IGBT Module-Single 600A, 600V

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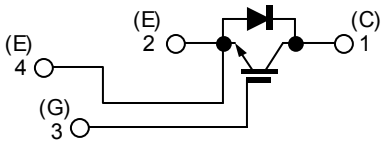
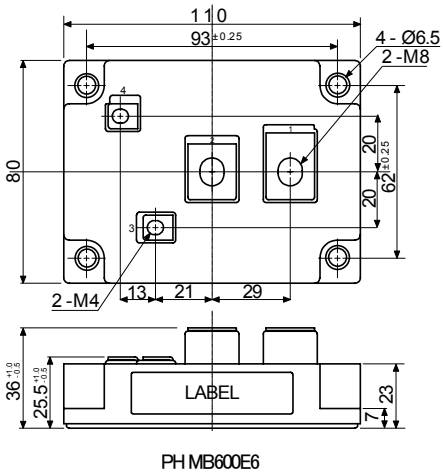
□ 回路図 : *CIRCUIT*



□ 外形寸法図 : *OUTLINE DRAWING*



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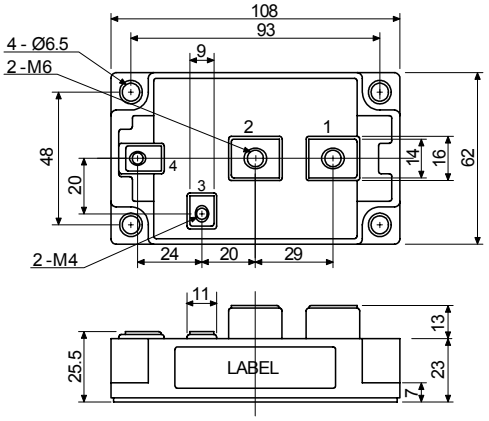

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□ 最大定格 : *MAXIMUM RATINGS* (T_C=25℃)

Item		Symbol	Rated Value						Unit
コレクタ・エミッタ間電圧 Collector-Emitter Voltage		V_{CES}	600						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	600						A
	1ms	1,200	1,200						
コレクタ損失 Collector Power Dissipation		P_C	2,080						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}	PHMB600E6	3 (30.6)		PHMB600E6C	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℃)

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}= 600V, V_{GE}= 0V	−	−	1.0	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= 600A, V_{GE}= 15V	−	2.1	2.6	V
ゲートしきい値電圧 Gate-Emitter Threshold Voltage		$V_{GE(th)}$	V_{CE}= 5V, I_C= 600mA	4.0	−	8.0	V
入力容量 Input Capacitance		C_{ies}	V_{CE}= 10V, V_{GE}= 0V, f= 1MHz	−	30,000	−	pF
スイッチング時間 Switching Time	上昇時間 Rise Time	t_r	V_{CC}= 300V R_L= 0.5Ω R_G= 2.0Ω V_{GE}= ±15V	−	0.15	0.35	μs
	ターンオン時間 Turn-on Time	t_{on}		−	0.30	0.85	
	下降時間 Fall Time	t_f		−	0.10	0.25	
	ターンオフ時間 Turn-off Time	t_{off}		−	0.40	0.80	

□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	600	A
	1ms	I_{FM}	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/μs	−	0.15	0.25	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 (Tc測定点チップ直下)	−	−	0.06	℃/W
	Diode			−	−	0.14	

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Fig.1- Output Characteristics (Typical)

