

6MBI100VX-120-50

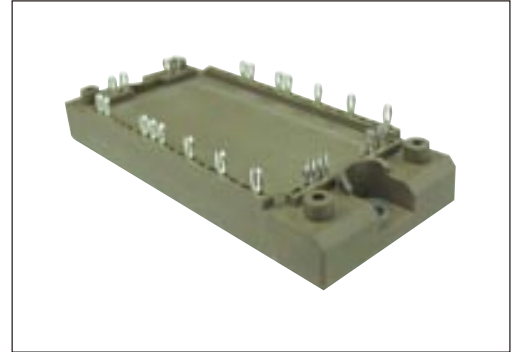
IGBT MODULE (V series) 1200V / 100A / 6 in one package

■ 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

● Absolute 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	$T_c=80^{\circ}\text{C}$	100	A
		I_{cp}	1ms	$T_c=80^{\circ}\text{C}$	200	
		$-I_c$			100	
		$-I_c$ pulse	1ms			200
	Collector power dissipation	P_c	1 device		520	W
Junction temperature		T_j			175	$^{\circ}\text{C}$
Operating junction 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 Tj= 25°C unless otherwise specified)

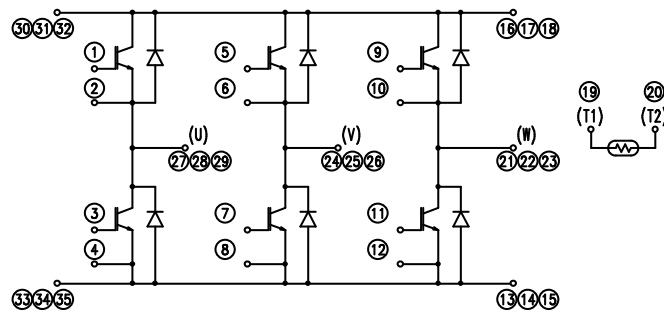
Items	Symbols	Conditions	Characteristics			Units		
			min.	typ.	max.			
Inverter	Zero gate voltage collector current	I_{CES}	$V_{GE} = 0V, V_{CE} = 1200V$	-	-	1.0	mA	
	Gate-Emitter leakage current	I_{GES}	$V_{GE} = 0V, V_{GE} = \pm 20V$	-	-	200	nA	
	Gate-Emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = 20V, I_c = 100mA$	6.0	6.5	7.0	V	
	Collector-Emitter saturation voltage	$V_{CE(sat)}$ (terminal)	$V_{GE} = 20V$ $I_c = 100A$	Tj=25°C	-	2.30	2.75	V
				Tj=125°C	-	2.60	-	
				Tj=150°C	-	2.65	-	
		$V_{CE(sat)}$ (chip)	$V_{GE} = 15V$ $I_c = 100A$	Tj=25°C	-	1.75	2.20	
				Tj=125°C	-	2.05	-	
				Tj=150°C	-	2.10	-	
	Input capacitance	C_{ies}	$V_{CE} = 10V, V_{GE} = 0V, f = 1MHz$	-	9.1	-	nF	
	Turn-on time	t_{on}	$V_{CC} = 600V$ $I_c = 100A$ $V_{GE} = +15 / -15V$ $R_G = 1.6\Omega$	-	0.39	1.20	μs	
		t_r		-	0.09	0.60		
		$t_r(i)$		-	0.03	-		
	Turn-off time	t_{off}	$R_G = 1.6\Omega$	-	0.53	1.00	μs	
		t_f		-	0.06	0.30		
Forward on voltage	V_F (terminal)	$I_F = 100A$	Tj=25°C	-	2.25	2.70	V	
			Tj=125°C	-	2.40	-		
			Tj=150°C	-	2.35	-		
	V_F (chip)	$I_F = 100A$	Tj=25°C	-	1.70	2.15		
			Tj=125°C	-	1.85	-		
			Tj=150°C	-	1.80	-		
Reverse recovery time	t_{rr}	$I_F = \pm 20$	-	-	0.1	μs		
Thermistor	Resistance	R	T = 25°C	-	5000	-	Ω	
		T = 100°C	465	495	520			
	B value	B	T = 25 / 50°C	3305	3375	3450	K	

