

6MBI100VW-120-50

IGBT Modules

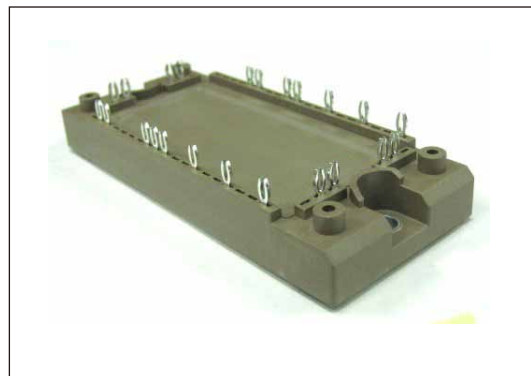
IGBT MODULE (V series) 1200V / 100A / 6 in one package

■ Features

- Compact Package
- P.C.Board Mount
- Low $V_{CE(sat)}$

■ Applications

- Inverter for Motor Drive
- AC and DC Servo Drive Amplifier
- Uninterruptible Power Supply
- Industrial machines, such as welding machines



■ Maximum Ratings and Characteristics

● Maximum ratings (at $T_c=25^{\circ}\text{C}$ unless otherwise specified)

Items		Symbols	Conditions		Maximum ratings	Units
Inverter	Collector-Emitter voltage	V _{CES}			1200	V
	Gate-Emitter voltage	V _{GES}			±20	V
	Collector current	I _c	Continuous	T _c =100°C	100	A
		I _{cp}	1ms	T _c =80°C	200	
		-I _c			100	
		-I _c pulse	1ms	200		
Collector power dissipation	P _c	1 device		520	W	
Junction temperature		T _j			175	°C
Operating junciton temperature (under switching conditions)		T _{jop}			150	
Case temperature		T _c			125	
Storage temperature		T _{stg}			-40 to +125	
Isolation voltage	between terminal and copper base (*1) between thermistor and others (*2)	V _{iso}	AC : 1min.		2500	VAC
Screw torque	Mounting (*3)	-	M5		3.5	N m

Note *1: All terminals should be connected together during the test.

Note *2: Two thermistor terminals should be connected together, other terminals should be connected together and shorted to base plate during the test.

Note *3: Recommendable value : 2.5-3.5 Nm (M5)

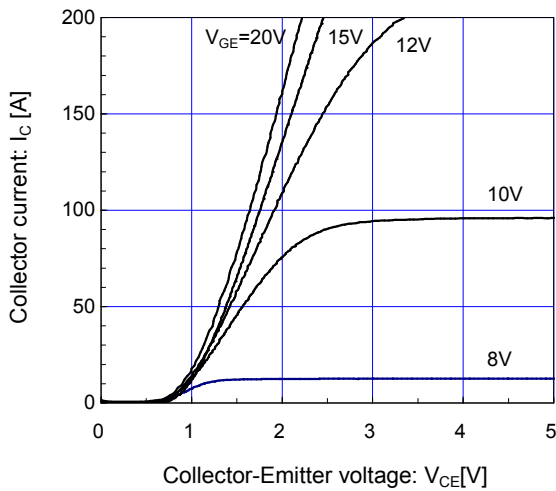
● Electrical characteristics (at T_j = 25°C unless otherwise specified)

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	max.	
Zero gate voltage collector current	I _{CES}	V _{GE} = 0V, V _{CE} = 1200V	-	-	1.0	mA
Gate-Emitter leakage current	I _{GES}	V _{GE} = 0V, V _{GE} = ±20V	-	-	200	nA
Gate-Emitter threshold voltage	V _{GE(th)}	V _{CE} = 20V, I _C = 100mA	6.0	6.5	7.0	V
Collector-Emitter saturation voltage	V _{CE(sat)} (terminal)	V _{GE} = 15V I _C = 100A	T _j =25°C	2.20	2.65	n□ e V
			T _j =125°C	2.50	-	
			T _j =150°C	2.55	-	
	V _{CE(sat)} (chip)	V _{GE} = 15V I _C = 100A	T _j =25°C	1.75	2.20	
			T _j =125°C	2.05	-	
			T _j =150°C	2.10	-	
Internal gate resistance	R _{g(int)}	-	-	7.5	-	Ω
Input capacitance	C _{ies}	V _{CE} = 10V, V _{GE} = 0V, f = 1MHz	-	9.1	-	nF
Inverter						

