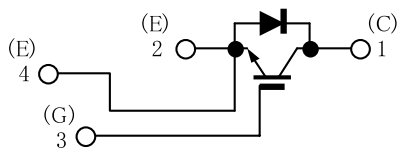


IGBT

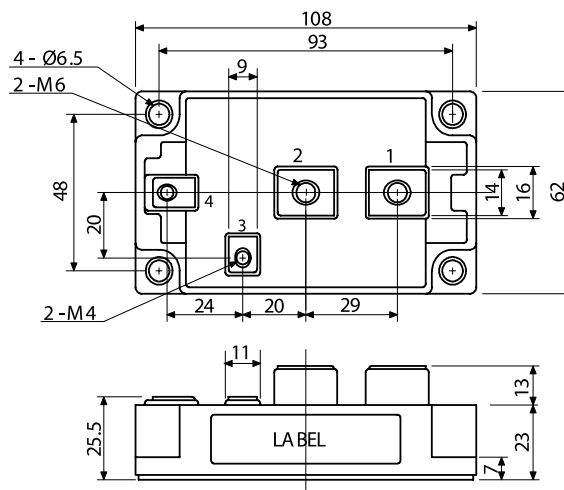
300 A 1200 V

PHMB300BS12

■回路図 CIRCUIT



■外形寸法図 OUTLINE DRAWING (単位 Dimension : mm)



■最大定格 Maximum Ratings (Tc=25°C)

項目 Item	記号 Symbol	定格値 Rated Value	単位 Unit	
コレクタ・エミッタ間電圧 Collector-Emitter Voltage	V _{CES}	1200	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	A	
	1ms	I _{CP}		600
コレクタ損失 Collector Power Dissipation	P _c	1800	W	
接合温度 Junction Temperature Range	T _j	-40 ~ +150	°C	
保存温度 Storage Temperature Range	T _{stg}	-40 ~ +125	°C	
絶縁耐圧(端子-ベース間, AC 1分間) Isolation Voltage (Terminal to Base, AC 1 min.)	V _{iso}	2500	V _(RMS)	
締付トルク Mounting Torque	ベース取付部 Module Base to Heatsink	F _{tor}	N·m (kgf·cm)	
	端子部 Busbar to Terminal	M4		3 (30.6)
	M6	1.4 (14.3)		
		M6	3 (30.6)	

■電気的特性 Electrical Characteristics (Tc=25°C)

項目 Characteristic	記号 Symbol	条件 Test Conditions	最小 Min.	標準 Typ.	最大 Max.	単位 Unit
コレクタ遮断電流 Collector-Emitter Cut-Off Current	I _{CES}	V _{CE} = 1200V, V _{GE} = 0V	—	—	3.0	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	—	2.3	2.7	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	—	18900	—	pF
スイッチング時間 Switching Time	上昇時間 Rise Time	V _{CC} = 600V R _L = 2.0Ω R _G = 5.1Ω V _{GE} = ±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	

■フリーホイールダイオードの特性 Free Wheeling Diode Ratings & Characteristics (T_c=25°C)

項目 Item		記号 Symbol	定格値 Rated Value	単位 Unit
順電流 Forward Current	DC	I _F	300	A
	1ms	I _{FM}	600	

項目 Characteristic	記号 Symbol	条件 Test Conditions	最小 Min.	標準 Typ.	最大 Max.	単位 Unit
順電圧 Peak Forward Voltage	V _F	I _F = 300A, V _{GE} = 0V	—	2.2	2.6	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

項目 Characteristic	記号 Symbol	条件 Test Conditions	最小 Min.	標準 Typ.	最大 Max.	単位 Unit
熱抵抗 Thermal Impedance	IGBT	T _c 測定点チップ直下 Junction to Case	—	—	0.069	°C/W
	Diode		—	—	0.143	

■定格・特性曲線

Fig. 1 Output Characteristics (Typical)

