

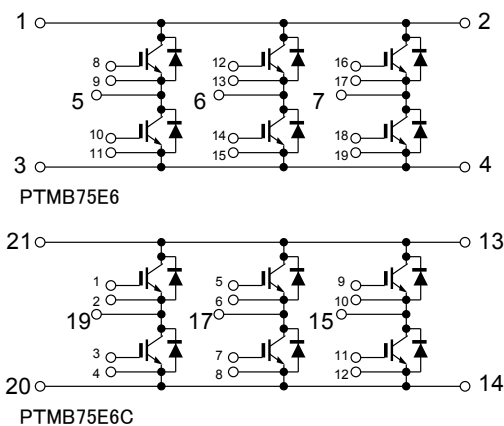
IGBT Module-Six Pack

75 A, 600V

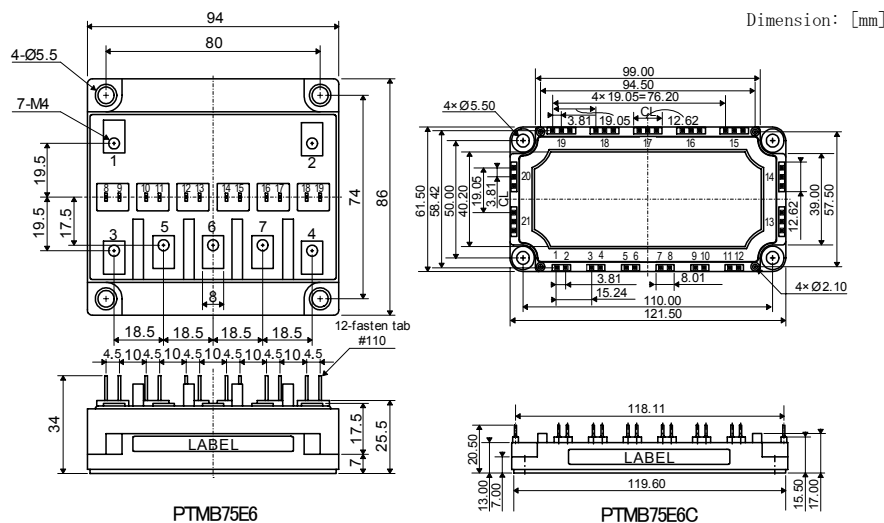
PTMB75E6

PTMB75E6C

□ 回路図 : CIRCUIT



□ 外形寸法図 : OUTLINE DRAWING

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

I t e m		S y m b o l	R a t e d V a l u e			U n i t	
コレクタ・エミッタ間電圧 Collector-Emitter Voltage		V _{CES}	6 0 0			V	
ゲ ー ト・エ ミ ッ タ 間 電 圧 Gate-Emitter Voltage		V _{GES}	± 2 0			V	
コ レ ク タ 電 流 Collector Current	DC	I _C	7 5			A	
	1 m s	I _{CP}	1 5 0				
コ レ ク タ 損 失 Collector Power Dissipation		P _C	3 2 0			W	
接 合 温 度 Junction Temperature Range		T _j	－ 4 0 ～ ＋ 1 5 0			℃	
保 存 温 度 Storage Temperature Range		T _{stg}	－ 4 0 ～ ＋ 1 2 5			℃	
絶 縁 耐 圧(Terminal to Base AC, 1 minute) Isolation Voltage		V _{ISO}	2, 5 0 0			V _(RMS)	
締 め 付 け ト ル ク Mounting Torque	Module Base to Heatsink	F _{tor}	PTMB75E6	2 (20.4)	PDMB75E6C	2 (20.4)	N・m (kgf・cm)
	Busbar to Main Terminal			1.4 (14.3)			

□ 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}	$V_{CE} = 600V, V_{GE} = 0V$	—	—	1.0	mA
ゲート漏れ電流 Gate-Emitter Leakage Current	I_{GES}	$V_{GE} = \pm 20V, V_{CE} = 0V$	—	—	1.0	μA
コレクタ・エミッタ間飽和電圧 Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 75A, V_{GE} = 15V$	—	2.1	2.6	V
ゲートしきい値電圧 Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{CE} = 5V, I_C = 75mA$	4.0	—	8.0	V
入力容量 Input Capacitance	C_{ies}	$V_{CE} = 10V, V_{GE} = 0V, f = 1MHz$	—	3,200	—	pF
スイッチング時間 Switching Time	上昇時間 Rise Time	$V_{CC} = 300V$ $R_L = 4.0\Omega$ $R_G = 12\Omega$ $V_{GE} = \pm 15V$	—	0.15	0.30	μs
	ターンオン時間 Turn-on Time		—	0.25	0.40	
	下降時間 Fall Time		—	0.10	0.35	
	ターンオフ時間 Turn-off Time		—	0.35	0.70	

