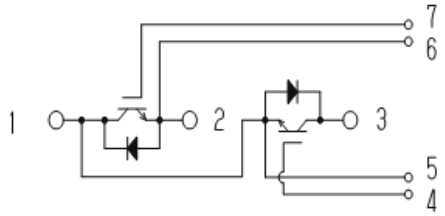
ShinDengen
New power. Your power.

I G B T Module
75 A／650V

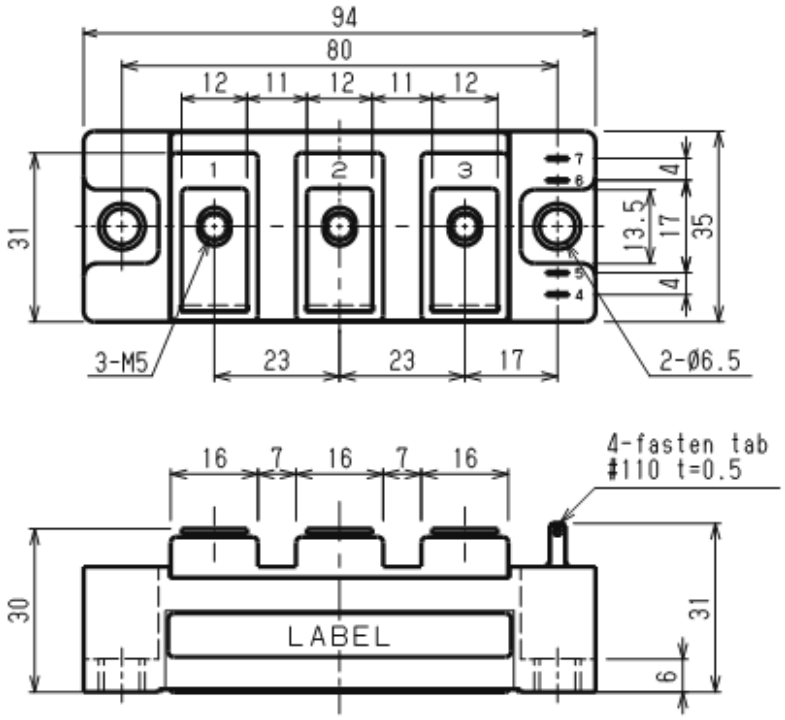
P D M B 7 5 W 6

□ 回路図 ： *C I R C U I T*



□ 概略図 ： *S C H E M A T I C D I A G R A M*

Dimension: [mm]



□ 最 大 定 格 ： *MAXIMUM RATINGS* (at Tc=25℃ 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 Tc=85℃	75	A
			I_{CP}	Pulse ≦ 1ms	150	
	コレクタ損失 Collector Power Dissipation		P_C	Tj=175℃	306	W
				Tj=150℃	255	
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		75	A
			I_{FM}	Pulse ≦ 1ms	150	
最大接合温度 Maximum Junction Temperature			T_{jMAX}	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	

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□ 電気的特性 : *ELECTRICAL CHARACTERISTICS* (at T_j=25℃ 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		I_{CES}	V_{CE}= 650V,V_{GE}= 0V		—	—	1.0	mA
IGBT	ゲート漏れ電流 Gate-Emitter Leakage Current		I_{GES}	V_{GE}= ±20V,V_{CE}= 0V		—	—	1.0	μA
IGBT	コレクタ・エミッタ間飽和電圧 Collector-Emitter Saturation Voltage		$V_{CE(sat.)}$	I_C= 75A,V_{GE}= 15V (chip level)	T_j=25℃	—	1.45	1.95	V
					T_j=125℃	—	1.65	—	
					T_j=150℃	—	1.70	—	
IGBT	ゲート しきい値電圧 Gate-Emitter Threshold Voltage		$V_{GE(th.)}$	V_{CE}= 10V,I_C= 1.5mA		4.8	—	7.0	V
IGBT	入力容量 Input Capacitance		Cies	V_{CE}= 25V,V_{GE}= 0V,f= 1MHz		—	6.6	—	nF
IGBT	出力容量 Output Capacitance		Coes			—	0.3	—	
IGBT	帰還容量 Reverse Transfer Capacitance		Cres			—	0.2	—	
IGBT	ゲート電荷量 Gate Charge		Qg	Vcc=300V, Ic=75A, V_{GE}=-15～+15V		—	660	—	nC
IGBT	スイッチング時間 Switching Time	上昇時間 Rise Time	tr	V_{CC}= 300V Ls=38nH I_C= 75A Inductive Load R_G= 12Ω V_{GE}= ±15V Tj= 150℃		—	75	—	ns
		ターンオン遅延時間 Turn-on Delay Time	td(on)			—	126	—	
		下降時間 Fall Time	tf			—	71	—	
		ターンオフ遅延時間 Turn-off Delay Time	td(off)			—	328	—	
FWD	順電圧 Peak Forward Voltage		V_F	I_F= 75A,V_{GE}=0V (chip level)	T_j=25℃	—	1.70	2.20	V
					T_j=125℃	—	1.60	—	
					T_j=150℃	—	1.55	—	
FWD	逆回復時間 Reverse Recovery Time		t_{rr}	V_{CC}= 300V Ls=38nH I_C= 75A Inductive Load R_G= 12Ω V_{GE}= ±15V Tj= 150℃		—	140	—	ns
内部配線抵抗 Internal Lead Resistance			$R_{CC'+EE'}$	主端子—チップ間 / 1素子 Main Terminal - Chip / Per 1 Arm		—	—	1	mΩ
内部インダクタンス Stray Inductance			L_{SCE}	メイン端子3－2間 Main Terminal 3 - Main Terminal 2		—	30	—	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)	—	—	0.49	℃/W
	FWD			—	—	1.30	
接触熱抵抗 Thermal Resistance	IGBT	Rth(c-f)	Case to heatsink Per 1 Arm Paste=1W/(m·℃)	—	0.10	—	
	FWD			—	0.17	—	

