

	MG200DB120T0
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MG200DB120T0
1200V200A Y62 IGBT Module

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IGBT, Inverter
Maximum Rated Values

Collector-emitter voltage	T _{vj} = 25°C	V _{CES}	1200	V			
Continuous DC collector current	T _C = 100°C, T _{vj} max = 150°C	I _{C nom}	200	A			
Repetitive peak collector current	t _p = 1 ms	I _{CRM}	400	A			
Gate-emitter peak voltage	T _C = 25°C, T _{vj} max = 150 °C	V _{GES}	+/- 20	V			
Characteristic value							
		min.	typ.	Max.			
Collector-emitter saturation voltage	I _C = 200 A, V _{GE} = 15 V T _{vj} = 25°C I _C = 200 A, V _{GE} = 15 V T _{vj} = 125°C I _C = 200 A, V _{GE} = 15 V T _{vj} = 150°C	V _{CE,sat}	1.8 2.1 2.15	2.15	V		
Gate threshold voltage	IC=11.4mA,VCE=VGE,Tj=25°C	V _{GE,th}	5.0	6.0	6.5	V	
Gate charge	V _{GE} = -15 V ... +15 V	Q _G	2			µC	
Internal gate resistor	T _{vj} = 25°C	R _{Gint}	4			Ω	
Input capacitance	f=1MHz, T _{vj} =25°C,V _{CE} =25V, V _{GE} =0V	C _{ies}	15			nF	
Reverse transfer capacitance	f=1MHz, T _{vj} =25°C,V _{CE} =25V, V _{GE} =0V	C _{res}	0.6			nF	
Collector-emitter cut-off current	V _{CE} = 1200 V, V _{GE} = 0 V, T _{vj} = 25°C	I _{CES}	0.1	5		mA	
Gate-emitter leakage current	V _{CE} = 0 V, V _{GE} = 20 V, T _{vj} = 25°C	I _{GES}	6	400		nA	
Turn-on delay time, inductive load	I _C = 200A, V _{CE} = 600V T _{vj} = 25°C V _{GE} = +15/-15V T _{vj} = 125°C R _{G,on} = 5Ω T _{vj} = 150°C	T _{d,on}	210	260	280	ns ns ns	
	I _C = 200A, V _{CE} = 600V T _{vj} = 25°C V _{GE} = +15/-15V T _{vj} = 125°C R _{G,on} = 5Ω T _{vj} = 150°C		T _r	47	51	56	ns ns ns
	I _C = 200A, V _{CE} = 600V T _{vj} = 25°C V _{GE} = +15/-15V T _{vj} = 125°C R _{G,on} = 5Ω T _{vj} = 150°C			T _{d,off}	510	610	630
Fall time, inductive load	I _C = 200A, V _{CE} = 600V T _{vj} = 25°C V _{GE} = +15/-15V T _{vj} = 125°C R _{G,off} = 5Ω T _{vj} = 150°C	T _f			110	170	200

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Turn-on energy loss per pulse	$I_C = 200A, V_{GE} = 600V, T_{vj} = 25^{\circ}C$ $V_{GE} = +15/-15V, T_{vj} = 125^{\circ}C$ $=3600A/\mu s$ $(T_{vj} = 150^{\circ}C), R_{gon} = 5\Omega$	E_{on}		11 16 21		mJ mJ mJ
Turn-off energy loss per pulse	$I_C = 200A, V_{CE} = 600V, T_{vj} = 25^{\circ}C$ $V_{GE} = +15/-15V, T_{vj} = 125^{\circ}C$ $dv/dt = 3600/\mu s$ $(T_{vj} = 150^{\circ}C), R_{Goff} = 5\Omega$	E_{off}		19 29 31		mJ mJ mJ
SC data	$V_{GE} \leq 15V, V_{CC} = 600V, t_p \leq 8\mu s, T_{vj} = 150^{\circ}C, R_G = 5\Omega, C_{GE} = 0.0\mu F, V_{CEmax} = V_{CES} - L_{sCE} \cdot di/dt$	I_{SC}		850		A
Thermal resistance, junction to case	per IGBT, grease = 1.3 W/(m · K)	$R_{th,JC}$		0.16		K/W

Diode

Maximum Rated Values

Repetitive peak reverse voltage	$T_{vj} = 25^{\circ}C$	V_{RRM}	1200	V
Continuous DC forward current		I_F	200	A
Repetitive peak forward current	$t_p = 1ms$	I_{FRM}	400	A
I^2t - value	$V_R = 0V, t_p = 10ms, T_{vj} = 125^{\circ}C$	I^2t	7400	A ² s
Characteristic value		min.	typ.	Max.
Forward voltage	$I_C = 200A, V_{GE} = 0V, T_{vj} = 25^{\circ}C$	V_F	1.5	V
	$I_C = 200A, V_{GE} = 0V, T_{vj} = 125^{\circ}C$		1.5	V
	$I_C = 200A, V_{GE} = 0V, T_{vj} = 150^{\circ}C$		1.5	V

