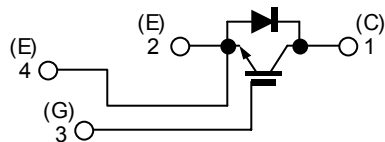
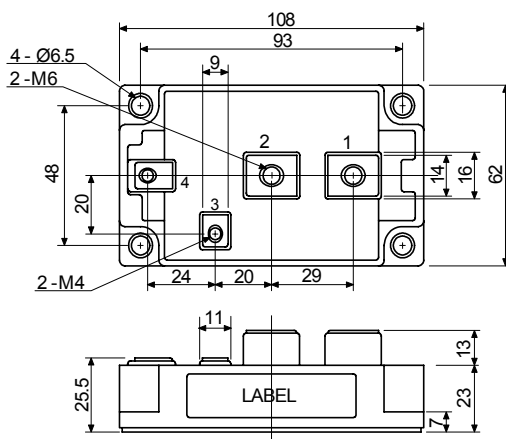


IGBT Module-Single

300 A, 1200V

PHMB300B12

□ 回路図 : *CIRCUIT*□ 外形寸法図 : *OUTLINE DRAWING*

Dimension: [mm]

□ 最大定格 : *MAXIMUM RATINGS* ($T_c = 25^\circ\text{C}$)

I t e m		S y m b o l	R a t e d V a l u e		U n i t
コレクタ・エミッタ間電圧 Collector-Emitter Voltage		V _{CES}	1, 2 0 0		V
ゲート・エミッタ間電圧 Gate-Emitter Voltage		V _{GES}	± 2 0		V
コレクタ電流 Collector Current	DC	I _C	3 0 0		A
	1 m s	I _{CP}	6 0 0		
コレクタ損失 Collector Power Dissipation		P _C	1, 4 6 0		W
接合温度 Junction Temperature Range		T _j	− 4 0 ~ + 1 5 0		℃
保存温度 Storage Temperature Range		T _{stg}	− 4 0 ~ + 1 2 5		℃
絶縁耐圧(Terminal to Base AC, 1 minute) Isolation Voltage		V _{ISO}	2, 5 0 0		V _(RMS)
締め付けトルク Mounting Torque	Module Base to Heatsink		3 (30.6)		N・m (kgf・cm)
	Busbar to Main Terminal		M4	1.4 (14.3)	
			M6	3 (30.6)	

□ 電気的特性 : *ELECTRICAL CHARACTERISTICS* ($T_c = 25^\circ\text{C}$)

Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
コレクタ遮断電流 Collector-Emitter Cut-Off Current		I_{CES}	$V_{CE} = 1200\text{V}, V_{GE} = 0\text{V}$	—	—	6.0	mA
ゲート漏れ電流 Gate-Emitter Leakage Current		I_{GES}	$V_{GE} = \pm 20\text{V}, V_{CE} = 0\text{V}$	—	—	1.0	μA
コレクタ・エミッタ間飽和電圧 Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 300\text{A}, V_{GE} = 15\text{V}$	—	1.9	2.4	V
ゲートしきい値電圧 Gate-Emitter Threshold Voltage		$V_{GE(th)}$	$V_{CE} = 5\text{V}, I_C = 300\text{mA}$	4.0	—	8.0	V
入力容量 Input Capacitance		C_{ies}	$V_{CE} = 10\text{V}, V_{GE} = 0\text{V}, f = 1\text{MHz}$	—	25,000	—	pF
スイッチング時間 Switching Time	上昇時間 Rise Time	t_r	$V_{CC} = 600\text{V}$ $R_g = 2\Omega$ $R_g = 1.3\Omega$ $V_{GE} = \pm 15\text{V}$	—	0.25	0.45	μs
	ターンオン時間 Turn-on Time	t_{on}		—	0.40	0.70	
	下降時間 Fall Time	t_f		—	0.25	0.35	
	ターンオフ時間 Turn-off Time	t_{off}		—	0.80	1.10	

