



MG300DB120T0

1200V300A IGBT Module

IGBT, Inverter

Maximum Rated Values

Collector-emitter voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{CES}	1200	V
Continuous DC collector current	$T_C = 100^{\circ}\text{C}, T_{vj} \text{ max} = 150^{\circ}\text{C}$	$I_{C \text{ nom}}$	300	A
Repetitive peak collector current	$t_p = 1 \text{ ms}$	I_{CRM}	600	A
Total power dissipation	$T_C = 25^{\circ}\text{C}, T_{vj} \text{ max} = 150^{\circ}\text{C}$	P_{tot}	735	W
Gate-emitter peak voltage		V_{GES}	+/- 20	V

Characteristic value			min.	typ.	Max.	
Collector-emitter saturation voltage	I _C = 300 A, V _{GE} = 15 V T _{vj} = 25°C	V _{CE,sat}		1.55		V
	I _C = 300 A, V _{GE} = 15 V T _{vj} = 125°C					V
	I _C = 300 A, V _{GE} = 15 V T _{vj} = 150°C					V
Gate threshold voltage	I _C = 11.4mA, V _{CE} = V _{GE} , T _{vj} = 25°C	V _{GE,th}	5.0	6.0	6.5	V
Gate charge	V _{GE} = -15 V ... +15 V	Q _G		1.7		μC
Internal gate resistor	T _{vj} = 25°C	R _{Gint}		2.1		Ω
Input capacitance	f=1MHz, T _{vj} =25°C,V _{CE} =25V, V _{GE} =0V	C _{ies}		22.0		nF
Reverse transfer capacitance	f=1MHz, T _{vj} =25°C,V _{CE} =25V, V _{GE} =0V	C _{res}		0.16		nF
Collector-emitter cut-off current	V _{CE} = 1200 V, V _{GE} = 0 V, T _{vj} = 25°C	I _{CES}			2	mA
Gate-emitter leakage current	V _{CE} = 0 V, V _{GE} = 20 V, T _{vj} = 25°C	I _{GES}			200	nA
Turn-on delay time, inductive load	I _C = 300A, V _{CE} = 600V T _{vj} = 25°C	T _{d,on}				ns
	V _{GE} = +15/-15V T _{vj} = 125°C					ns
	R _{G,on} = 5Ω T _{vj} = 150°C					ns
Rise time, inductive load	I _C = 300A, V _{CE} = 600V T _{vj} = 25°C	T _r				ns
	V _{GE} = +15/-15V T _{vj} = 125°C					ns
	R _{G,on} = 5Ω T _{vj} = 150°C					ns
Turn-off delay time, inductive load	I _C = 300A, V _{CE} = 600V T _{vj} = 25°C	T _{d,off}				ns
	V _{GE} = +15/-15V T _{vj} = 125°C					ns
	R _{Goff} = 5Ω T _{vj} = 150°C					ns
Fall time, inductive load	I _C = 300A, V _{CE} = 600V T _{vj} = 25°C	T _f				ns
	V _{GE} = +15/-15V T _{vj} = 125°C					ns
	R _{Goff} =5Ω T _{vj} = 150°C					ns
Turn-on energy loss per pulse	I _C =300A, V _{CE} = 600V, T _{vj} = 25°C	E _{on}				mJ
	L _S =35 nH T _{vj} = 125°C					mJ
	V _{GE} = +15/-15V T _{vj} = 150°C					mJ

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	$R_{Gon} = 5\Omega$					
Turn-off energy loss per pulse	$I_C = 300A, V_{CE} = 600V,$ $L_S = 35\text{ nH}$ $V_{GE} = +15/-15V$ $(T_{vj} = 150^\circ C), R_{Goff} = 5\Omega$	$T_{vj} = 25^\circ C$ $T_{vj} = 125^\circ C$ $T_{vj} = 150^\circ C$	E_{off}		48.6	mJ mJ mJ
SC data	$V_{GE} \leq 15V, V_{CC} = 600V, t_P \leq 8\text{ }\mu s, T_{vj} = 150^\circ C, R_G = 5\Omega, V_{CEmax} = V_{CES} - L_{SCE} \cdot di/dt$		I_{SC}		1450	A
Thermal resistance, junction to case	per IGBT, grease = 1.3 W/(m·K)		$R_{th,Jc}$			0.17 K/W

Diode, Inverter
Maximum Rated Values

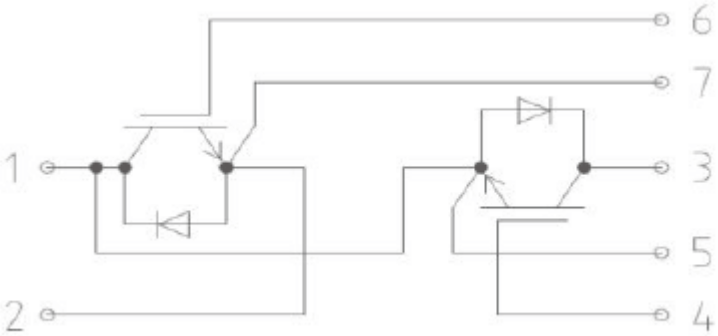
Repetitive peak reverse voltage	$T_{vj} = 25^\circ C$	V_{RRM}	1200	V
Continuous DC forward current		I_F	300	A
Repetitive peak forward current	$t_P = 1\text{ ms}$	I_{FRM}	600	A
I^2t - value	$V_R = 0V, t_P = 10\text{ ms}, T_{vj} = 125^\circ C$	I^2t	18500	A ² s

Characteristic value

			min.	typ.	Max.	
Forward voltage	$I_C = 300A, V_{GE} = 0V$	$T_{vj} = 25^\circ C$	V_F	2		V
	$I_C = 300A, V_{GE} = 0V$	$T_{vj} = 125^\circ C$				V
	$I_C = 300A, V_{GE} = 0V$	$T_{vj} = 150^\circ C$				V
Peak reverse recovery current	$I_F = 300A, (T_{vj} = 150^\circ C),$	$T_{vj} = 25^\circ C$	I_{RM}			A
	$V_R = 600V$	$T_{vj} = 125^\circ C$				A
	$V_{GE} = -15V$	$T_{vj} = 150^\circ C$		290		A
Recovered charge	$I_F = 300A,$	$T_{vj} = 25^\circ C$	Q_r			μC
	$(T_{vj} = 150^\circ C), V_R = 600V$	$T_{vj} = 125^\circ C$				μC
	$V_{GE} = -15V$	$T_{vj} = 150^\circ C$		50		μC
Reverse recovery energy	$I_F = 300A,$	$T_{vj} = 25^\circ C$	E_{rec}			mJ
	$(T_{vj} = 150^\circ C), V_R = 600V$	$T_{vj} = 125^\circ C$				
	$V_{GE} = -15V$	$T_{vj} = 150^\circ C$		13		
Thermal resistance, junction to case	Per diode		$R_{th,Jc}$			0.22 K/W

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Circuit Diagram



Package outlines

