

IGBT Module-Single

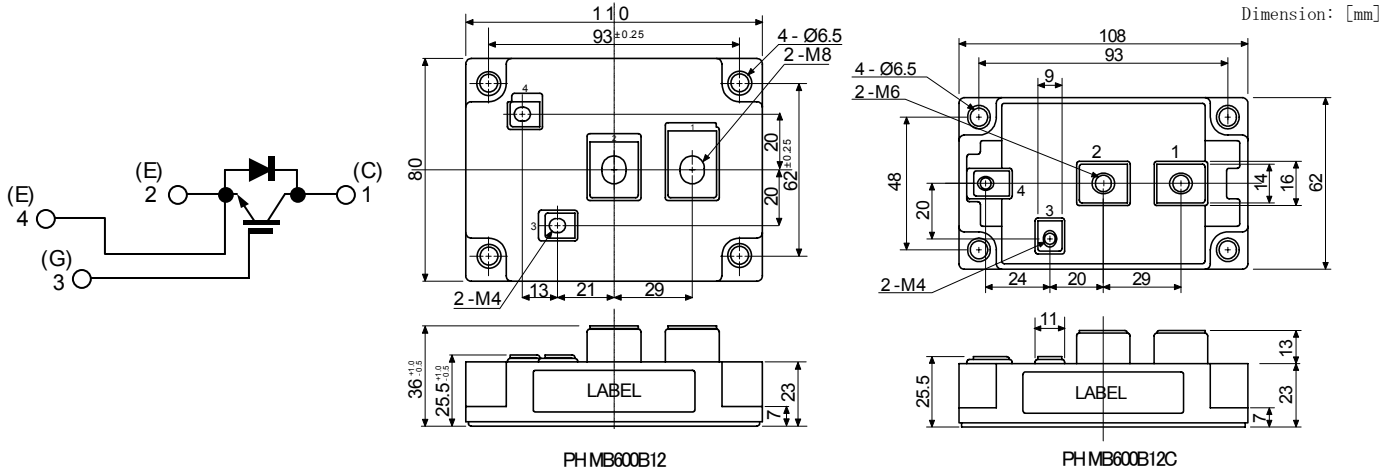
600 A, 1200V

PHMB600B12

PHMB600B12C

□ 回路図 : *CIRCUIT*

□ 外形寸法図 : *OUTLINE DRAWING*



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

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	600	A	
	1ms	1,200		
コレクタ損失 Collector Power Dissipation	P_c	2,800	W	
接合温度 Junction Temperature Range	T_j	$-40 \sim +150$	$^\circ\text{C}$	
保存温度 Storage Temperature Range	T_{stg}	$-40 \sim +125$	$^\circ\text{C}$	
絶縁耐圧(Terminal to Base AC, 1 minute) Isolation Voltage	V_{iso}	2,500	V (RMS)	
締め付けトルク Mounting Torque	F_{tor}	Module Base to Heatsink	3 (30.6)	
		Busbar to Main Terminal	M4	1.4 (14.3)
			M6	3 (30.6)
			M8	10.5 (107)

□ 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}	$V_{CE} = 1200V, V_{GE} = 0V$	—	—	12	mA
ゲート漏れ電流 Gate-Emitter Leakage Current	I_{GES}	$V_{GE} = \pm 20V, V_{CE} = 0V$	—	—	1.0	μA
コレクタ・エミッタ間飽和電圧 Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_c = 600A, V_{GE} = 15V$	—	1.9	2.4	V
ゲートしきい値電圧 Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{CE} = 5V, I_c = 600mA$	4	—	8	V
入力容量 Input Capacitance	C_{ies}	$V_{CE} = 10V, V_{GE} = 0V, f = 1MHz$	—	50,000	—	pF
スイッチング時間 Switching Time	上昇時間 Rise Time	$V_{CC} = 600V$ $R_f = 1\Omega$ $R_g = 1\Omega$ $V_{GE} = \pm 15V$	—	0.25	0.45	μs
	ターンオン時間 Turn-on Time		—	0.40	0.70	
	下降時間 Fall Time		—	0.25	0.35	
	ターンオフ時間 Turn-off Time		—	0.80	1.10	

