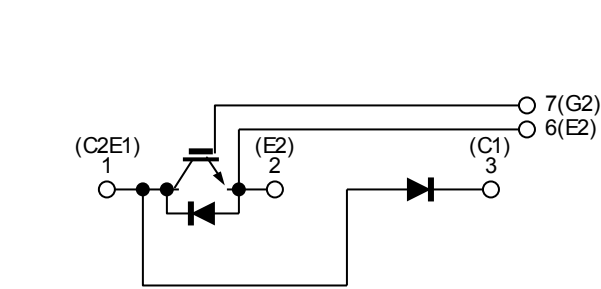


IGBT Module-Chopper

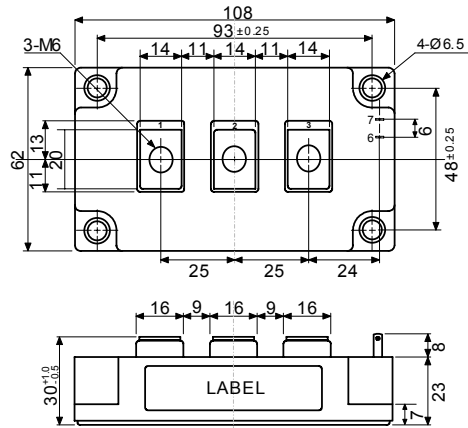
400 A, 1200V

PRHMB400B12A

□ 回路図 : *CIRCUIT*



□ 外形寸法図 : *OUTLINE DRAWING*



Dimension: [mm]

□ 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	I_C	400	A
	1 ms	I_{CP}	800	
コレクタ損失 Collector Power Dissipation		P_C	1, 900	W
接合温度範囲 Junction Temperature Range		T_j	$-40 \sim +150$	$^{\circ}\text{C}$
保存温度範囲 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	Module Base to Heatsink	F_{tor}	3 (30.6)	N · m (kgf · cm)
	Busbar to Main Terminal			

□ 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}	$V_{CE} = 1200\text{V}, V_{GE} = 0\text{V}$	—	—	8.0	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		$V_{CE(sat)}$	$I_C = 400\text{A}, V_{GE} = 15\text{V}$	—	1.9	2.4	V
ゲートしきい値電圧 Gate-Emitter Threshold Voltage		$V_{GE(th)}$	$V_{CE} = 5\text{V}, I_C = 400\text{mA}$	4.0	—	8.0	V
入力容量 Input Capacitance		C_{ies}	$V_{CE} = 10\text{V}, V_{GE} = 0\text{V}, f = 1\text{MHz}$	—	25,000	—	pF
スイッチング時間 Switching Time	上昇時間 Rise Time	t_r	$V_{CC} = 600\text{V}$ $R_g = 1.5\Omega$ $V_{GE} = \pm 15\text{V}$	—	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* ($T_c = 25^{\circ}\text{C}$)

Item		Symbol	Rated Value	Unit
順電流 Forward Current	DC	I_F	400	A
	1 ms	I_{FM}	800	

Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
順電圧 Peak Forward Voltage		V_F	$I_F = 400\text{A}, V_{GE} = 0\text{V}$	—	1.9	2.4	V
逆回復時間 Reverse Recovery Time		t_{rr}	$I_F = 400\text{A}, V_{GE} = -10\text{V}$ $di/dt = 800\text{A}/\mu\text{s}$	—	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	$R_{th(j-c)}$	Junction to Case	—	—	0.065	$^{\circ}\text{C}/\text{W}$
	Diode			—	—	0.12	

Fig.1- Output Characteristics (Typical)