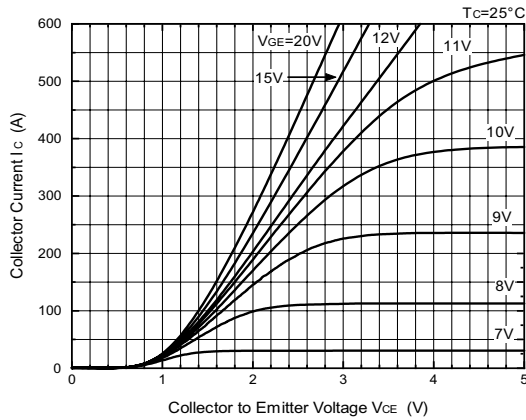


Fig. 2 Output Characteristics (Typical)

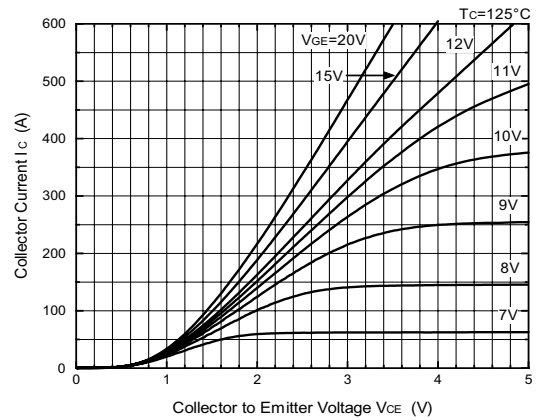


Fig. 3 Collector to Emitter on Voltage vs. Gate to Emitter Voltage (Typical)

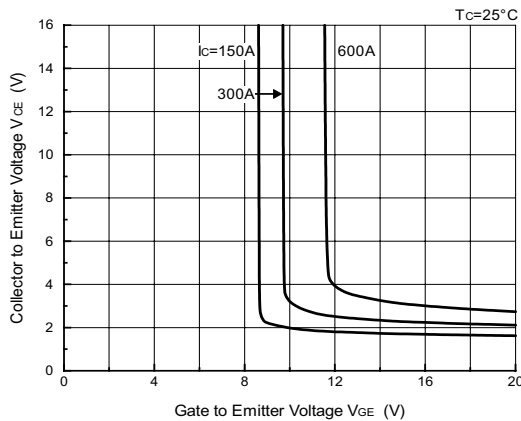


Fig. 4 Collector to Emitter on Voltage vs. Gate to Emitter Voltage (Typical)

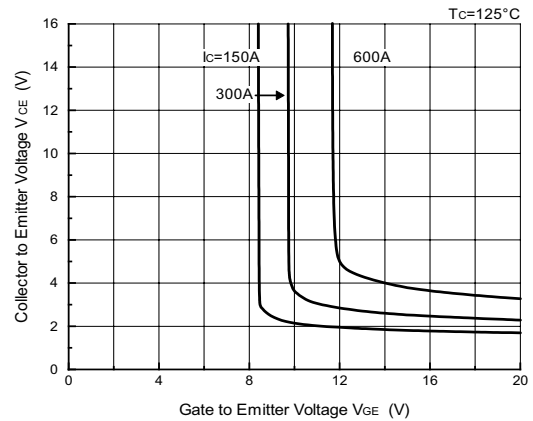


Fig. 5 Gate Charge vs. Collector to Emitter Voltage (Typical)

