

IGBT Module-Single

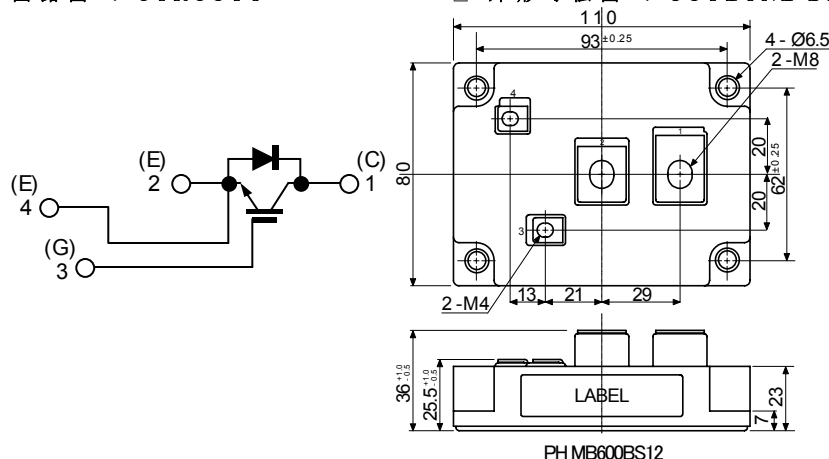
600 A, 1200V

PHMB600BS12

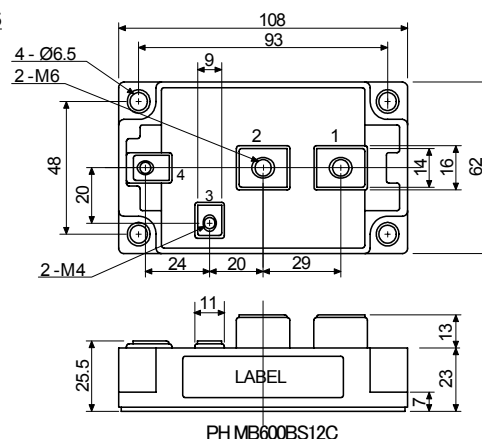
PHMB600BS12C

□ 回路図 : CIRCUIT

□ 外形寸法図 : OUTLINE DRAWING



PHMB600BS12



PHMB600BS12C

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	6 0 0				A		
	1 m s	I _{CP}	1, 2 0 0						
コレクタ損失 Collector Power Dissipation		P _C	3, 6 0 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	F _{tor}	PHMB600BS12	3 (30.6)		PHMB600BS12C	3 (30.6)		N・m (kgf・cm)
	Busbar to Terminals			M4	1.4 (14.3)		M4	1.4 (14.3)	
			M8	10.5 (107)		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	$V_{CE(sat)}$	$I_C = 600\text{A}, V_{GE} = 15\text{V}$	—	2.3	2.7	V
ゲートしきい値電圧 Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{CE} = 5\text{V}, I_C = 600\text{mA}$	4.0	—	8.0	V
入力容量 Input Capacitance	C_{ies}	$V_{CE} = 10\text{V}, V_{GE} = 0\text{V}, f = 1\text{MHz}$	—	37,800	—	pF
スイッチング時間 Switching Time	上昇時間 Rise Time	$V_{CC} = 600\text{V}$ $R_L = 1.0\Omega$ $R_g = 2.7\Omega$ $V_{GE} = \pm 15\text{V}$	—	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	I_F	A
	1ms	I_{FM}	

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
順電圧 Peak Forward Voltage	V_F	$I_F = 600\text{A}, V_{GE} = 0\text{V}$	—	2.2	2.6	V
逆回復時間 Reverse Recovery Time	t_{rr}	$I_F = 600\text{A}, V_{GE} = -10\text{V}$ $di/dt = 1200\text{A}/\mu\text{s}$	—	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	Junction to Case	—	—	0.035	$^\circ\text{C}/\text{W}$
	Diode		—	—	0.071	

PHMB600BS12

PHMB600BS12C

Fig.1- Output Characteristics (Typical)

