

FEATURES

- High short circuit capability, self limiting short circuit current
- IGBT CHIP(Trench+ Field Stop technology)
- $V_{CE(sat)}$ with positive temperature coefficient
- Fast switching and short tail current, Low switching losses
- Free wheeling diodes with fast and soft reverse recovery
- Temperature sense included



APPLICATIONS

- High frequency switching application
- Medical applications
- Motion/servo control
- UPS systems

ABSOLUTE MAXIMUM RATINGS

T_c=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Values	Unit
IGBT				
V _{CEs}	Collector - Emitter Voltage	T _{vj} =25°C	1250	V
V _{GEs}	Gate - Emitter Voltage		±30	V
I _c	DC Collector Current	T _c =25°C	450	A
		T _c =80°C	300	A
I _{CM}	Repetitive Peak Collector Current	t _p =1ms	600	A
P _{tot}	Power Dissipation Per IGBT		2083	W
Diode				
V _{RRM}	Repetitive Reverse Voltage	T _{vj} =25°C	1250	V
I _{F(AV)}	Average Forward Current	T _c =25°C	450	A
		T _c =80°C	300	A
I _{FRM}	Repetitive Peak Forward Current	t _p =1ms	600	A



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ELECTRICAL AND THERMAL CHARACTERISTICS TC=25°C unless otherwise specified

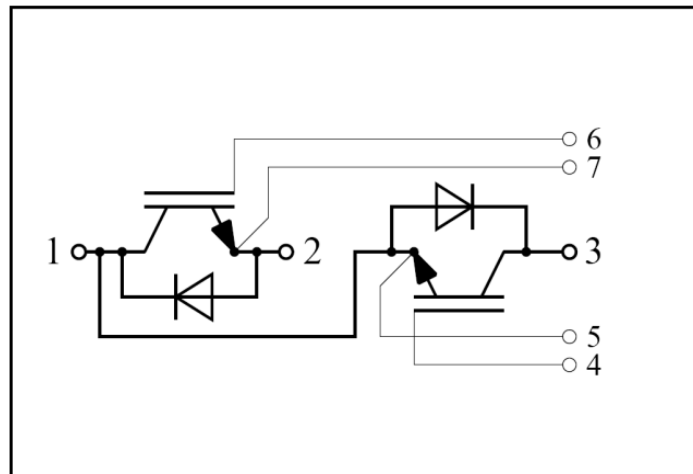
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
IGBT						
$V_{GE(th)}$	Gate - Emitter Threshold Voltage	$V_{CE}=V_{GE}, I_c=2.0mA$	5.0		6.8	V
$V_{CE(sat)}$	Collector - Emitter Saturation Voltage	$I_c=300A, V_{GE}=15V, T_{vj}=25^{\circ}C$		2.2	2.6	V
		$I_c=300A, V_{GE}=15V, T_{vj}=125^{\circ}C$		2.65		V
I_{CES}	Collector Leakage Current	$V_{CE}=1250V, V_{GE}=0V, T_{vj}=25^{\circ}C$			1	mA
		$V_{CE}=1250V, V_{GE}=0V, T_{vj}=125^{\circ}C$			5	mA
R_{gint}	Integrated Gate Resistor	Per switch		5		Ω
I_{GES}	Gate Leakage Current	$V_{CE}=0V, V_{GE}\pm 15V, T_{vj}=125^{\circ}C$	-500		500	nA
C_{ies}	Input Capacitance	$V_{CE}=25V, V_{GE}=0V, f=1MHz$		21.3		nF
C_{res}	Reverse Transfer Capacitance			1.42		nF
$t_{d(on)}$	Turn - on Delay Time	$V_{cc}=600V, I_c=300A, R_g=3.3\Omega$	$T_{vj}=25^{\circ}C$		393	ns
			$T_{vj}=125^{\circ}C$		395	ns
t_r	Rise Time	$V_{GE}=\pm 15V, \text{Inductive Load}$	$T_{vj}=25^{\circ}C$		130	ns
			$T_{vj}=125^{\circ}C$		135	ns
$t_{d(off)}$	Turn - off Delay Time	$V_{cc}=600V, I_c=300A, R_g=3.3\Omega$	$T_{vj}=25^{\circ}C$		570	ns
			$T_{vj}=125^{\circ}C$		600	ns
t_f	Fall Time	$V_{GE}=\pm 15V, \text{Inductive Load}$	$T_{vj}=25^{\circ}C$		145	ns
			$T_{vj}=125^{\circ}C$		155	ns
E_{on}	Turn - on Energy	$V_{cc}=600V, I_c=300A, R_g=3.3\Omega$	$T_{vj}=25^{\circ}C$		7.7	mJ
			$T_{vj}=125^{\circ}C$		14.5	mJ
E_{off}	Turn - off Energy	$V_{GE}=\pm 15V, \text{Inductive Load}$	$T_{vj}=25^{\circ}C$		26.3	mJ
			$T_{vj}=125^{\circ}C$		33.5	mJ
I_{sc}	Short Circuit Current	$t_{psc}\leq 10\mu S, V_{GE}=15V, T_{vj}=125^{\circ}C, V_{cc}=900V$		2100		A
R_{thJc}	Junction-to-Case Thermal Resistance (Per IGBT)				0.07	K/W
Diode						
V_F	Forward Voltage	$I_F=300A, V_{GE}=0V, T_{vj}=25^{\circ}C$		1.82	2.25	V
			$I_F=300A, V_{GE}=0V, T_{vj}=125^{\circ}C$		2.0	
Q_{rr}	Reversed Charge	$I_F=300A, V_R=600V$		40		μC
I_{RRM}	Max. Reverse Recovery Current	$di/dt=-2360A/\mu s$		250		A
E_{rec}	Reverse Recovery Energy	$T_{vj}=125^{\circ}C$		18.5		mJ
R_{thJcD}	Junction-to-Case Thermal Resistance (Per Diode)				0.12	K/W

MODULE CHARACTERISTICS

T_c=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
T _{Vj max}	Max. Junction Temperature				175	°C
T _{Vj op}	Operating Temperature		-40		150	°C
T _{stg}	Storage Temperature		-40		125	°C
V _{isol}	Insulation Test Voltage	AC, t=1min	3000			V
Torque	To-Sink	Recommended (M6)	3		5	N·m
Torque	To-Terminal	Recommended (M5)	2.5		5	N·m
Weight				302		g

CIRCUIT DIAGRAM



PACKAGE OUTLINE

