

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

Tc=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	400	A
		Tcase=85°C	300	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		600	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	390	A
		Tcase=80°C	260	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		600	A
I _{FSM}	t _p =10ms; sin.	T _j =150°C	2880	A
Module				
I _{t(RMS)}			500	A
T _{vj}			-40...+150	°C
T _{stg}			-40...+150	°C
V _{isol}	AC, 1min.		4000	V

Characteristics

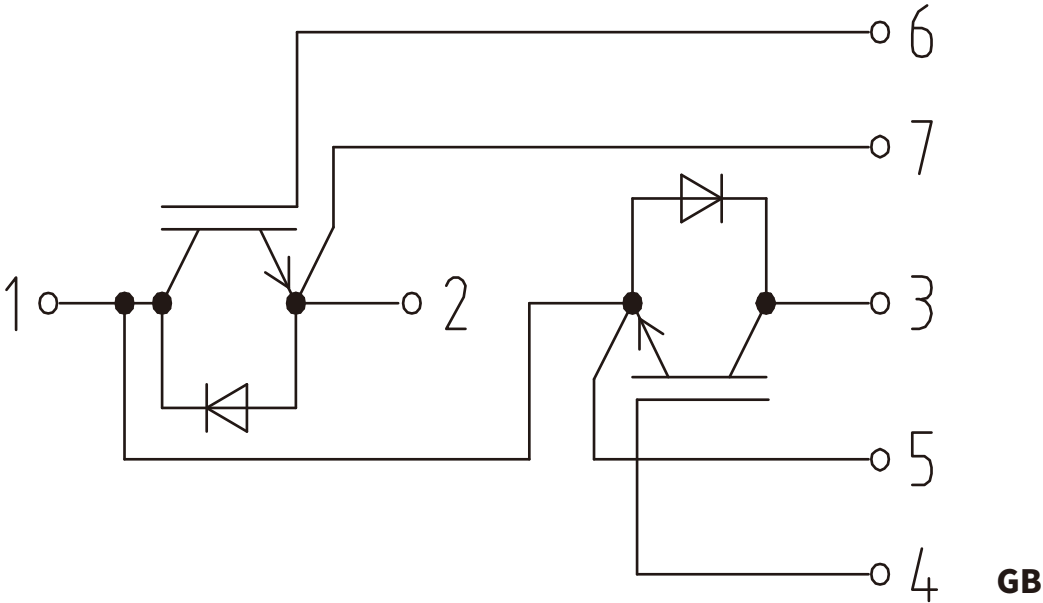
Tc=25°C, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 12mA$	4.5	5.5	6.5	V
I_{CES}	$V_{GE} = 0V, V_{CE} = V_{CES}$	$T_J = 25^\circ C$	0.15	0.45	mA
		$T_J = 125^\circ C$			mA
V_{CE0}		$T_J = 25^\circ C$	1.4		V
		$T_J = 125^\circ C$	1.7		V
r_{CE}	$V_{GE} = 15V$	$T_J = 25^\circ C$	6.3		mΩ
		$T_J = 125^\circ C$	7.6		mΩ
$V_{CE(sat)}$	$I_{Cnom} = 300A, V_{GE} = 15V$	$T_J = ^\circ C_{chiplev.}$	3.3	3.85	V
C_{ies}	$V_{CE} = 25V, V_{GE} = 0V$	$f = 1\text{ MHz}$	22	30	nF
C_{oes}			3.3	4	nF
C_{res}			1.2	1.6	nF
Q_G	$V_{GE} = 0 \rightarrow +20V$		2650		nC
R_{Gint}		$T_J = ^\circ C$	1.25		Ω
$t_{d(on)}$	$R_{Gon} = 2\Omega$	$V_{CC} = 600V$ $I_C = 150A$	70		ns
t_r			50		ns
E_{on}			17		mJ
$t_{d(off)}$	$R_{Gon} = 2\Omega$	$T_J = 125^\circ C$ $V_{GE} = \pm 15V$	500		ns
t_f			32		ns
E_{off}			18		mJ
$R_{th(j-c)}$	per IGBT			0.05	K/W
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 300A, V_{GE} = 0V$	$T_J = 25^\circ C_{chiplev.}$	2	2.5	V
		$T_J = 125^\circ C_{chiplev.}$	1.8		V
V_{F0}		$T_J = 25^\circ C$	1.1	1.2	V
		$T_J = 125^\circ C$			V
r_F		$T_J = 25^\circ C$	3	4.3	mΩ
		$T_J = 125^\circ C$			mΩ
I_{RRM}	$I_F = 300A$	$T_J = 125^\circ C$	350		A
Q_{rr}	$di/dt = 8300A/\mu s$		45		μC
E_{rr}	$V_{GE} = 0V; V_{CC} = 600V$		16		mJ
$R_{th(j-c)D}$	per diode			0.125	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

03

Symbol	Conditions	Values	Units
Z _{th(j-c)I}			
R _j	i = 1	36	mk/W
R _j	i = 2	10.5	mk/W
R _j	i = 3	3.0	mk/W
R _j	i = 4	0.5	mk/W
t _{aur}	i = 1	0.0744	s
t _{aur}	i = 2	0.0078	s
t _{aur}	i = 3	0.0016	s
t _{aur}	i = 4	0.002	s
Z _{th(j-c)D}			
R _j	i = 1	75	mk/W
R _j	i = 2	38	mk/W
R _j	i = 3	10.6	mk/W
R _j	i = 4	1.4	mk/W
t _{aur}	i = 1	0.0386	s
t _{aur}	i = 2	0.0201	s
t _{aur}	i = 3	0.001	s
t _{aur}	i = 4	0.003	s

Circuit Diagram



Package Outline

