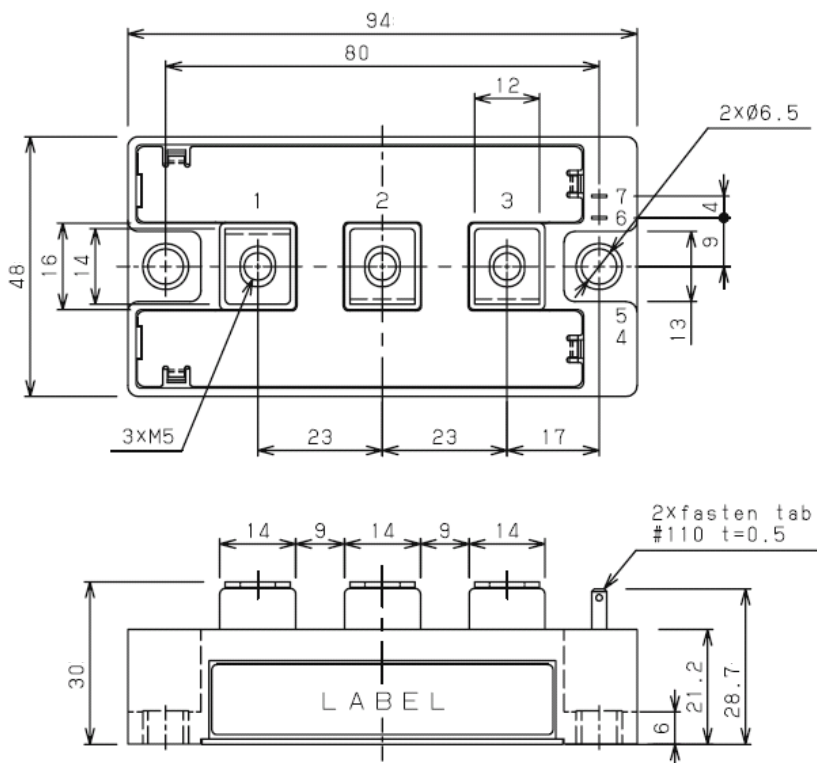
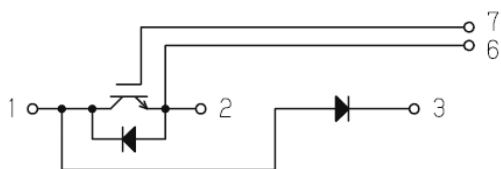


□ 回路図 : *CIRCUIT*

□ 概略図 : *SCHEMATIC DIAGRAM*

Dimension: [mm]



□ 最大定格 : *MAXIMUM RATINGS* (at $T_c=25^{\circ}\text{C}$ unless otherwise specified)

Item		Symbol	Condition	Rated Value	Unit	
IGBT	コレクタ・エミッタ間 電 圧 Collector-Emitter Voltage	V _{CES}	G-E Short	650	V	
	ゲ ー ト ・ エ ミ ッ タ 間 電 圧 Gate-Emitter Voltage	V _{GES}	C-E Short	±20	V	
	コ レ ク タ 電 流 Collector Current	I _C	DC T _c =85℃	400	A	
		I _{CP}	Pulse ≤ 1ms	800		
	コ レ ク タ 損 失 Collector Power Dissipation	P _C	T _j =175℃	1363	W	
T _j =150℃			1136			
FWD	繰 り 返 し ピ ー ク 逆 電 圧 Repetitive peak reverse voltage	V _{RRM}		650	V	
	順 電 流 Forward Current	I _F		400	A	
		I _{FM}	Pulse ≤ 1ms	800		
最 大 接 合 温 度 Maximum Junction Temperature		T _j MAX	瞬時動作(過負荷) Instantaneous Overload	175	℃	
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 Isolation Voltage		V _{ISO}	Terminal to Base AC, 1minute	2,500	V (RMS)	
締 め 付 け ト ル ク Mounting Torque		Module Base to Heatsink	F _{tor}	M6	3	N・m
		Busbar to Main Terminal		M5	2	

