2MBI50L-120 (50A)

IGBT Module

1200V / 50A 2 in one-package

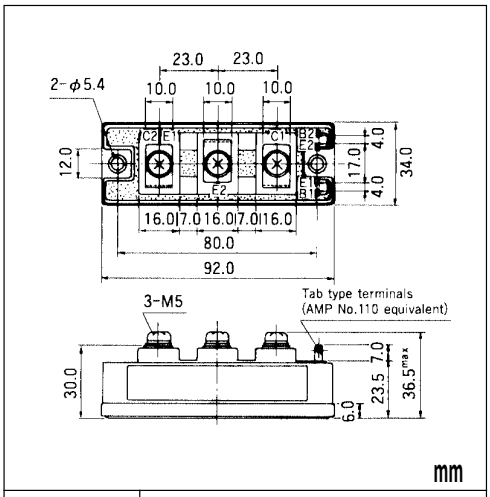
■ 特長：Features

高速ｽｲｯﾁﾝｸﾞ High Speed Switching
低飽和電圧 Low Saturation Voltage
電圧駆動(MOSｹﾞｰﾄ構造) Voltage Drive
豊富な容量系列 Variety of Power Capacity Series

■ 用途：Applications

ﾓｰﾀｰ駆動用ｲﾝﾊﾞｰﾀ Inverter for Motor Drive
AC,DCｻｰﾎﾞｱﾝﾌﾟ AC and DC Servo Drive Amplifier
無停電電源装置 Uninterruptible Power Supply
溶接機等の産業用機器
Industrial Machines, shch as Welding Machine

■ 外形寸法 Outline Drawings



CASE	M218

■ 定格と特性：Maximum ratings and characteristics

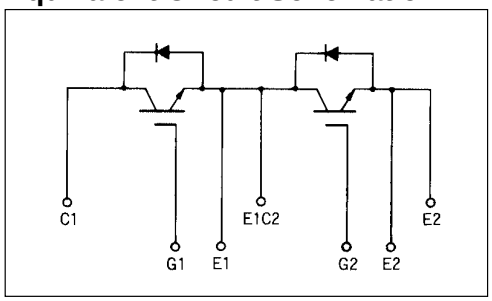
● 絶対最大定格：Absolute maximum ratings

Item		Symbol	Rating	Unit
コレクタ・エミッタ間電圧		V_{CES}	1200	V
ゲート・エミッタ間電圧		V_{GES}	±20	V
コレクタ電流	連続	I_C	50	A
	1ms	IC pulse	100	A
	連続	$-I_C$	50	A
	1ms	$-I_C$ pulse	100	A
最大損失		P_C	400	W
接合部温度		T_j	+150	℃
保存温度		T_{stg}	-40 to +125	℃
質量			185	g
絶縁耐量		V_{is}	AC 2500 (1min.)	V
締付けトルク		Mounting *1	3.5	N·m
		Terminals *2	3.5	N·m

*1推奨値 : Recommendable value : 2.5 to 3.5 N·m [25 to 35kgf·cm] (M5)
*2推奨値 : Recommendable value : 2.5 to 3.5 N·m [25 to 35kgf·cm] (M5)

■ 等価回路

Equivalent Circuit Schematic



● 電気的特性：Electrical characteristics (Tj=25°C)

Item	Symbol	Test Conditions	Characteristics Min.	Typ.	Max.	Unit
コレクタ・エミッタ間遮断電流	I_{CES}	V_{GE}=0V, V_{CE}=1200V, Tj=25°C	–	–	1.0	mA
ゲート・エミッタ間漏れ電流	I_{GES}	V_{CE}=0V, V_{GE}=±20V	–	–	100	nA
ゲート・エミッタ間しきい値電圧	$V_{GE(th)}$	V_{CE}=20V, I_C=50mA	3.0	–	6.0	V
コレクタ・エミッタ間飽和電圧	$V_{CE(sat)}$	V_{GE}=15V, I_C=50A	–	2.7	3.5	V
入力容量	C_{ies}	V_{GE}=0V	–	9000	–	pF
出力容量	C_{oes}	V_{CE}=10V	–	–	–	pF
帰還容量	C_{res}	f=1MHz	–	–	–	pF
ターンオン時間	t_{on}	V_{CC}=600V	–	0.5	0.8	µs
	t_r	I_C=50A	–	0.3	0.6	µs
ターンオフ時間	t_{off}	V_{GE}=±15V	–	0.8	1.5	µs
	t_f	R_G=25 ohm	–	0.3	0.5	µs
ダイオード順電圧	V_F	IF=50A, VGE=0V	–	–	2.5	V
逆回復時間	t_{rr}	I_F=50A,-di/dt=150A/µs,V_{GE}=-10V	–	200	350	ns

● 熱的特性：Thermal resistance characteristics

Items	Symbol	Test Conditions	Characteristics Min.	Typ.	Max.	Unit
熱抵抗	Rth(j-c)	IGBT	–	–	0.312	°C/W
	Rth(j-c)	Diode	–	–	0.60	°C/W
	Rth(c-f)	With Thermal compound	–	0.05	–	°C/W