● Thermal resistance characteristics

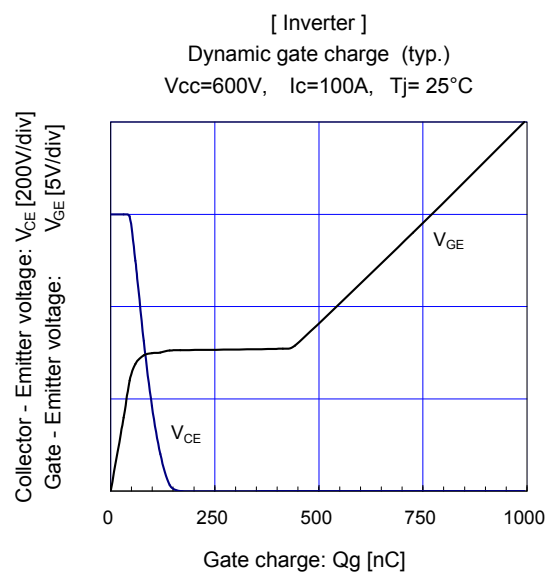
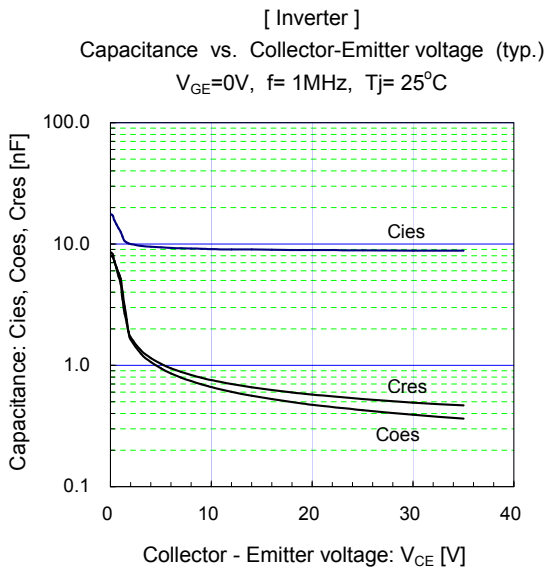
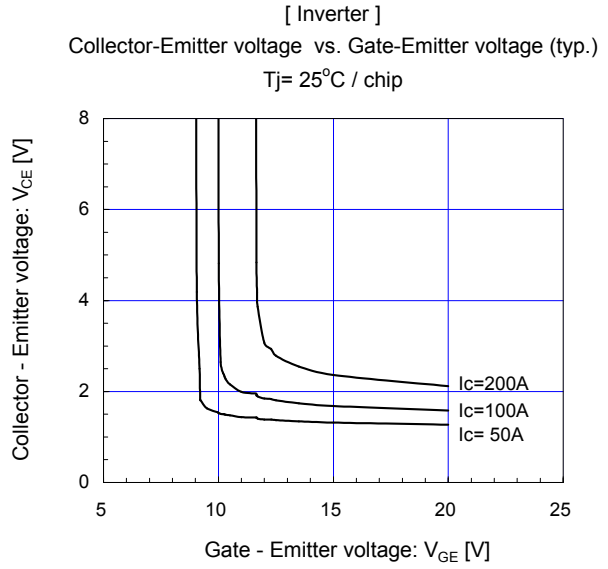
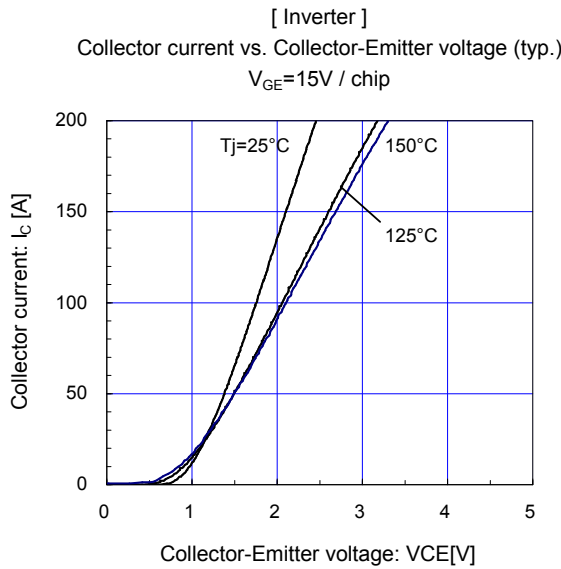
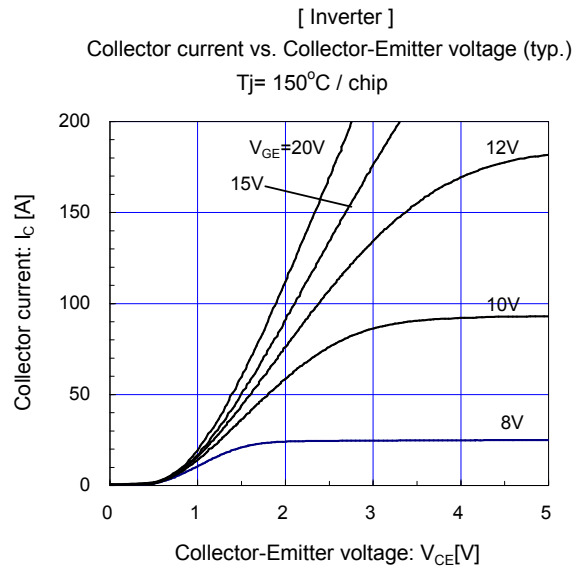
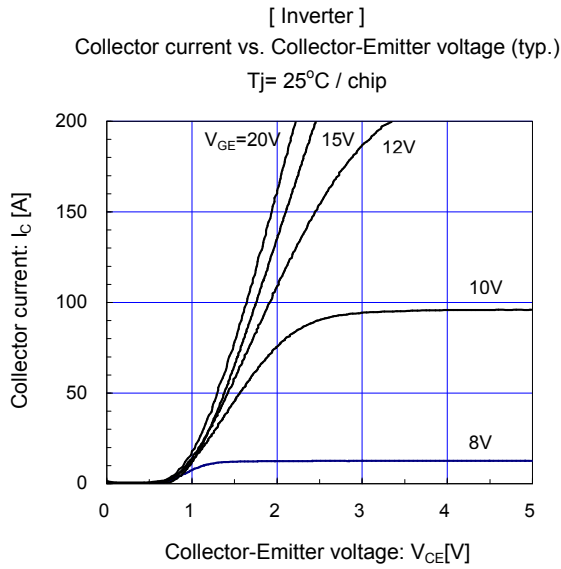
Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	max.	
Thermal resistance (1device)	$R_{th(j-c)}$	Inverter IGBT	-	-	0.29	°C/W
		Inverter FWD	-	-	0.44	
Contact thermal resistance (1device) (*4)	$R_{th(c-f)}$	with Thermal Compound	-	0.05	-	