□ 電気的特性 : **ELECTRICAL CHARACTERISTICS** (at $T_J=25^\circ\text{C}$ unless otherwise specified)

Characteristic			Symbol	Test Condition		Min.	Typ.	Max.	Unit
IGBT	コレクタ遮断電流 Collector-Emitter Cut-Off Current		ICES	VCE= 650V,VGE= 0V		—	—	1.0	mA
	ゲート漏れ電流 Gate-Emitter Leakage Current		IGES	VGE= ±20V,VCE= 0V		—	—	2.0	μA
	コレクタ・エミッタ間飽和電圧 Collector-Emitter Saturation Voltage		VCE(sat.)	Ic= 400A,VGE= 15V (chip level)	Tj=25°C	—	1.45	1.95	V
					Tj=125°C	—	1.65	—	
					Tj=150°C	—	1.70	—	
	ゲートしきい値電圧 Gate-Emitter Threshold Voltage		VGE(th.)	VCE= 10V,Ic= 8mA		4.8	—	7.0	V
	入力容量 Input Capacitance		Cies	VCE= 25V,VGE= 0V,f= 1MHz		—	34.0	—	nF
	出力容量 Output Capacitance		Coes			—	1.4	—	
	帰還容量 Reverse Transfer Capacitance		Cres			—	1.2	—	
	ゲート電荷量 Gate Charge		Qg	Vcc=300V, Ic=400A, VGE=-15~+15V		—	3400	—	nC
スイッチング時間 Switching Time	上昇時間 Rise Time	tr	Vcc= 300V Ls=20nH Ic= 400A Inductive Load Rg= 3Ω VGE= ±15V Tj= 150°C		—	95	—	ns	
	ターンオン遅延時間 Turn-on Delay Time	td(on)			—	220	—		
	下降時間 Fall Time	tf			—	100	—		
	ターンオフ遅延時間 Turn-off Delay Time	td(off)			—	480	—		
FWD	順電圧 Peak Forward Voltage		VF	If= 400A,VGE=0V (chip level)	Tj=25°C	—	1.70	2.20	V
					Tj=125°C	—	1.60	—	
					Tj=150°C	—	1.55	—	
	逆回復時間 Reverse Recovery Time		trr	Vcc= 300V Ls=20nH Ic= 400A Inductive Load Rg= 3Ω VGE= ±15V Tj= 150°C		—	185	—	ns
内部配線抵抗 Internal Lead Resistance			RCC+EE'	主端子—チップ間 / 1素子 Main Terminal - Chip / Per 1 Arm		—	—	0.6	mΩ
内部インダクタンス Stray Inductance			LSCE	メイン端子3—2間 Main Terminal 3 - Main Terminal 2		—	27	—	nH

□ 熱的特性 : **THERMAL CHARACTERISTICS**

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
熱抵抗 Thermal Resistance	IGBT	Rth(j-c) Junction to Case Per 1 Arm (Tc測定点: チップ直下)	—	—	0.11	$^\circ\text{C}/\text{W}$
	FWD		—	—	0.24	
接触熱抵抗 Thermal Resistance	IGBT	Rth(c-f) Case to heatsink Per 1 Arm (Paste=1W/(m 2 · $^\circ\text{C}$))	—	0.05	—	
	FWD		—	0.10	—	

特性図 : CHARACTERISTICS CURVES

Fig.1- Output Characteristics (Typical)