□ フリーホイーリングダイオードの特性 : FREE WHEELING DIODE RATINGS & CHARACTERISTICS ($T_c = 25^\circ\text{C}$)

I t e m		S y m b o l	R a t e d V a l u e		U n i t		
順電流 Forward Current	DC	I_F	75		A		
	1 m s	I_{FM}	150				
C h a r a c t e r i s t i c		S y m b o l	T e s t C o n d i t i o n	M i n .	T y p .	M a x .	U n i t
順電圧 Peak Forward Voltage		V_F	$I_F = 75A, V_{GE} = 0V$	—	1.9	2.4	V
逆回復時間 Reverse Recovery Time		t_{rr}	$I_F = 75A, V_{GE} = -10V$ $di/dt = 150A/\mu s$	—	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	Junction to Case (T_c 測定点チップ直下)	—	—	0.38	$^\circ\text{C}/\text{W}$
	Diode		—	—	0.80	

PTMB75E6

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Fig.1- Output Characteristics (Typical)

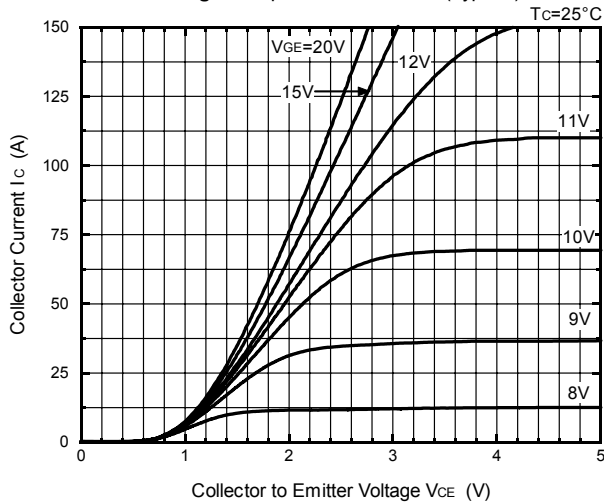


Fig.2- Output Characteristics (Typical)