■ Characteristics (Representative)

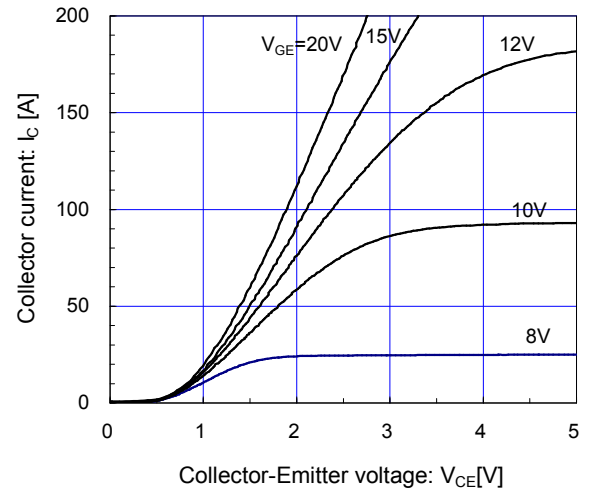
[Inverter]

Collector current vs. Collector-Emittter voltage (typ.)

 $T_j = 25^\circ\text{C}$ / chip

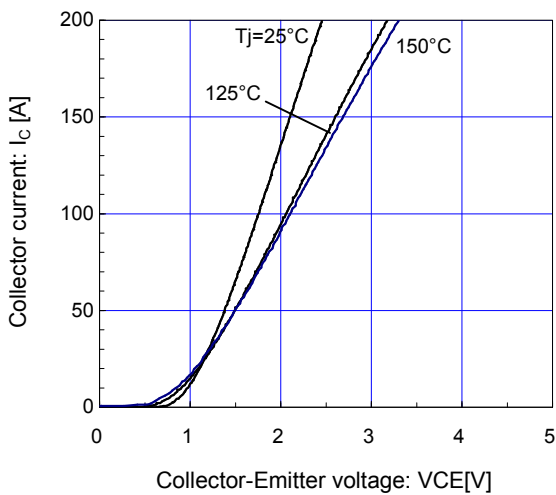
[Inverter]

Collector current vs. Collector-Emittter voltage (typ.)

 $T_j = 150^\circ\text{C}$ / chip

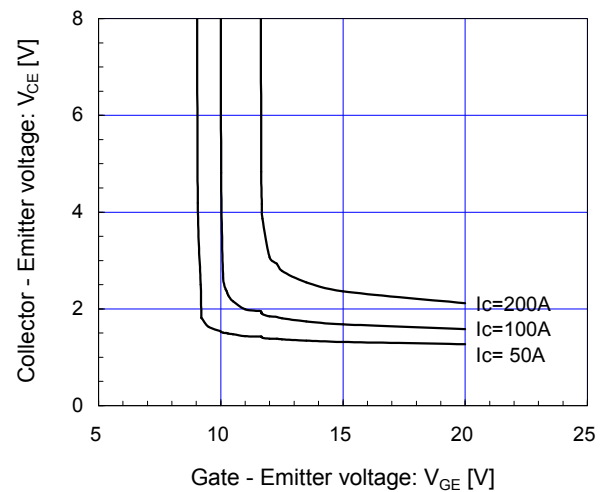
[Inverter]

Collector current vs. Collector-Emittter voltage (typ.)

