A	I_{F80} T_C 80°C IGBT A	$V_{CE(SAT)}$ Saturation Voltage (typical) T_j=25°C A	E_{off} T_j=25°C IGBT mJ	R_{thJC} IGBT K/W	I_{F25} Tc= 25°C Diode A	I_{F80} Tc= 80°C Diode A	Figure
PSHI 25/12*	1200	30	21	2.6	2.1	0.96	26	17	**4**
PSHI 50/12*	1200	49	33	3.1	3.4	0.6	49	31	**4**

***NTC optional**



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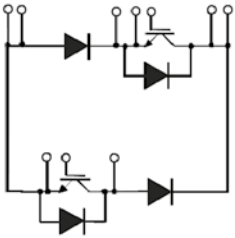
IGBT Modules, released, E 148688 ECO-PAC™ 2

IGBT Module (H-bridge configuration)

Part Number	V_{CES} Voltage Grade V	I_{C25} T_C 25°C IGBT A	I_{F80} T_C 80°C IGBT A	$V_{CE(SAT)}$ Saturation Voltage (typical) T_j=25°C A	E_{off} T_j=25°C IGBT mJ	R_{thJC} IGBT K/W	I_{F25} Tc= 25°C Diode A	I_{F80} Tc= 80°C Diode A	Figure
PSHI 50D/12*	1200	49	33	3.1	3.4	0.6	49	31	**4**

***NTC optional**



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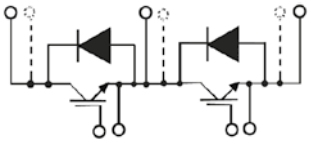
Part Number	V_{CES} Voltage Grade V	I_{C25} T_C 25°C IGBT A	I_{F80} T_C 80°C IGBT A	$V_{CE\ (SAT)}$ Saturation Voltage (typical) T_j=25°C A	$t_{d(on)}$ $t_{d(off)}$ delay time Switching Characteristics ns	R_{thJC} IGBT K/W	I_{F25} Tc= 25°C Diode A	I_{F80} Tc= 80°C Diode A	R_{thJC} Diode K/W	Figure
PSI 25/12*	1200	30	21	2.6	100 500	0.96	26	17	2.3	**4**
PSI 50/12*	1200	49	33	3.1	100 500	0.6	49	31	1.3	**4**
PSI 75/12*	1200	92	62	2.7	100 500	0.33	103	65	0.66	**4**

***NTC optional**



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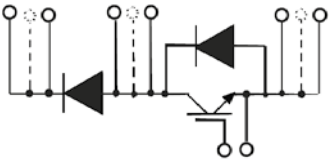
IGBT Modules, released, E 148688 ECO-PAC™ 2

IGBT Module (boost chopper)

Part Number	V_{CES} Voltage Grade V	I_{C25} T_C 25°C IGBT A	I_{F80} T_C 80°C IGBT A	$V_{CE(SAT)}$ Saturation Voltage (typical) T_j=25°C A	$t_{d(on)}$ $t_{d(off)}$ Delay Time Switching Characteristics ns	R_{thJC} IGBT K/W	I_{F25} Tc= 25°C Diode A	I_{F80} Tc= 80°C Diode A	R_{thJC} Diode K/W	Figure
PSSI 25/12*	1200	30	21	2.6	100 500	0.96	26	17	2.3	**4**
PSSI 50/12*	1200	49	33	3.1	100 500	0.6	49	31	1.3	**4**
PSSI 75/12*	1200	92	62	2.7	100 500	0.33	103	65	0.66	**4**
PSSI 100/12*	1200	138	94	2.8	100 650	0.22	154	97	0.45	**4**
PSSI 160/12*	1200	169	117	2.9	100 600	0.18	154	97	0.45	**4**

***NTC optional**



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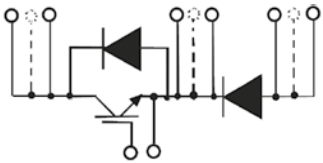
IGBT Modules, released, E 148688 ECO-PAC™ 2

IGBT Module (buck chopper)

Part Number	V_{CES} Voltage Grade V	I_{C25} T_C 25°C IGBT A	I_{F80} T_C 80°C IGBT A	$V_{CE(SAT)}$ Saturation Voltage (typical) T_j=25°C A	$t_{d(on)}$ $t_{d(off)}$ Delay Time Switching Characteristics ns	R_{thJC} IGBT K/W	I_{F25} Tc= 25°C Diode A	I_{F80} Tc= 80°C Diode A	R_{thJC} Diode K/W	Figure
PSIS 25/12*	1200	30	21	2.6	100 500	0.96	26	17	2.3	**4**
PSIS 50/12*	1200	49	33	3.1	100 500	0.6	49	31	1.3	**4**
PSIS 75/12*	1200	92	62	2.7	100 500	0.33	103	65	0.66	**4**
PSIS 100/12*	1200	138	94	2.8	100 650	0.22	154	97	0.45	**4**
PSIS 160/12*	1200	169	117	2.9	100 600	0.18	154	97	0.45	**4**

***NTC optional**



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IGBT Modules, released, E 148688 ECO-PAC™ 2

IGBT Sixpac Module

Part Number	V_{CES} Voltage Grade V	I_{C25} T_C 25°C IGBT A	I_{F80} T_C 80°C IGBT A	$V_{CE(SAT)}$ Saturation Voltage (typical) T_j=25°C A	E_{off} T_j=25°C IGBT mJ	R_{thJC} IGBT K/W	I_{F25} T_c= 25°C Diode A	I_{F80} T_c= 80°C Diode A	Figure
PSII 6/12*	1200	6	4.1	3.9	0.2	3.1	12	8	4
PSII 15/12*	1200	18	14	2.3	1.1	1.4	15	10	4
PSIIX 20/12	1200	28	17	1.8	1.7	1.3	33	22	4

***NTC optional**

Figure 4
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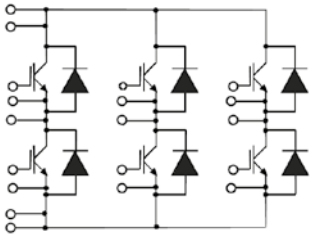

IGBT Modules, released, E 148688 ECO-PAC™ 2

IGBT Module (single switch)

Part Number	V_{CES} Voltage Grade V	I_{C25} T_C 25°C IGBT A	I_{F80} T_C 80°C IGBT A	$V_{CE(SAT)}$ Saturation Voltage (typical) T_j=25°C A	$t_{d(on)}$ $t_{d(off)}$ Delay Time Switching Characteristics ns	R_{thJC} IGBT K/W	I_{F25} Tc= 25°C Diode A	I_{F80} Tc= 80°C Diode A	R_{thJC} Diode K/W	Figure
PSIG 25/12	1200	30	21	2.6	100 500	0.96	26	17	2.3	4
PSIG 50/12	1200	49	33	3.1	100 500	0.6	49	31	1.3	4
PSIG 75/12	1200	92	62	2.7	100 500	0.33	103	65	0.66	4
PSIG 100/12	1200	138	94	2.8	100 650	0.22	154	97	0.45	4
PSIG 160/12	1200	169	117	2.9	100 600	0.18	154	97	0.45	4

Figure 4
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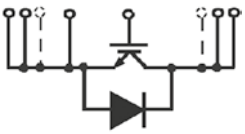
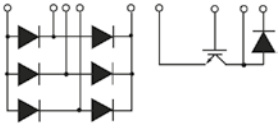


Rectifier Bridges for Braking Systems, released, E 148688 — ECO-PAC™ 2

Three Phase Rectifier Bridge with IGBT and Fast Recovery Diode for Braking System

Part Number	Rectifier			IGBT		fast Diode			Figure
	V_{RRM}	I_{dAV} @ T_H		V_{CES}	I_{C80}	V_{RRM}	$IF_{(AV)}$	t_{rr}	
	V	A	°C	V	A	V	A	ns	
PSDI 50/12	1600	56	TC=100	1200	14	1200	10	110	**4**

***NTC optional**



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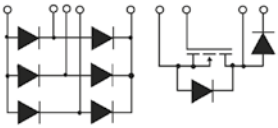
Rectifier Bridges for Braking Systems, released, E 148688 — ECO-PAC™ 2

Three Phase Rectifier Bridge with MOSFET and Fast Recovery Diode for Braking System

Part Number	Rectifier			MOSFET		fast Diode			Figure
	V_{RRM}	I_{dAV} @ T_H		V_{CES}	I_{C80}	V_{RRM}	$IF_{(AV)}$	t_{rr}	
	V	A	°C	V	A	V	A	ns	
PSDM 33/05*	800	54	85	500	24	600	33	30	**4**

***NTC optional**



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MOSFET Modules, released, E 148688 ECO-PAC™ 2

H-Bridge Configuration

Part Number	V_{DSS} V	I_{D25} T_s=25°C A	I_{D80} T_s=28°C A	$R_{DS(on)}$ T_j=25°C mΩ	t_f ns	t_r ns	R_{thJC} K/W	Figure
PSHM 40/06*	600	38	25 (T_C=90°C)	70	10	95	0.45	**4**
PSHM 120/01*	100	75	47	25	60	60	0.5	**4**
PSHM 140/01*	100	70	52	20	TBD	TBD	0.45	**4**