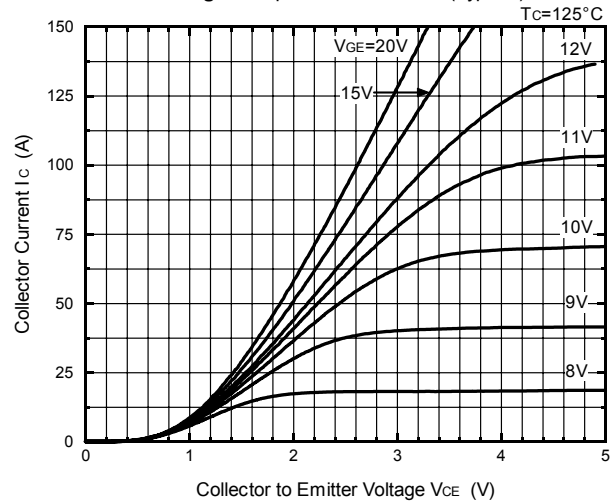


Fig.3- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

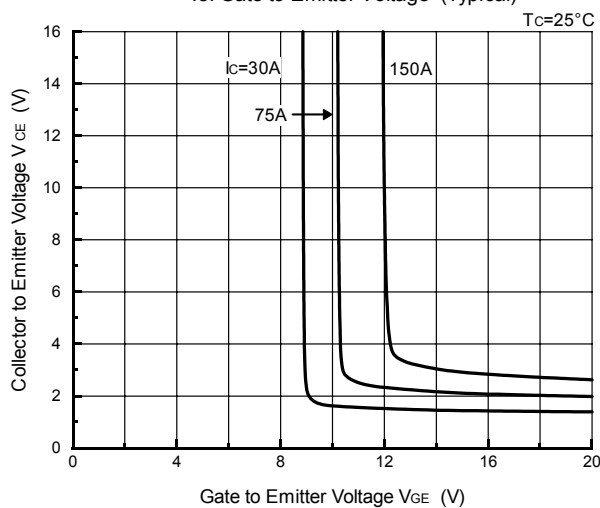


Fig.4- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

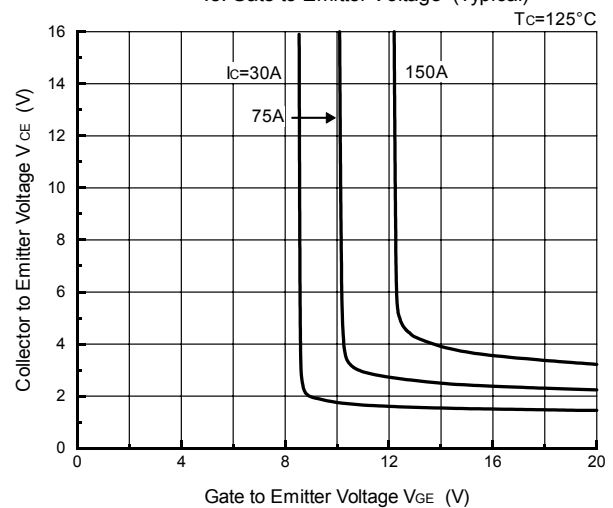


Fig.5- Gate Charge vs. Collector to Emitter Voltage (Typical)

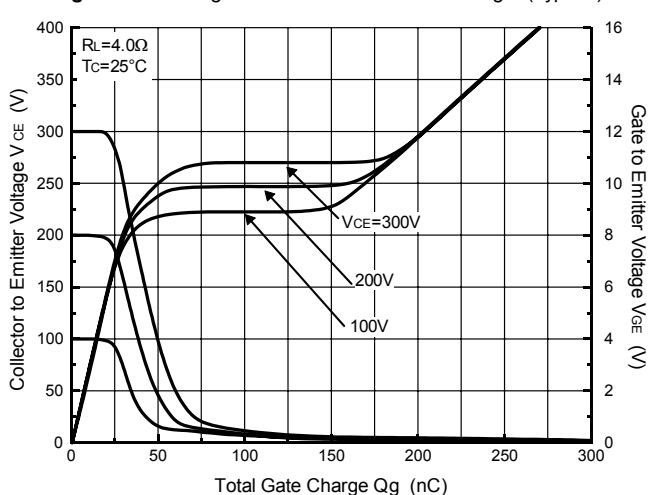
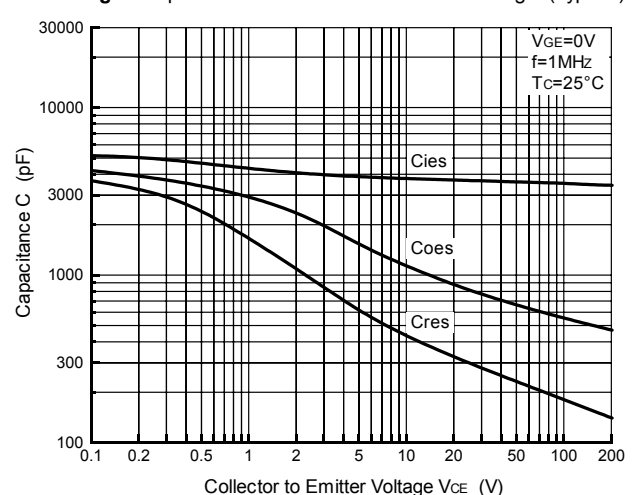


Fig.6- Capacitance vs. Collector to Emitter Voltage (Typical)



PTMB 75 E 6

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

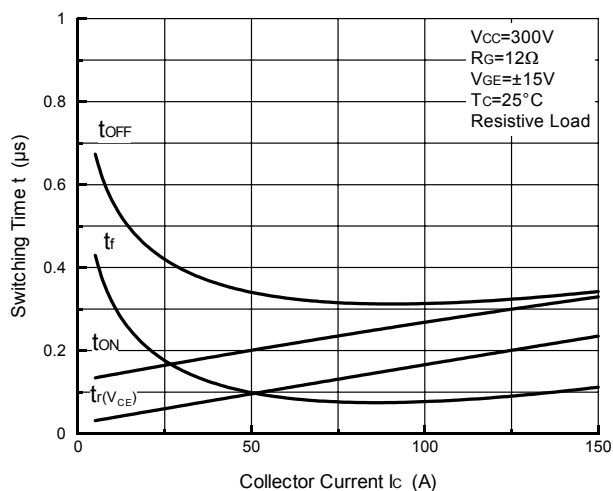


Fig.8- Series Gate Impedance vs. Switching Time (Typical)

