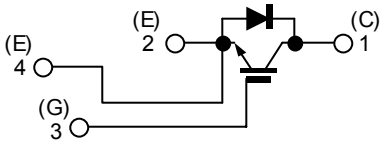
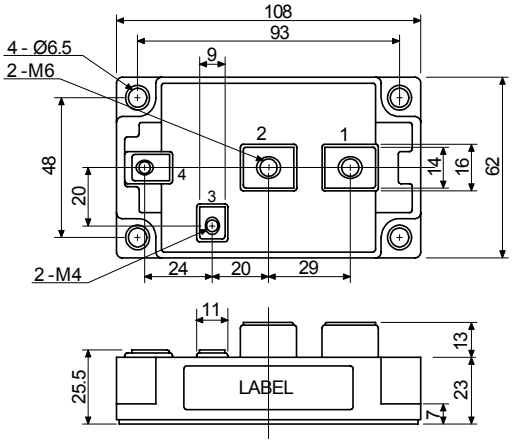
IGBT Module-Single　300A, 1200V　PHMB300B12

□ 回路図 : *CIRCUIT*



□ 外形寸法図 : *OUTLINE DRAWING*



Dimension: [mm]

□ 最大定格 : *MAXIMUM RATINGS* (T_C=25℃)

Item		Symbol	Rated Value		Unit
コレクタ・エミッタ間電圧 Collector-Emitter Voltage		V_{CES}	1,200		V
ゲート・エミッタ間電圧 Gate-Emitter Voltage		V_{GES}	±20		V
コレクタ電流 Collector Current	DC	I_C	300		A
	1ms	I_{CP}	600		
コレクタ損失 Collector Power Dissipation		P_C	1,460		W
接合温度 Junction Temperature Range		T_j	−40～+150		℃
保存温度 Storage Temperature Range		T_{stg}	−40～+125		℃
絶縁耐圧(Terminal to Base AC, 1minute) Isolation Voltage		V_{ISO}	2,500		$V_{(RMS)}$
締め付けトルク Mounting Torque	Module Base to Heatsink	F_{tor}	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℃)

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}= 1200V, V_{GE}= 0V	−	−	6.0	mA
ゲート漏れ電流 Gate-Emitter Leakage Current		I_{GES}	V_{GE}= ±20V, V_{CE}= 0V	−	−	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= 300A, V_{GE}= 15V	−	1.9	2.4	V
ゲートしきい値電圧 Gate-Emitter Threshold Voltage		$V_{GE(th)}$	V_{CE}= 5V, I_C= 300mA	4.0	−	8.0	V
入力容量 Input Capacitance		C_{ies}	V_{CE}= 10V, V_{GE}= 0V, f= 1MHz	−	25,000	−	pF
スイッチング時間 Switching Time	上昇時間 Rise Time	t_r	V_{CC}= 600V R_L= 2Ω R_G= 1.3Ω V_{GE}= ±15V	−	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℃)

Item		Symbol	Rated Value	Unit
順電流 Forward Current	DC	I_F	300	A
	1ms	I_{FM}	600	

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
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	Rth(j-c)	Junction to Case	−	−	0.086	℃/W
	Diode			−	−	0.16	

PHMB３００B１２

Fig.1- Output Characteristics (Typical)