□ フリーホイーリングダイオードの特性 : *FREE WHEELING DIODE RATINGS & CHARACTERISTICS* ($T_c = 25^\circ\text{C}$)

I t e m		S y m b o l	R a t e d V a l u e			U n i t
順電流 Forward Current	DC	I _F	300			A
	1 m s	I _{FM}	600			

C h a r a c t e r i s t i c		S y m b o l	T e s t C o n d i t i o n	M i n .	T y p .	M a x .	U n i t
順電圧 Peak Forward Voltage		V _F	I _F = 300A, V _{GE} = 0V	—	1.9	2.4	V
逆回復時間 Reverse Recovery Time		t _{rr}	I _F = 300A, V _{GE} = -10V di/dt = 600A/μs	—	0.2	0.3	μs

□ 熱的特性 : *THERMAL CHARACTERISTICS*

Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
熱抵抗 Thermal Impedance	IGBT	$R_{th(j-c)}$	Junction to Case	—	—	0.086	$^\circ\text{C}/\text{W}$
	Diode			—	—	0.16	

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Fig.1- Output Characteristics (Typical)

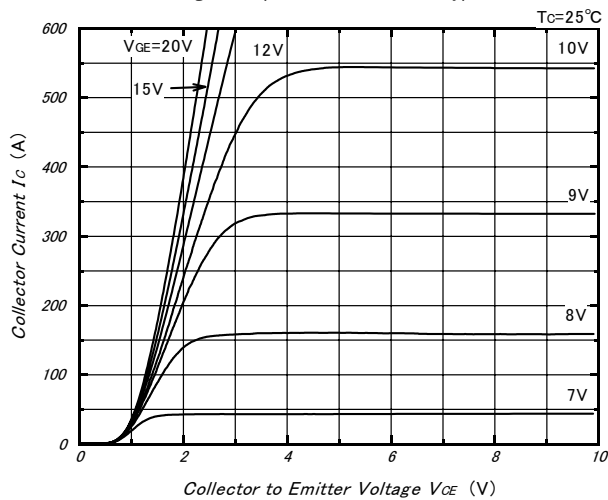


Fig.2- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

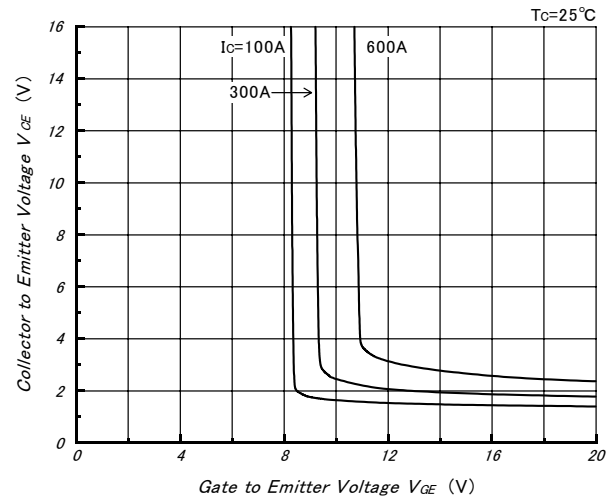


Fig.3- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

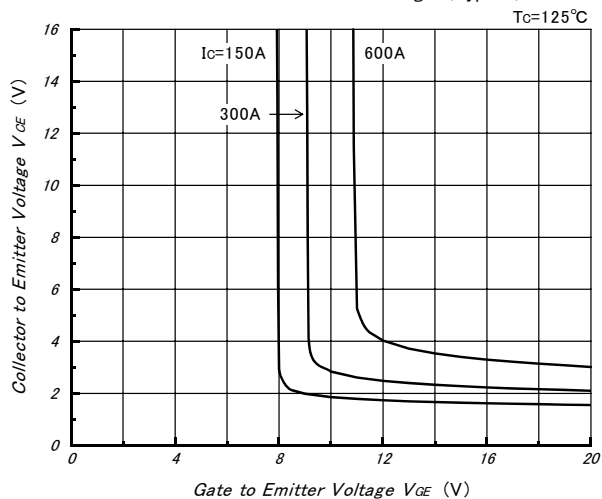


Fig.4- Gate Charge vs. Collector to Emitter Voltage (Typical)