***NTC optional**

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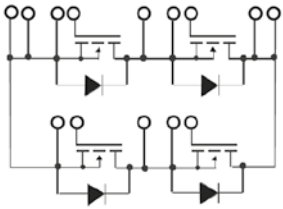

MOSFET Modules, released, E 148688 ECO-PAC™ 2

Forward Converter

Part Number	V_{DSS} V	I_{D25} T_s=25°C A	I_{D80} T_s=28°C A	$R_{DS(on)}$ T_j=25°C mΩ	t_f ns	t_r ns	R_{thJC} K/W	Figure
PSHM 40D/06*	600	38	25 (TC=90°C)	70	10	95	0.45	**4**
PSHM 120D/01*	100	75	47	25	60	60	0.5	**4**
PSHM 140D/01*	100	70	52	20	TBD	TBD	0.45	**4**

***NTC optional**

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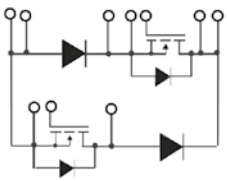
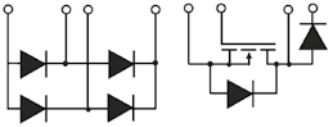


Rectifier Bridges for Power Factor Correction (PFC), Single Phase PFC released, E 148688 ECO-PAC™ 2

Boost Module with MOSFET and Boost Diode, Fast Rectifier Diodes

Part Number	V_{DSS} max. V	$I_{D(cont.)}$ T_s 25°C A	$R_{DS(on)}$ T_C 80°C boost diode Ω	R_{thJS} max. K/W	P_D max. TS= 25°C V	V_{RRM} boost diode V	V_{RRM} rectifier diode V	Figure
PSBM 24/05	500	35	0.12	0.38	325	600	800	**4**



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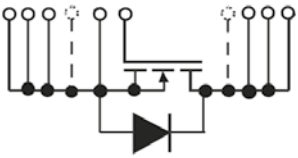
MOSFET Modules, released, E 148688 ECO-PAC™ 2

Part Number	V_{DSS} V	I_{D25} T_s=25°C A	I_{D80} T_s=28°C A	$R_{DS(on)}$ T_j=25°C mΩ	t_f ns	t_r ns	R_{thJC} K/W	Figure
PSMG 50/05*	500	43	31	100	45	60	0.3	**4**
PSMG 60/08	800	60	tbd	0.12	40	45	0.45	**4**
PSMG 100/05*	500	82	62	50	45	60	0.16	**4**
PSMG 150/01*	100	150	110	8	65	90	0.3	**4**

***NTC optional**



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Stud Type Devices

Standard Recovery Diodes

Part Number	V_{RRM} (V)	$I_{F(AV)}$ (A)	V_F (V)	I_{FSM} (A)	I_R (µA)	$R_{th\ (j-c)}$ (°C/W)	Package
PSM 6	100-1600	6	1.2	175	100	2.5	DO-4
PSM 12	100-1600	12	1.2	250	100	2.0	DO-4
PSM 16	100-1600	16	1.3	300	100	1.5	DO-4
PSM 25	100-1600	25	1.3	400	150	1.5	DO-5
PSM 40	100-1600	40	1.3	500	150	1.0	DO-5
PSM 60	100-1600	55	1.3	850	100	0.65	DO-5
PSM 70	100-1600	70	1.3	1200	150	0.45	DO-5
PSM 85	100-1600	85	1.3	1700	200	0.50	DO-5
PSM 100	100-1600	100	1.3	2200	200	0.40	DO-8
PSM 125	100-1600	125	1.3	2600	200	0.30	DO-8
PSM 150	100-1600	150	1.4	3100	200	0.25	DO-8
PSM 200	100-1600	200	1.4	4000	200	0.23	DO-8
PSM 250	100-1600	250	1.4	4500	200	0.18	DO-9
PSM 300	100-1600	300	1.4	5000	200	0.18	DO-9
PSM 320	100-1600	320	1.4	6100	200	0.18	DO-9
PSM 400	100-1600	400	1.4	8250	200	0.15	DO-9

Fast Recovery Diodes

Part Number	V_{RRM} (V)	$I_{F(AV)}$ (A)	V_F (V)	I_{FSM} (A)	I_R (µA)	$R_{th\ (j-c)}$ (°C/W)	t_{rr} (ns)	Package
PSM 12F	100-1000	12	1.4	150	100	2.5	300	DO-4
PSM 16F	100-1000	16	1.4	180	100	2.0	300	DO-4
PSM 25F	100-1000	25	1.4	250	100	1.7	300	DO-5
PSM 40F	100-1000	40	1.5	420	100	1.3	300	DO-5
PSM 70F	100-1000	70	1.5	700	100	0.8	300	DO-5

Schottky Diodes

Part Number	V_{RRM} (V)	$I_{F(AV)}$ (A)	V_F (V)	I_{FSM} (A)	$R_{th\ (j-c)}$ (°C/W)	Package
PSM 1N5831	40	25	0.38	800	1.75	DO-4
PSM 1N5832	20	40	0.36	800	1.00	DO-5
PSM 1N5833	30	40	0.37	800	1.00	DO-5
PSM 1N5834	40	40	0.38	800	1.00	DO-5
PSM 1N6391	45	25	0.52	600	2.00	DO-4
PSM SD41	45	30	0.64	600	2.00	DO-4
PSM SD51	45	60	0.70	800	1.00	DO-5

Stud Type Devices

Zener Diodes

Part Number	Zener Voltage (V)	Wattage (W)	V_F (V)	I (A)	Package
PSM 1N2970 – PSM 1N3015	6.8 - 200	10	1.5	2.0	DO-4
PSM BZY93 Series	7.5 - 75	20	1.5	5.0	DO-4
PSM 1N3305 – PSM 1N3350	6.8 - 200	50	1.5	10.0	DO-5
PSM BZY91 Series	7.5 - 75	75	1.5	10.0	DO-5

Thyristors

Part Number	V_{RRM} (V)	$I_{T(AV)}$ (A)	V_{TM} (V)	I_{TSM} (A)	V_{GT} (V)	I_{GT} (mA)	dv/dt (V/µs)	$R_{th\ (j\text{-}c)}$ (°C/W)	Package
PSM 25NT	200-1600	25	1.7	380	2.5	10-100	300	0.9	TO-48
PSM 40NT	200-1600	40	1.4	600	2.5	50-150	300	0.9	TO-65
PSM 56NT	200-1600	56	1.4	900	2.5	50-150	300	0.6	TO-65
PSM 70NT	200-1600	70	1.4	1800	2.5	50-200	300	0.35	TO-94
PSM 100NT	200-1600	100	1.4	2020	2.5	50-200	300	0.35	TO-94
PSM 125NT	200-1600	125	1.4	3500	2.5	50-200	300	0.18	TO-94
PSM 150NT	200-1600	150	1.4	5700	2.5	50-200	300	0.11	TO-93

For detailed information with pictures,
outlines and datasheets visit **www.powersem.com**

Mounting Instructions

Modules and Rectifier Bridges:

Contact surfaces must be free of dirt and be undamaged. The heat sink contact surface must have a flatness of < 0.03 mm (< 1.2 mil) and a levelling depth of <0.02 mm (< 0.8 mil). Apply a thin layer of heat transfer paste evenly to the module's base plate just sufficient to cover the entire base plate. It is recommended to apply DC 340 (Dow Corning) or Berulub FZ 1E3 (Bechem, silicone free), or equivalent by using a sponge/soft rubber roller.
The minimum thickness of grease is best controlled by removing some modules from the heat sink after mounting and inspecting the entire area of the metal base plate. The module bottom surface must have wetted completely with thermal grease.
The minimum required depth of thread in aluminium heatsinks is 12 mm and 10 mm in copper heat sink.
All mounting holes must be free from burrs. First tighten all mounting and terminal screws stepwise. Then use a torque wrench to apply the tightening torques given on the data sheet. Make sure that the screws fit easily into the threads. Otherwise the total tightening torque will be reached without the necessary contact being obtained.
Do not pull or push on the terminals when making the electrical connections. Make sure that no permanent tensile force is exerted on the terminals.

Modules and Rectifier Bridges supplied with solderable leads:

The maximum allowable soldering time is 10 seconds. Do not exert any axial force on the leads. Make sure that the distance between the bending axis and package is > 5 mm, with the bending radius > 2 mm. Avoid repeated bending. The distance between solder leads and package should be > 10 mm.

Note about Modules with Copper-Baseplates:

Due to the manufacturing process there could be variations in the flatness of the baseplates. But the thermal resistance will always be within the limits of the datasheets.
The flatness is controlled in several steps during the manufacturing process.
Make sure that the given torque is not exceeded. Besides a thermal conductance paste (e.g. DC 340, Dow Corning) has to be used with a layer thickness of 50µm -100µm.