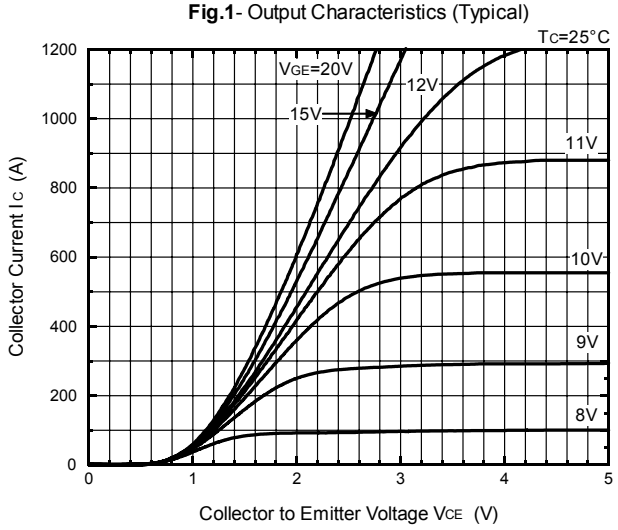

Fig.2- Output Characteristics (Typical)

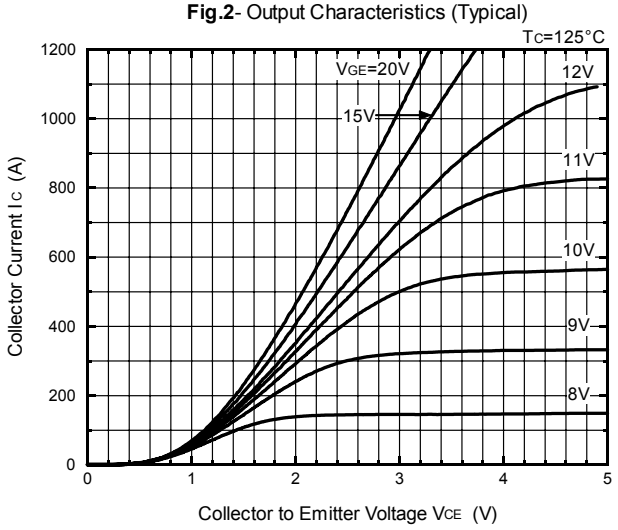

Fig.3- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

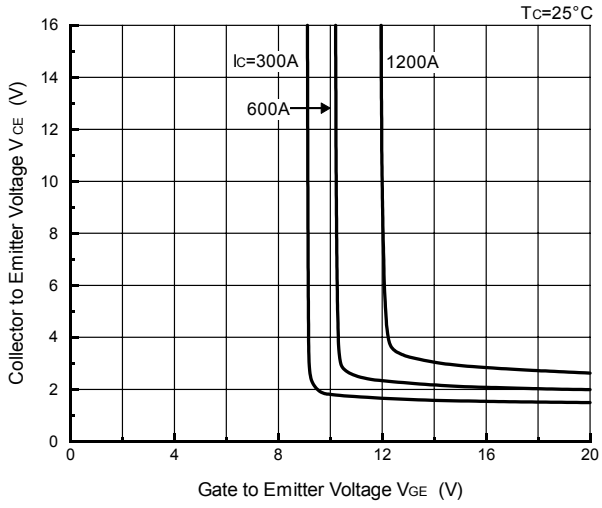

Fig.4- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

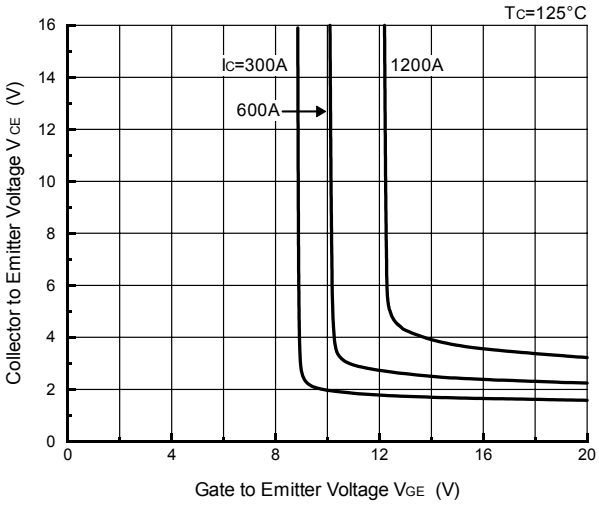

Fig.5- Gate Charge vs. Collector to Emitter Voltage (Typical)