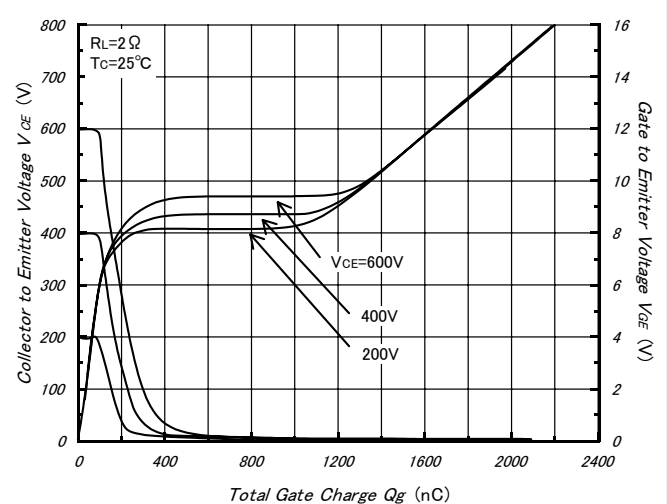


Fig.5- Capacitance vs. Collector to Emitter Voltage (Typical)

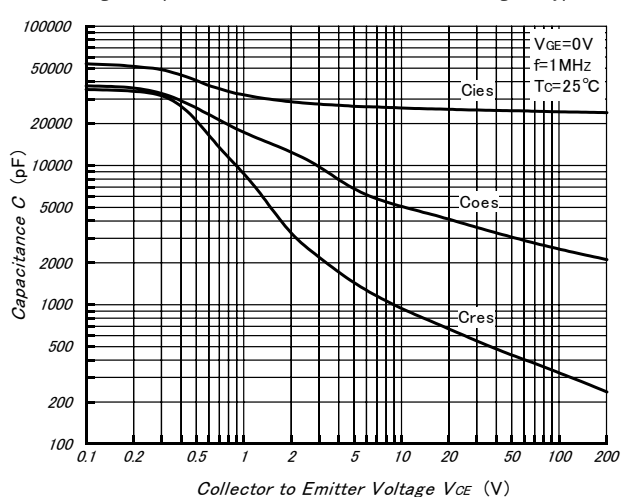
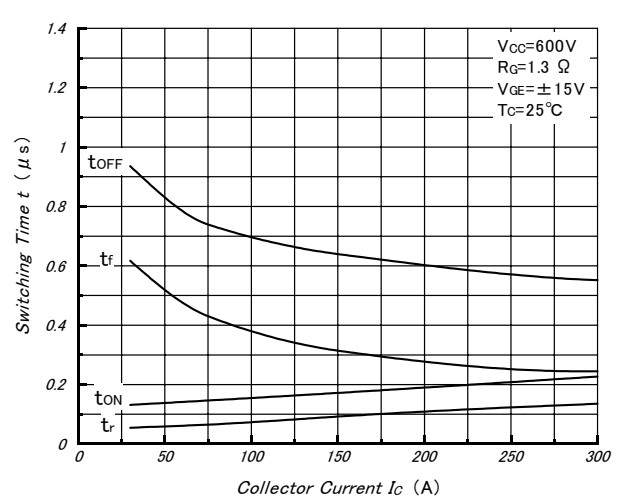


Fig.6- Collector Current vs. Switching Time (Typical)



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Fig.7- Series Gate Impedance vs. Switching Time (Typical)