Important note:

The terminal connection torques given in the data sheets are maximum values, depending on the applied connection.
Using current bars, torques up to 5 Nm can be necessary to achieve a tight and reliable connection. For open cable lugs, a torque of 2.5 Nm is already sufficient to realize a good electrical connection. Higher terminal connection torques could damage the lug itself as well as the module terminals and the housing.
In every case, one should pay attention, that the clamping parts don´t move, while the terminal screws are fastened. Twisting of the terminals would effect mechanical stresses on the terminals themselves and on the housing. Both could reduce lifetime and reliability fo the module.
For each module you can download detailed datasheets from our website or send us your request to info@powersem.com
If you should need more help and information concerning mounting instructions
do not hesitate to contact: ***tech@powersem.com***

Figures

Module Picture

Outline Drawing

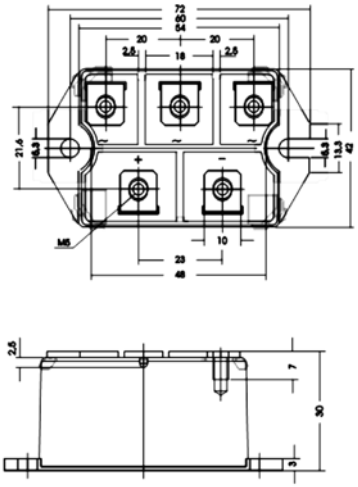
Dimensions in mm (1mm = 0.0394“)

Figure 1, 30 mm Height, 72 mm Length

typ. weight = 160 g

Also available in modified version for high-speed-rotating applications, Page 92.
Picture only representative for Housing Dimensions

Figure 1, 30 mm Height, 72 mm Length



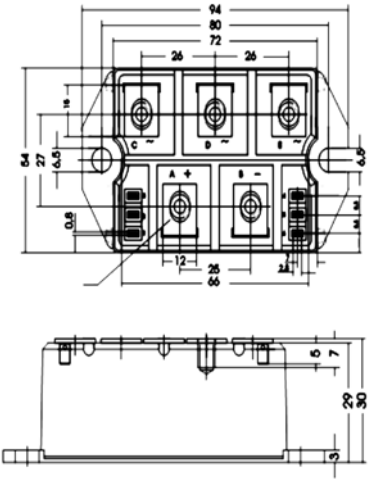
Outline only representative for Housing Dimensions

Figure 2, 30 mm Height, 94 mm Length

typ. weight = 270 g

Picture only representative for Housing Dimensions

Figure 2, 30 mm Height, 94 mm Length



Outline only representative for Housing Dimensions

Figures

Module Picture

Outline Drawing

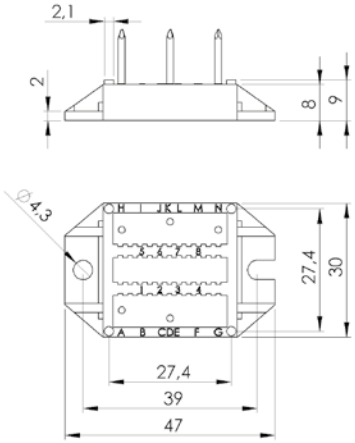
Dimensions in mm (1mm = 0.0394“)

Figure 3, ECO-PAC™ 1, Solder Version, Gold-Plated

typ. weight = 16 g

Picture only representative for Housing Dimensions

Figure 3, ECO-PAC™ 1, Solder Version, Gold-Plated



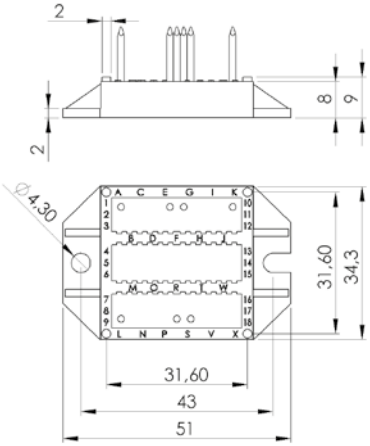
Outline only representative for Housing Dimensions

Figure 4, ECO-PAC™ 2, Solder Version, Gold-Plated

typ. weight = 24 g

Picture only representative for Housing Dimensions

Figure 4, ECO-PAC™ 2, Solder Version, Gold-Plated



Outline only representative for Housing Dimensions

Figures

Module Picture

Outline Drawing

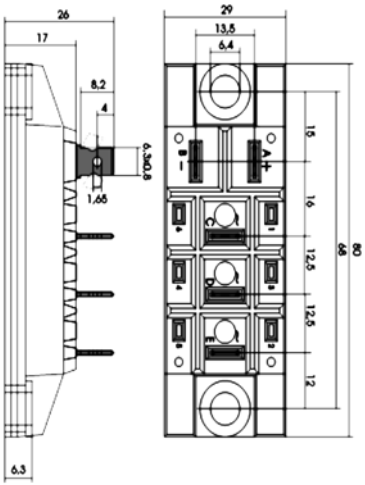
Dimensions in mm (1mm = 0.0394“)

Figure 5, POWER-PAC™, 17 mm Height

typ. weight = 100 g

Picture only representative for Housing Dimensions

Figure 5, POWER-PAC™, 17 mm Height



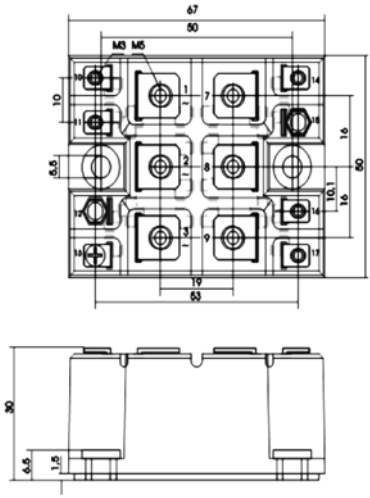
Outline only representative for Housing Dimensions

Figure 6

typ. weight = 220 g

Picture only representative for Housing Dimensions

Figure 6



Outline only representative for Housing Dimensions

Figures

Module Picture

Outline Drawing

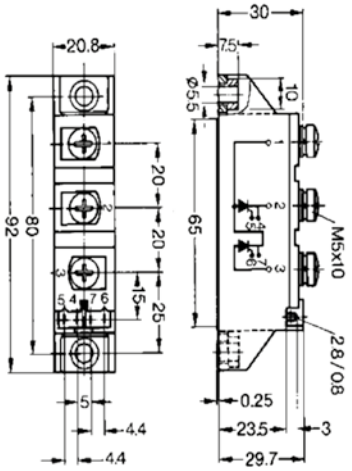
Dimensions in mm (1mm = 0.0394“)

Figure 7

typ. weight = 90 g

Also available in modified version for high-speed-rotating applications, Page 92.
Picture only representative for Housing Dimensions

Figure 7



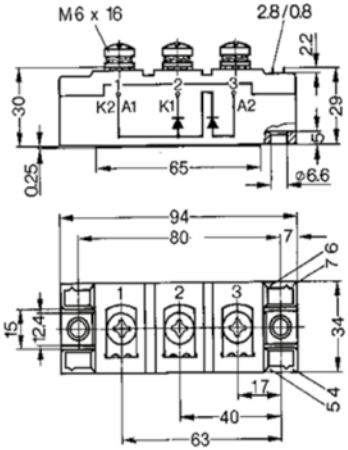
Outline only representative for Housing Dimensions

Figure 8

typ. weight = 120 g

Picture only representative for Housing Dimensions

Figure 8



Outline only representative for Housing Dimensions

Figures

Module Picture

Outline Drawing

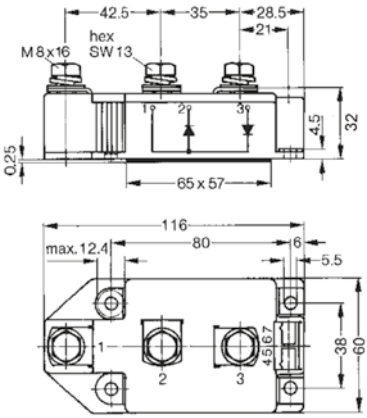
Dimensions in mm (1mm = 0.0394“)

Figure 9

typ. weight = 320 g

Picture only representative for Housing Dimensions

Figure 9



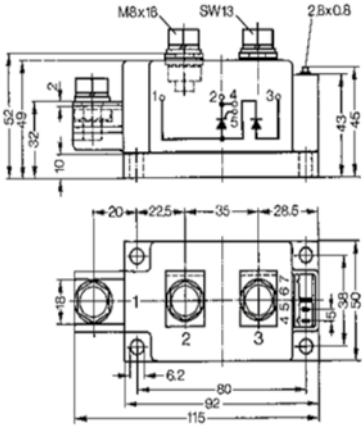
Outline only representative for Housing Dimensions

Figure 10

typ. weight = 750 g

Picture only representative for Housing Dimensions

Figure 10



Outline only representative for Housing Dimensions

Figures

Module Picture

Outline Drawing

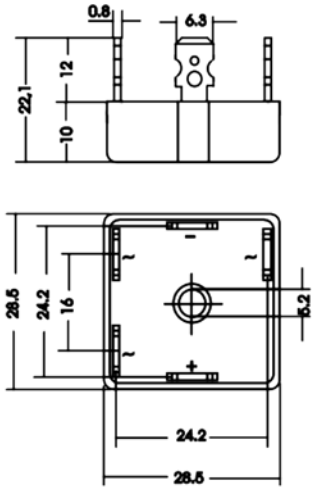
Dimensions in mm (1mm = 0.0394“)