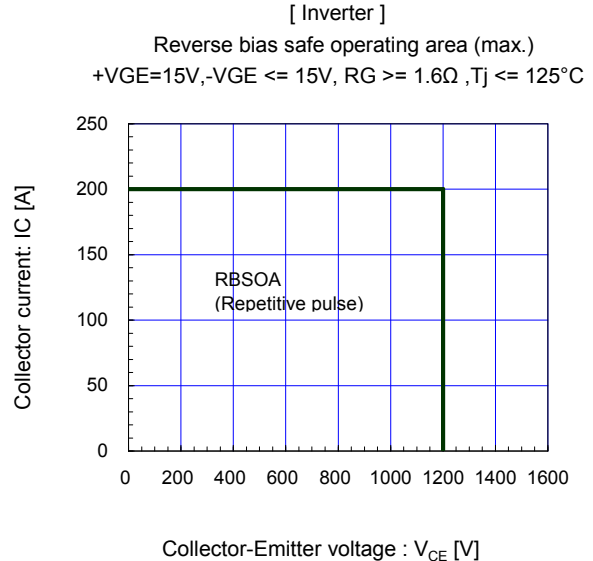
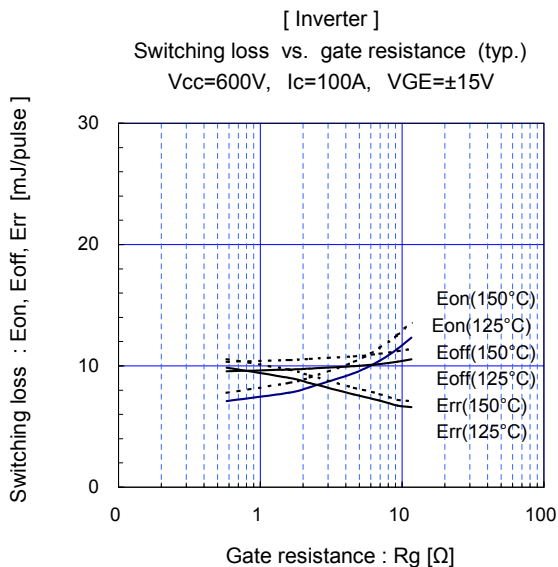
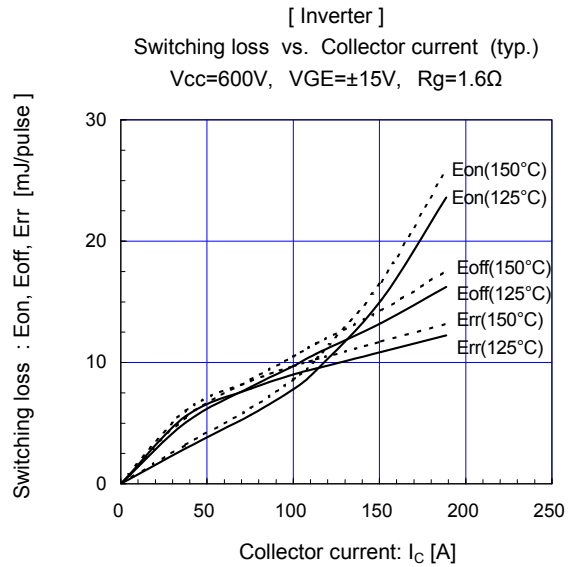
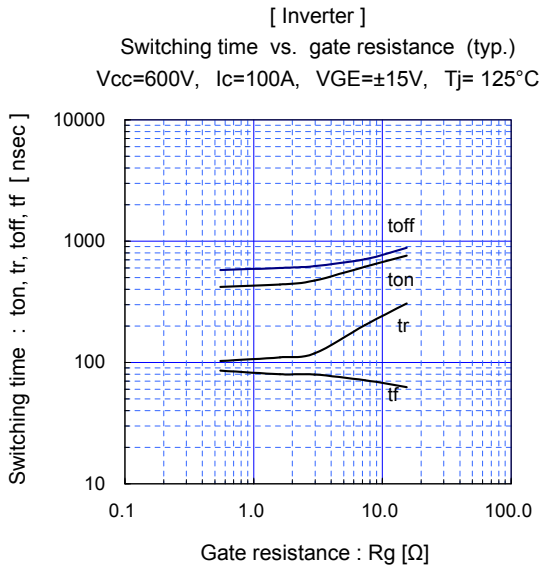
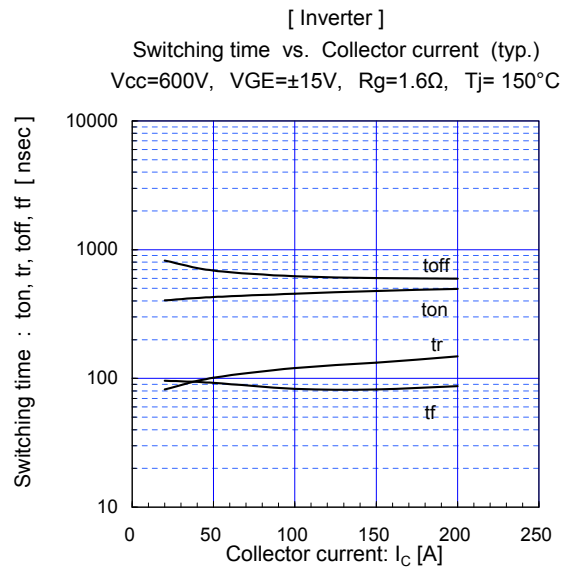
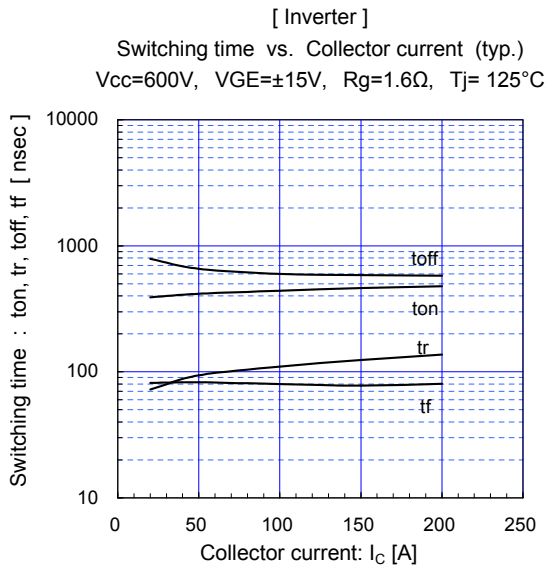
Note *4: This is the value which is defined mounting on the additional cooling fin with thermal compound.