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

Item	Symbol	Rated Value	Unit
順電流 Forward Current	DC	600	A
	1ms	1,200	

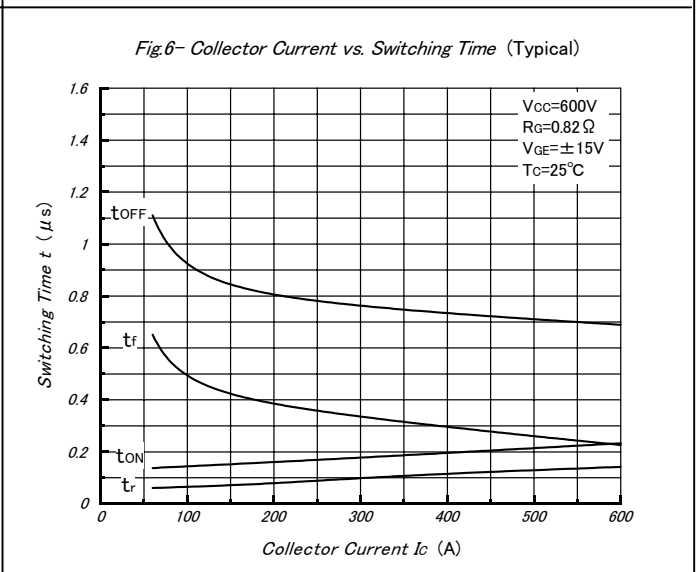
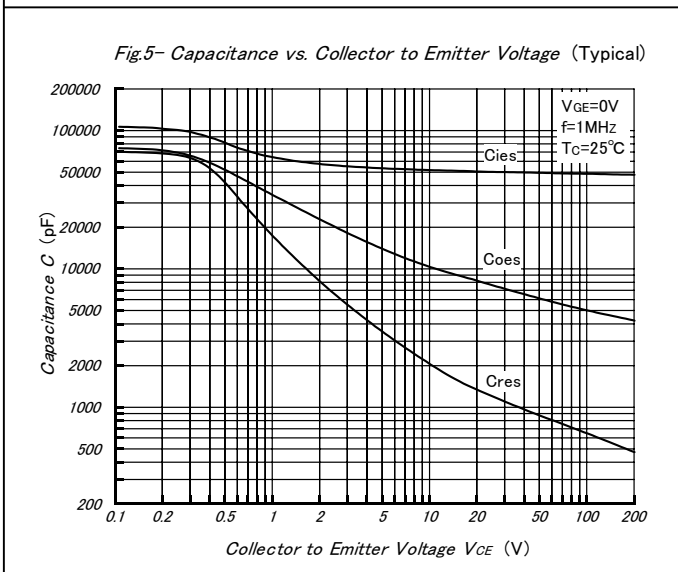
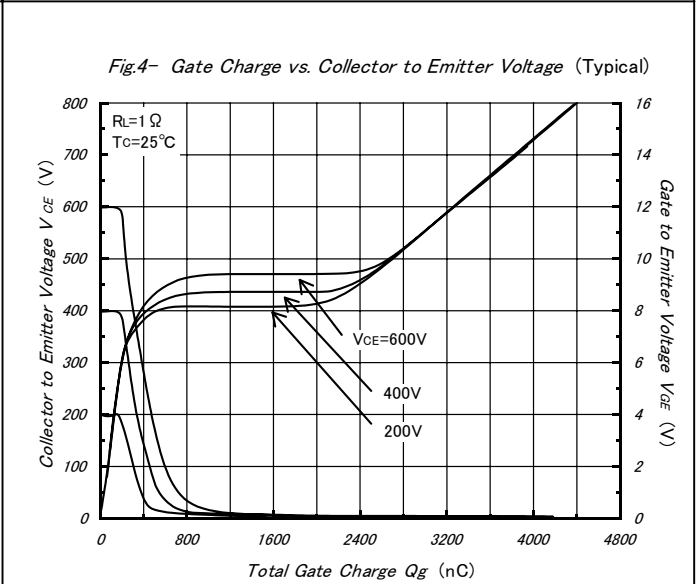
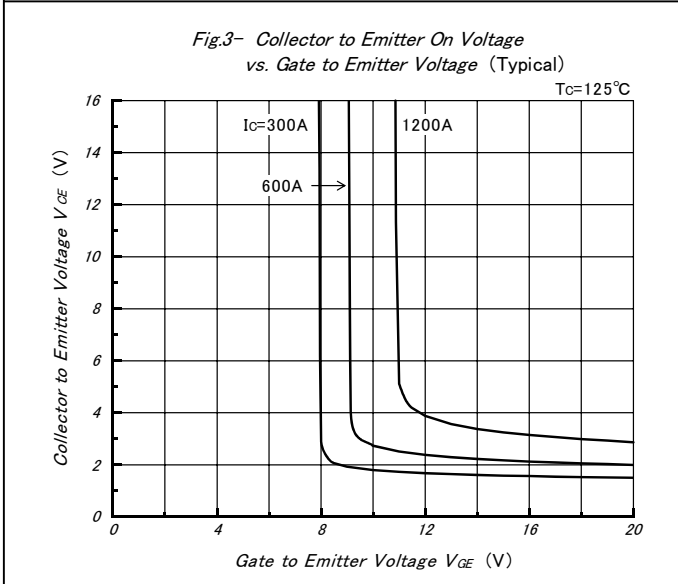