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Peak reverse recovery current	$I_F = 200A, -di_F/dt = 3600A/\mu s$ $(T_{vj} = 150^{\circ}C), V_R = 600V$ $V_{GE} = -15V$	$T_{vj} = 25^{\circ}C$ $T_{vj} = 125^{\circ}C$ $T_{vj} = 150^{\circ}C$	I_{RM}	235 252 265		A
Recovered charge	$I_F = 200A, -di_F/dt = 3600A/\mu s$ $(T_{vj} = 150^{\circ}C), V_R = 600V$ $V_{GE} = -15V$	$T_{vj} = 25^{\circ}C$ $T_{vj} = 125^{\circ}C$ $T_{vj} = 150^{\circ}C$	Q_r	20 33 46		μC
Reverse recovery energy	$I_F = 200A, -di_F/dt = 3600A/\mu s$ $(T_{vj} = 150^{\circ}C), V_R = 600V$ $V_{GE} = -15V$	$T_{vj} = 25^{\circ}C$ $T_{vj} = 125^{\circ}C$ $T_{vj} = 150^{\circ}C$	E_{rec}	10 17 19		mJ
Thermal resistance, junction to case	Per diode, grease = 1.3 W/(m·K)		$R_{th,JC}$		0.2	K/W

Diagram of Technical Features

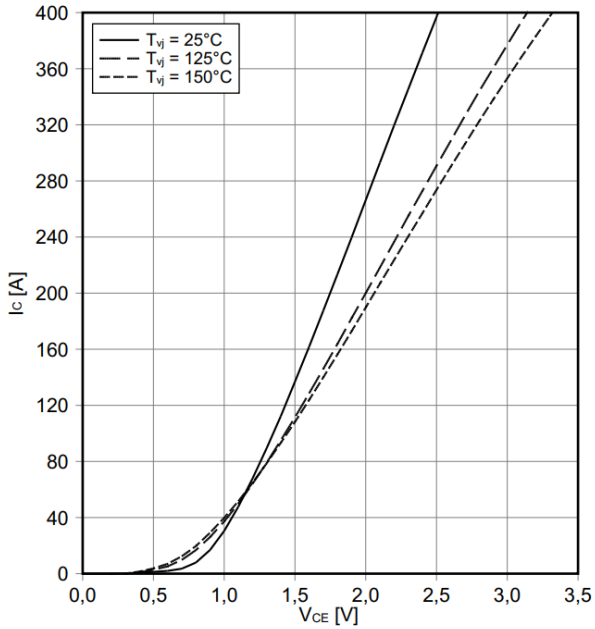
Output

$I_C = f(V_{CE})$
 $V_{GE} = 15V$

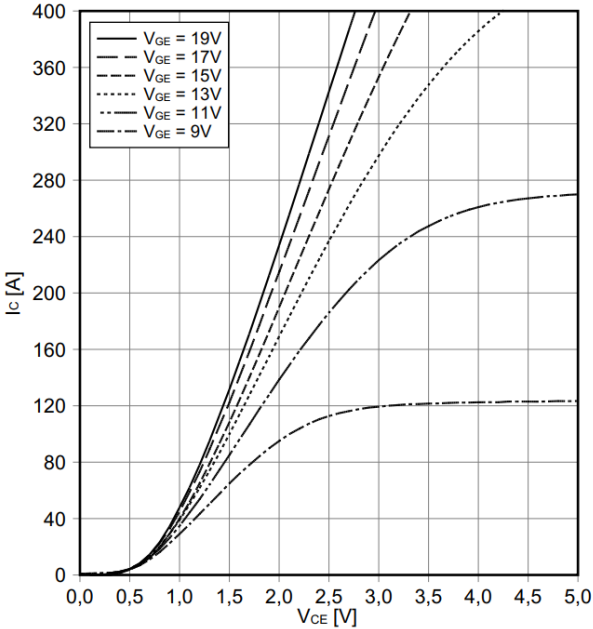
Output

$I_C = f(V_{CE})$
 $T_{vj} = 150^{\circ}C$

Output characteristic IGBT, Inverter (typical)