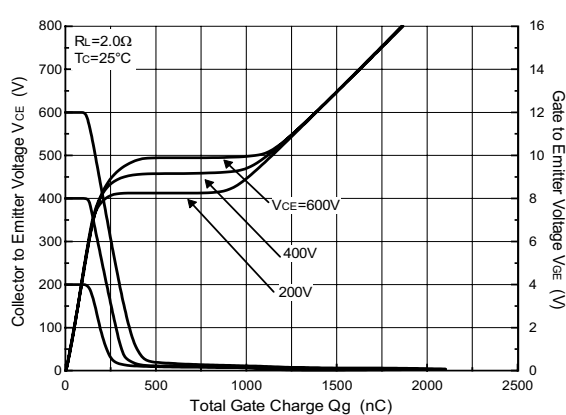
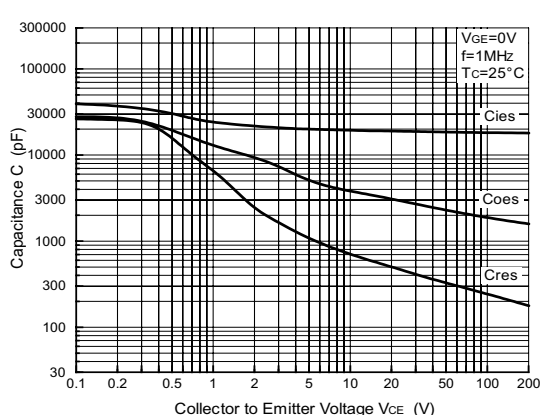


Fig. 6 Capacitance vs. Collector to Emitter Voltage (Typical)



IGBTモジュール

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

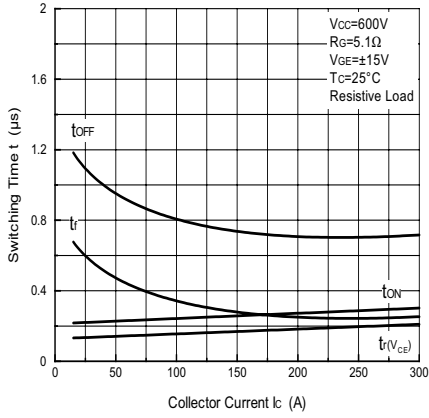


Fig. 10 Series Gate Impedance vs. Switching Time

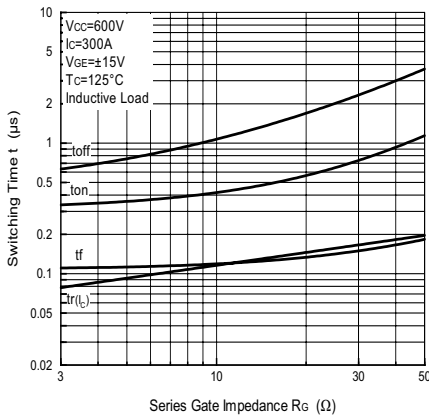


Fig. 13 Forward Characteristics of Free Wheeling Diode (Typical)

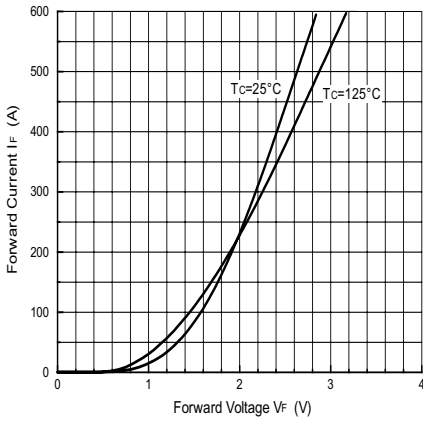


Fig. 16 Transient Thermal Impedance

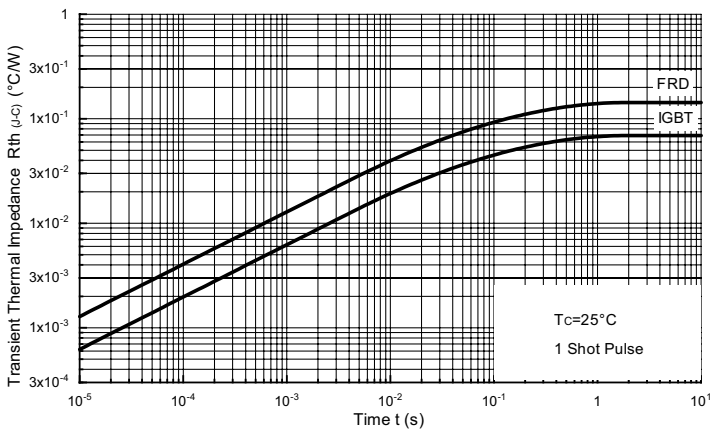


Fig. 8 Series Gate Impedance vs. Switching Time (Typical)

