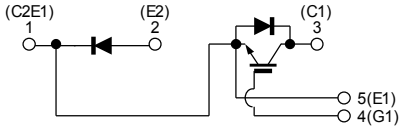
日本インター株式会社
Nihon Inter Electronics Corporation

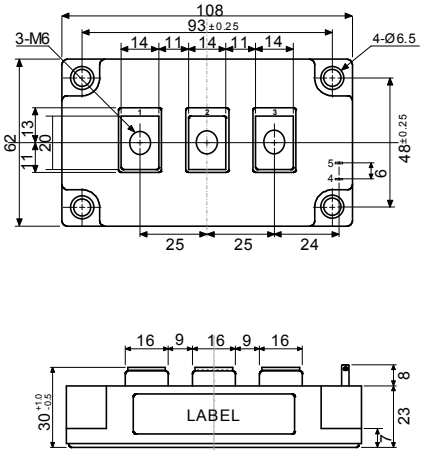
ＩＧＢＴ Module
４００Ａ／６００Ｖ

ＰＣＦＭＢ４００Ｅ６

□ 回路図 ： *CIRCUIT*



□ 外形寸法図 ： *OUTLINE DRAWING*



Dimension: [mm]

□ 最大定格 ： *MAXIMUM RATINGS* (at Tc=25℃ unless otherwise specified)

Item		Symbol	Rated Value	Unit
コレクタ・エミッタ間電圧 Collector-Emitter Voltage		VCES	600	V
ゲート・エミッタ間電圧 Gate-Emitter Voltage		VGES	±20	V
コレクタ電流 Collector Current	DC	IC	400	A
	1ms	ICP	800	
コレクタ損失 Collector Power Dissipation		PC	1,470	W
接合温度 Junction Temperature Range		Tj	−40～+150	℃
保存温度 Storage Temperature Range		Tstg	−40～+125	℃
絶縁耐圧 (Terminal to Base AC, 1minute) Isolation Voltage		VISO	2,500	V(RMS)
締め付けトルク Mounting Torque	Module Base to Heatsink	Ftor	3 (30.6)	N・m (kgf・cm)
	Busbar to Main Terminal			

□ 電気的特性 ： *ELECTRICAL CHARACTERISTICS* (at Tj=25℃ unless otherwise specified)

Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
コレクタ遮断電流 Collector-Emitter Cut-Off Current		ICES	VCE= 600V, VGE= 0V	−	−	1.0	mA
ゲート漏れ電流 Gate-Emitter Leakage Current		IGES	VGE= ±20V, VCE= 0V	−	−	1.0	μA
コレクタ・エミッタ間飽和電圧 Collector-Emitter Saturation Voltage		VCE(sat)	IC= 400A, VGE= 15V	−	2.1	2.6	V
ゲートしきい値電圧 Gate-Emitter Threshold Voltage		VGE(th)	VCE= 5V, IC= 400mA	4.0	−	8.0	V
入力容量 Input Capacitance		Cies	VCE= 10V, VGE= 0V, f= 1MHz	−	20,000	−	pF
スイッチング時間 Switching Time	上昇時間 Rise Time	tr	VCC= 300V RL= 0.75Ω RG= 3.0Ω VGE= ±15V	−	0.15	0.30	μs
	ターンオン時間 Turn-on Time	ton		−	0.25	0.40	
	下降時間 Fall Time	tf		−	0.10	0.35	
	ターンオフ時間 Turn-off Time	toff		−	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* (at Tc=25℃) & *CHARACTERISTICS* (at Tj=25℃)

Item		Symbol	Rated Value	Unit
順電流 Forward Current	DC	IF	400	A
	1ms	IFM	800	

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
順電圧 Peak Forward Voltage	VF	IF= 400A, VGE= 0V	−	1.9	2.4	V
逆回復時間 Reverse Recovery Time	trr	IF= 400A, VGE= -10V di/dt= 800A/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チップ直下での測定点)	−	−	0.085	℃／W
	Diode			−	−	0.20	

Fig.1- Output Characteristics (Typical)

