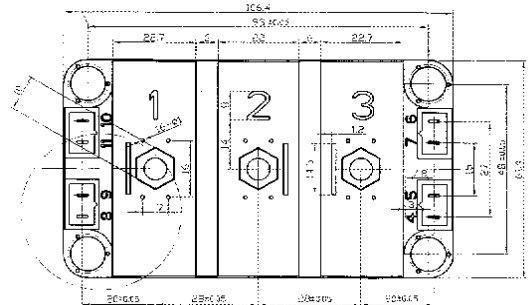
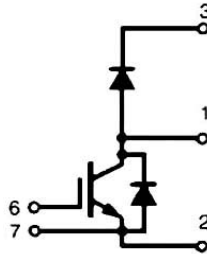
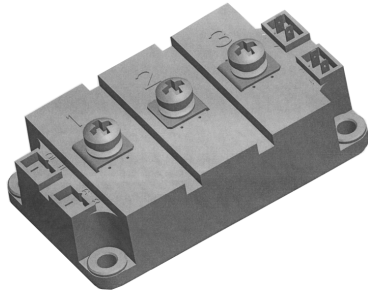


SID400N12

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	$T_c = 25(80)^{\circ}\text{C}$	400(330)	A
I_{CRM}	$T_c = 25(80)^{\circ}\text{C}$, $t_p = 1\text{ms}$	800(660)	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	4000	V
Inverse Diode			
$I_F = -I_C$	$T_c = 25(80)^{\circ}\text{C}$	390(260)	A
I_{FRM}	$T_c = 25(125)^{\circ}\text{C}$, $t_p = 1\text{ms}$	800(660)	A
I_{FSM}	$t_p = 10\text{ms}$; sin.; $T_j = 150^{\circ}\text{C}$	2900	A

SID400N12

NPT IGBT Modules

Characteristics

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

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 12\text{mA}$	4.8	5.5	6.45	V
I_{CES}	$V_{GE} = 0$; $V_{CE} = V_{CES}$; $T_j = 25^{\circ}\text{C}$		0.1	0.3	mA
$V_{CE(TO)}$	$T_j = 25(125)^{\circ}\text{C}$		1.4(1.6)	1.6(1.8)	V
r_{CE}	$V_{GE} = 15\text{V}$, $T_j = 25(125)^{\circ}\text{C}$		3.66(5)	4.66(6.33)	$\text{m}\Omega$
$V_{CE(sat)}$	$I_C = 300\text{A}$; $V_{GE} = 15\text{V}$; chip level		2.5(3.1)	3(3.7)	V
C_{ies}	under following conditions		22	30	nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25\text{V}$, $f = 1\text{MHz}$		3.3	4	nF
C_{res}			1.2	1.6	nF
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip $T_C = 25(125)^{\circ}\text{C}$		0.35(0.5)		$\text{m}\Omega$
$t_{d(on)}$	under following conditions: $V_{CC} = 600\text{V}$, $I_C = 300\text{A}$		200	400	ns
t_r	$R_{Gon} = R_{Goff} = 3.3\Omega$, $T_j = 125^{\circ}\text{C}$		115	220	ns
$t_{d(off)}$	$V_{GE} = \pm 15\text{V}$		720	900	ns
t_f			80	100	ns
$E_{on}(E_{off})$			38(40)		mJ
Inverse Diode under following conditions:					
$V_F = V_{EC}$	$I_F = 300\text{A}$; $V_{GE} = 0\text{V}$; $T_j = 25(125)^{\circ}\text{C}$		2(1.8)	2.5	V
$V_{(TO)}$	$T_j = 125^{\circ}\text{C}$			1.2	V
r_T	$T_j = 125^{\circ}\text{C}$		2.5	3.5	$\text{m}\Omega$
I_{RRM}	$I_F = 300\text{A}$; $T_j = 25(125)^{\circ}\text{C}$		85(140)		A
Q_{rr}	$di/dt = 2000\text{A/us}$		13(40)		μC
E_{rr}	$V_{GE} = V$				mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.05	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.125	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				Nm
W				325	g