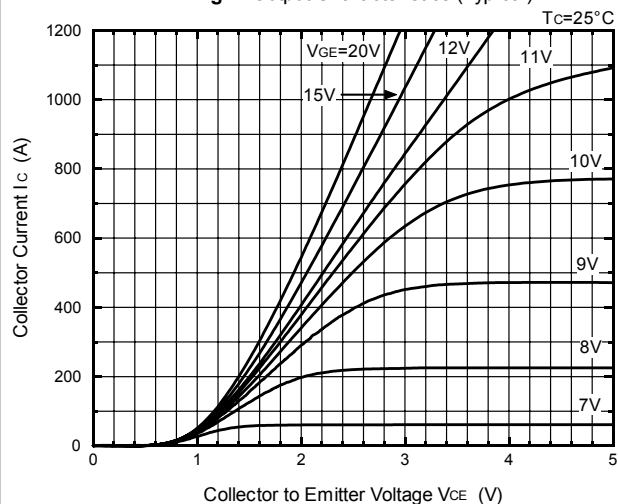


Fig.2- Output Characteristics (Typical)

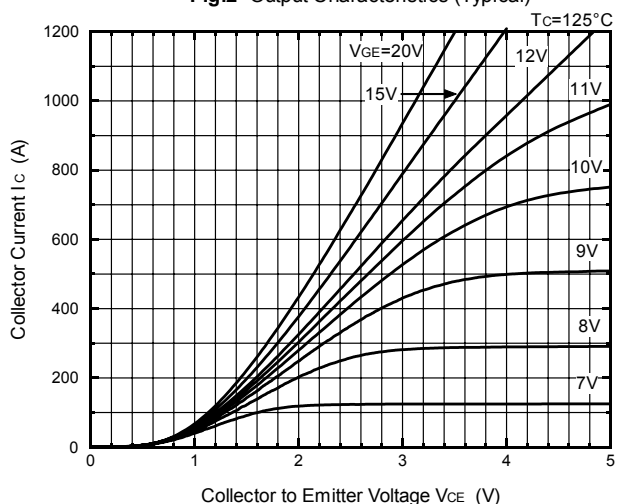


Fig.3- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

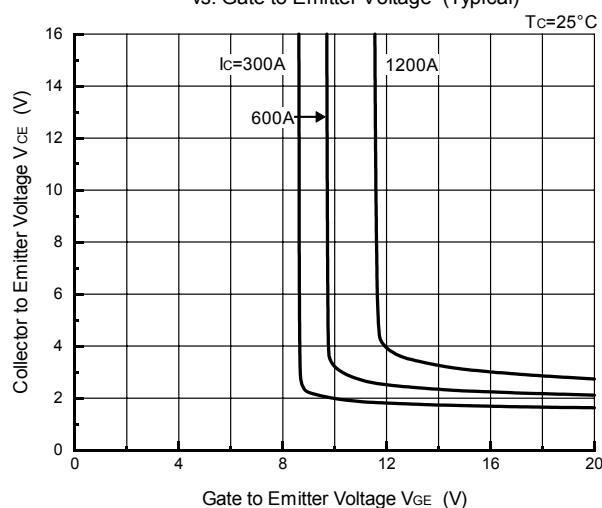


Fig.4- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

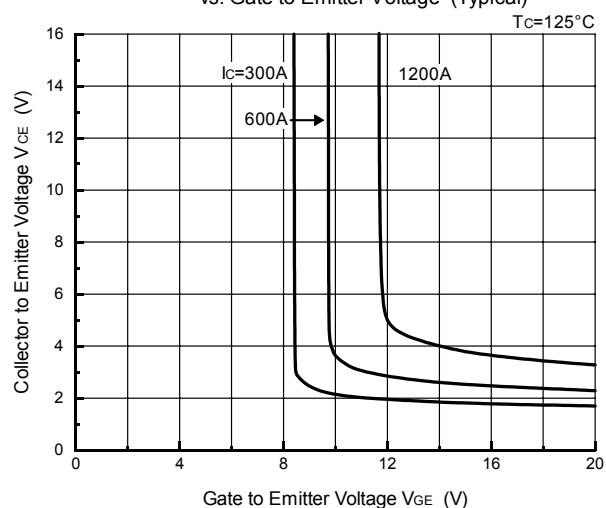


Fig.5- Gate Charge vs. Collector to Emitter Voltage (Typical)