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□ 特性図 ：*CHARACTERISTICS CURVES*

Fig.1- Output Characteristics (Typical)

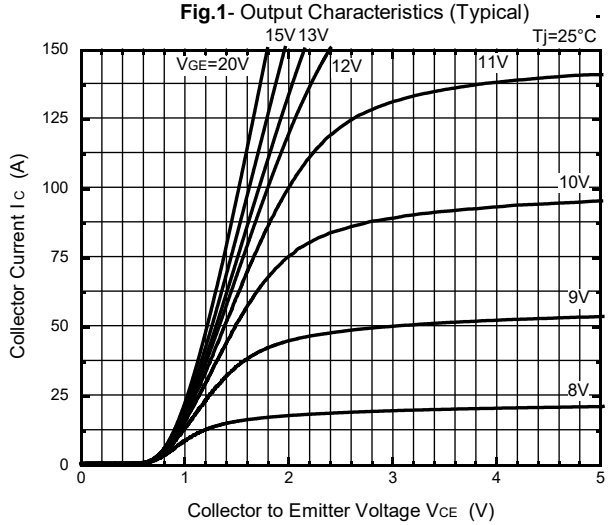


Fig.2- Saturation Voltage Characteristics (Typical)

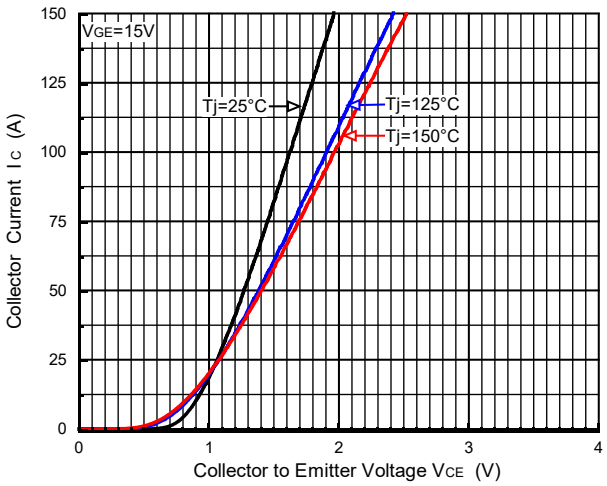


Fig.3- Transfer Characteristics (Typical)

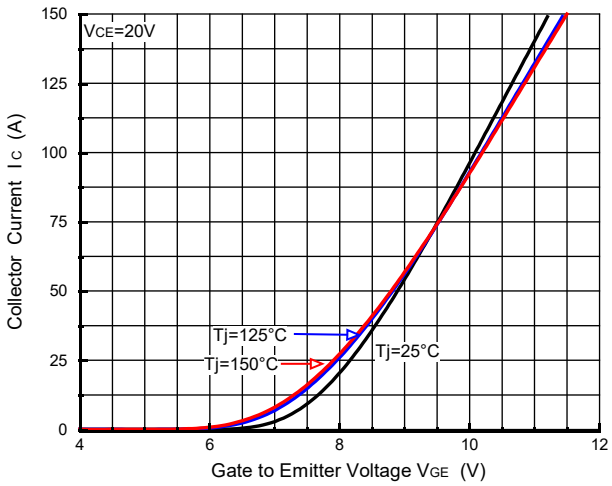


Fig.4- Gate Charge vs. Collector to Emitter Voltage (Typical)