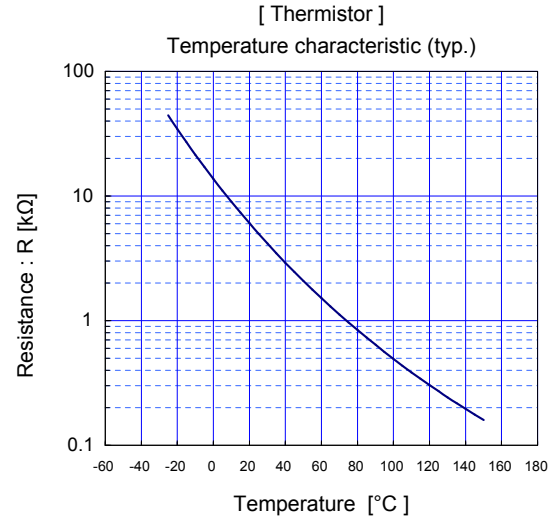
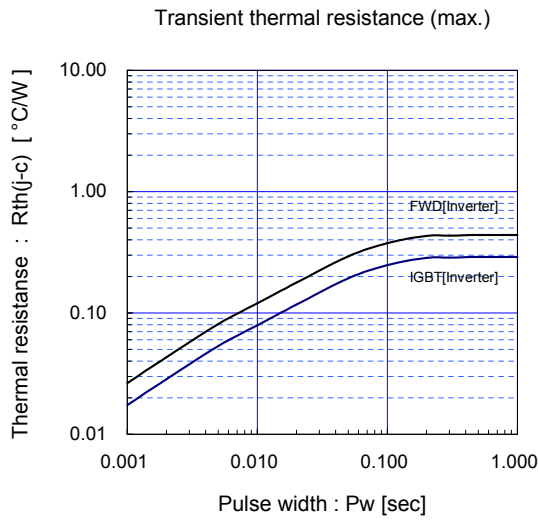
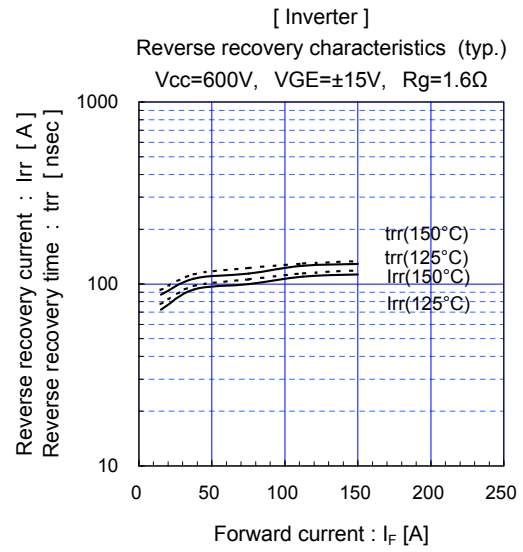
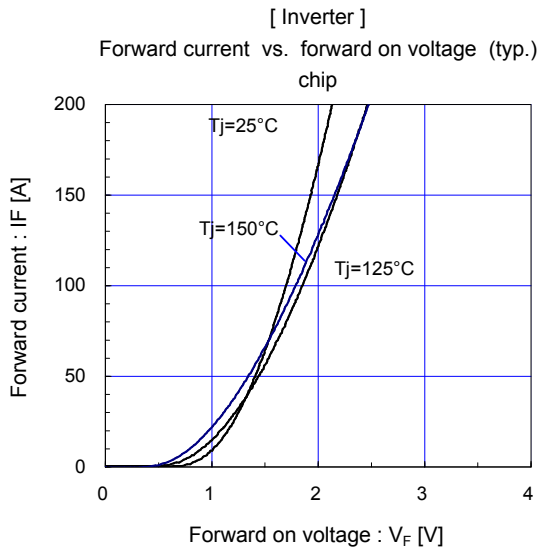
■ Equivalent Circuit Schematic