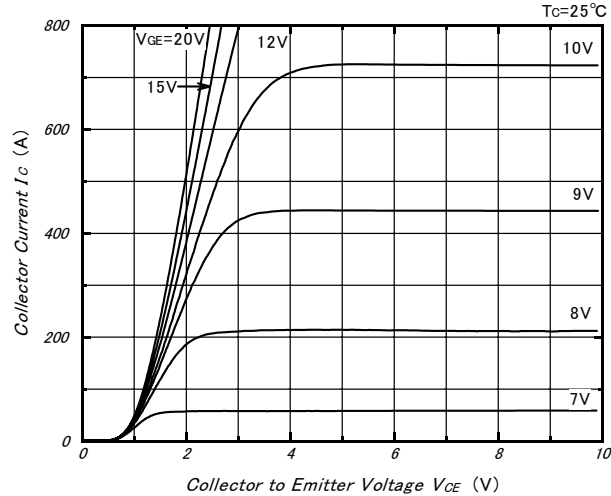


Fig.2- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

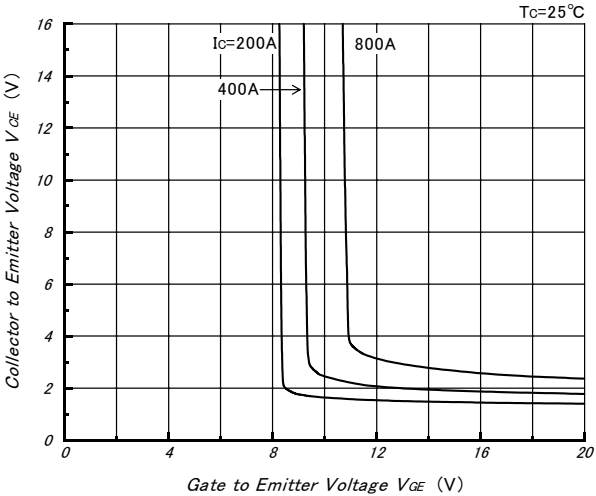


Fig.3- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

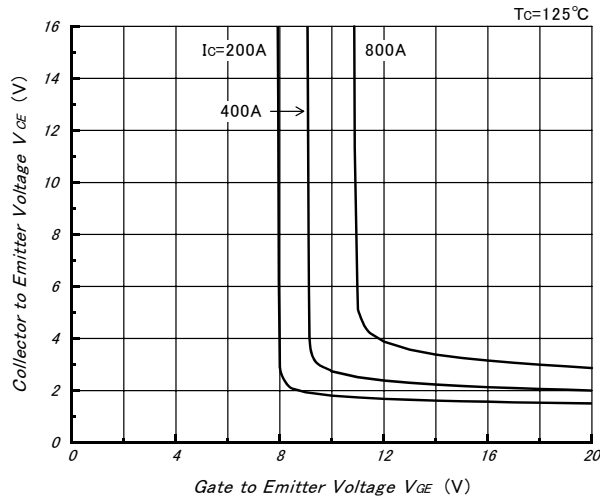


Fig.4- Gate Charge vs. Collector to Emitter Voltage (Typical)

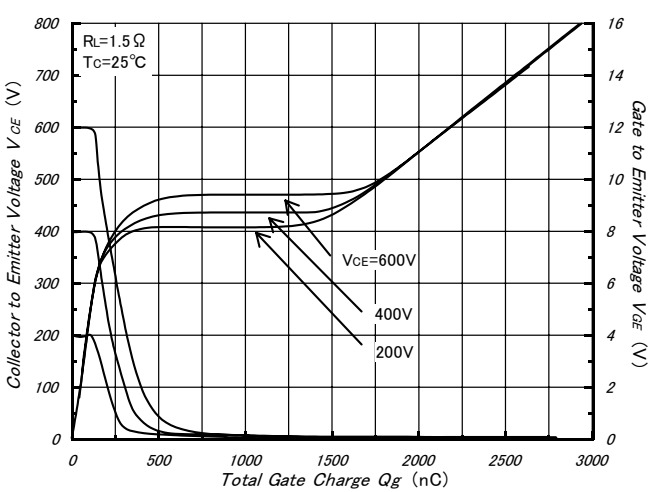


Fig.5- Capacitance vs. Collector to Emitter Voltage (Typical)

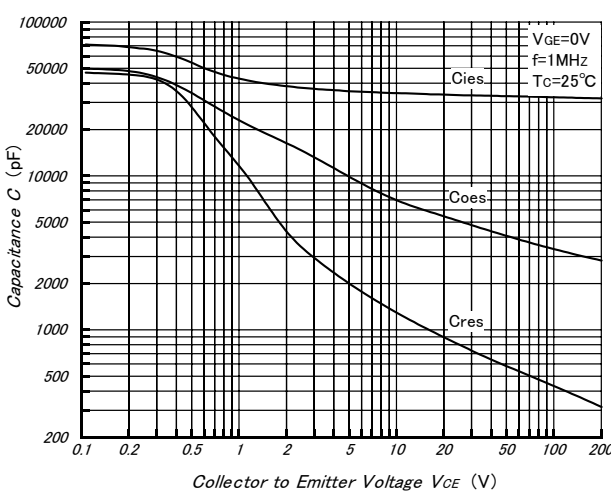


Fig.6- Collector Current vs. Switching Time (Typical)

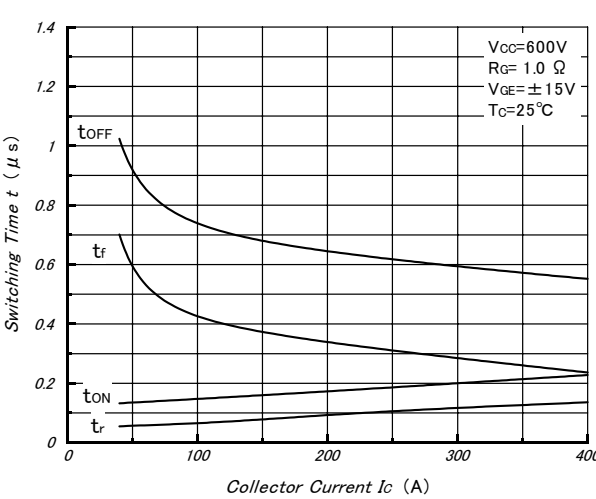


Fig.7- Series Gate Impedance vs. Switching Time (Typical)