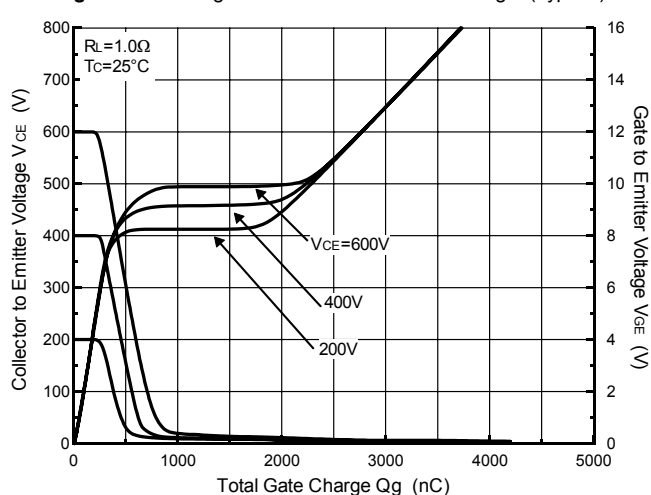
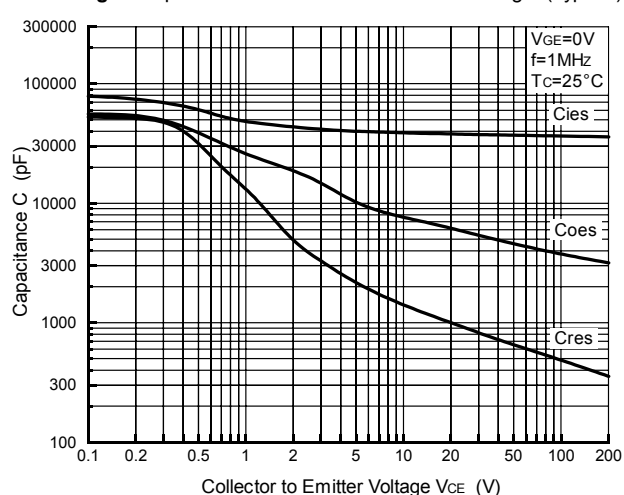


Fig.6- Capacitance vs. Collector to Emitter Voltage (Typical)



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Fig.7- Collector Current vs. Switching Time (Typical)

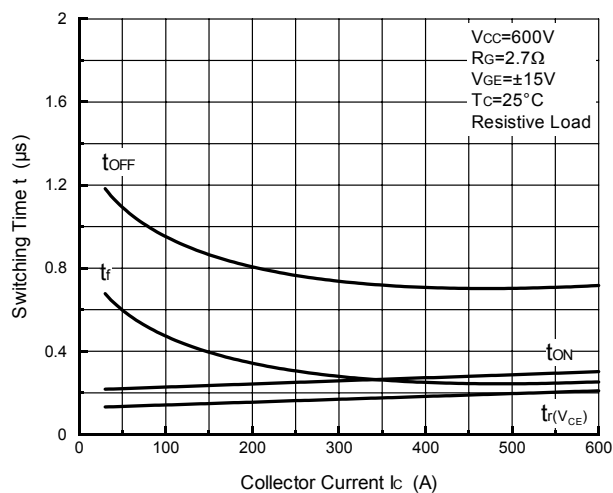


Fig.8- Series Gate Impedance vs. Switching Time (Typical)