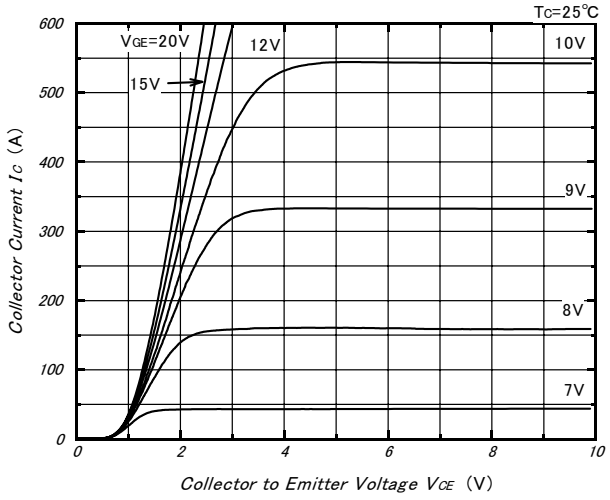


Fig.2- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

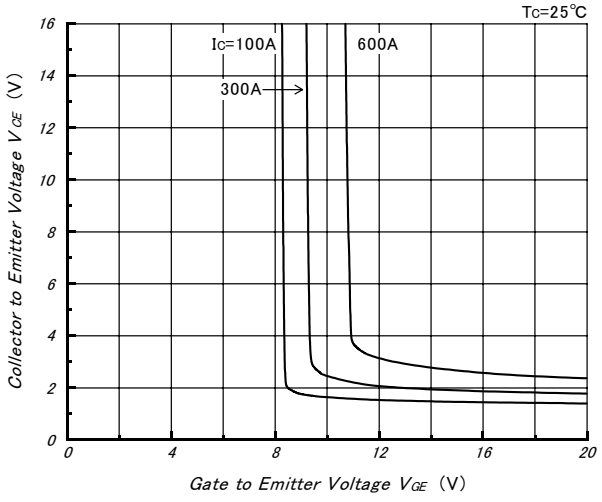


Fig.3- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

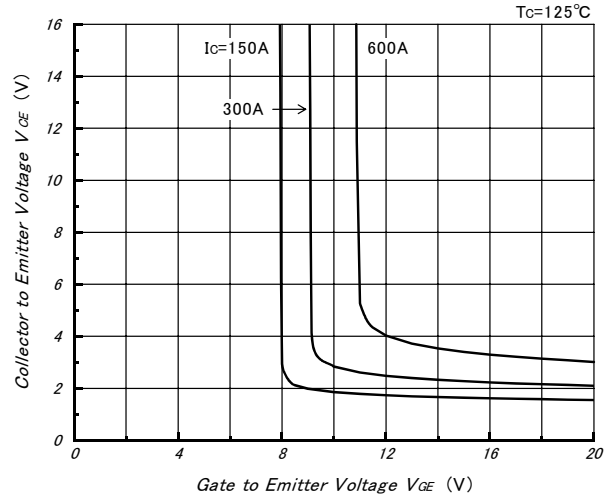


Fig.4- Gate Charge vs. Collector to Emitter Voltage (Typical)

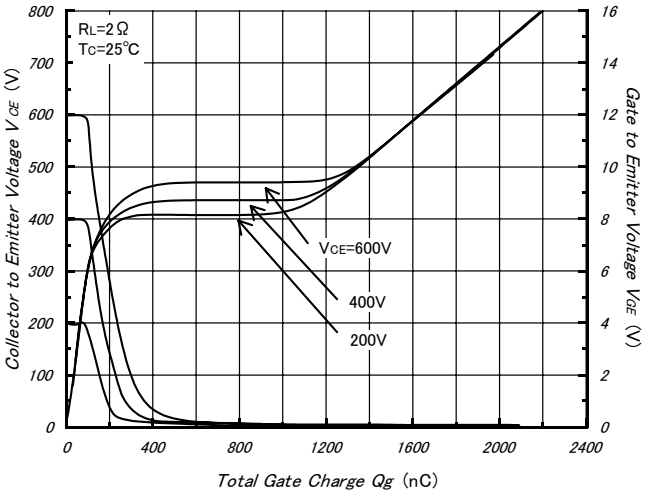


Fig.5- Capacitance vs. Collector to Emitter Voltage (Typical)

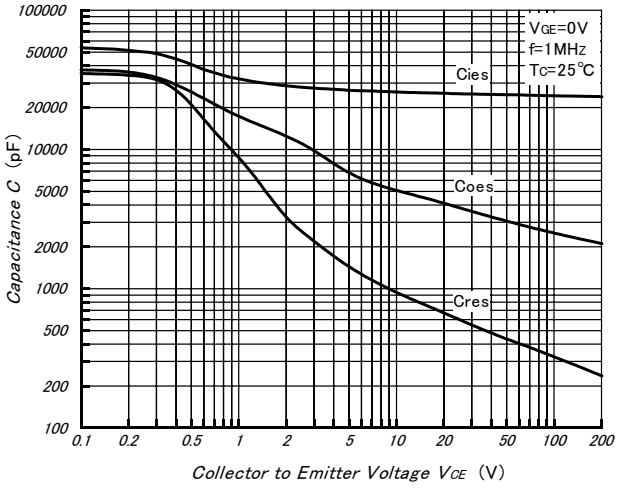
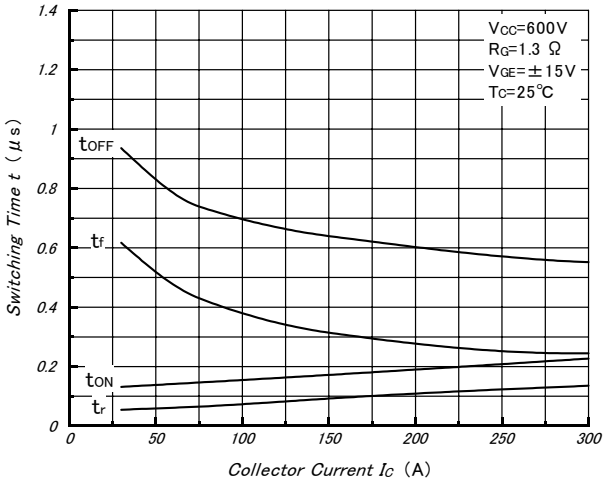