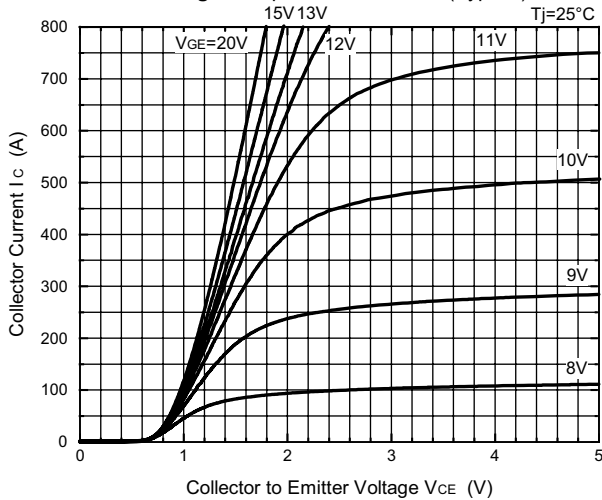


Fig.2- Saturation Voltage Characteristics (Typical)

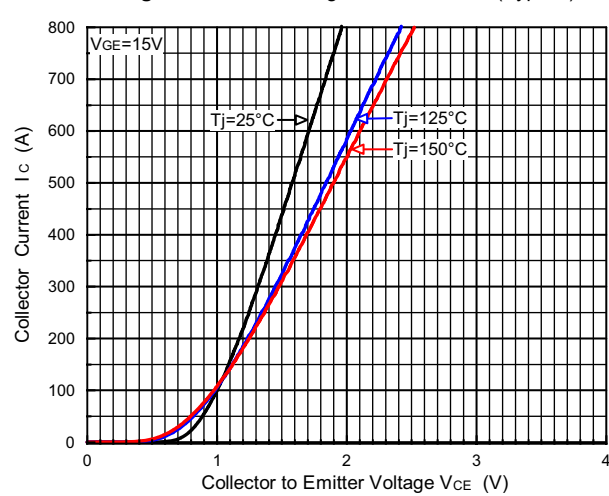


Fig.3- Transfer Characteristics (Typical)

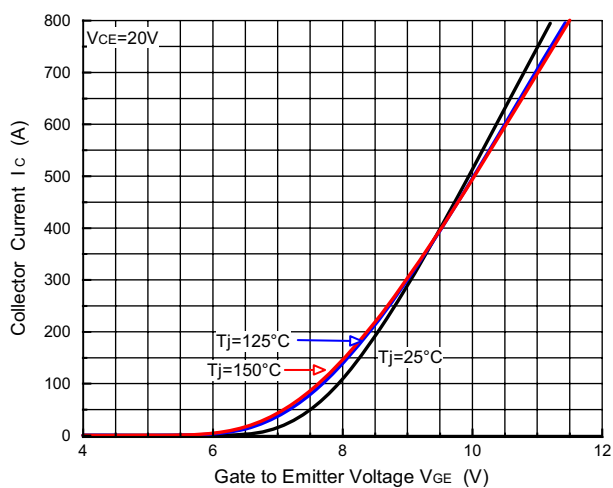


Fig.4- Gate Charge vs. Collector to Emitter Voltage (Typical)

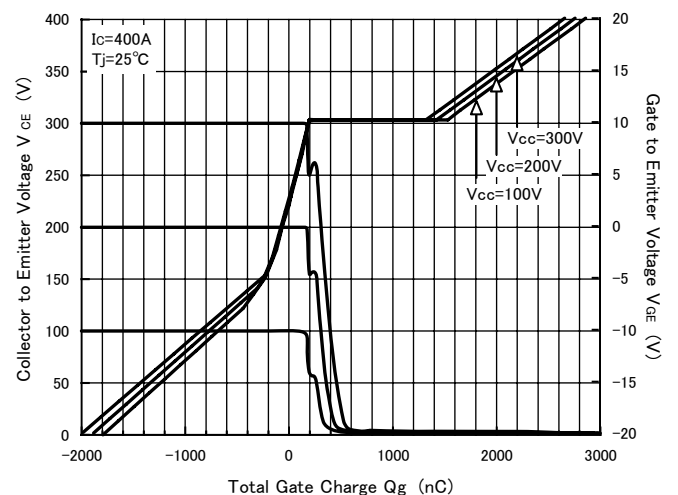


Fig.5- Collector Current vs. Switching Time (Typical)