Figure 11

typ. weight = 22 g

Picture only representative for Housing Dimensions

Figure 11



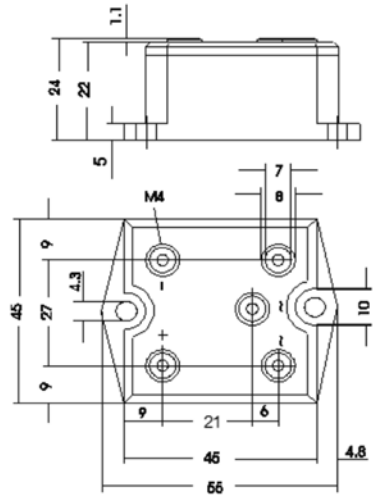
Outline only representative for Housing Dimensions

Figure 12

typ. weight = 110 g

Picture only representative for Housing Dimensions

Figure 12



Outline only representative for Housing Dimensions

Figures

Module Picture

Outline Drawing

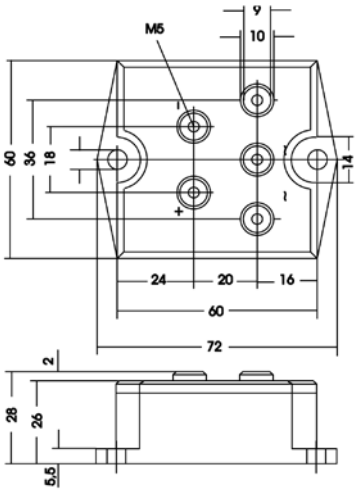
Dimensions in mm (1mm = 0.0394“)

Figure 13

typ. weight = 205 g

Picture only representative for Housing Dimensions

Figure 13



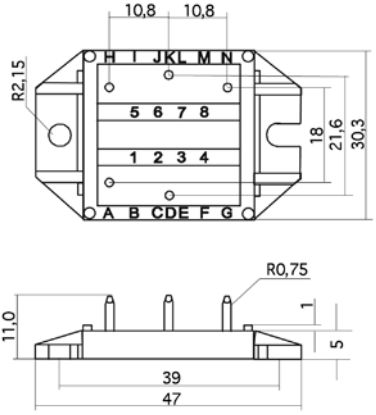
Outline only representative for Housing Dimensions

Figure 14, 6 mm Height

typ. weight = 10 g

Picture only representative for Housing Dimensions

Figure 14, 6 mm Height



Outline only representative for Housing Dimensions

Figures

Module Picture

Outline Drawing

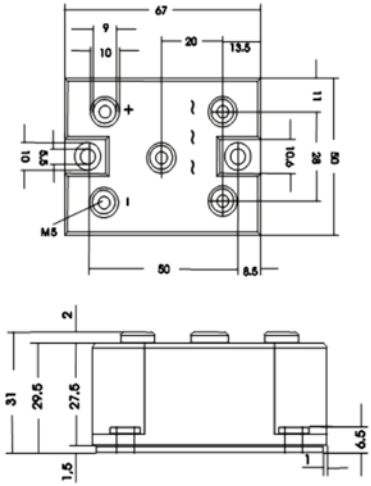
Dimensions in mm (1mm = 0.0394“)

Figure 15

typ. weight = 240 g

Picture only representative for Housing Dimensions

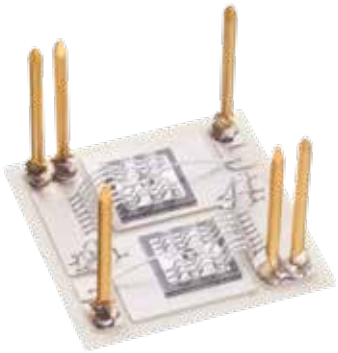
Figure 15



Outline only representative for Housing Dimensions

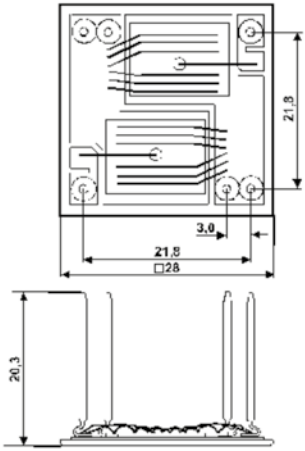
Figure 16, SUB-ASSEMBLY

typ. weight = 8 g



Picture only representative for Housing Dimensions

Figure 16, SUB-ASSEMBLY



Outline only representative for Housing Dimensions

Figures

Module Picture

Outline Drawing

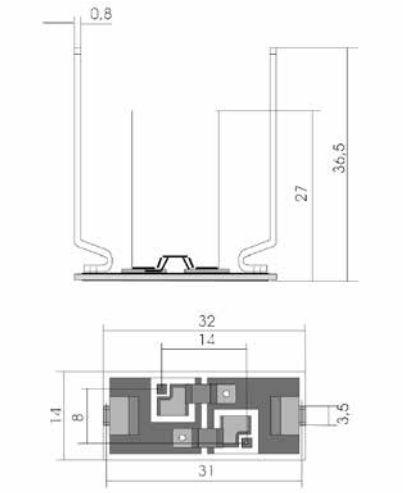
Dimensions in mm (1mm = 0.0394“)

Figure 17, SUB-ASSEMBLY

typ. weight = 8 g

Picture only representative for Housing Dimensions

Figure 17, SUB-ASSEMBLY



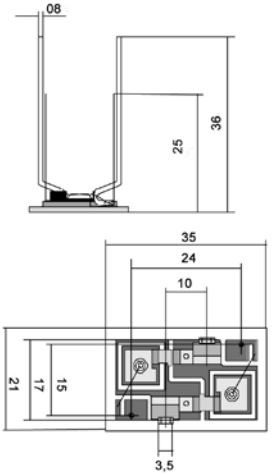
Outline only representative for Housing Dimensions

Figure 18, SUB-ASSEMBLY

typ. weight = 9 g

Picture only representative for Housing Dimensions

Figure 18, SUB-ASSEMBLY



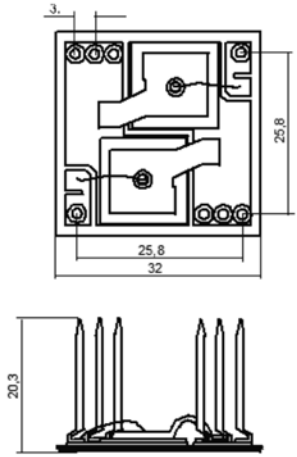
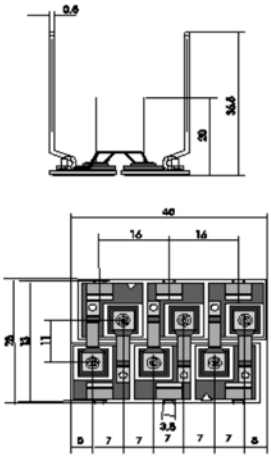
Outline only representative for Housing Dimensions

Figures

Module Picture

Outline Drawing

Dimensions in mm (1mm = 0.0394“)

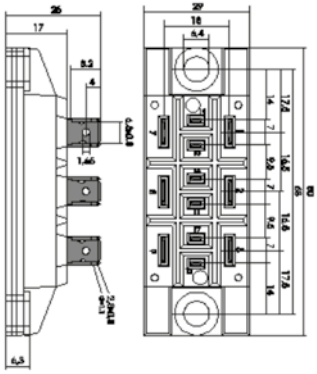
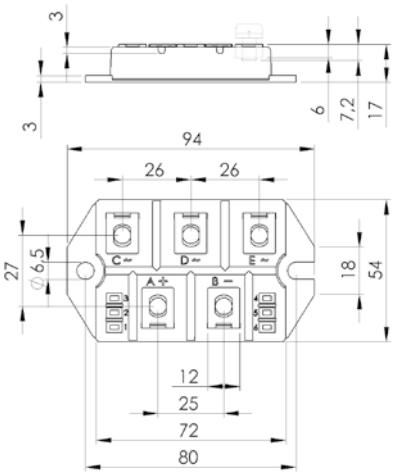
Figure 19, SUB-ASSEMBLY	Figure 19, SUB-ASSEMBLY
typ. weight = 18 g  Picture only representative for Housing Dimensions	 Outline only representative for Housing Dimensions
Figure 20, SUB-ASSEMBLY	**Figure 20, SUB-ASSEMBLY**
typ. weight = 20 g  Picture only representative for Housing Dimensions	 Outline only representative for Housing Dimensions

Figures

Module Picture

Outline Drawing

Dimensions in mm (1mm = 0.0394“)

Figure 21, 17 mm Height	Figure 21, 17 mm Height
typ. weight = 100 g  Picture only representative for Housing Dimensions	 Outline only representative for Housing Dimensions
Figure 22, 17 mm Height	**Figure 22, 17 mm Height**
typ. weight = 225 g  Picture only representative for Housing Dimensions	 Outline only representative for Housing Dimensions