Fig.6- Collector Current vs. Switching Time (Typical)



PHMB３００B１２

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

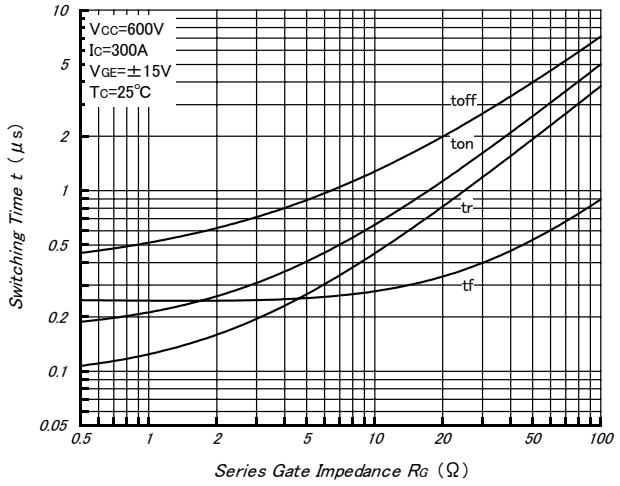


Fig.8- Forward Characteristics of Free Wheeling Diode (Typical)

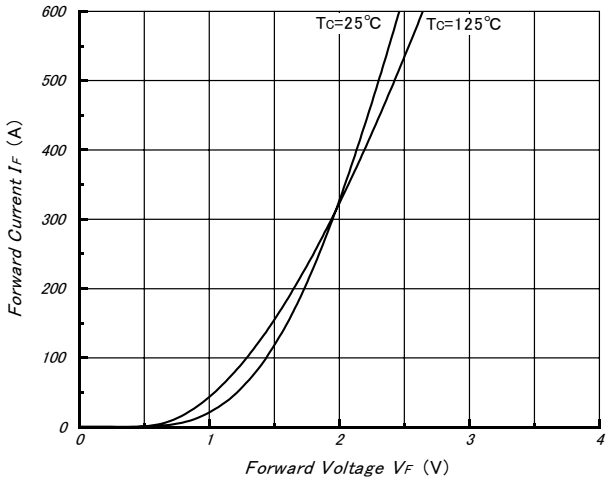


Fig.9- Reverse Recovery Characteristics (Typical)

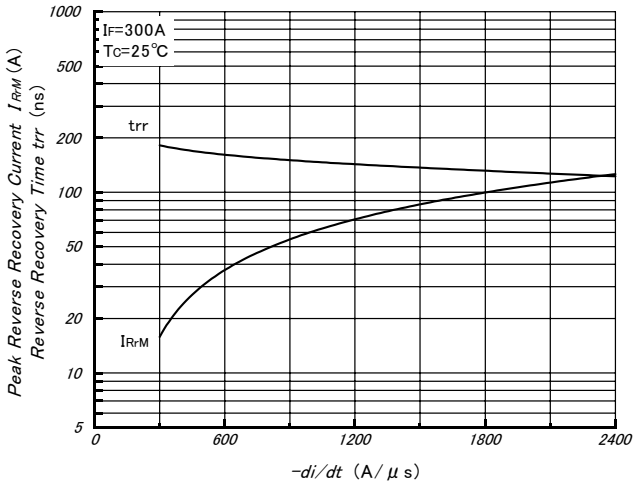


Fig.10- Reverse Bias Safe Operating Area

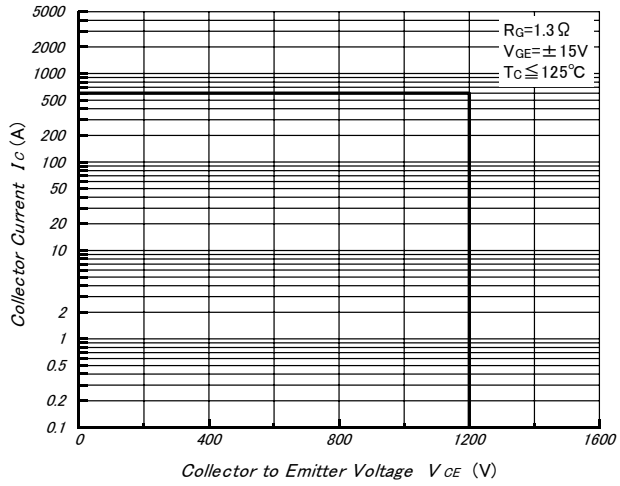


Fig.11- Transient Thermal Impedance