

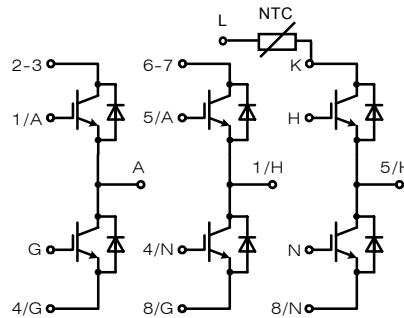
IGBT Module PSII 3x10/06 Sixpack

Preliminary Data Sheet

$$I_{C25} = 19 \text{ A}$$

$$V_{CES} = 600 \text{ V}$$

$$V_{CE(sat)typ.} = 1.9 \text{ V}$$



IGBTs

Symbol	Conditions	Maximum Ratings	
V_{CES}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	600	V
V_{GES}		± 20	V
I_{C25}	$T_C = 25^{\circ}\text{C}$	19	A
I_{C80}	$T_C = 80^{\circ}\text{C}$	14	A
I_{CM} V_{CEK}	$V_{GE} = \pm 15 \text{ V}; R_G = 82 \Omega; T_{VJ} = 125^{\circ}\text{C}$ RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$	20	A
		V_{CES}	
t_{SC} (SCSOA)	$V_{CE} = 720 \text{ V}; V_{GE} = \pm 15 \text{ V}; R_G = 82 \Omega; T_{VJ} = 125^{\circ}\text{C}$ non-repetitive	10	μs
P_{tot}	$T_C = 25^{\circ}\text{C}$	73	W

PSII 3x10/06

Features

- NPT IGBT's
 - positive temperature coefficient of saturation voltage
 - fast switching
- FRED diodes
 - fast reverse recovery
 - low forward voltage
- Industry Standard Package
 - solderable pins for PCB mounting
 - isolated DCB ceramic base plate
- UL registered, E 148688

Applications

- AC drives
- power supplies with power factor correction

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- High power density
- Small and light weight

Caution: These devices are sensitive to electrostatic discharge. Users should observe proper ESD handling precautions.

Symbol	Conditions	Characteristic Values ($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)			
		min.	typ.	max.	
$V_{CE(sat)}$	$I_C = 10 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	1.9	2.2	V	
$V_{GE(th)}$	$I_C = 0.35 \text{ mA}; V_{GE} = V_{CE}$	4.5		V	
I_{CES}	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		2.7	0.6 mA	
I_{GES}	$V_{CE} = 0 \text{ V}; V_{GE} = \pm 20 \text{ V}$			100 nA	
$t_{d(on)}$ t_r $t_{d(off)}$ t_f E_{on} E_{off}	Inductive load, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 300 \text{ V}; I_C = 10 \text{ A}$ $V_{GE} = \pm 15 \text{ V}; R_G = 82 \Omega$		35	ns	
				35	ns
				230	ns
				30	ns
				0.4	mJ
				0.3	mJ
C_{ies}	$V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; f = 1 \text{ MHz}$		600	pF	
Q_{Gon}	$V_{CE} = 300 \text{ V}; V_{GE} = 15 \text{ V}; I_C = 10 \text{ A}$		39	nC	
R_{thJC} R_{thJH}	(per IGBT) with heatsink compound (0.42 K/m.K; 50 μm)		3.4	1.7 K/W K/W	

Diodes

Symbol	Conditions	Maximum Ratings	
I_{F25}	$T_C = 25^\circ\text{C}$	21	A
I_{F80}	$T_C = 80^\circ\text{C}$	14	A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
V_F	$I_F = 10\text{ A}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 150^\circ\text{C}$		1.9 1.4	V V
I_{RM} t_{rr}	$I_F = 10\text{ A}; di_F/dt = -400\text{ A}/\mu\text{s}; T_{VJ} = 125^\circ\text{C}$ $V_R = 300\text{ V}; V_{GE} = 0\text{ V}$		11	A
			80	ns
R_{thJC} R_{thJH}	with heatsink compound (0.42 K/m.K; 50 μm)		7.0	3.5 K/W K/W

Data according to IEC 60747 and refer to a single diode unless otherwise stated.