Figures

Module Picture

Outline Drawing

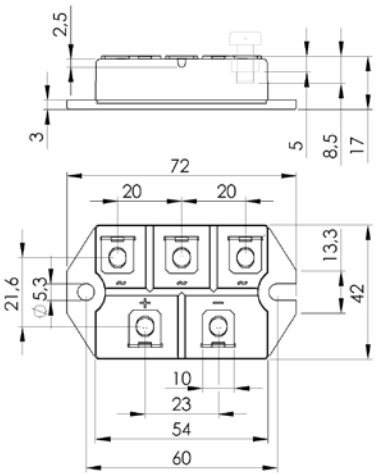
Dimensions in mm (1mm = 0.0394“)

Figure 23, 17 mm Height

typ. weight = 120 g

Picture only representative for Housing Dimensions

Figure 23, 17 mm Height



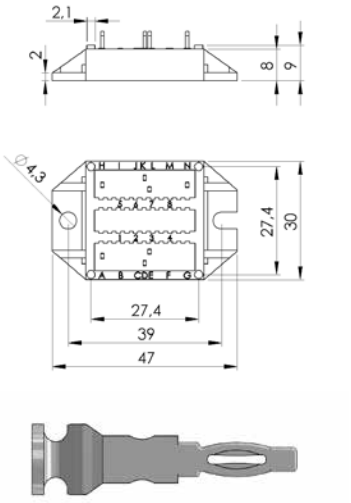
Outline only representative for Housing Dimensions

Figure 24 A, ECO-PRESS-FIT™ 1

typ. weight = 16 g

Picture only representative for Housing Dimensions

Figure 24 A, ECO-PRESS-FIT™ 1



Outline only representative for Housing Dimensions

Figures

Module Picture

Outline Drawing

Dimensions in mm (1mm = 0.0394“)

Figure 24 B

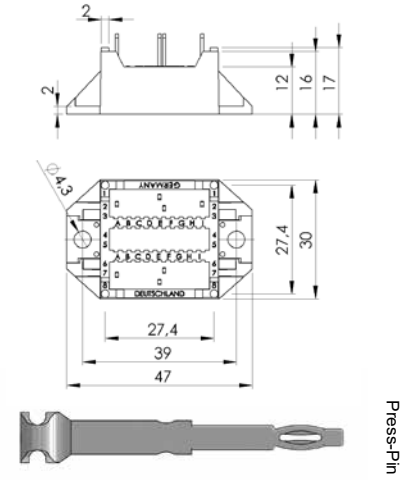
ECO-PRESS-FIT™ 1, 17 mm Height

typ. weight = 23 g

Picture only representative for Housing Dimensions

Figure 24 B

ECO-PRESS-FIT™ 1, 17 mm Height

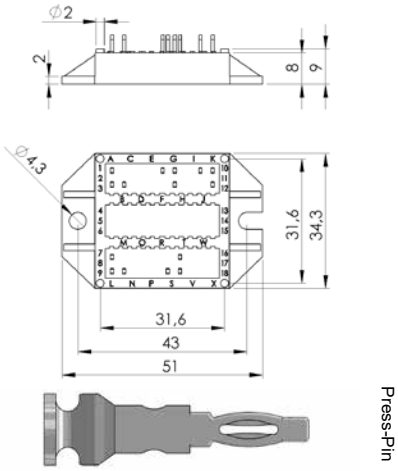


Outline only representative for Housing Dimensions

Figure 25 A

ECO-PRESS-FIT™ 2

typ. weight = 24 g

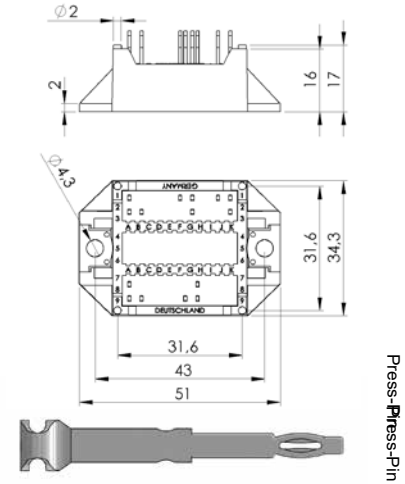


Picture only representative for Housing Dimensions

Figure 25 B

ECO-PRESS-FIT™ 2, 17 mm Height

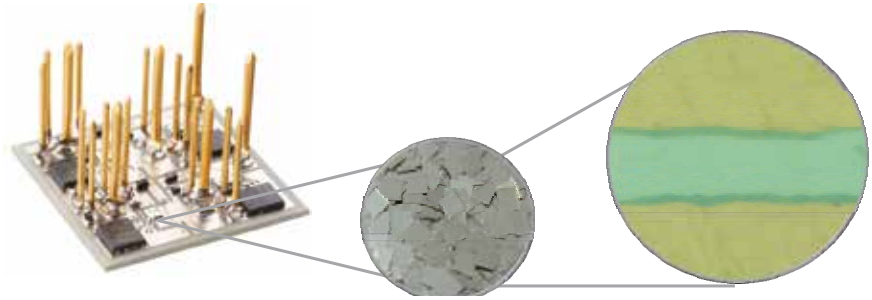
typ. weight = 28 g



Outline only representative for Housing Dimensions

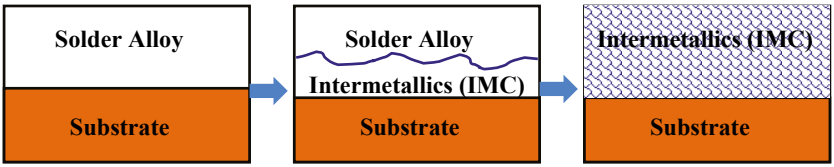
Dr.-Ing. H. M. Daoud M. Sc. A. Syed-Khaja M. Sc. E. Siedlecki

Preform based Diffusion Soldering Technology for SiC/GaN Devices for Usage at High Temperatures



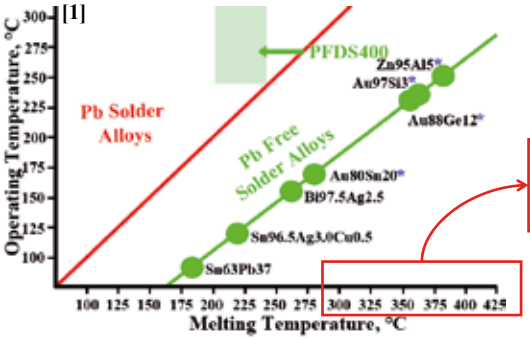
Diffusion Soldering:

Growth of intermetallic phases in the joint during the isothermal solidification



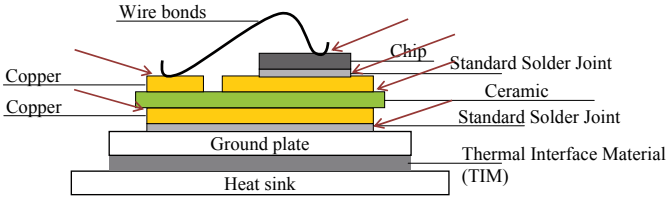
Why “Diffusion Soldering” for high temperature electronic applications?

Why “Diffusion Soldering” for high temperature electronic applications?



1- General application
2- SiC/GaN chips (> 300°C)

[1]: M. Knoerr et al., ISBN 978-3-8007-3212-8, VDE Verlag, Berlin Offenbach



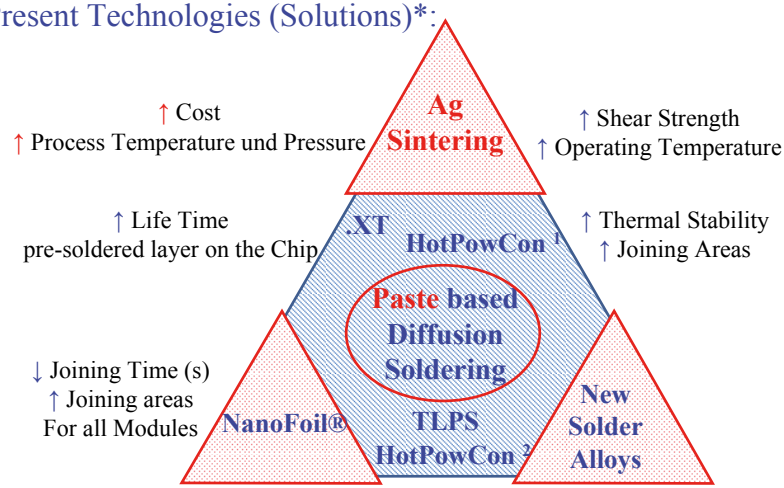
Die attach and DBC attach –
- Solder fatigue, fractures
- Voids and CTE mismatch, delamination
- Loss of adhesion, thermal runaway, open circuit

Substrate –
- Copper delamination
- Substrate fracture and fatigue
- Ceramic cracking