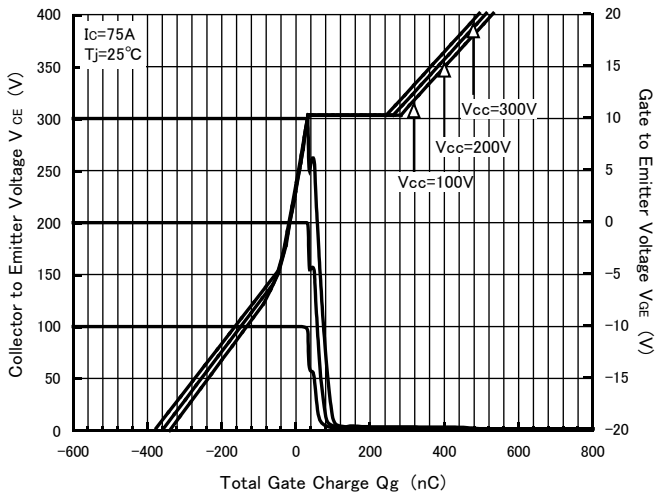


Fig.5- Collector Current vs. Switching Time (Typical)

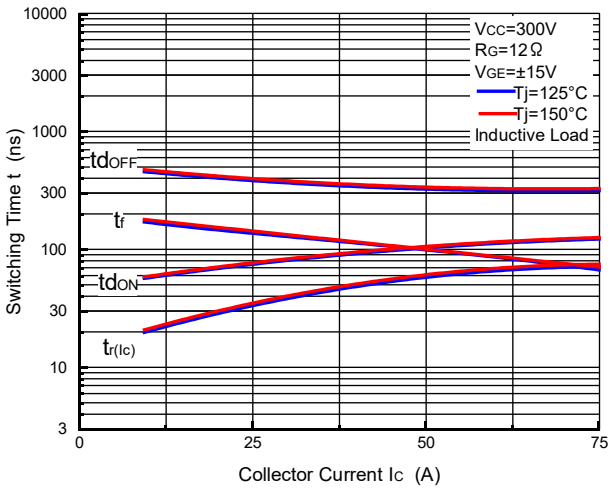
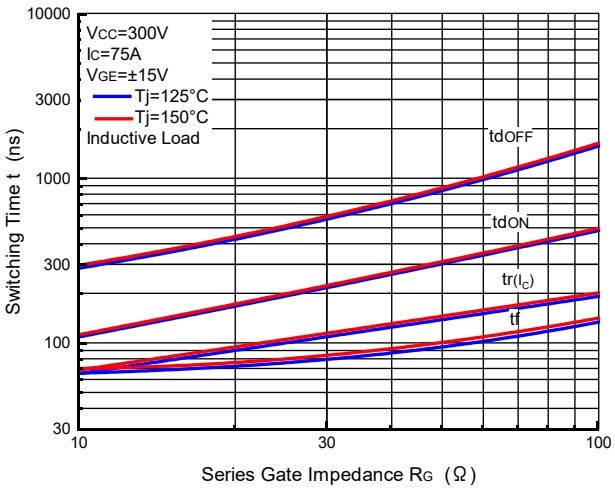


Fig.6- Series Gate Impedance vs. Switching Time (Typical)



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□ 特性図 ：*CHARACTERISTICS CURVES*

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

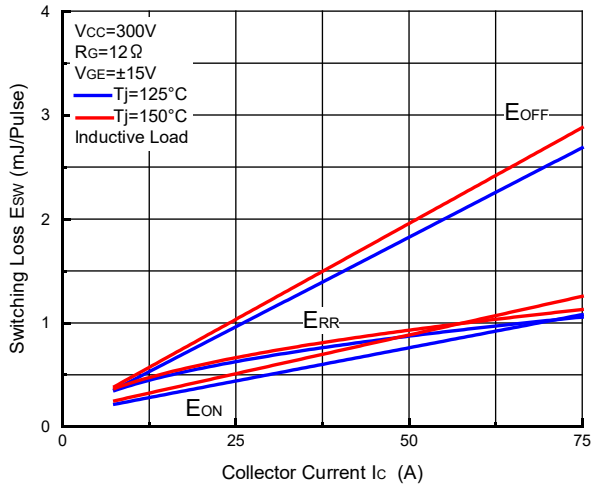


Fig.8- Series Gate Impedance vs. Switching Loss (Typical)

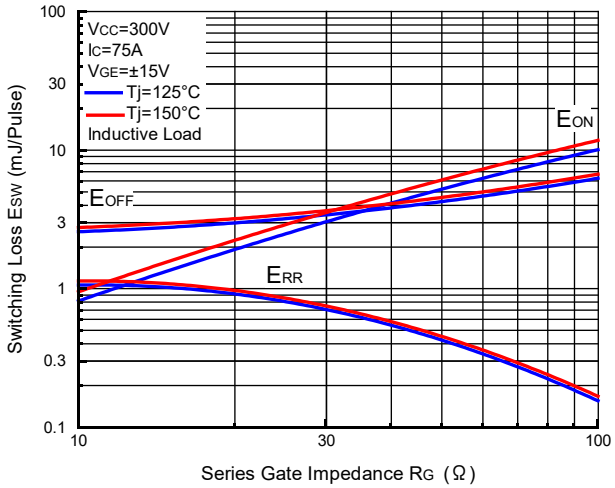


Fig.9- Forward Characteristics of Free Wheeling Diode (Typical)