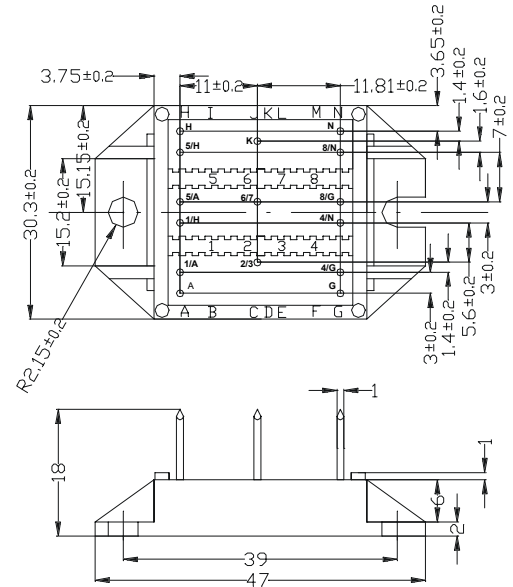
Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}		-40...+150	$^\circ\text{C}$
T_{stg}		-40...+125	$^\circ\text{C}$
V_{ISOL}	$I_{ISOL} \leq 1\text{ mA}; 50/60\text{ Hz}; t = 1\text{ s}$	3600	V~
M_d	Mounting torque (M4)	1.5 - 1.8	Nm lb.in.
a	Max. allowable acceleration	50	m/s^2

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
d_s	Creepage distance on surface (Pin to heatsink)	11.2		mm
d_A	Strike distance in air (Pin to heatsink)	11.2		mm
Weight			18	g

Package style and outline

Dimensions in mm (1mm = 0.0394")



Temperature Sensor NTC

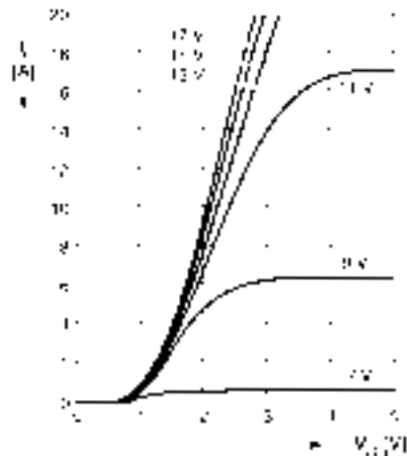
Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
R_{25}	$T = 25^\circ\text{C}$	455	470	485 k Ω
$B_{25/50}$			3474	K

IGBT

Typ. output characteristics

$V_{GE} = +10V$

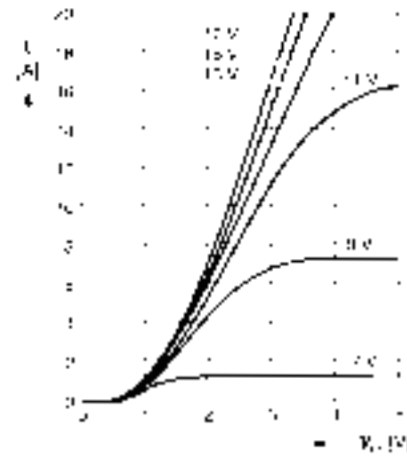
parameter $t_r = 250 ns, T_c = 25^\circ C$



Typ. output characteristics

$I_c = -10A$

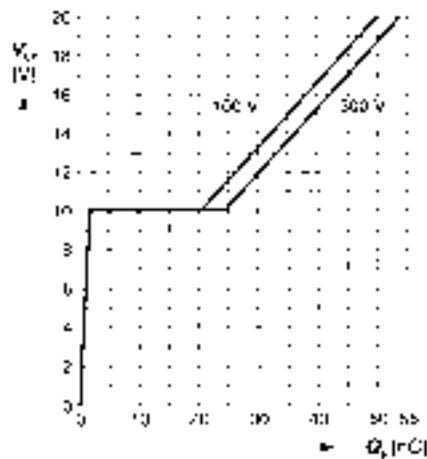
parameter $t_r = 250 ns, T_c = 175^\circ C$