 $V_{GE} = 15\text{V}$ / chip

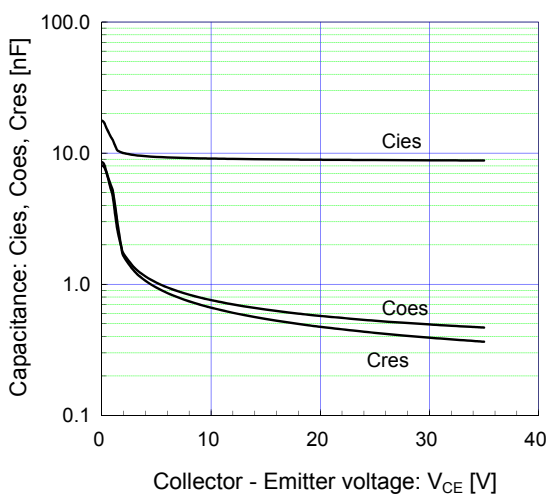
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Collector-Emittter voltage vs. Gate-Emittter voltage (typ.)

 $T_j = 25^\circ\text{C}$ / chip

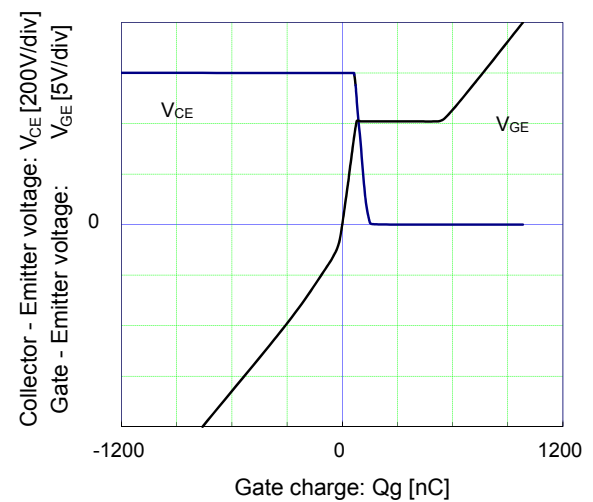
[Inverter]

Capacitance vs. Collector-Emittter voltage (typ.)

 $V_{GE} = 0\text{V}$, $f = 1\text{MHz}$, $T_j = 25^\circ\text{C}$ 

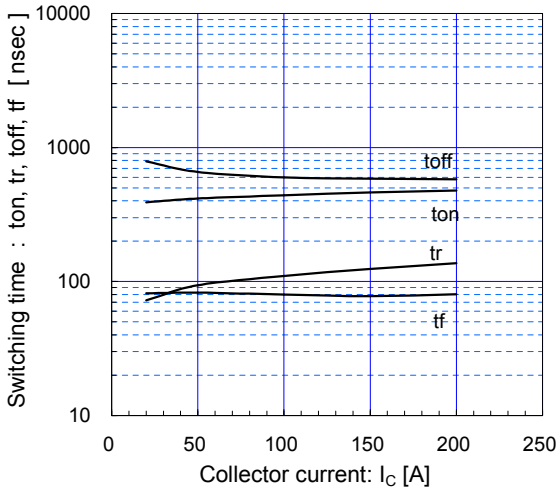
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Dynamic gate charge (typ.)

 $V_{CC} = 600\text{V}$, $I_c = 100\text{A}$, $T_j = 25^\circ\text{C}$ 

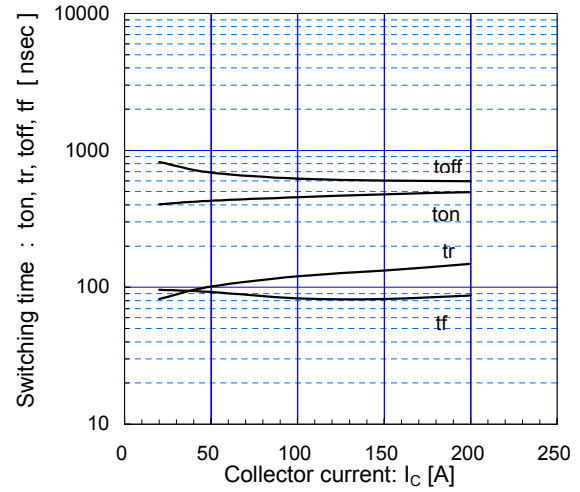
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Switching time vs. Collector current (typ.)
V_{cc}=600V, V_{GE}=±15V, R_g=1.6Ω, T_j= 125°C