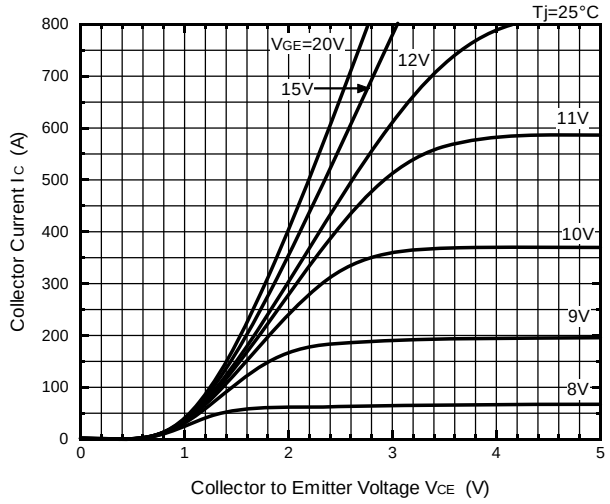


Fig.2- Output Characteristics (Typical)

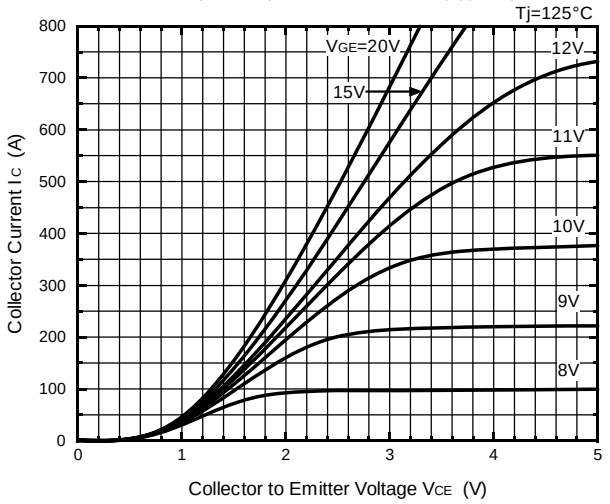


Fig.3- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

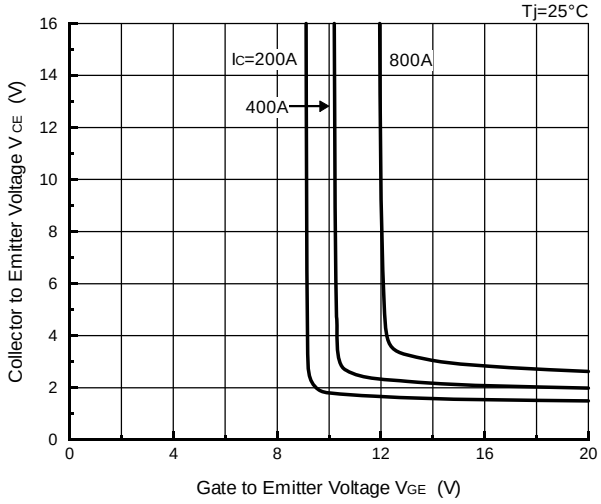


Fig.4- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

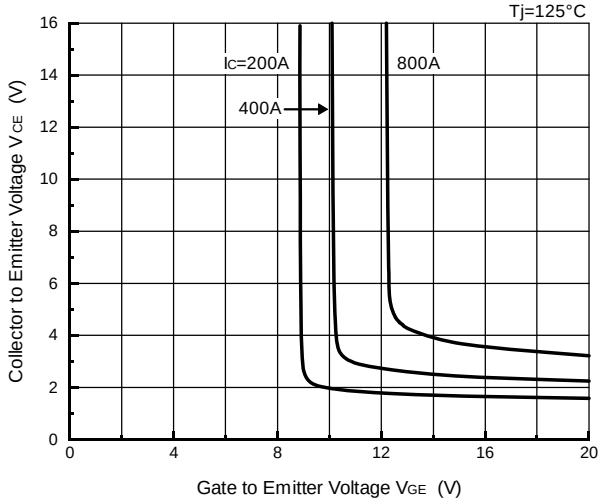


Fig.5- Gate Charge vs. Collector to Emitter Voltage (Typical)

