

Features

- High short circuit capability, self limiting short circuit current
- IGBT CHIP(Highly rugged SPT+ design)
- VCE(sat) with positive temperature coefficient
- Ultra Low Loss, High ruggedness
- Free wheeling diodes with fast and soft reverse recovery

Applications

- AC motor control
- Inverter and power supplies
- Motion/servo control
- Photovoltaic/Fuel cell

Absolute Maximum Ratings

T_c=25°C, unless otherwise specified



Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j =25°C		1200	V
I _C	T _j =150°C	Tcase=25°C	300	A
		Tcase=85°C	210	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		400	A
V _{GES}			±20	V
t _{psc}	V _{CC} =600V; V _{GE} ≤20V; V _{CES} <1200V	T _j =125°C	10	μs
Inverse Diode				
I _F	T _j =150°C	Tcase=25°C	260	A
		Tcase=80°C	180	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		400	A
I _{FSM}	t _p =10ms; sin.	T _j =150°C	1800	A
Module				
I _{t(RMS)}			500	A
T _{vj}			-40...+150	°C
T _{stg}			-40...+150	°C
V _{isol}	AC, 1min.		4000	V

Characteristics

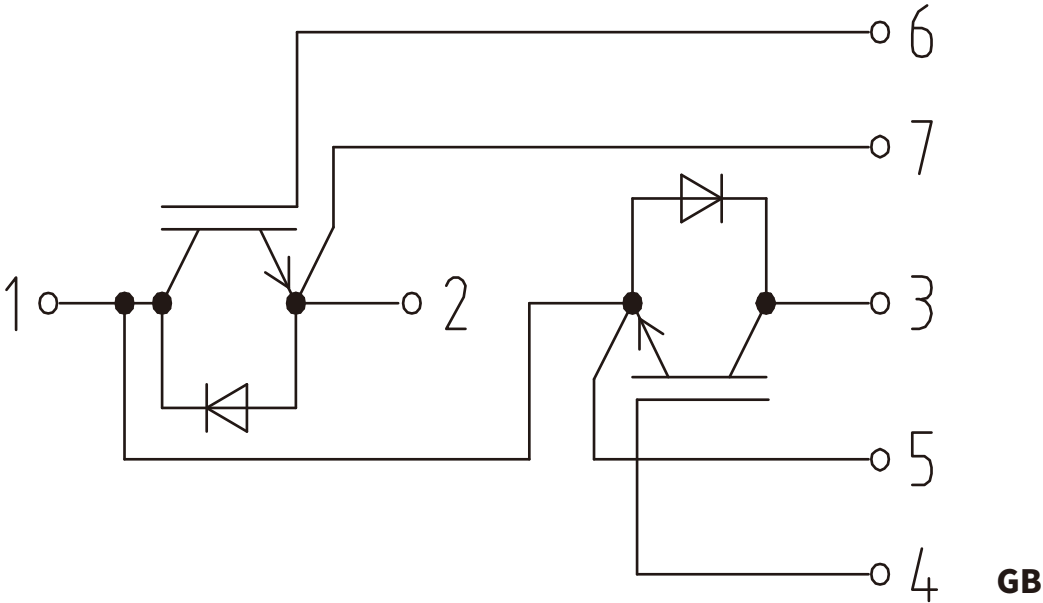
Tc=25°C, unless otherwise specified

Symbol	Conditions		min.	typ.	max.	Units
IGBT						
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 8mA$		4.5	5.5	6.5	V
I_{CES}	$V_{GE} = 0V, V_{CE} = V_{CES}$	$T_j = 25^\circ C$		0.1	0.3	mA
		$T_j = 125^\circ C$				mA
V_{CE0}		$T_j = 25^\circ C$		1.5	1.75	V
		$T_j = 125^\circ C$		1.7		V
r_{CE}	$V_{GE} = 15V$	$T_j = 25^\circ C$		9	10.5	mΩ
		$T_j = 125^\circ C$		11.5		mΩ
$V_{CE(sat)}$	$I_{Cnom} = 200A, V_{GE} = 15V$	$T_j = ^\circ C_{chipleve}$		3.3	3.85	V
C_{ies}	$V_{CE} = 25V, V_{GE} = 0V$	$f = 1\text{ MHz}$		18	24	nF
C_{oes}				2.5	3.2	nF
C_{res}				1	1.3	nF
Q_G	$V_{GE} = 0 \rightarrow +20V$			2000		nC
R_{Gint}		$T_j = ^\circ C$		2.5		Ω
$t_{d(on)}$	$R_{Gon} = 3\Omega$	$V_{CC} = 600V$ $I_C = 150A$		130		ns
t_r				40		ns
E_{on}				16		mJ
$t_{d(off)}$	$R_{Gon} = 3\Omega$	$T_j = 125^\circ C$		460		ns
t_f		$V_{GE} = \pm 15V$		30		ns
E_{off}						mJ
$R_{th(j-c)}$	per IGBT				0.075	K/W
Inverse Diode						
$V_F = V_{EC}$	$I_{Fnom} = 200A, V_{GE} = 0V$	$T_j = 25^\circ C_{chipleve}$		2	2.5	V
		$T_j = 125^\circ C_{chipleve}$		1.8		V
V_{F0}		$T_j = 25^\circ C$		1.1	1.2	V
		$T_j = 125^\circ C$				V
r_F		$T_j = 25^\circ C$		4.5	6.5	mΩ
		$T_j = 125^\circ C$				mΩ
I_{RRM}	$I_F = 200A$	$T_j = 125^\circ C$		340		A
Q_{rr}	$di/dt = 8000A/\mu s$			46		μC
E_{rr}	$V_{GE} = 0V; V_{CC} = 600V$					mJ
$R_{th(j-c)D}$	per diode				0.18	K/W
Module						
L_{CE}				15	20	nH
$R_{CC'+EE'}$	res.terminal-chip	$T_{case} = 25^\circ C$		0.35		mΩ
		$T_{case} = 125^\circ C$		0.5		mΩ
$R_{th(c-s)}$	per module				0.038	K/W
M_s	to heat sink M6		3		5	Nm
M_t	to heat sink M6		2.5		5	Nm
W					325	g

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Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$			
R_j	$i = 1$	53	mk/W
R_j	$i = 2$	18.5	mk/W
R_j	$i = 3$	3.1	mk/W
R_j	$i = 4$	0.4	mk/W
t_{aui}	$i = 1$	0.04	s
t_{aui}	$i = 2$	0.0189	s
t_{aui}	$i = 3$	0.0017	s
t_{aui}	$i = 4$	0.003	s
$Z_{th(j-c)D}$			
R_j	$i = 1$	115	mk/W
R_j	$i = 2$	52	mk/W
R_j	$i = 3$	11	mk/W
R_j	$i = 4$	2	mk/W
t_{aui}	$i = 1$	0.0366	s
t_{aui}	$i = 2$	0.0113	s
t_{aui}	$i = 3$	0.003	s
t_{aui}	$i = 4$	0.0002	s

Circuit Diagram



Package Outline

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