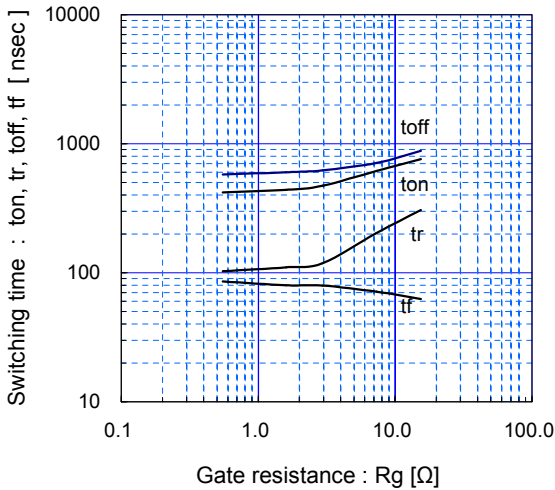
[Inverter]

Switching time vs. Collector current (typ.)
V_{cc}=600V, V_{GE}=±15V, R_g=1.6Ω, T_j= 150°C



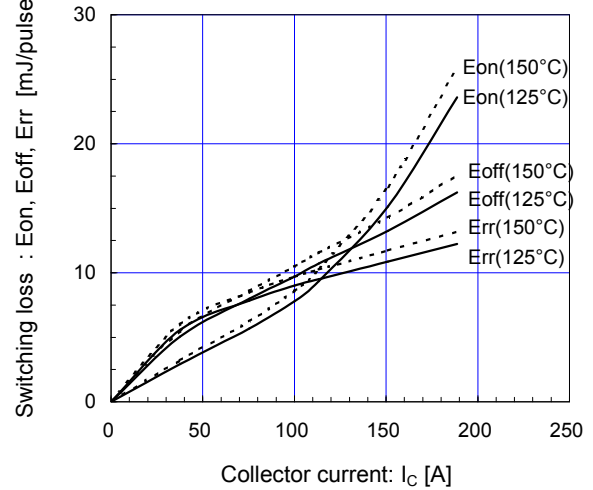
[Inverter]

Switching time vs. gate resistance (typ.)
V_{cc}=600V, I_C=100A, V_{GE}=±15V, T_j= 125°C



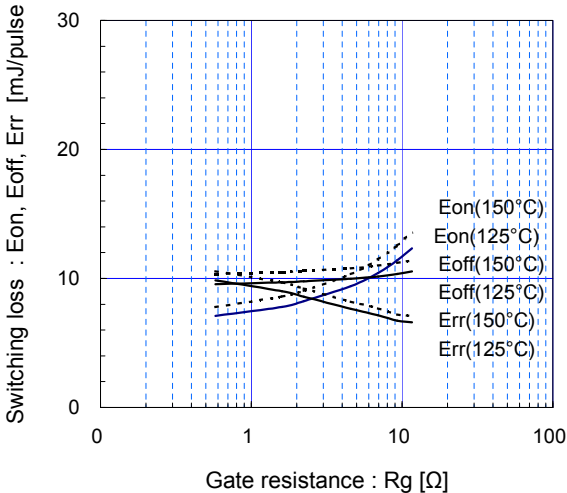
[Inverter]