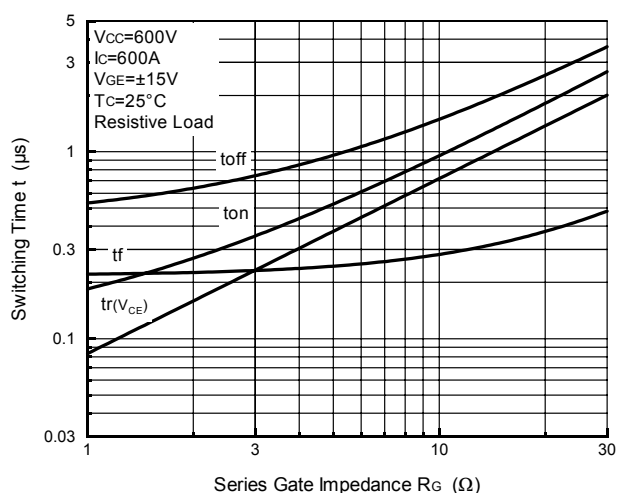


Fig.9- Collector Current vs. Switching Time

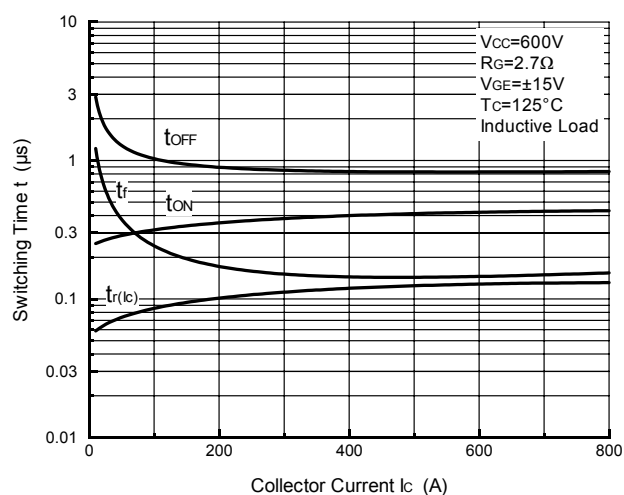


Fig.10- Series Gate Impedance vs. Switching Time

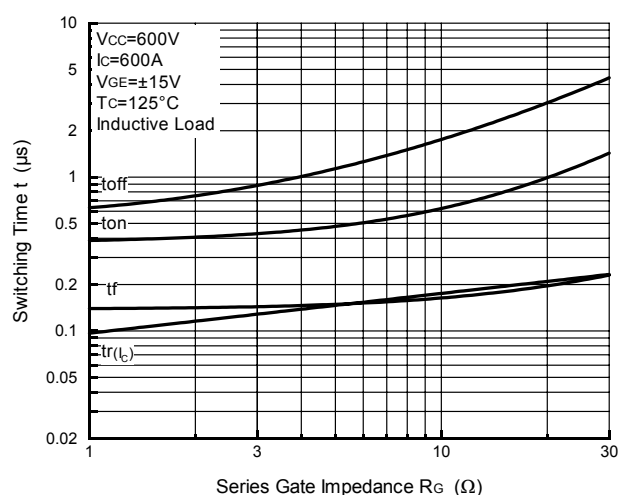


Fig.11- Collector Current vs. Switching Loss

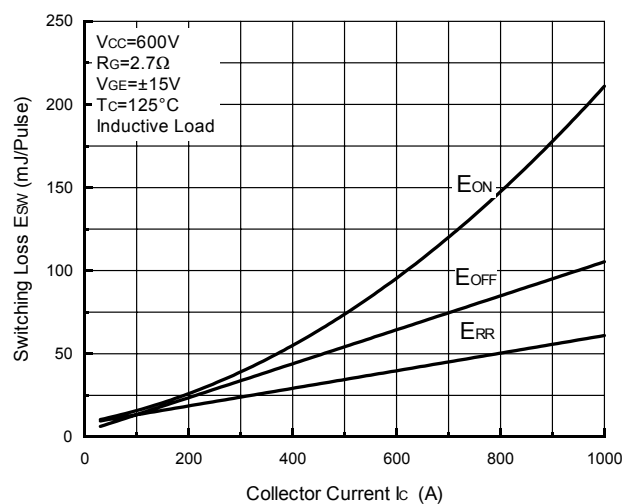
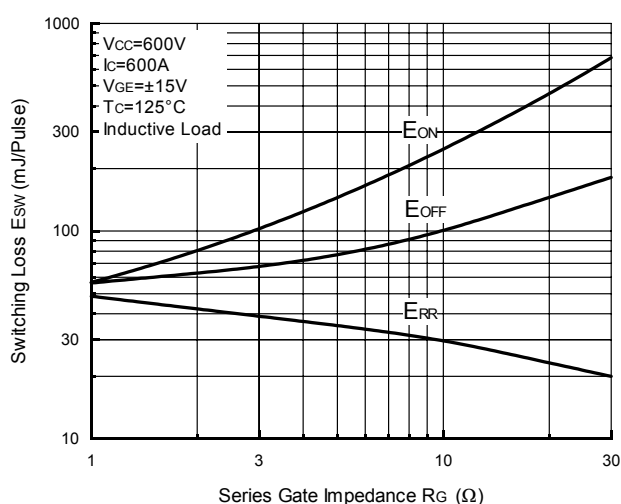
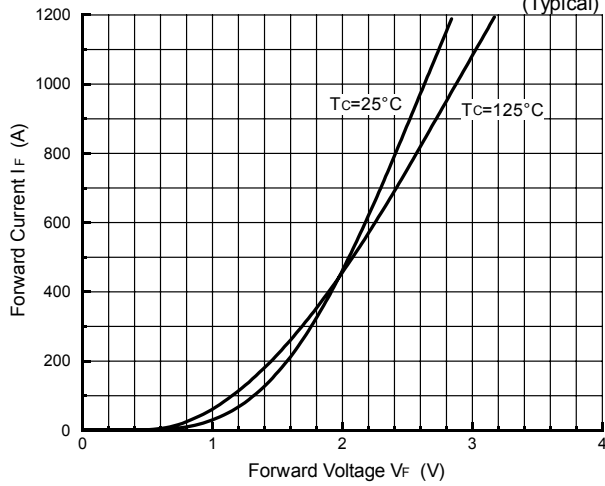