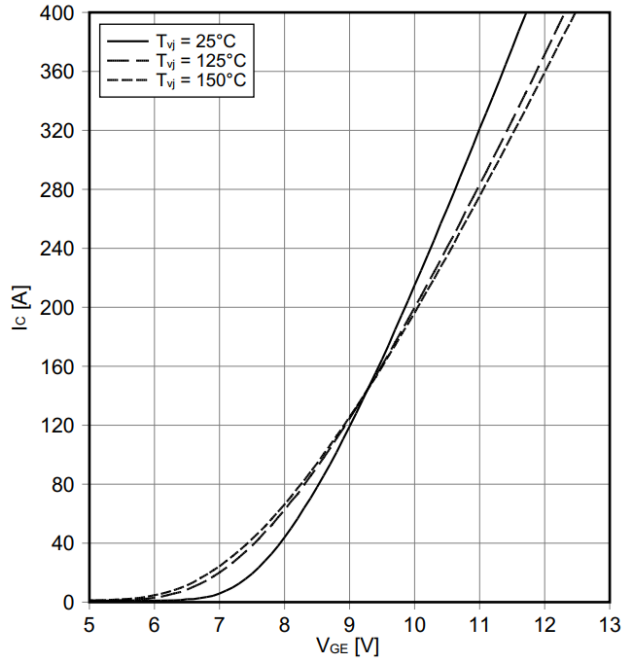
Output characteristic IGBT, Inverter (typical)



传输特性

$I_C = f(V_{GE})$

$V_{CE} = 20\text{ V}$



反偏安全工作区 IGBT, 逆变器 (RBSOA)