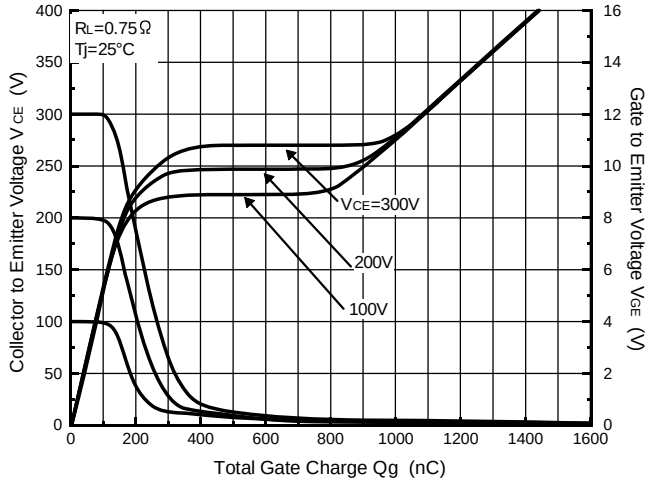


Fig.6- Capacitance vs. Collector to Emitter Voltage (Typical)

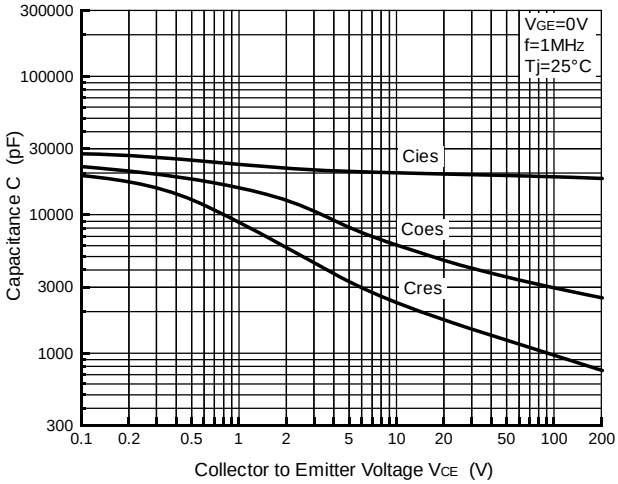


Fig.7- Collector Current vs. Switching Time (Typical)

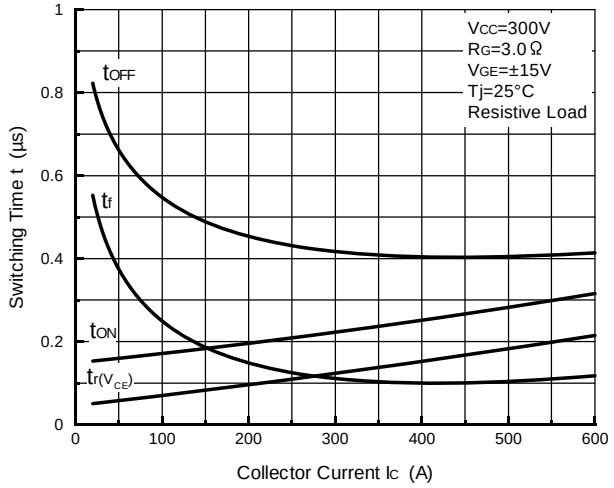


Fig.8- Series Gate Impedance vs. Switching Time (Typical)