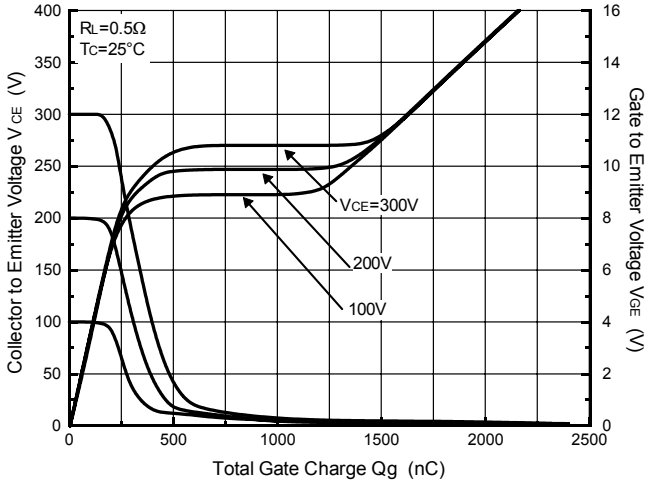

Fig.6- Capacitance vs. Collector to Emitter Voltage (Typical)

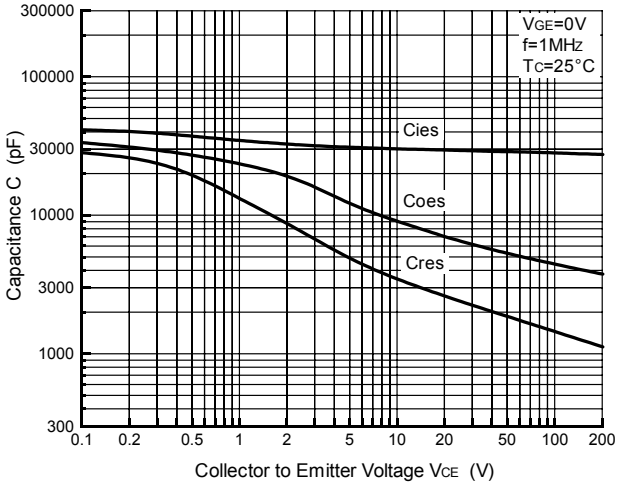

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Fig.7- Collector Current vs. Switching Time (Typical)

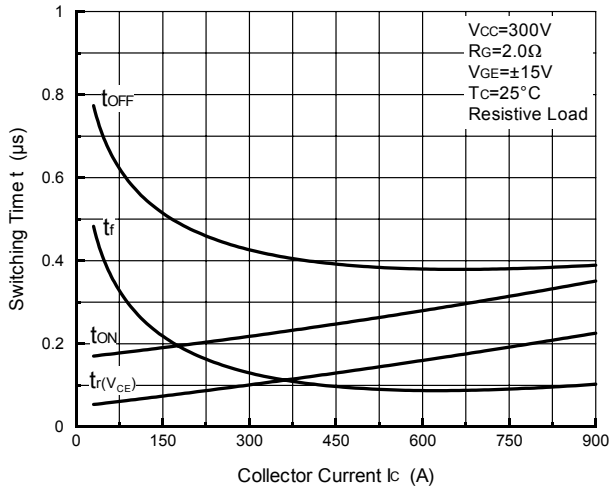

Fig.8- Series Gate Impedance vs. Switching Time (Typical)