Switching loss vs. Collector current (typ.)
V_{cc}=600V, V_{GE}=±15V, R_g=1.6Ω



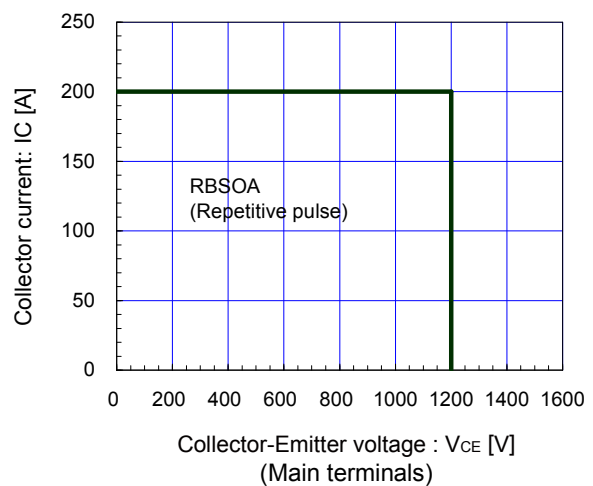
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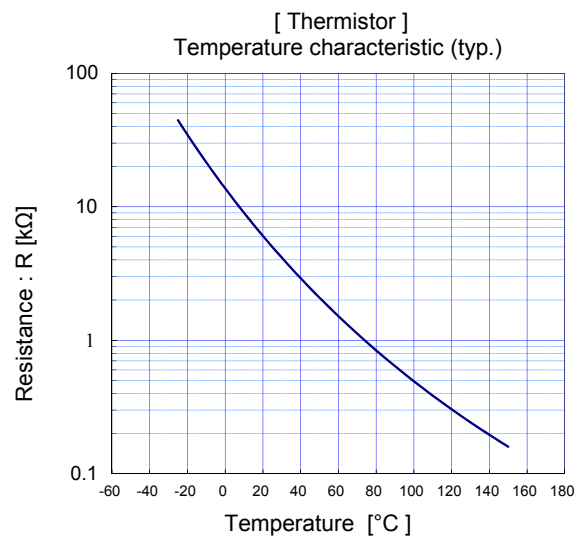
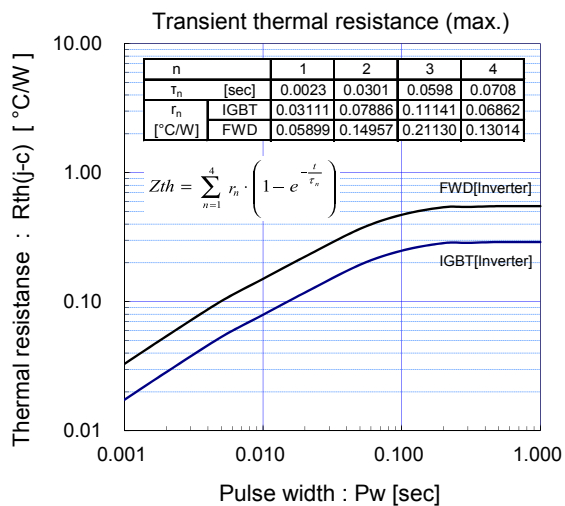
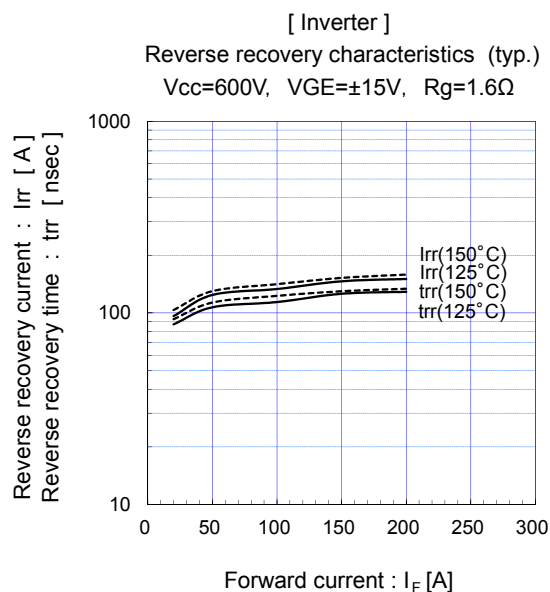
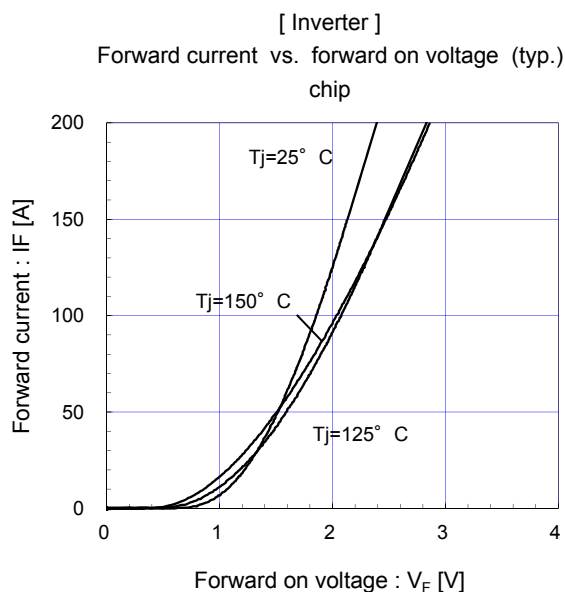
Switching loss vs. gate resistance (typ.)
V_{cc}=600V, I_C=100A, V_{GE}=±15V



