

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

Applications

- AC motor control
- Inverter and power supplies
- Motion/servo control
- UPS systems



Absolute Maximum Ratings

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

Symbol	Parameter	Test Conditions	Values	Unit
IGBT				
V_{CES}	Collector - Emitter Voltage	$T_{vj}=25^{\circ}\text{C}$	1250	V
V_{GES}	Gate - Emitter Voltage		± 30	V
I_c	DC Collector Current	$T_c=25^{\circ}\text{C}$	220	A
		$T_c=80^{\circ}\text{C}$	150	A
I_{CM}	Repetitive Peak Collector Current	$t_p=1\text{ms}$	300	A
P_{tot}	Power Dissipation Per IGBT		1190	W
Diode				
V_{RRM}	Repetitive Reverse Voltage	$T_{vj}=25^{\circ}\text{C}$	1250	V
$I_{F(AV)}$	Average Forward Current	$T_c=25^{\circ}\text{C}$	220	A
		$T_c=80^{\circ}\text{C}$	150	A
I_{FRM}	Repetitive Peak Forward Current	$t_p=1\text{ms}$	300	A

Electrical and Thermal Characteristics

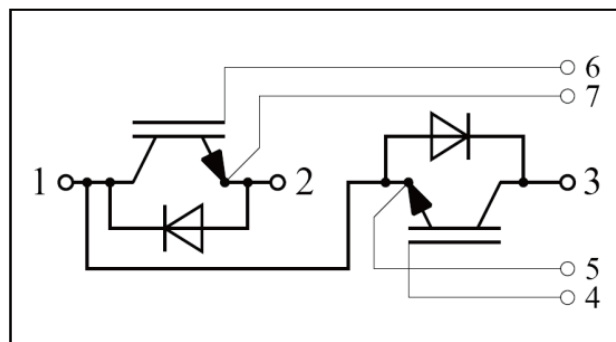
$T_c = 25^\circ\text{C}$ unless otherwise specified

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 =150A, V _{GE} =15V, T _{Vj} =25°C			1.9	2.2	V
		I _C =150A, V _{GE} =15V, T _{Vj} =125°C			2.1		V
I _{CES}	Collector Leakage Current	V _{CE} =1250V, V _{GE} =0V, T _{Vj} =25°C				1	mA
		V _{CE} =1250V, V _{GE} =0V, T _{Vj} =125°C				5	mA
R _{gint}	Integrated Gate Resistor	Per switch			10		Ω
I _{GES}	Gate Leakage Current	V _{CE} =0V, V _{GE} =±15V, T _{Vj} =125°C		-500		500	nA
C _{ies}	Input Capacitance	V _{CE} =25V, V _{GE} =0V, f=1MHz			TBD		nF
C _{res}	Reverse Transfer Capacitance				TBD		nF
t _{d(on)}	Turn-on Delay Time	V _{CC} =600V, I _C =150A, R _G =5.6Ω, V _{GE} =±15V, Inductive Load	T _{Vj} =25°C		335		ns
			T _{Vj} =125°C		344		ns
t _r	Rise Time	R _G =5.6Ω, V _{GE} =±15V, Inductive Load	T _{Vj} =25°C		87		ns
			T _{Vj} =125°C		89		ns
t _{d(off)}	Turn-off Delay Time	V _{CC} =600V, I _C =150A, R _G =5.6Ω, V _{GE} =±15V, Inductive Load	T _{Vj} =25°C		419		ns
			T _{Vj} =125°C		442		ns
t _f	Fall Time	R _G =5.6Ω, V _{GE} =±15V, Inductive Load	T _{Vj} =25°C		170		ns
			T _{Vj} =125°C		224		ns
E _{on}	Turn-on Energy	V _{CC} =600V, I _C =150A, R _G =5.6Ω, V _{GE} =±15V, Inductive Load	T _{Vj} =25°C		9		mJ
			T _{Vj} =125°C		11.3		mJ
E _{off}	Turn-off Energy	R _G =5.6Ω, V _{GE} =±15V, Inductive Load	T _{Vj} =25°C		11.5		mJ
			T _{Vj} =125°C		14.7		mJ
I _{sc}	Short Circuit Current	t _{pSC} ≤10 μs, V _{GE} =15V, T _{Vj} =125°C, V _{CC} =720V			600		A
R _{thJC}	Junction-to-Case Thermal Resistance (Per IGBT)					0.13	K/W
Diode							
V _F	Forward Voltage	I _F =150A, V _{GE} =0V, T _{Vj} =25°C			1.8	2.3	V
		I _F =150A, V _{GE} =0V, T _{Vj} =125°C			1.8		V
Q _{rr}	Reverse Recovery Charge	I _F =150A, V _R =600V			28		μC
I _{RRM}	Max. Reverse Recovery Current	di _F /dt=-3000A/μs T _{Vj} =125°C			140		A
E _{rec}	Reverse Recovery Energy				13.5		mJ
R _{thJC}	Junction-to-Case Thermal Resistance (Per Diode)					0.26	K/W

Module Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$T_{Vj\max}$	Max. Junction Temperature				150	°C
T_{Vjop}	Operating Temperature		-40		125	°C
T_{stg}	Storage Temperature		-40		125	°C
V_{isol}	Insulation Test Voltage	AC, t=1min	3000			
Torque	ToSink	Recommended (M6)	3		5	N • m
Torque	ToTerminal	Recommended (M6)	2.5		5	N • m
Weight				302		g

Circuit Diagram



Package Outline