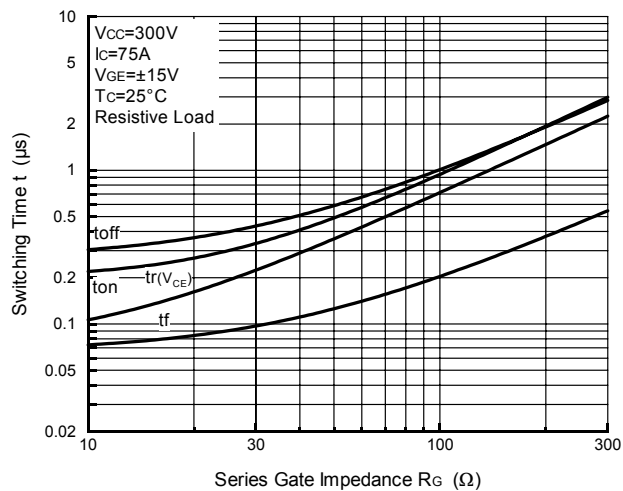


Fig.9- Collector Current vs. Switching Time

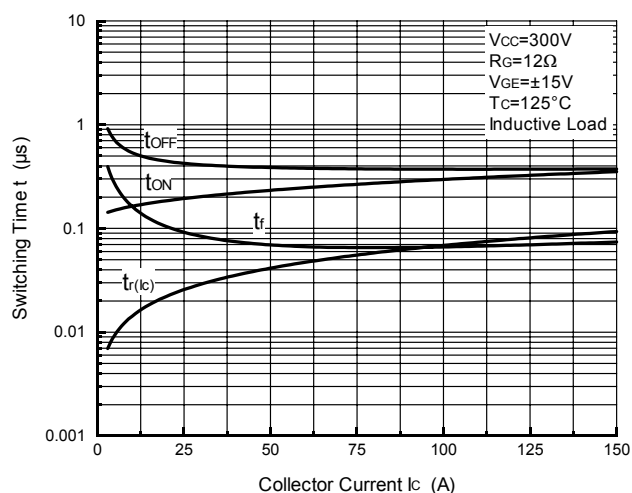


Fig.10- Series Gate Impedance vs. Switching Time

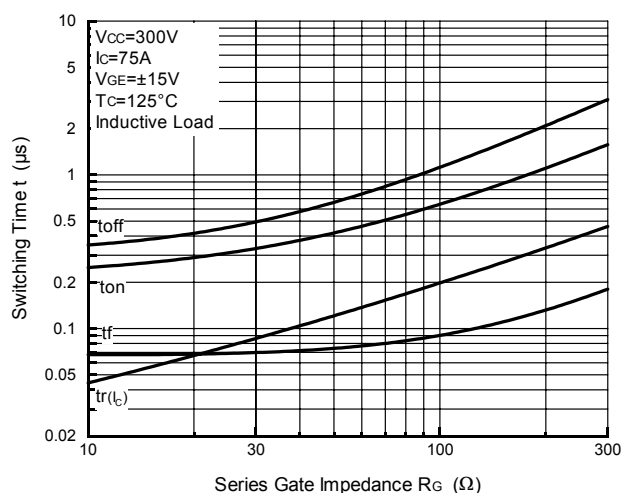


Fig.11- Collector Current vs. Switching Loss

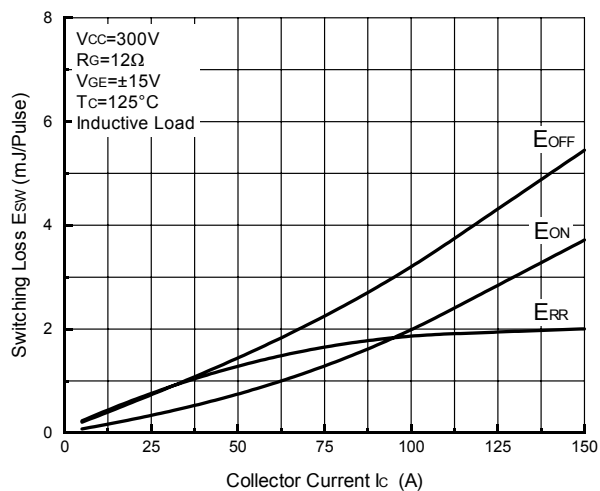