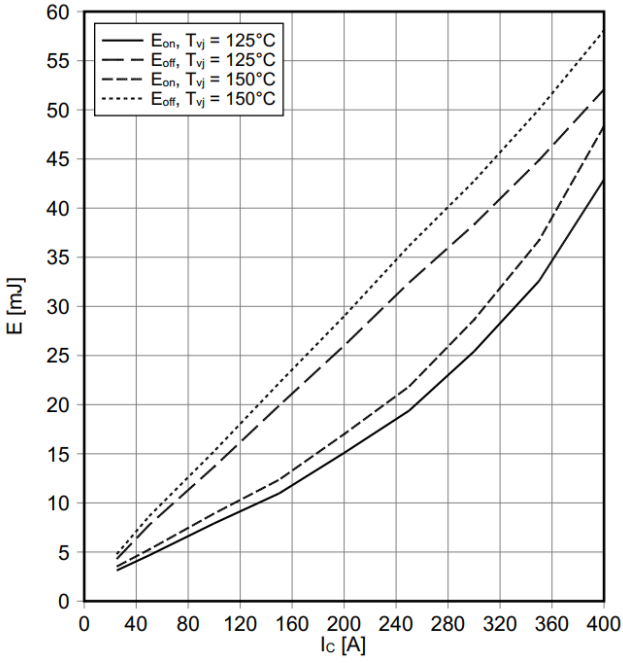
$I_C = f(V_{CE})$

$V_{GE} = \pm 15\text{ V}, R_{Goff} = 2.7\Omega, T_{vj} = 150^\circ\text{ C}$

开关损耗

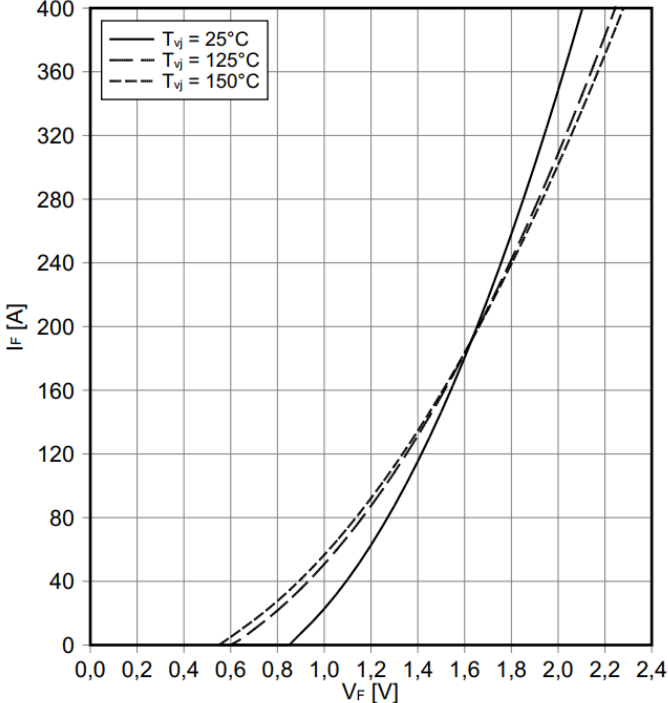
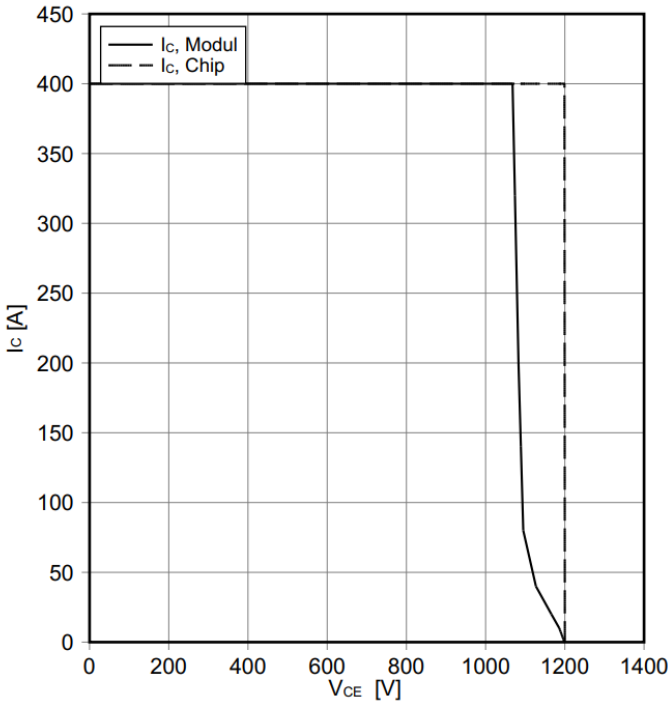
$E_{on} = f(I_C), E_{off} = f(I_C)$

$V_{GE} = \pm 15\text{ V}, R_{Gon} = 5\Omega, R_{Goff} = 5\Omega, V_{CE} = 600\text{ V}$



正向偏压特性二极管

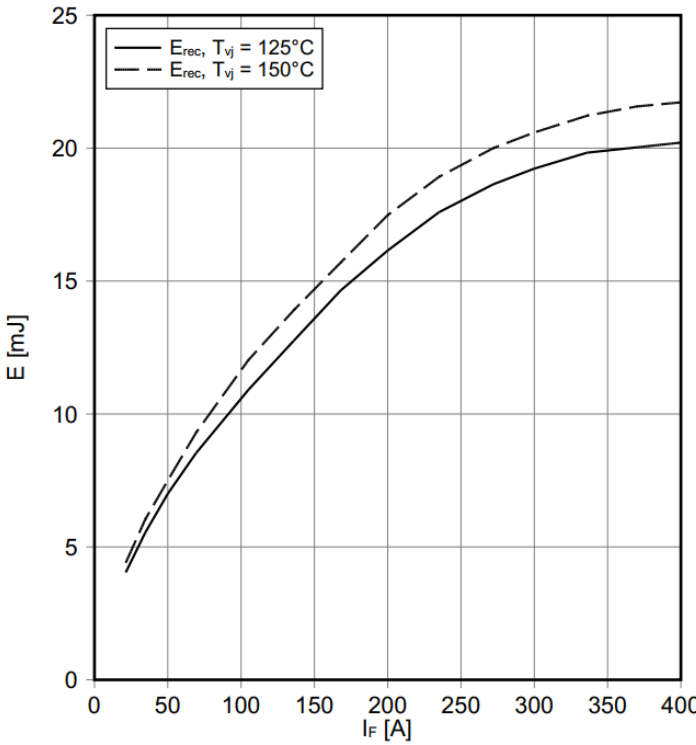
$I_F = f(V_F)$



开关损耗二极管

$E_{rec} = f(I_F)$

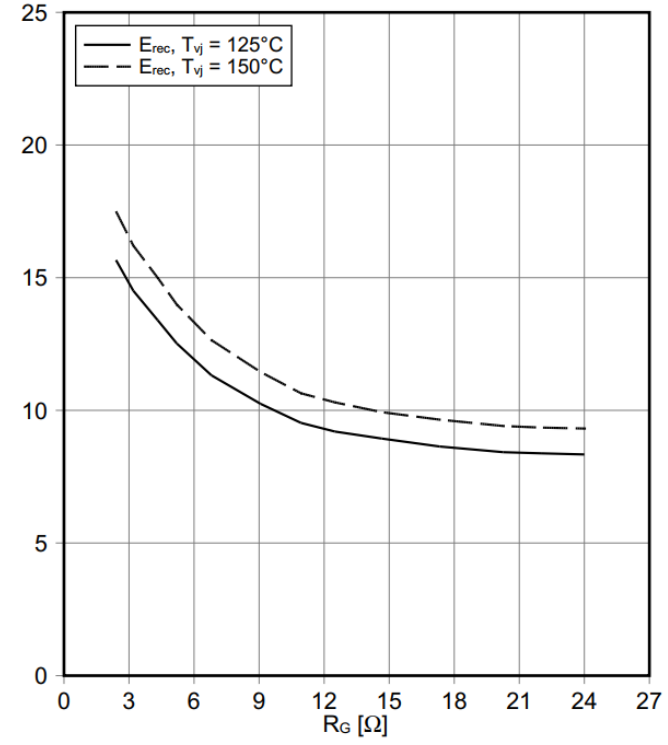
$R_{Gon} = 5\Omega, V_{CE} = 600\text{ V}$