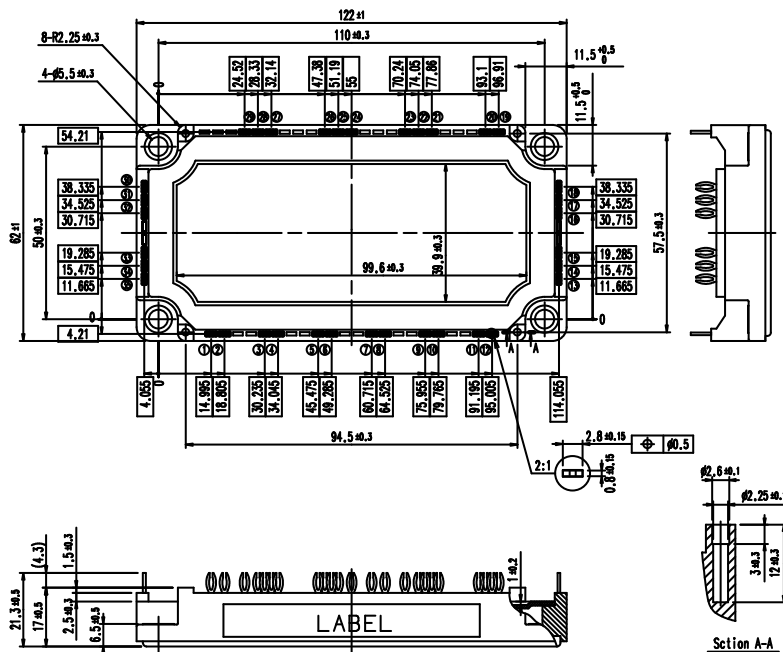
■ Characteristics (Representative)







■ Outline Drawings, mm



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