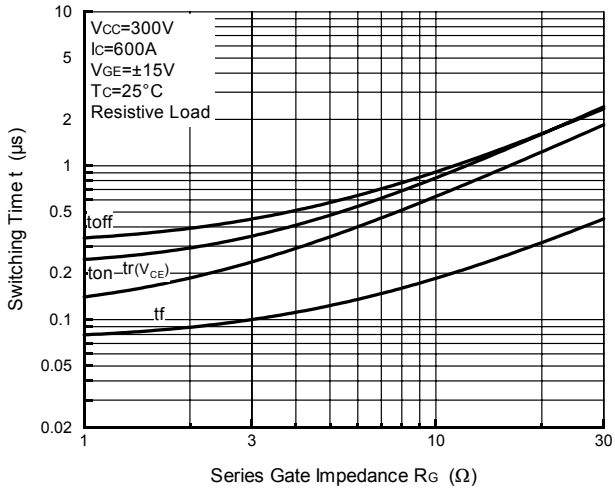

Fig.9- Collector Current vs. Switching Time

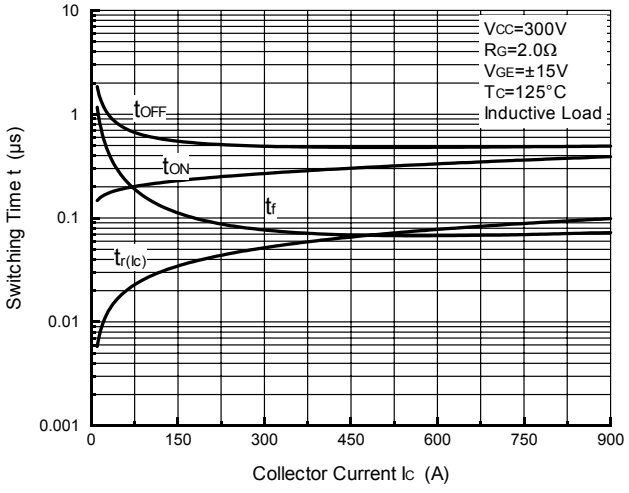

Fig.10- Series Gate Impedance vs. Switching Time

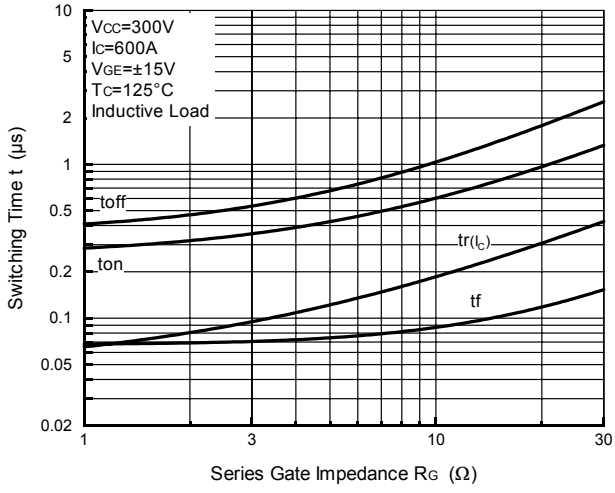

Fig.11- Collector Current vs. Switching Loss

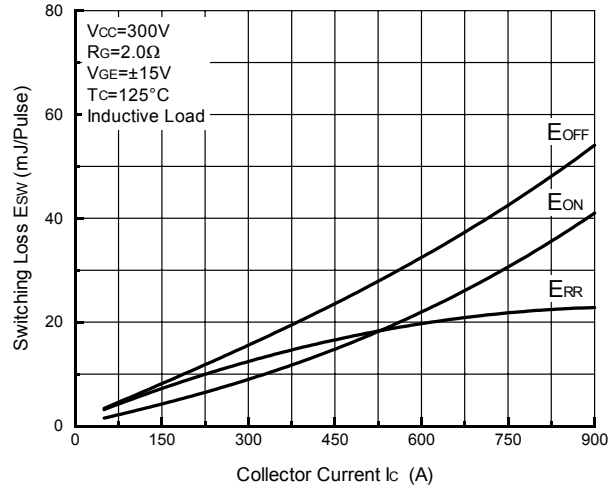

Fig.12- Series Gate Impedance vs. Switching Loss

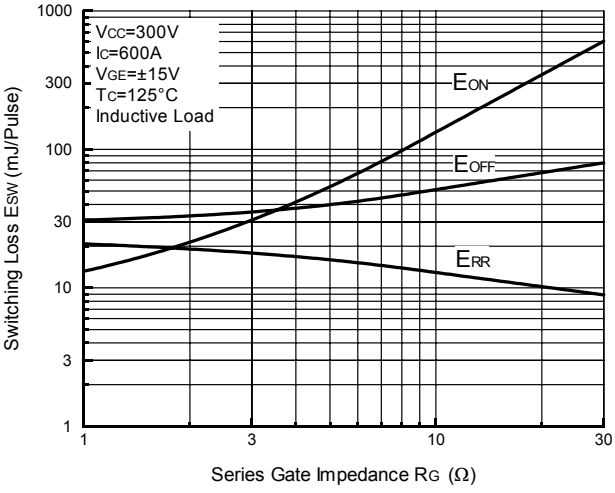