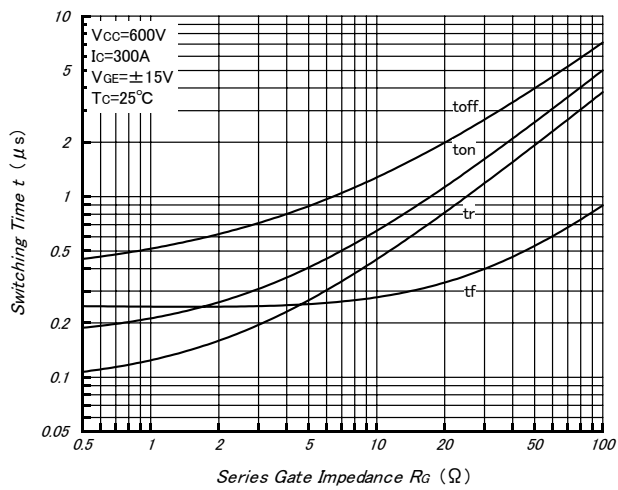


Fig.8- Forward Characteristics of Free Wheeling Diode (Typical)

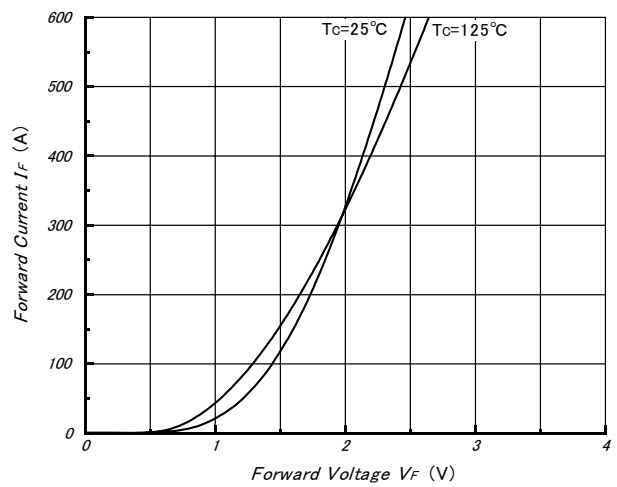


Fig.9- Reverse Recovery Characteristics (Typical)

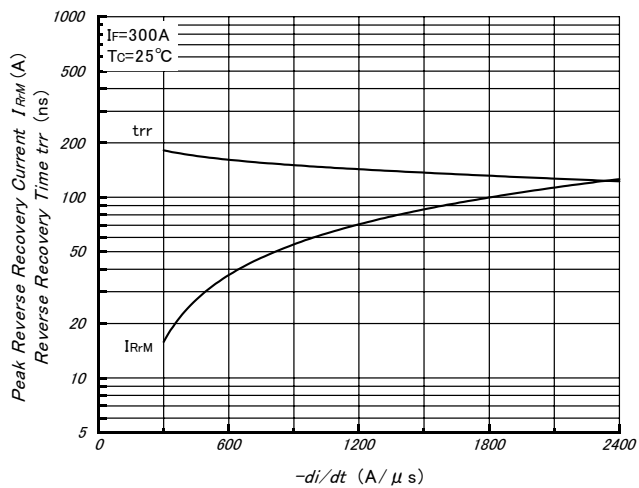


Fig.10- Reverse Bias Safe Operating Area

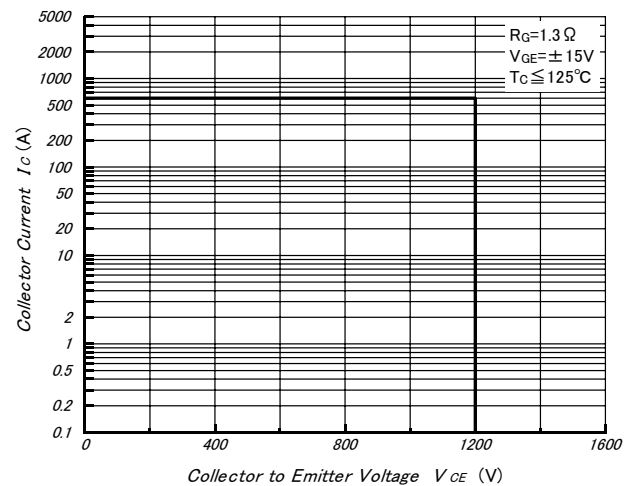


Fig.11- Transient Thermal Impedance