Typ. gate charge

$V_{CE} = +10V$

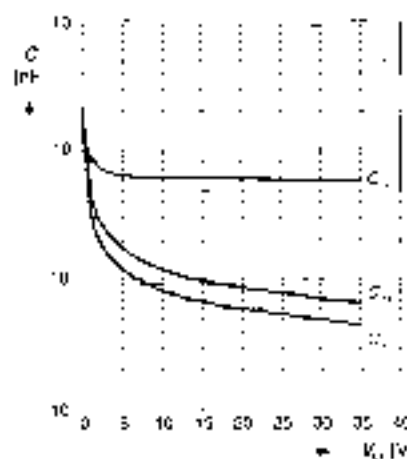
parameter $V_{GE} = +10V$



Typ. capacitances

$C = 10KHz$

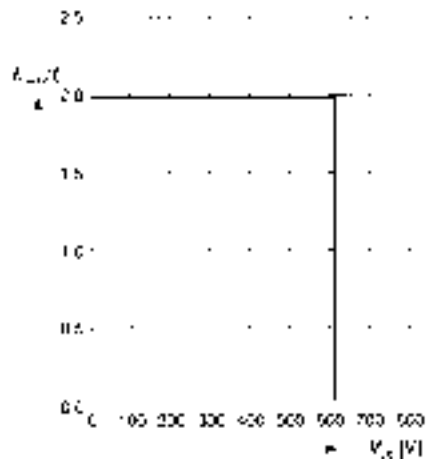
parameter $V_{CE} = 0V, f = 1MHz$



Reverse biased safe operating area

$V_{CE} = +10V, T_c = 150^\circ C$

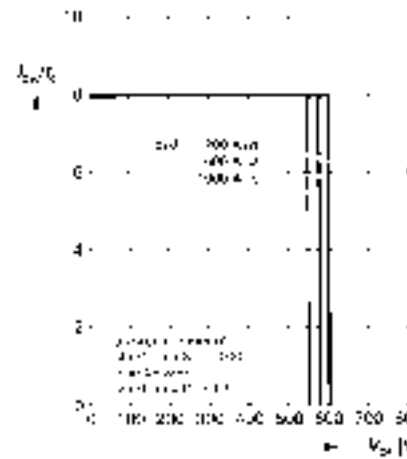
parameter $V_{GE} = 15V$



Short circuit safe operating area

$V_{CE} = +10V, T_c = 150^\circ C$

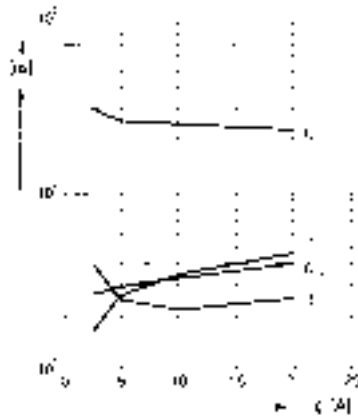
parameter $V_{GE} = +15V, t_{sc} = 10 \mu s, I_c = 60A$



IGBT

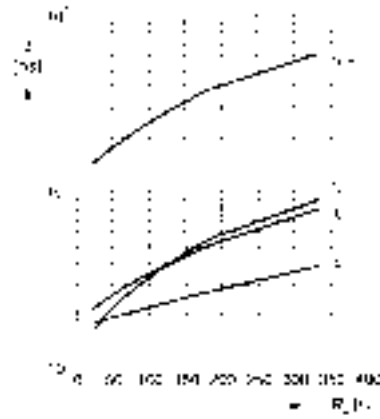
t_{sp} switching time

$E = 100 \mu\text{s}$ inductive load, $T = 125^\circ\text{C}$
 parameter: $V_{ce} = 300\text{V}$, $V_{ge} = 15\text{V}$, $R_{th} = 100\text{s}$