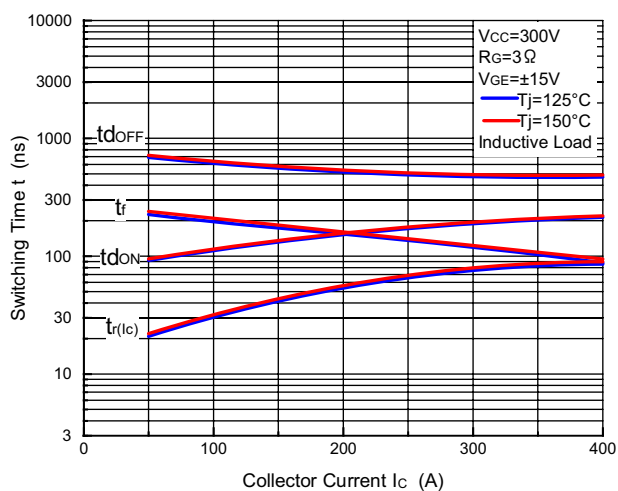
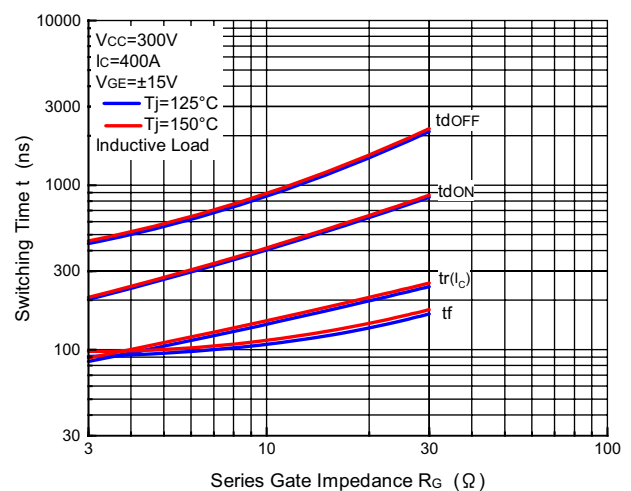


Fig.6- Series Gate Impedance vs. Switching Time (Typical)



特性 : CHARACTERISTICS CURVES

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

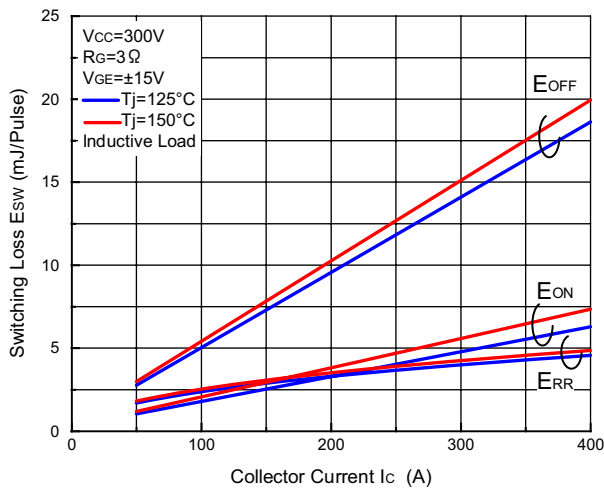


Fig.8- Series Gate Impedance vs. Switching Loss (Typical)

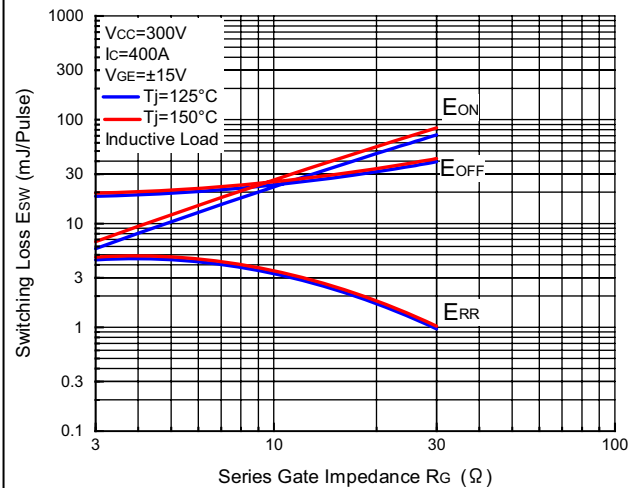


Fig.9- Forward Characteristics of Free Wheeling Diode (Typical)