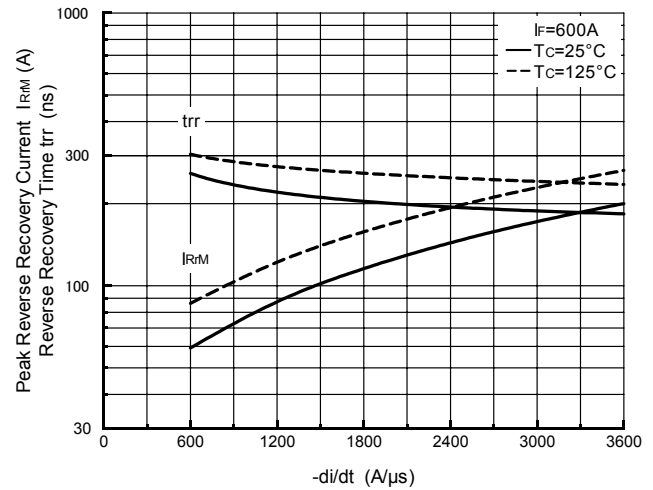
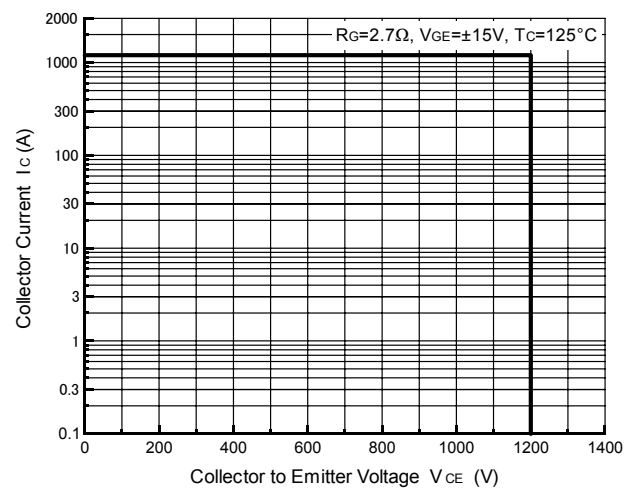


Fig.12- Series Gate Impedance vs. Switching Loss



PHMB 6 0 0 B S 1 2

PHMB 6 0 0 B S 1 2 C

Fig.13- Forward Characteristics of Free Wheeling Diode (Typical)**Fig.14- Reverse Recovery Characteristics (Typical)****Fig.15- Reverse Bias Safe Operating Area****Fig.16- Transient Thermal Impedance**