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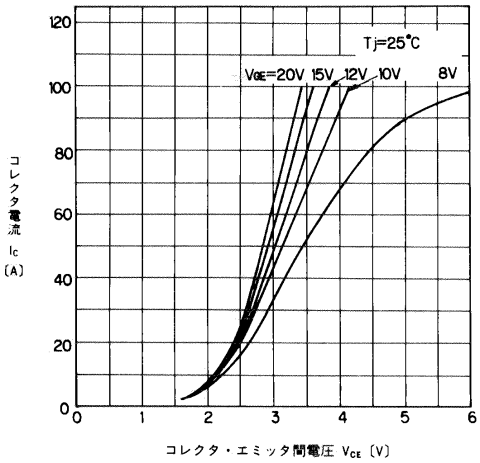
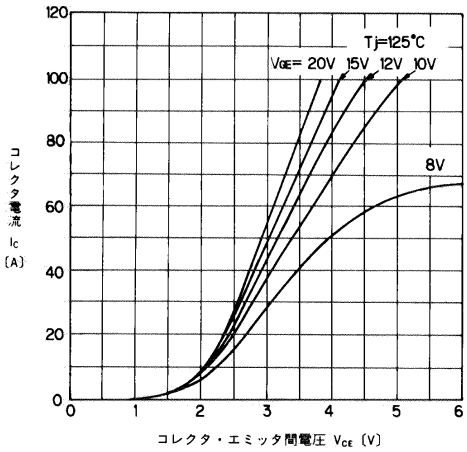
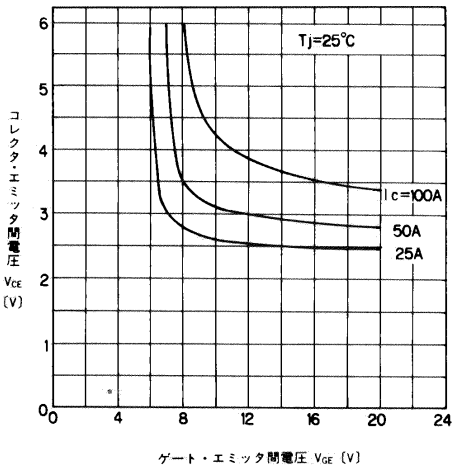
■ Characteristics



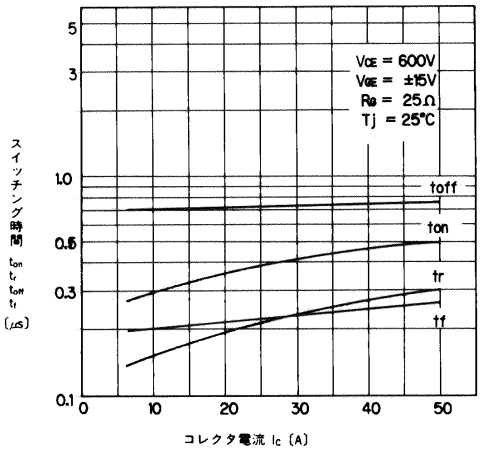
コレクタ電流—コレクタ・エミッタ間電圧特性
Collector Current vs. Collector-Emitter Voltage



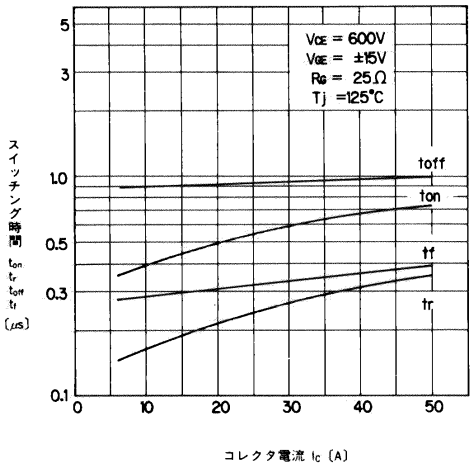
コレクタ電流—コレクタ・エミッタ間電圧特性
Collector Current vs. Collector-Emitter Voltage



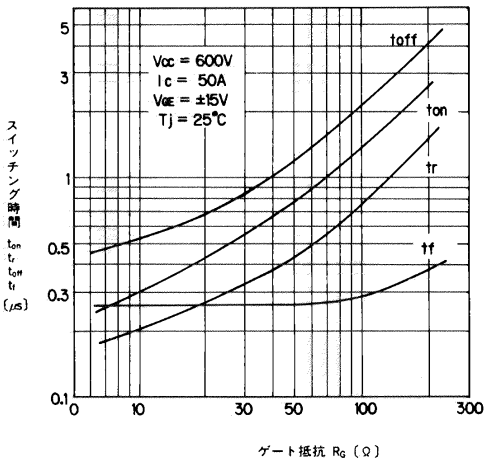
コレクタ・エミッタ間電圧—ゲート・エミッタ間電圧特性
Collector-Emitter Voltage vs. Gate-Emitter Voltage