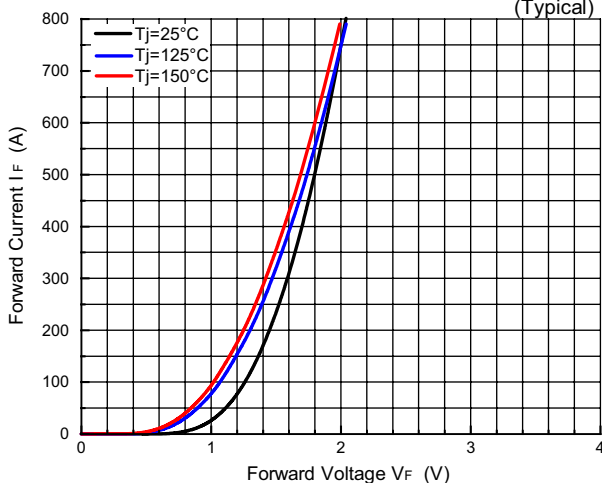


Fig.10- FWD Reverse Recovery Characteristics (Typical)

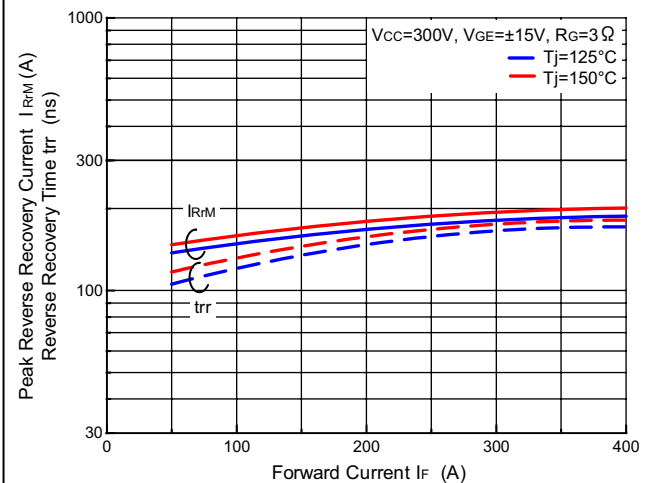


Fig.11- Reverse Bias Safe Operating Area

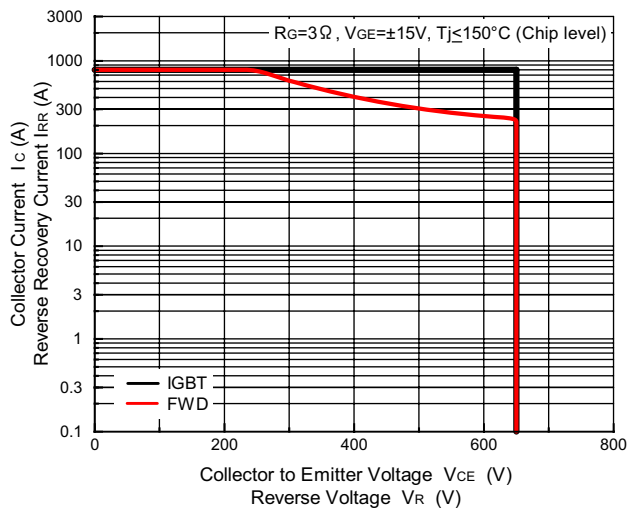


Fig.12- Transient Thermal Impedance