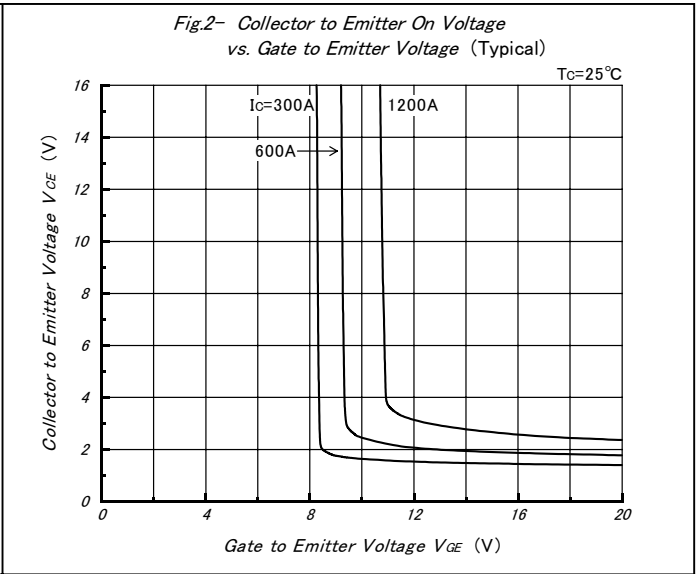
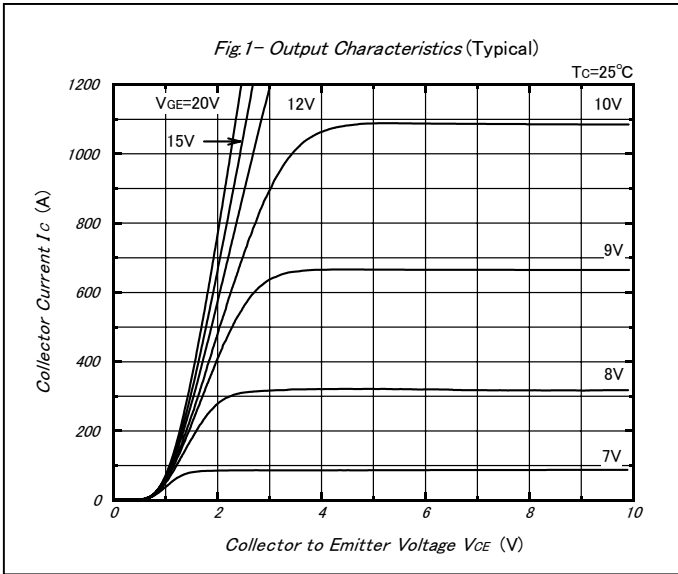
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
順電圧 Peak Forward Voltage	V_F	$I_F = 600A, V_{GE} = 0V$	—	1.9	2.4	V
逆回復時間 Reverse Recovery Time	t_{rr}	$I_F = 600A, V_{GE} = -10V$ $di/dt = 1200A/\mu\text{s}$	—	0.25	0.35	μs