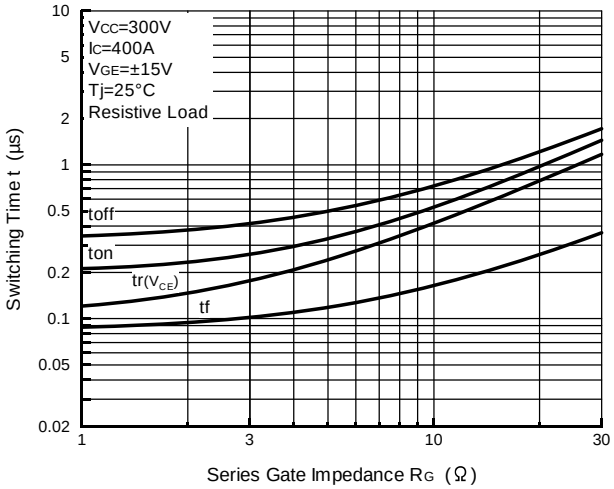


Fig.9- Collector Current vs. Switching Time

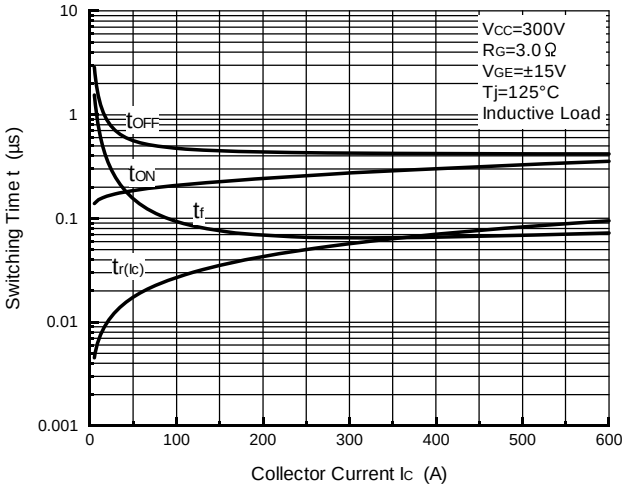


Fig.10- Series Gate Impedance vs. Switching Time

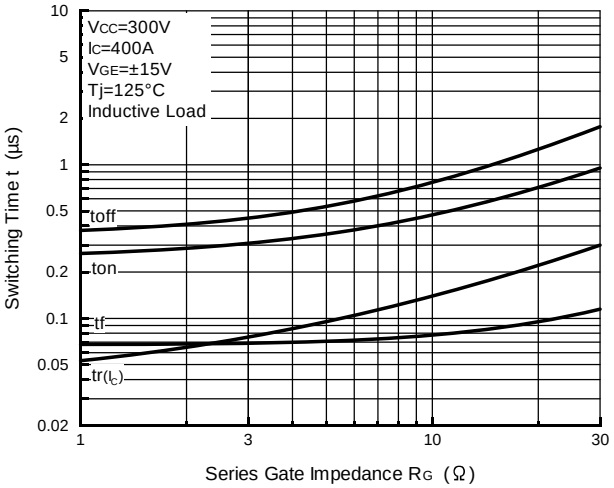


Fig.11- Collector Current vs. Switching Loss

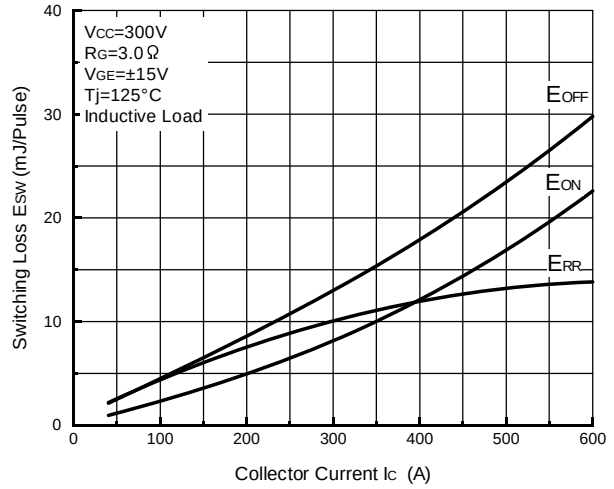


Fig.12- Series Gate Impedance vs. Switching Loss

