1200V/100A IGBT Half-Bridge Module

Features

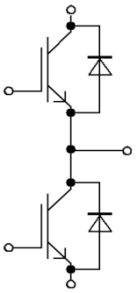
- High frequency operation
- Low stray inductance
- High reliability and Power density
- Low switching loss and Vcesat

34mm Half-Bridge Module

Applications

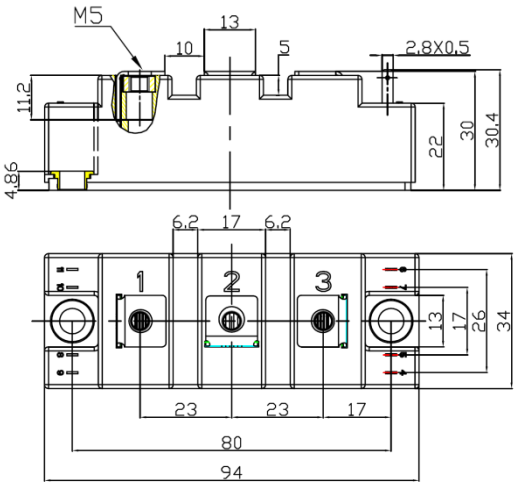
- Welding machine
- UPS
- Industry Inverter
- Motor Control

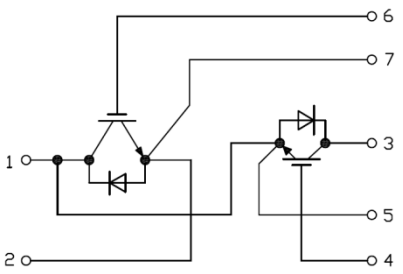
Circuit Diagram



Vces=1200v
Ic=100A@Tc=100℃

Package Outlines （Unit：mm）





IGBT Absolute Max Ratings

Symbol	Parameter	Condition	Units	Maximum
V_{CES}	Collector-to-Emitter Voltage	T_{VJ}=25 ℃	V	1200
I_C	Continuous DC collector current	TC = 100°C,$T_{VJ\ MAX}$=150 ℃	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/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℃	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 ℃	V	1200
I_F	Continuous DC forward current		A	100
I_{FRM}	Repetitive peak forward current	T_p=1ms	A	200
I^2t	I^2t Value	V_R=0V,T_p=10ms,T_{VJ}=125 ℃	A^2s	1580

FRD Characteristics						
Symbol	**Parameter**	**Test conditions**	**Units**	**Min.**	**Typ.**	**Max.**
V_F	Forward voltage	I_F=100A,T_{VJ}=25 ℃	V	—	2.25	2.5
		I_F=100A,T_{VJ}=125 ℃	V	—	2.05	—
I_{RM}	Peak reverse recovery current	I_F=100A,L=500uH，Vdc=600v,V_{GE}=15V, R_g=10ohm, T_{VJ}=25 ℃	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，Vdc=600v,V_{GE}=15V, R_g=10ohm, T_{VJ}=125 ℃	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

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