

1200V/100A IGBT Half-Bridge Module

Features

- High frequency operation
- Low stray inductance
- High reliability and Power density
- Low switching loss and Vcesat

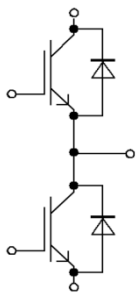


Applications

- Welding machine
- UPS
- Industry Inverter
- Motor Control

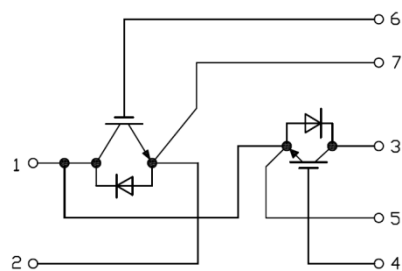
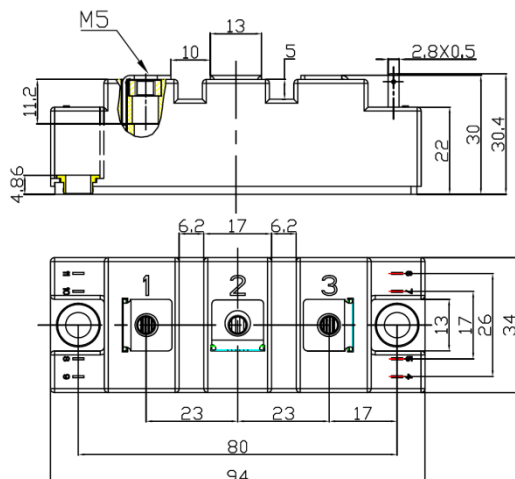
34mm Half-Bridge Module

Circuit Diagram



$V_{ces}=1200v$
 $I_c=100A@T_c=100^{\circ}C$

Package Outlines (Unit: mm)



IGBT Absolute Max Ratings						
Symbol	Parameter	Condition	Units	Maximum		
V _{CES}	Collector-to-Emitter Voltage	T _{VJ} =25 °C	V	1200		
I _C	Continuous DC collector current	TC = 100°C,T _{VJ MAX} =150 °C	A	100		
I _{CRM}	Repetitive peak collector current	t _p =1ms	A	200		
P _{total}	Total power dissipation	TC = 25°C,T _{VJ MAX} =150 °C	°C/W	463		
V _{GES}	Gate-Emitter peak voltage		V	+/- 30		
IGBT Characteristics						
Symbol	Parameter	Test conditions	Units	Min.	Typ.	Max.
V _{CE(sat)}	Collector-Emitter Saturation voltage	V _{GE} =15V, I _C =100A,T _{VJ} =25°C	V	—	1.90	2.2
		V _{GE} =15V, I _C =100A,T _{VJ} =125°C	V	—	2.15	—
V _{GE(th)}	Gate threshold voltage	V _{GE} = V _{CE} , I _D = 3.3mA	V	5.2	-	6.8
I _{CES}	Collector-Emitter leakage current	V _{CE} =1200V, V _{GE} = 0V,T _{VJ} =25°C	mA	—	—	1
I _{GES}	Gate-Emitter leakage current	V _{CE} =0V,V _{GE} =20V,T _{VJ} =25°C	nA	—	—	100
C _{iss}	Input capacitance	V _{GE} = 0V,V _{CE} = 25V T _{VJ} =25°C,f = 1MHz	nF	—	6.9	—
C _{rss}	Reverse transfer capacitance	V _{GE} = 0V,V _{CE} = 25V T _{VJ} =25°C,f = 1MHz	nF	—	0.3	—
T _{don}	Turn-on delay time, inductive load	V _{CE} =600v, I _C =100A R _g =10ohm, V _{GE} = 15V	nS	—	40	—
T _r	Rise time, inductive load	V _{CE} =600v, I _C =100A R _g =10ohm, V _{GE} = 15V	ns	—	80	—
E _{on}	Turn-on energy loss per pulse	V _{CE} =600v, I _C =100A R _g =10ohm, V _{GE} = 15V	mJ	—	9.5	—
T _{doff}	Turn-off delay time, inductive load	V _{CE} =600v, I _C =100A R _g =10ohm, V _{GE} = 15V	nS	—	240	—
T _f	Fall time, inductive load	V _{CE} =600v, I _C =100A R _g =10ohm, V _{GE} = 15V	nS	—	385	—
E _{off}	Turn-off energy loss per pulse	V _{CE} =600v, I _C =100A R _g =10ohm, V _{GE} = 15V	mJ	—	10.2	—
I _{SC}	Short- circuit current	T _a =25°C,V _{GE} =15V, V _{CE} =720V, t _p =10us	A	—	500	—
R _{ThJC}	Junction-Case Thermal resistance		K/W	—	—	0.27
T _{VJ OP}	Temperature under switching		°C	-40		150

FRD Absolute Max Ratings						
Symbol	Parameter	Condition	Units	Maximum		
V _{RRM}	Repetitive peak reverse voltage	T _{VJ} =25 °C	V	1200		
I _F	Continuous DC forward current		A	100		
I _{FRM}	Repetitive peak forward current	T _p =1ms	A	200		
I ² t	I ² t Value	V _R =0V,T _p =10ms,T _{VJ} =125 °C	A ² s	1580		
FRD Characteristics						
Symbol	Parameter	Test conditions	Units	Min.	Typ.	Max.
V _F	Forward voltage	I _F =100A,T _{VJ} =25 °C	V	—	2.25	2.5
		I _F =100A,T _{VJ} =125 °C	V	—	2.05	—
I _{RM}	Peak reverse recovery current	I _F =100A,L=500uH, V _d c=600v,V _{GE} =15V, R _g =10ohm, T _{VJ} =25 °C	A	—	55	—
Q _r	Recovery charge		uC	—	3.2	—
T _{rr}	Reverse recovery energy		nS	—	120	—
E _{rec}	Reverse recovery energy		mJ	—	0.71	—
I _{RM}	Peak reverse recovery current	I _F =100A,L=500uH, V _d c=600v,V _{GE} =15V, R _g =10ohm, T _{VJ} =125 °C	A	—	62	—
Q _r	Recovery charge		uC	—	4.5	—
T _{rr}	Reverse recovery energy		nS	—	140	—
E _{rec}	Reverse recovery energy		mJ	—	0.92	—
R _{ThJC}	Junction-Case Thermal Resistance		K/W	—	—	0.5
T _{VJ OP}	Temperature under switching		°C	-40	—	150