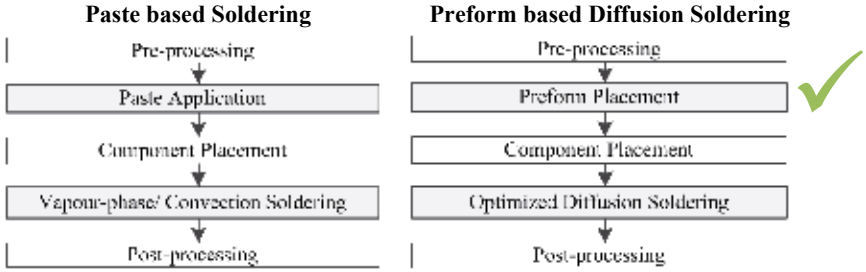
Wire bonds –
- Wire lift-off and flexure fatigue
- Cracking of semiconductor die

- Sn-based solders reaching load limits due to thermo-mechanical fatigue
- Sn-based standard solder joints unreliable as operating temperatures reach 200°C in power electronics
- Need for reliable power modules for operating temperatures >200°C
- Compatible with new generation materials (SiC, GaN) and already available manufacturing equipment
- Competitive and cost-effective processes compared to other die-attach technologies

Present Technologies (Solutions)*:



*: R. Kohl, et al., and T. Herberholz, et al., DVS 310, 2015



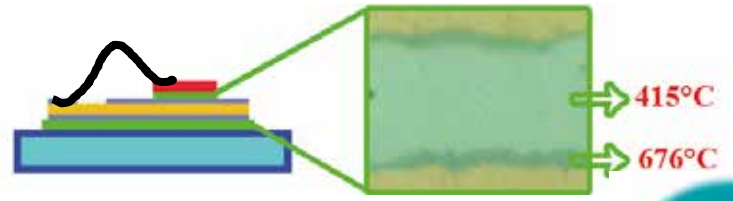
- ✓ Elimination of paste printers and laborious handling of solder pastes
- ✓ Elimination of hardware based changes and installations (e.g. stencils/ screens)
- ✓ Flexible handling of preforms and integration possibilities

Immediate cost reduction with higher Product Reliability

Customized prototyping and faster product designs with higher flexibility

PFDS400:

Preforms based **Diffusion Soldering** technology made by Pfarr for usage at **high temperatures** is your solution



Initials experiments → metallized chips/or substrates with Cu and Ni

PFDS400 MADE BY PFARR IT IS 2 IN 1

PFARR
WIR BRINGEN LOTE IN FORM
GETTING SOLDER INTO SHAPE

www.pfarr.de

Pfarr Stanztechnik GmbH:

- Founded in 1982
- 100 employees
- Precision preforms stamped parts for electronic and microelectronic applications
- High purity solder and braze alloys
- Landal-Seal®

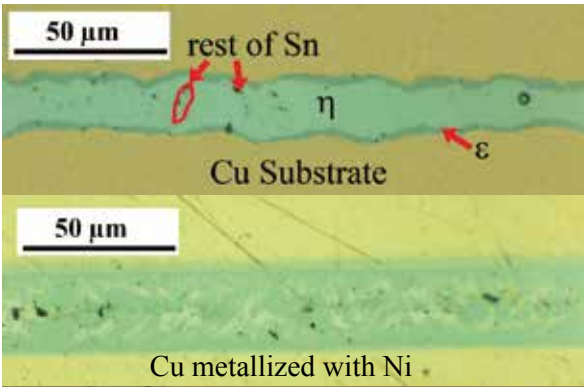
PFDS400 MADE BY PFARR IT IS 2 IN 1

PFDS400:

Initial Results

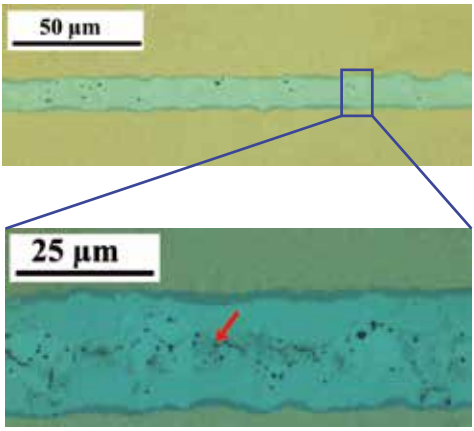
- ✓ Different choices of solder alloys
- ✓ Various sizes and thickness
- ✓ Suitable for different metalized substrates/Chips

Property	Cu_6Sn_5 (η)	Cu_3Sn (ε)
E-Modul	86 GPa	108 GPa
Melting point	415°C	676°C



PFDS400 MADE BY PFARR IT IS 2 IN 1

PFDS400:



- ✓ Conventional vacuum soldering process
- ✓ Melting points < 250°C
- ✓ Operating temperatures up to 400°C
- ✓ Temperatures profiles < 300°C
- ✓ Time of temperature profiles ≤ 30 min

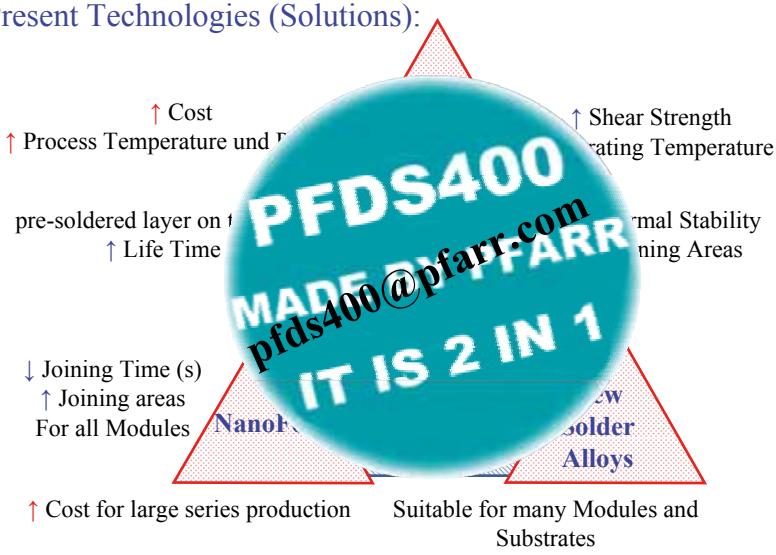
PFDS400 MADE BY PFARR IT IS 2 IN 1

PFARR
WIR BRINGEN LOTE IN FORM
GETTING SOLDER INTO SHAPE

FAPS

POWERSEM

Present Technologies (Solutions):



↑ Cost for large series production

Suitable for many Modules and Substrates

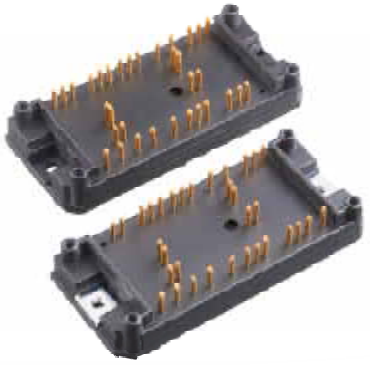
Featured Products

Eco-227®

- ✓ Same footprint as SOT 227
- ✓ Halogen-Free Housings
- ✓ Best Thermal Cycling with SCT instead of DBC
- ✓ More flexible customized and optimized circuits possible than with SOT 227
- ✓ ***Ideal for SiC-, GaN- Modules***

Highest efficiency with preform based diffusion soldering (PFDS400)

iSi-Flow®



- ✓ 9mm, 12mm and 17mm Heights available
- ✓ Halogen-Free Housings
- ✓ Best Thermal Cycling with SCT instead of DBC
- ✓ Screwable from TOP or DOWN
- ✓ Available with Solder Pins (gold-plated) or PRESS-FIT-PINS
- ✓ ***Ideal for SiC-, GaN- Modules***

Highest efficiency with preform based diffusion soldering (PFDS400)

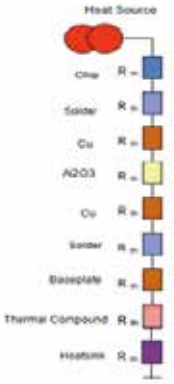
Heat-Up-Pack ™

✓ Best Thermal Cycling with CoH™ instead of DBC and Aluminium Heatsink

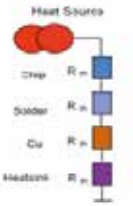
✓ Available with Solder Pins (gold-plated) or PRESS-FIT-PINS

✓ ***Ideal for SiC-, GaN- Modules***

Highest efficiency with preform based diffusion soldering (PFDS400)



ACTUAL R_{th}-STANDARD



PFDS400

Your **NEW R_{th}-STANDARD** for chip temperatures above 200° C

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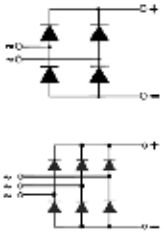
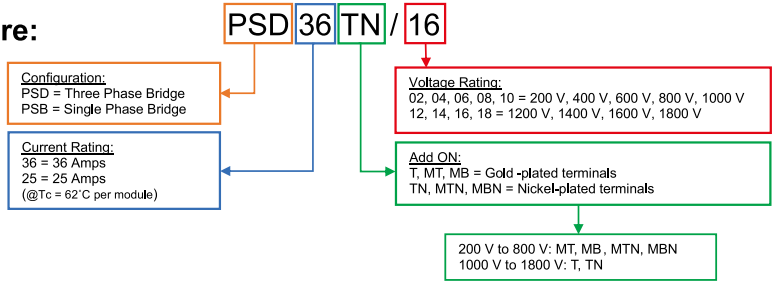
RECTIFIER BRIDGES