スイッチング時間—コレクタ電流特性
Switching Time vs. Collector Current



スイッチング時間—コレクタ電流特性
Switching Time vs. Collector Current



スイッチング時間—ゲート抵抗特性
Switching Time vs. Gate Resistance

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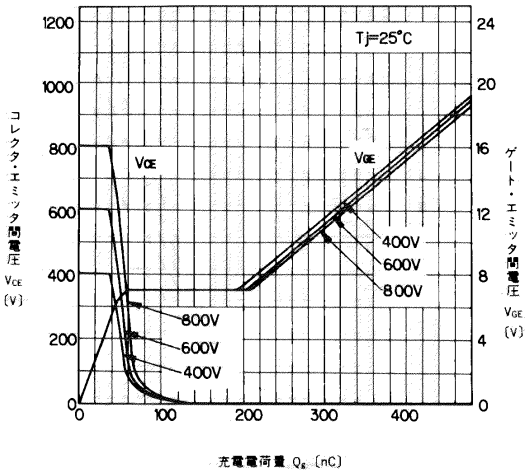
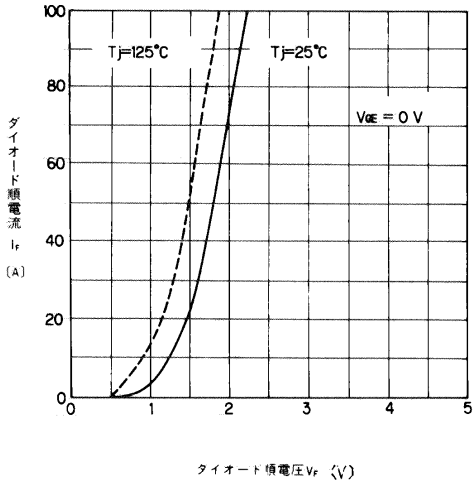
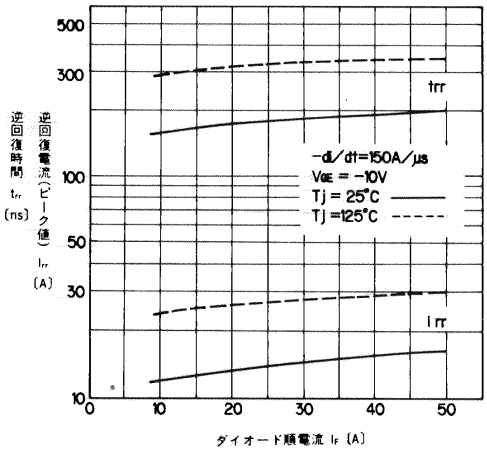


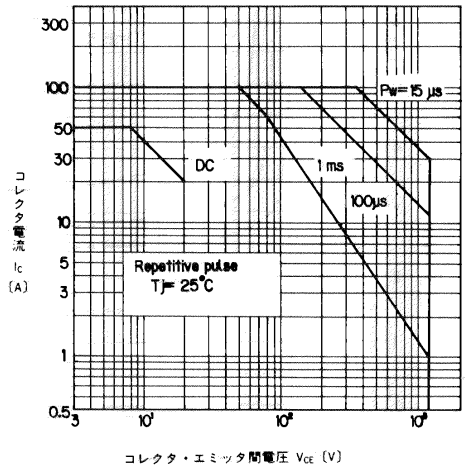
ダイナミック入力特性
Dynamic Input Characteristic



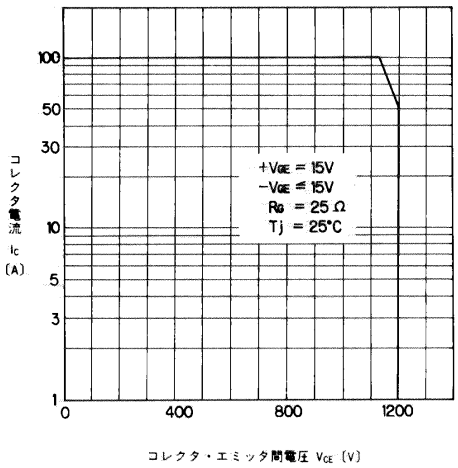
高速フリーホイリングダイオード順電圧特性
Forward Voltage of Free Wheeling Diode



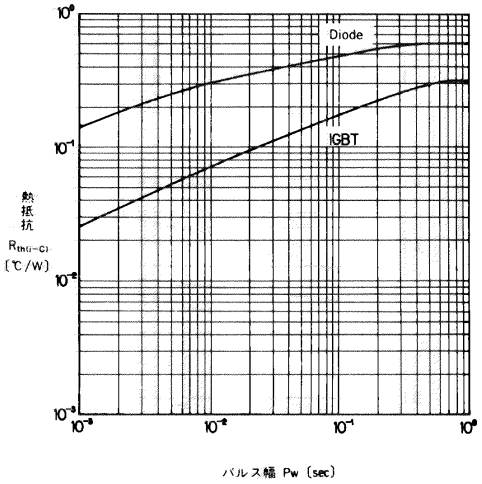
T_{rr}、I_{rr}-I_F特性
T_{rr}, I_{rr}-I_F



安全動作領域（繰り返し）
Safe Operating Area



安全動作領域（逆バイアス）
Reverse Biased Safe Operating Area



過渡熱抵抗特性
Transient Thermal Resistance

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