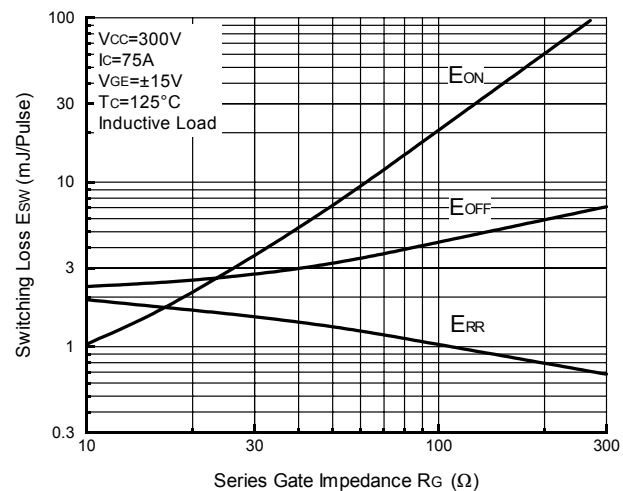
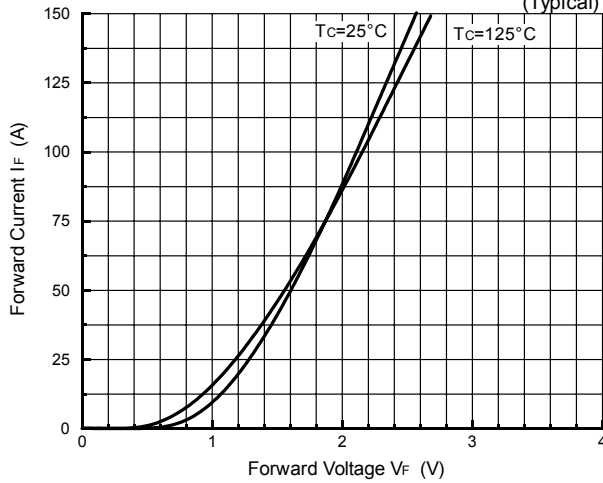
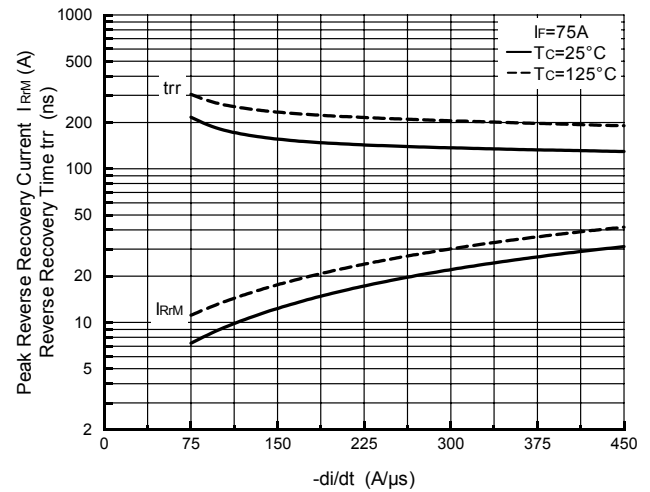
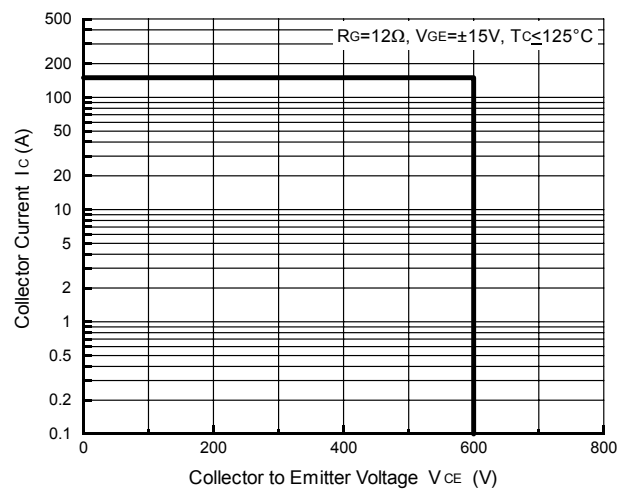


Fig.12- Series Gate Impedance vs. Switching Loss



P T M B 7 5 E 6

P T M B 7 5 E 6 C

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**