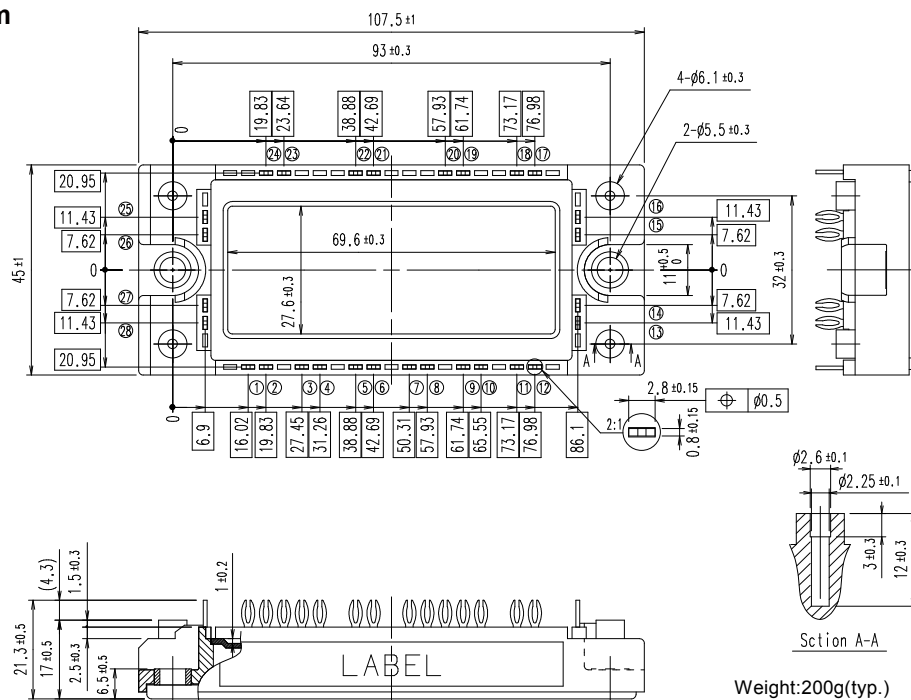
[Inverter]

Reverse bias safe operating area (max.)
+V_{GE}=15V, -V_{GE} ≤ 15V, R_g ≥ 1.6Ω, T_j = 150°C





Outline Drawings, mm



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IGBT Modules

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