□ 熱的特性 : *THERMAL CHARACTERISTICS*

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
熱抵抗 Thermal Impedance	IGBT	Junction to Case	—	—	0.044	$^\circ\text{C}/\text{W}$
	Diode		—	—	0.085	

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

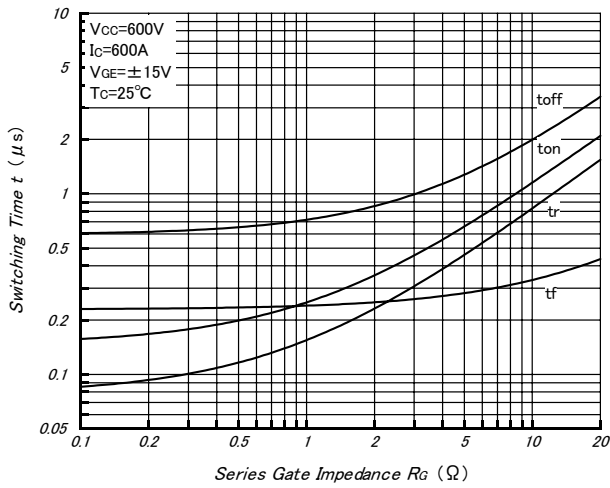


Fig.8- Forward Characteristics of Free Wheeling Diode (Typical)

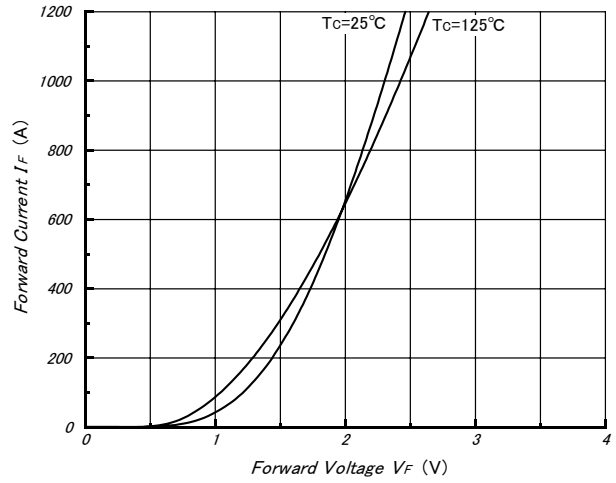


Fig.9- Reverse Recovery Characteristics (Typical)

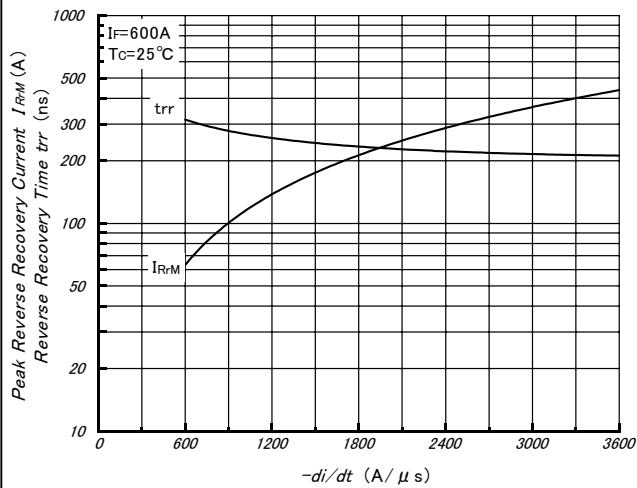


Fig.10- Reverse Bias Safe Operating Area

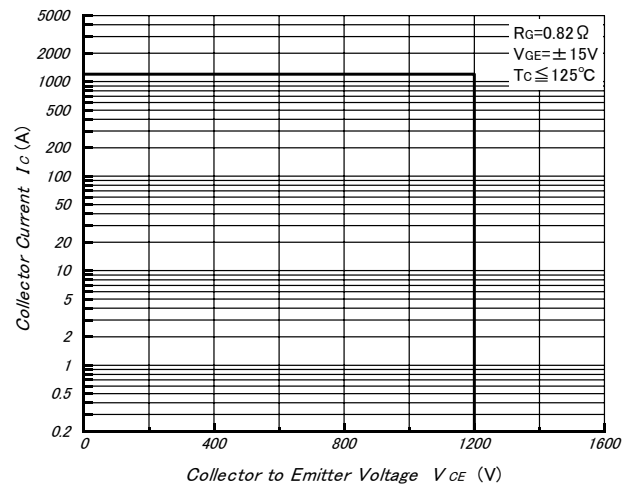


fig11-Transient Thermal Impedance