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Fig.13- Forward Characteristics of Free Wheeling Diode (Typical)

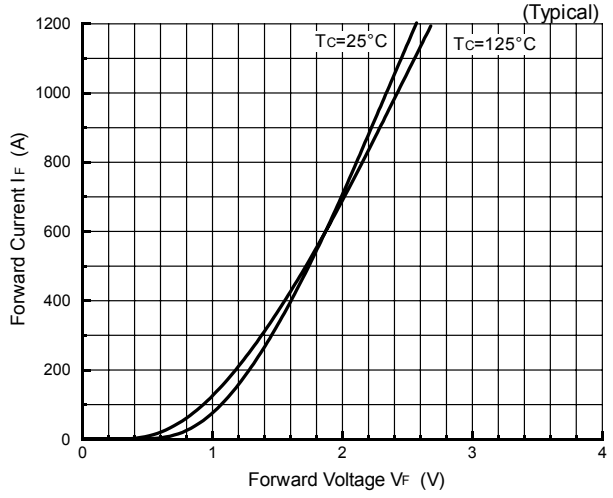

Fig.14- Reverse Recovery Characteristics (Typical)

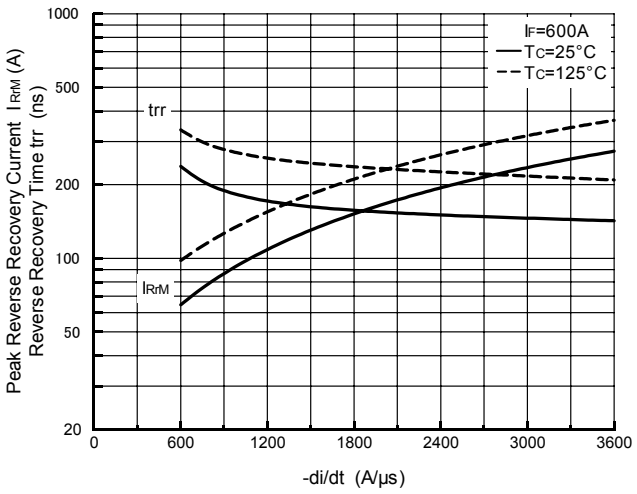

Fig.15- Reverse Bias Safe Operating Area

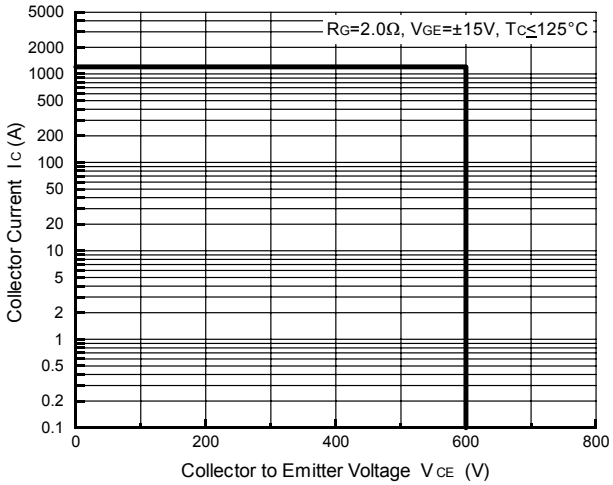

Fig.16- Transient Thermal Impedance