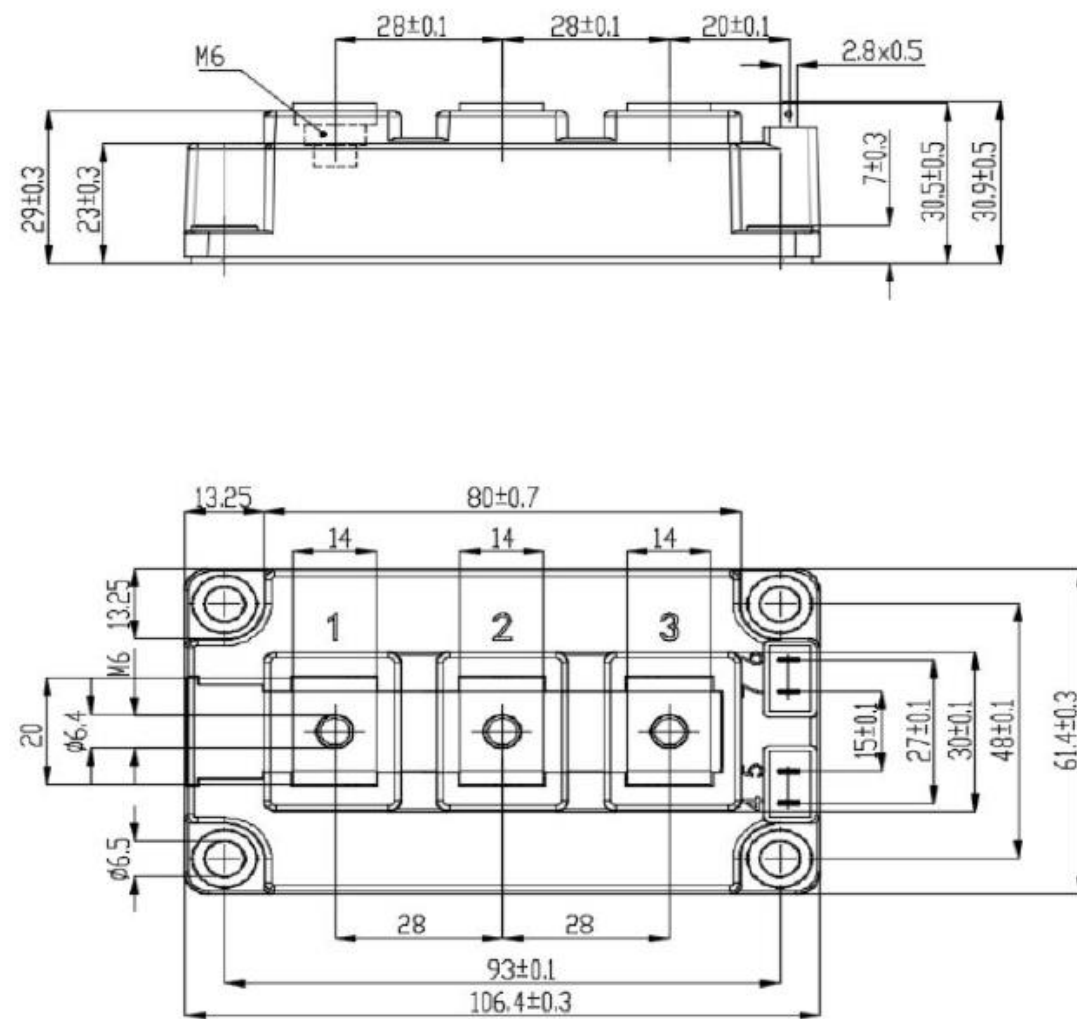
开关损耗二极管

$E_{rec} = f(R_G)$

$I_F = 200\text{ A}, V_{CE} = 600\text{ V}$



Package outlines



Circuit Diagram

