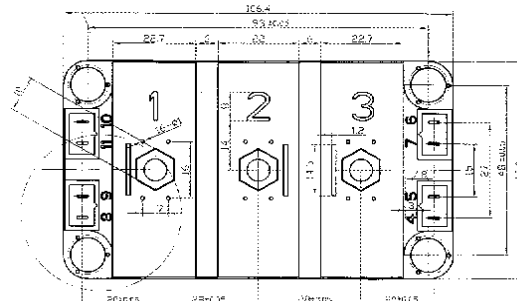
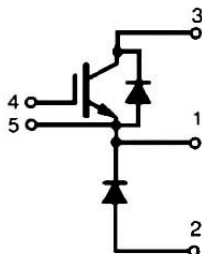
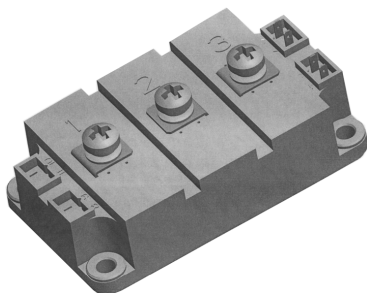


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NPT IGBT Modules

Dimensions in mm (1mm = 0.0394")



Absolute Maximum Ratings

$T_c = 25^\circ\text{C}$, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_c = 25(80)^\circ\text{C}$	150(110)	A
I_{CRM}	$T_c = 25(80)^\circ\text{C}$, $t_P = 1\text{ms}$	300(220)	A
V_{GES}		± 20	V
$T_{Vj}, (T_{stg})$	$T_{OPERATION} \leq T_{stg}$	$-40 \dots +150(125)$	$^\circ\text{C}$
V_{isol}	AC, 1min	2500	V
Inverse Diode			
$I_F = -I_C$	$T_c = 25(80)^\circ\text{C}$	150(100)	A
I_{FRM}	$T_c = 25(80)^\circ\text{C}$, $t_P = 1\text{ms}$	300(220)	A
I_{FSM}	$t_P = 10\text{ms}$; sin.; $T_j = 150^\circ\text{C}$	1100	A
Freewheeling diode			
$I_F = -I_C$	$T_c = 25(80)^\circ\text{C}$	200(135)	A
I_{FRM}	$T_c = 25(80)^\circ\text{C}$, $t_P = 1\text{ms}$	300(220)	A
I_{FSM}	$t_P = 10\text{ms}$; sin.; $T_j = 150^\circ\text{C}$	1450	A

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NPT IGBT Modules

Characteristics

T_c = 25°C, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 4mA	4.5	5.5	6.5	V
I _{CES}	V _{GE} = 0; V _{CE} = V _{CE(s)} ; T _j = 25(125)°C		0.1	0.3	mA
V _{CE(TO)}	T _j = 25(125)°C		1.4(1.6)	1.6(1.8)	V
r _{CE}	V _{GE} = 15V, T _j = 25(125)°C		11(15)	14(19)	mΩ
V _{CE(sat)}	I _C = 100A; V _{GE} = 15V; chip level		2.5(3.1)	3(3.7)	V
C _{ies}	under following conditions		6.5	8.5	
C _{oes}	V _{GE} = 0, V _{CE} = 25V, f = 1MHz		1	1.5	nF
C _{res}			0.5	0.6	
L _{CE}				20	nH
R _{CC'+EE'}	res., terminal-chip T _c = 25(125)°C		0.35(0.5)		mΩ
t _{d(on)}	under following conditions: V _{CC} = 600V, I _C = 100A		160	320	ns
t _r	R _{Gon} = R _{Goff} = 6.8Ω, T _j = 125°C		80	160	ns
t _{d(off)}	V _{GE} = ± 15V		400	520	ns
t _f			70	100	ns
E _{on} (E _{off})			13(11)		mJ
Inverse Diode under following conditions:					
V _F = V _{EC}	I _F = 100A; V _{GE} = 0V; T _j = 25(125)°C		2(1.8)	2.5	V
V _(TO)	T _j = 125°C			1.2	V
r _T	T _j = 125°C		8	11	mΩ
I _{RRM}	I _F = 100A; T _j = 25(125)°C		35(50)		A
Q _{rr}	di/dt = A/us		5(14)		uC
E _{rr}	V _{GE} = V				mJ
FWD under following conditions:					
V _F = V _{EC}	I _F = 100A; V _{GE} = 0V; T _j = 25(125)°C		1.85(1.6)	2.2	V
V _(TO)	T _j = 125°C			1.2	V
r _T	T _j = 125°C		5	7	mΩ
I _{RRM}	I _F = 100A; T _j = 25°C		40(65)		A
Q _{rr}	di/dt = A/us		5(15)		uC
E _{rr}	V _{GE} = V				mJ
Thermal Characteristics					
R _{th(j-c)}	per IGBT			0.15	K/W
R _{th(j-c)D}	per Inverse Diode			0.3	K/W
R _{th(j-c)FD}	per FWD			0.25	K/W
R _{th(c-s)}	per module			0.038	K/W
Mechanical Data					
M _s	to heatsink M6	3		5	Nm
M _t	to terminals M6	2.5		5	Nm
w				325	g

