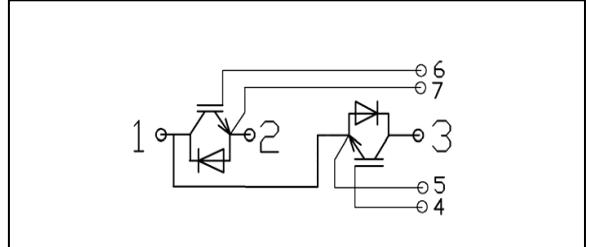


IGBT MODULE

Features

- Low $V_{ce(sat)}$ Non punch
- Ultrafast switching speed
- Low inductance case
- Excellent short circuit ruggedness
- Isolate copper base using DBC technology



Typical Applications

- UPS
- Electronic welders
- Inductive heating

Absolute Maximum Ratings of IGBT

V_{CES}	Collector to Emitter Voltage		1200	V
V_{GES}	Continuous Gate to Emitter Voltage		± 30	V
I_C	Continuous Collector Current	$T_C = 25^\circ\text{C}$	600	A
		$T_C = 100^\circ\text{C}$	300	
I_{CM}	Pulse Collector Current	$T_J = 150^\circ\text{C}$	600	A
P_D	Maximum Power Dissipation (IGBT)	$T_C = 25^\circ\text{C}$, $T_J = 150^\circ\text{C}$	1315	W
t_{sc}	Short Circuit Withstand Time		> 10	μs
T_J	Maximum IGBT Junction Temperature		150	$^\circ\text{C}$
T_{JOP}	Maximum Operating Junction Temperature Range		-40 to +150	$^\circ\text{C}$
T_{stg}	Storage Temperature Range		-40 to +125	$^\circ\text{C}$

Absolute Maximum Ratings of Freewheeling Diode

V_{RRM}	Repetitive Peak Reverse Voltage	Preliminary Data	1200	V
I_F	Diode Continuous Forward Current	$T_C = 25^\circ\text{C}$	600	A
		$T_C = 100^\circ\text{C}$	300	
I_{FM}	Diode Maximum Forward Current		600	A

Electrical Characteristics of IGBT at T_J = 25°C (Unless Otherwise Specified)

Parameter	Test Conditions	Min	Typ	Max	Unit	
BV _{CES}	Collector to Emitter Breakdown Voltage	V _{GE} = 0V, I _C = 1mA	1200		V	
I _{CES}	Collector to Emitter Leakage Current	V _{GE} = 0V, V _{CES} = V _{CES}		5	mA	
I _{GES}	Gate to Emitter Leakage Current	V _{GE} = ±30V, V _{CE} = 0V		400	nA	
V _{GE(th)}	Gate Threshold Voltage	I _C = 1mA, V _{CE} = V _{GE}	4.5	5.7	V	
V _{CE(sat)}	Collector to Emitter Saturation Voltage (Module Level)	I _C = 300A, V _{GE} = 15V	T _J = 25°C	3.00	3.20	V
			T _J = 125°C	3.60		

Switching Characteristics of IGBT

Parameter	Test Conditions	Min	Typ	Max	Unit	
t _{d(on)}	Turn-on Delay Time	V _{CC} = 600V I _C = 300A R _G = 3.3Ω V _{GE} = ±15V Inductive Load	T _J = 25°C	130		ns
			T _J = 125°C	140		
t _r	Turn-on Rise Time	V _{CC} = 600V I _C = 300A R _G = 3.3Ω V _{GE} = ±15V Inductive Load	T _J = 25°C	105		ns
			T _J = 125°C	110		
t _{d(off)}	Turn-off Delay Time	V _{CC} = 600V I _C = 300A R _G = 3.3Ω V _{GE} = ±15V Inductive Load	T _J = 25°C	820		ns
			T _J = 125°C	890		
t _f	Turn-off Fall Time	V _{CC} = 600V I _C = 300A R _G = 3.3Ω V _{GE} = ±15V Inductive Load	T _J = 25°C	110		ns
			T _J = 125°C	130		
E _{on}	Turn-on Switching Loss	V _{CC} = 600V I _C = 300A R _G = 3.3Ω V _{GE} = ±15V Inductive Load	T _J = 25°C	11.5		mJ
			T _J = 125°C	15.5		
E _{off}	Turn-off Switching Loss	V _{CC} = 600V I _C = 300A R _G = 3.3Ω V _{GE} = ±15V Inductive Load	T _J = 25°C	22.5		mJ
			T _J = 125°C	26.0		
Q _g	Total Gate Charge	V _{CC} = 600V I _C = 300A R _G = 3.3Ω V _{GE} = ±15V Inductive Load	T _J = 25°C	2550		nC
R _{gint}	Integrated gate resistor	f = 1M; V _{pp} = 1V	T _J = 25°C	2.5		Ω
C _{ies}	Input Capacitance	V _{CE} = 25V V _{GE} = 0V f = 1MHz	T _J = 25°C	25		nF
C _{oes}	Output Capacitance		T _J = 25°C	3.5		
C _{res}	Reverse Transfer Capacitance		T _J = 25°C	2.0		
R _{θJC}	Thermal Resistance, Junction-to-Case (IGBT)			0.095		°C/W

Electrical and Switching Characteristics of Freewheeling Diode

V _F	Diode Forward Voltage	I _F = 300A , V _{GE} = 0V	T _J = 25°C	1.90	2.20	V	
			T _J = 125°C	1.90			
t _{rr}	Diode Reverse Recovery Time	I _F = 300A, di/dt=2780A/ s, V _{rr} = 600V,	T _J = 25°C	200		ns	
			T _J = 125°C	300			
I _{rr}	Diode Peak Reverse Recovery Current		T _J = 25°C	230		A	
			T _J = 125°C	290			
Q _{rr}	Diode Reverse Recovery Charge		T _J = 25°C	27.50		nC	
			T _J = 125°C	46.50			
E _{rr}	Diode Reverse Recovery Energy		T _J = 25°C	10.00		mJ	
			T _J = 125°C	17.50			
R _{θJC}	Thermal Resistance, Junction-to-Case (Diode)				0.115	°C/W	

Module Characteristics

Parameter		Min.	Typ.	Max.	Unit
V _{iso}	Isolation Voltage (All Terminals Shorted),f = 50Hz, 1minute	2500			V
R _{cs}	Case-To-Sink(Conductive Grease Applied)		0.1		°C/W
M	Power Terminals Screw: M6	3.0		5.0	N·m
M	Mounting Screw: M6	4.0		6.0	N·m
G	Weight		315		g

Outline in MM