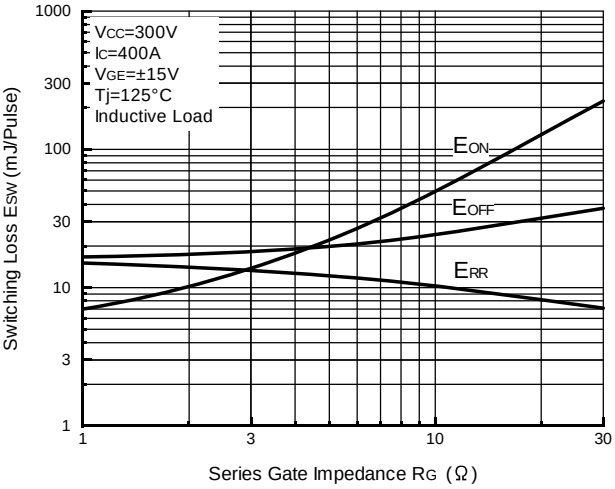


Fig.13- Forward Characteristics of Free Wheeling Diode (Typical)

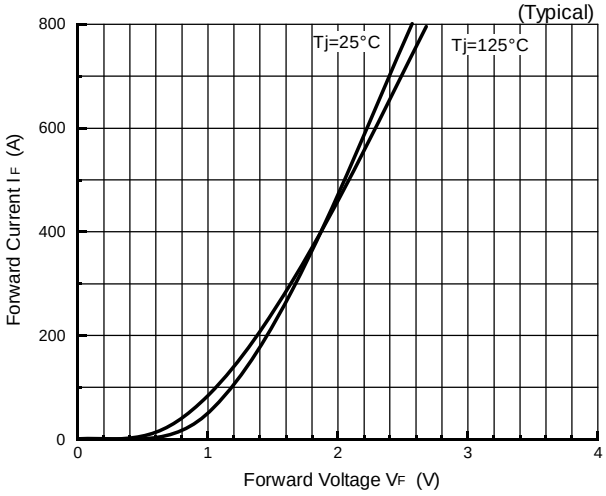


Fig.14- Reverse Recovery Characteristics (Typical)

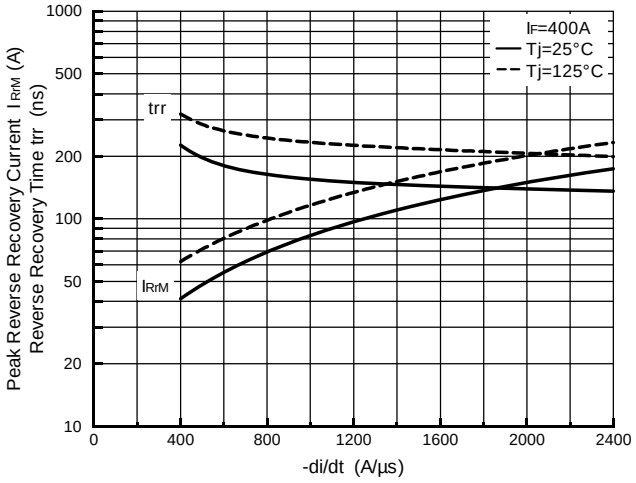


Fig.15- Reverse Bias Safe Operating Area

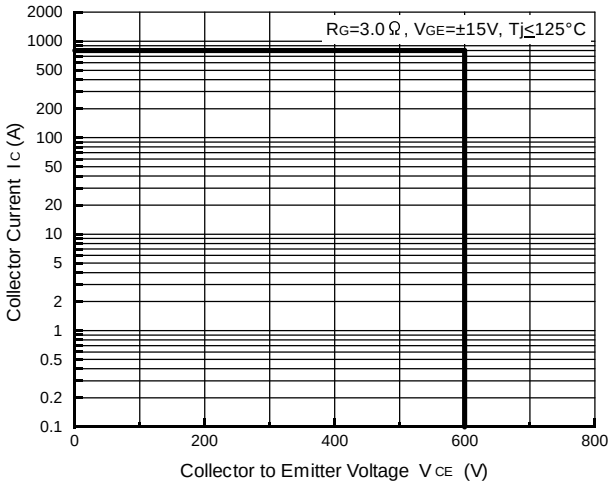


Fig.16- Transient Thermal Impedance