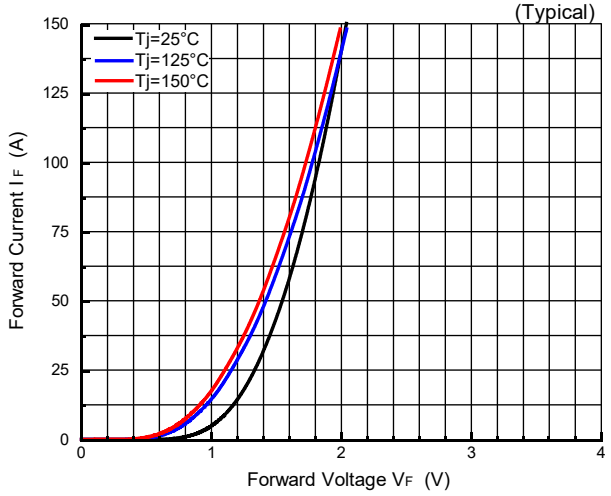


Fig.10- FWD Reverse Recovery Characteristics (Typical)

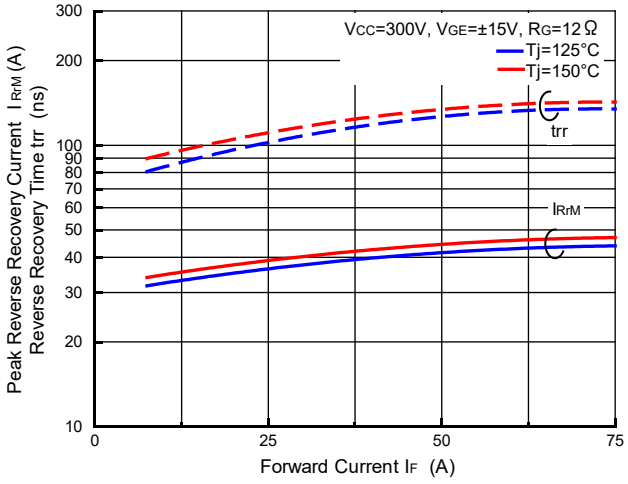


Fig.11- Reverse Bias Safe Operating Area

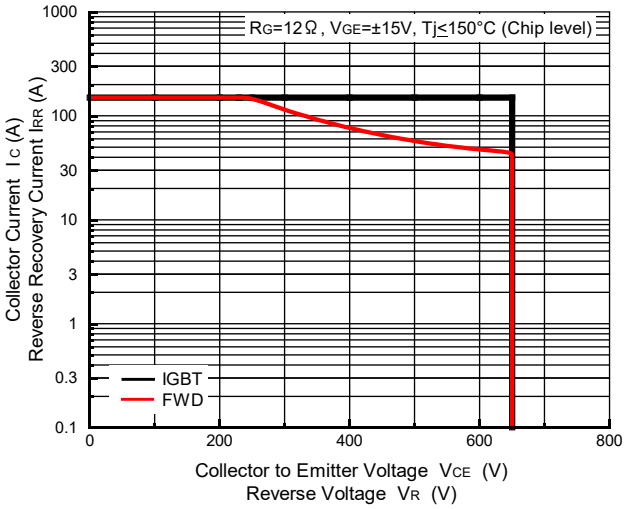
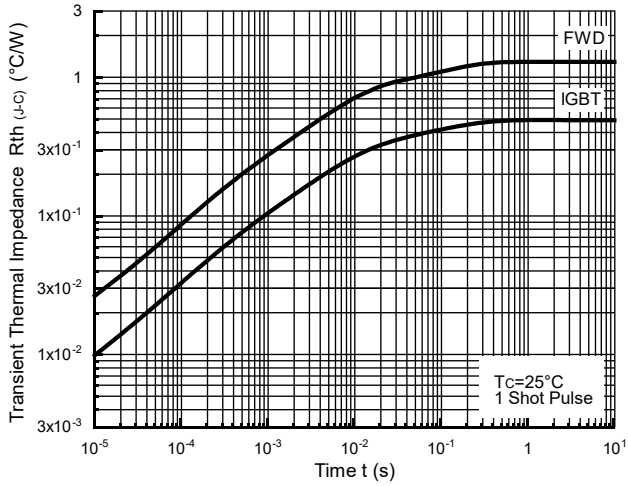


Fig.12- Transient Thermal Impedance



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   【Standard applications】
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