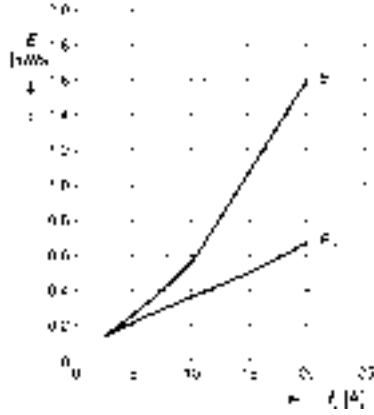
t_{yb} switching time

$E = 100 \mu\text{s}$ inductive load, $T = 125^\circ\text{C}$
 parameter: $V_{ce} = 300\text{V}$, $V_{ge} = 15\text{V}$, $I_{C1} = 10\text{A}$



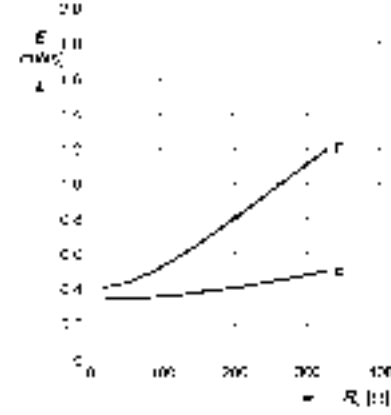
t_{sp} switching losses

$E = 100 \mu\text{s}$ inductive load, $T = 125^\circ\text{C}$
 parameter: $V_{ce} = 300\text{V}$, $V_{ge} = 15\text{V}$, $R_{th} = 100\text{s}$

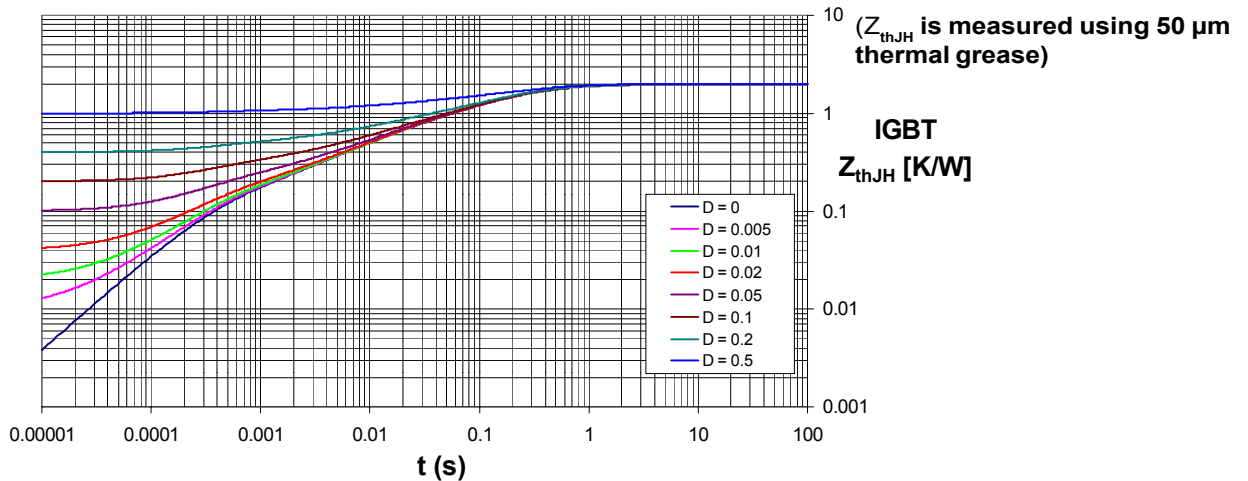


t_{yb} switching losses

$E = 100 \mu\text{s}$ inductive load, $T = 125^\circ\text{C}$
 parameter: $V_{ce} = 300\text{V}$, $V_{ge} = 15\text{V}$, $I_{C1} = 10\text{A}$



Transient thermal resistance junction to heatsink



Diode