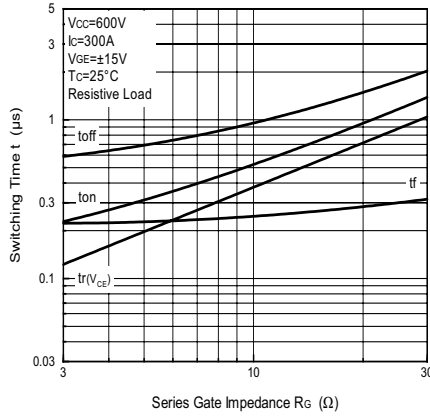


Fig. 11 Collector Current vs. Switching Loss

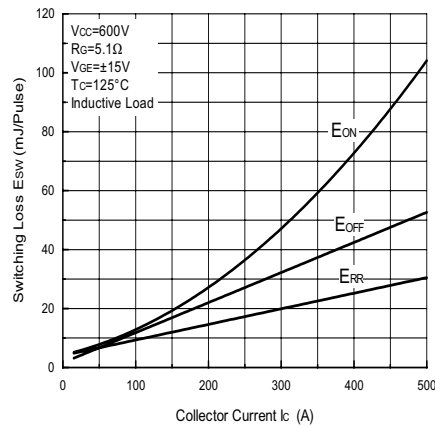


Fig. 14 Reverse Recovery Characteristics (Typical)

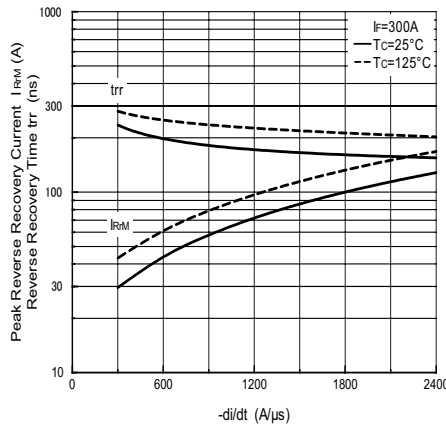


Fig. 9 Collector Current vs. Switching Time

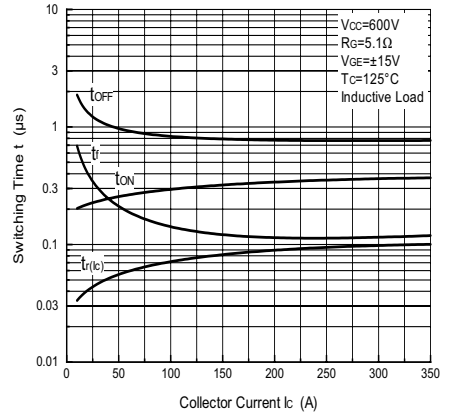


Fig. 12 Series Gate Impedance vs. Switching Loss

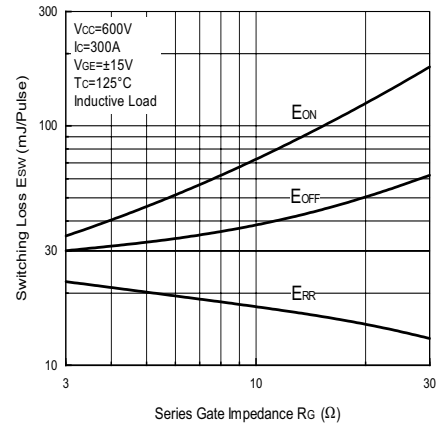


Fig. 15 Reverse Bias Safe Operating Area