Current	Voltage	Part Number	Available Configurations	Figure
25 A	200 V – 1000 V	PSB 25MB & PSD 25MT PSB 25MBN & PSD 25MTN		
	1200 V – 2200 V	PSB 25T & PSD 25T PSB 25TN & PSD 25TN		
36 A	200 V – 1000 V	PSB 36MB & PSD 36MT PSB 36MBN & PSD 36MTN		
	1200 V – 2200 V	PSB 36T & PSD 36T PSB 36TN & PSD 36TN		

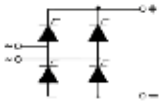
Highlights:

> Single phase and three phase uncontrolled bridges
> Compact package, easy to mount with one screw
> Connectors suitable for easy PCB mounting
> Gold plated or nickel plated terminals
> UL certified, RoHS and REACH conform

Nomenclature:

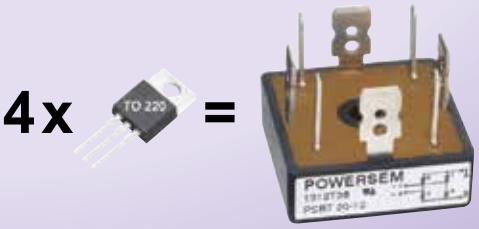


FULL CONTROLLED RECTIFIER BRIDGES

Current	Voltage	Part Number	Available Configurations	Figure
20 A	200 V – 1000 V	PSBT 20		

Highlights:

> Single phase fully controlled bridge
> Replaces 4 discrete thyristors
> Reduced costs and assembly times
> Compact package, easy to mount with one screw
> Connectors suitable for easy PCB mounting
> Nickel plated terminals
> UL certified, RoHS and REACH conform



For detailed datasheets visit www.powersem.com

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Customized Si/SiC-ECO-Diode-Modules* for mounting on PCBs

with solder pins or press pins and optimized module heights (pin heights on request)

9 mm Height with different solder pin lenghts on request

17 mm Height Eco-Press-Fit®

9 mm Height Eco-Press-Fit®

9 mm Height Eco-Press-Fit®

6 mm Height with solder pins

12 mm Height without Baseplate

Power modules with SCT** or DCB/DBC

Differences SCT / DCB:

	SCT	DCB
Method of production	Screenprinting	High temperature bonding process
Min. gapwidth	100µ	0,4 mm (@ 200µ CU) 0,5mm (@ 300µ CU)
Number of thermal cycles (-55°/150°C) (63,3%)	> 1000 (depending on layout)	~ 150 (depending on layout)
Free of partial discharge	yes	no (special treatement required)
Specific. Resistance	0,0167 Ohm x mm2/m	0,0297 Ohm x mm2/m
Min. thickness of metallization	17µm	127µm
Multilayer	Up to 4 layers	No
Printed resistors	Yes	No

Made in Germany

with Phase Change Material

* All housing types also available for Thyristor-, IGBT-, Si-MOSFET- and SiC-MOSFET-Configurations

**SCT = Structure Copper Technology

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excellence since 1985

SiC at its best...!®

Customized and optimized SiC-ECO-Modules

9 mm Height

9 mm Height

17 mm Height
Eco-Press-Fit ©

12 mm Height
with Baseplate

Pin Heights can change

9 mm Height
Eco-Press-Fit ©

6 mm Height
SiC-Slim©

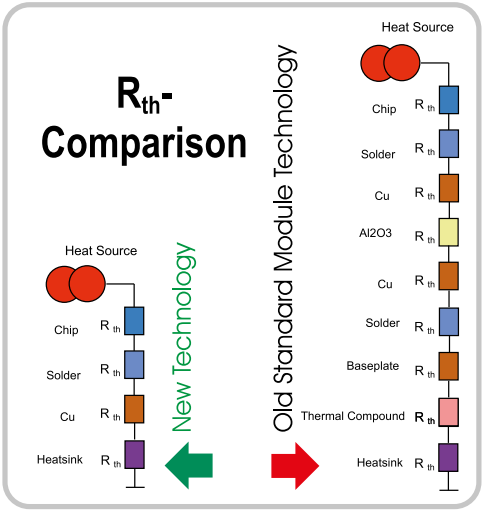
5,5 mm Height

12 mm Height
without Baseplate

Chip on Heatsink©

NEW!

Module with
integrated
AlN CeramCool®
Chip on Heatsink®



CeramCool,© The Ceramic Heatsink made by CeramTec

THE CERAMIC EXPERTS

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HiPOR® HIGH POWER RELIABILITY from POWERSEM

Diode-Diode-, Diode-Thyristor-, Thyristor-Thyristor-Modules

Figure 26, **HiPOR 1**

Figure 27, **HiPOR 2**

Figure 28 / 29 (similar), **HiPOR 3**

Figure 33, **HiPOR 4**

Figure 30, **HiPOR 5**

Figure 31 / 32 (similar), **HiPOR 6**

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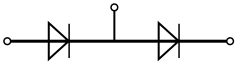
POWERSEM Diode-Diode Modules



TYPE	V_{DRM}/V_{RRM}	$I_{T(AV)}$ @ T_C		$I_{F(RMS)}$	I_{FSM}	I^2t	V_{FM} @ I_{FM}		V_{FO}	r_F	R_{JC}	Figure
	V	A	°C	A	A	kA^2s	V	A	V	mΩ	°C/W	
PSKD 26M	800-1800	26	100	41	650	2,1	1,65	80	0,80	6,80	1,30	26
PSKD 42M	800-1800	40	100	63	1000	5	1,55	120	0,80	5,57	0,90	26
PSKD 55M	800-1800	55	100	86	1300	8,45	1,45	170	0,80	3,47	0,70	26
PSKD 72M	800-1800	70	100	110	1800	16,2	1,40	210	0,80	2,50	0,57	26
PSKD 92M	800-1800	90	100	141	2300	26	1,33	270	0,80	1,70	0,47	26
PSKD 112M	800-1800	110	100	173	2600	33	1,45	330	0,80	1,74	0,35	26
PSKD 135M	800-1800	135	100	212	3900	76	1,38	410	0,80	1,18	0,31	27
PSKD 162M	800-1800	160	100	251	4600	106	1,56	480	0,80	1,35	0,23	27
PSKD 184M	800-1800	182	100	286	6400	205	1,43	550	0,80	0,96	0,22	27
PSKD 202M	800-1800	200	100	314	7500	281	1,38	600	0,75	0,88	0,21	27
PSKD 252M	800-1800	250	100	393	9500	451	1,43	750	0,75	0,76	0,14	28
PSKD 285M	800-1800	285	100	447	9500	453	1,40	750	0,75	0,70	0,14	28
PSKD 302M	800-1800	300	100	471	10000	500	1,35	900	0,75	0,55	0,13	28
PSKD 352M	800-1800	350	100	550	12000	720	1,50	1050	0,75	0,61	0,11	29
PSKD 402M	800-1800	400	100	628	13000	845	1,48	1200	0,75	0,50	0,10	29
PSKD 502M	800-1800	500	100	785	16000	1280	1,45	1500	0,75	0,30	0,09	30
PSKD 572M	800-1800	570	100	895	18000	1620	1,45	1500	0,75	0,30	0,09	30
PSKD 602M	800-1800	600	100	785	19000	1805	1,50	1800	0,75	0,28	0,065	31
PSKD 802M	800-1800	800	100	1256	22000	2420	1,80	2400	0,72	0,18	0,058	31
PSKD 1010M	800-1800	1000	100	1570	28000	3920	1,82	3000	0,71	0,10	0,052	32
PSKD 1210M	800-1800	1200	100	1884	34000	5780	1,86	3000	0,71	0,11	0,040	32