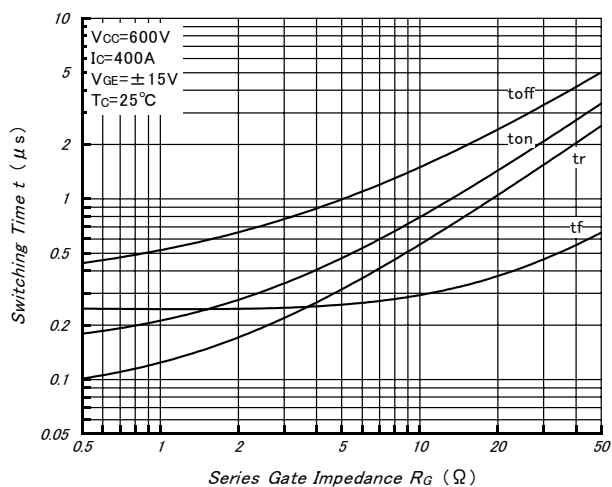


Fig.8- Forward Characteristics of Free Wheeling Diode (Typical)

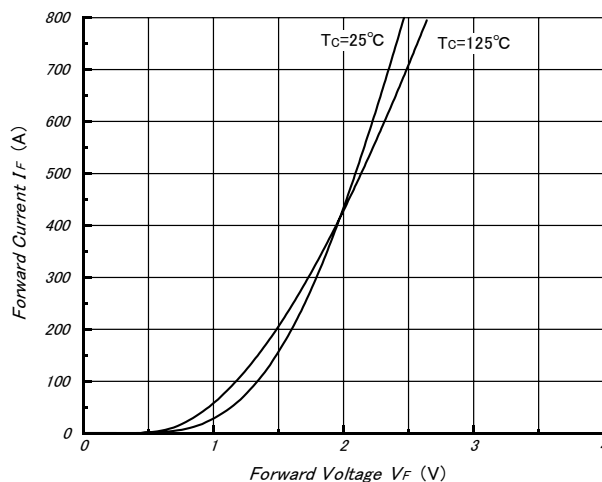


Fig.9- Reverse Recovery Characteristics (Typical)

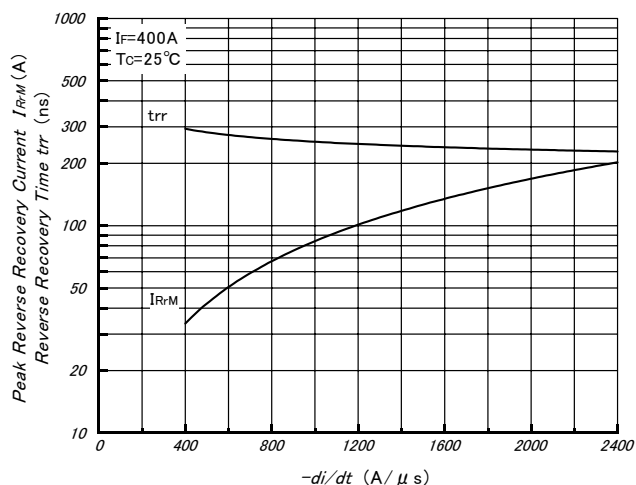


Fig.10- Reverse Bias Safe Operating Area

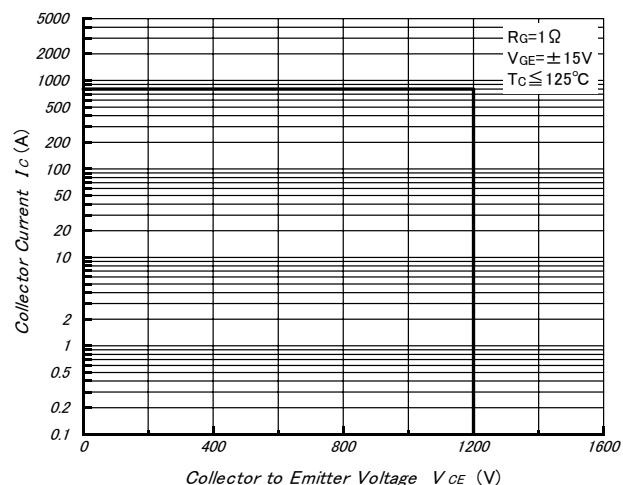


Fig.11- Transient Thermal Impedance