Figure 26, **HiPOR 1**

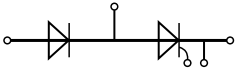
Figure 27, **HiPOR 2**

Figure 28 / 29 (similar), **HiPOR 3**

Figure 30, **HiPOR 5**

Figure 31 / 32 (similar), **HiPOR 6**

POWERSEM Diode-Thyristor Modules



TYPE	V_{DRM}/V_{RRM}	$I_{T(AV)}$ @ T_C		I_{TSM}	I^2t	V_{TM} @ I_{TM}		V_{TO}	r_T	R_{JC}	Figure
	V	A	°C	A	kA^2S	V	A	V	mΩ	°C/W	
PSKH 26M	800-1800	26	85	500	1,25	1,69	80	0,85	9,68	0,95	26
PSKH 42M	800-1800	40	85	900	4,05	1,60	120	0,85	5,57	0,65	26
PSKH 55M	800-1800	55	85	1300	8,45	1,50	170	0,85	3,47	0,53	26
PSKH 72M	800-1800	70	85	1500	11,3	1,48	210	0,80	2,64	0,41	26
PSKH 92M	800-1800	90	85	1800	16,2	1,85	270	0,80	3,01	0,28	26
PSKH 112M	800-1800	110	85	2200	24,2	1,69	330	0,80	2,29	0,25	26
PSKH 113M	2000-2200	110	85	1600	12,8	1,95	330	0,85	2,25	0,25	26
PSKH 135M	800-1800	135	85	3600	65	1,75	410	0,80	2,85	0,20	27
PSKH 162M	800-1800	160	85	6000	180	1,70	480	0,80	1,69	0,17	27
PSKH 184M	800-1800	182	85	7000	245	1,62	550	0,80	1,26	0,16	27
PSKH 185M	2000-2200	182	85	4800	115	1,84	550	0,85	1,21	0,16	27
PSKH 252M	800-1800	250	85	9000	405	1,57	750	0,80	0,85	0,12	28
PSKH 285M	800-1800	300	85	9100	414	1,45	750	0,80	0,53	0,12	28
PSKH 332M	800-1800	330	85	9100	414	1,45	750	0,80	0,53	0,12	33
PSKH 352M	800-1800	350	85	11000	605	1,45	550	0,95	0,36	0,09	29
PSKH 402M	800-1800	400	85	12500	781	1,52	628	0,80	0,49	0,08	30
PSKH 502M	800-1800	500	85	14500	1051	1,44	1500	0,80	0,34	0,065	30
PSKH 572M	800-1800	570	85	15000	1125	1,45	1600	0,80	0,20	0,065	30
PSKH 602M	800-1800	600	85	16000	1280	1,45	942	0,80	0,28	0,054	31
PSKH 802M	800-1800	800	85	22000	2420	1,86	1256	0,80	0,20	0,042	31
PSKH 1010M	800-1800	1000	85	28000	3920	1,96	1570	0,80	0,15	0,034	32
PSKH 1210M	800-1800	1200	85	34000	5480	1,76	1884	0,80	0,09	0,031	32

Figure 26, **HiPOR 1**

Figure 27, **HiPOR 2**

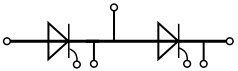
Figure 29, **HiPOR 3**

Figure 30, **HiPOR 5**

Figure 31 / 32 (similar), **HiPOR 6**

Figure 33, **HiPOR 4**

POWERSEM Thyristor-Thyristor Modules



TYPE	V_{DRM}/V_{RRM}	$I_{T(AV)}$ @ T_C		I_{TSM}	I^2t	V_{TM} @ I_{TM}		V_{TO}	r_T	R_{JC}	Figure
	V	A	°C	A	kA^2S	V	A	V	mΩ	°C/W	
PSKT 26M	800-1800	26	85	500	1,25	1,69	80	0,85	9,68	0,95	26
PSKT 42M	800-1800	40	85	900	4,05	1,60	120	0,85	5,57	0,65	26
PSKT 55M	800-1800	55	85	1300	8,45	1,50	170	0,85	3,47	0,53	26
PSKT 72M	800-1800	70	85	1500	11,3	1,48	210	0,80	2,64	0,41	26
PSKT 92M	800-1800	90	85	1800	16,2	1,85	270	0,80	3,01	0,28	26
PSKT 112M	800-1800	110	85	2200	24,2	1,69	330	0,80	2,29	0,25	26
PSKT 113M	2000-2200	110	85	1600	12,8	1,95	330	0,85	2,25	0,25	26
PSKT 135M	800-1800	135	85	3600	65	1,75	410	0,80	2,85	0,20	27
PSKT 162M	800-1800	160	85	6000	180	1,70	480	0,80	1,69	0,17	27
PSKT 163M	2000-2200	106	85	4500	101	1,90	480	0,85	1,53	0,17	27
PSKT 184M	800-1800	182	85	7000	245	1,62	550	0,80	1,26	0,16	27
PSKT 202M	800-1800	200	85	8000	320	1,90	600	0,85	1,27	0,14	27
PSKT 252M	800-1800	250	85	9000	405	1,57	750	0,80	0,85	0,12	33
PSKT 253M	800-1800	250	85	9000	405	1,73	750	0,85	0,80	0,12	33
PSKT 332M	800-1800	330	85	9100	414	1,45	750	0,80	0,53	0,12	33
PSKT 352M	800-1800	350	85	11000	605	1,45	1050	0,95	0,36	0,090	29
PSKT 402M	800-1800	400	85	12500	781	1,52	1200	0,80	0,49	0,080	30
PSKT 502M	800-1800	500	85	14500	1051	1,44	1500	0,80	0,34	0,065	30
PSKT 572M	800-1800	570	85	15000	1125	1,45	1600	0,80	0,20	0,065	30
PSKT 602M	800-1800	600	85	16000	1280	1,45	1800	0,80	0,28	0,054	31
PSKT 802M	800-1800	800	85	22000	2420	1,86	2400	0,80	0,20	0,042	31
PSKT 1010M	800-1800	1000	85	28000	3920	1,96	3000	0,80	0,15	0,034	32
PSKT 1210M	800-1800	1200	85	34000	5780	1,76	3000	0,80	0,09	0,031	32

Figure 26, **HiPOR 1**

Figure 27, **HiPOR 2**

Figure 29, **HiPOR 3**

Figure 30, **HiPOR 5**

Figure 31 / 32 (similar), **HiPOR 6**

Figure 33, **HiPOR 4**

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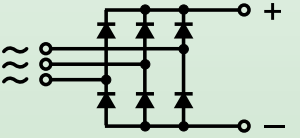
TRACTION-PAC™: Diode Modules for high-speed-rotating applications

Three Phase Rectifier Bridge PSTD 82

PSTD 82

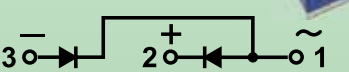
V_{RRM}	:	600 - 1800 V
I_{DAV}	:	88 A @ T_C = 110° C
I_{FSM}	:	750 A (10 ms, 45° C)
V_{TO}	:	0,8 V
r_T	:	5mΩ
T_{VJM}	:	150° C
R_{thJC}	:	1,10 K/W
R_{thJH}	:	1,52 K/W



Diode Module PSTKD 82

PSTKD 82

V_{RRM}	:	600 - 1800 V
I_{DAV}	:	88 A @ T_C = 110° C
I_{FSM}	:	1700 A (10 ms, 45° C)
V_{TO}	:	0,8 V
r_T	:	2,7 mΩ
T_{VJM}	:	150° C
R_{thJC}	:	0,35 K/W
R_{thJH}	:	0,55 K/W



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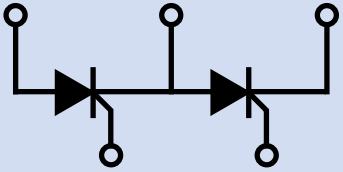
ECO-FRIENDLY THYRISTOR MODULES FOR PCB MOUNTING

V_{RRM}	:	600 - 1800 V
I_{TAVM}	:	116 A @ T_C = 85° C
I_{FSM}	:	2250 A (45° C, 10 msec)
V_{TO}	:	0,8 V
r_T	:	2,4 mΩ
T_{VJM}	:	125° C
R_{thJC}	:	0,26 K/W
R_{thJH}	:	0,46 K/W

PSKT 95 (TO 240)
PSKT 96 (ECO-PAC®2)



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TO 240 (PSKT 95)

ECO-PAC®2

ECO-PAC®2

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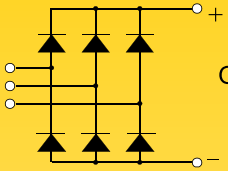

Other configurations and pin layout upon request
kundenspezifische Konfiguration
und Pin Layout möglich

9mm Gehäuse-Höhe, 9mm Housing Height
17mm Gehäuse-Höhe, 17mm Housing-Height

Flexible Einpresstechnik EloPin®

- ✓ Niedrige Einpresskräfte
- ✓ Hohe Haltekräfte
- ✓ Niedriger Übergangswiderstand
- ✓ Hohe Schwingungs - und Schock beständigkeit
- ✓ Einsatztemperatur von - 40ºC bis +150ºC
- ✓ Geringste Beanspruchung der Durchkontaktierungen und PCB-Layer
- ✓ Keine Zinnspanbildung beim Einpressvorgang
- ✓ RoHS-konform

Elastic Press-Fit EloPin®

- ✓ Low press-in force
- ✓ High push-out force
- ✓ Low electrical resistance
- ✓ High vibration and shock resistance
- ✓ Operating temperature - 40ºC to +150ºC
- ✓ Low stress on through plated holes and PCB Layers
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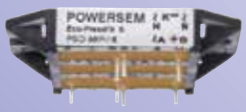

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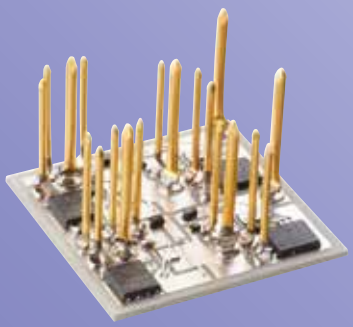

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