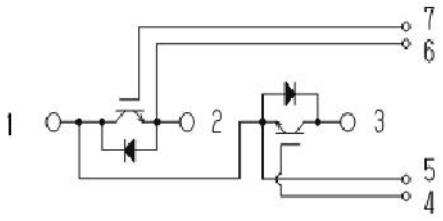
KYOCERA

IGBT Module
50A／1200V

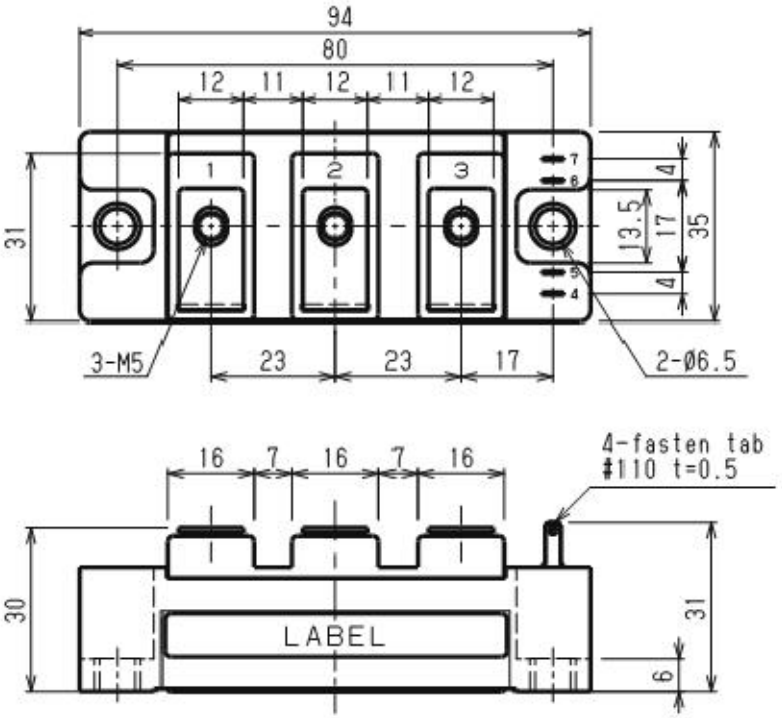
PDMB50W12

□ 回路図 ： *CIRCUIT*



□ 概略図 ： *SCHEMATIC DIAGRAM*

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	1200	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℃	50	A
			I_{CP}	Pulse ≦ 1ms	100	
	コレクタ損失 Collector Power Dissipation		P_C	Tj=175℃	277	W
				Tj=150℃	231	
FWD	繰り返しピーク逆電圧 Repetitive peak reverse voltage		V_{RRM}		1200	V
	順電流 Forward Current		I_F		50	A
			I_{FM}	Pulse ≦ 1ms	100	
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			Tstg		−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	Ftor	M6	3	N・m
		Busbar to Main Terminal		M5	2	

□ 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}= 1200V,V_{GE}= 0V		－	－	１．０	ｍA
	ゲート漏れ電流 Gate-Emitter Leakage Current		I_{GES}	V_{GE}= ±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= 50A,V_{GE}= 15V (chip level)	T_j=25℃	－	１．５０	２．００	V
					T_j=125℃	－	１．７０	－	
					T_j=150℃	－	１．８０	－	
	ゲートしきい値電圧 Gate-Emitter Threshold Voltage		$V_{GE(th.)}$	V_{CE}= 10V,I_C= 1.7mA		４．８	－	７．０	V
	入力容量 Input Capacitance		Cies	V_{CE}= 25V,V_{GE}= 0V,f= 1MHz		－	５．３	－	ｎF
	出力容量 Output Capacitance		Coes			－	０．１６	－	
	帰還容量 Reverse Transfer Capacitance		Cres			－	０．１２	－	
	ゲート電荷量 Gate Charge		Qg	Vcc=600V, I_C=50A, V_{GE}=-15～+15V		－	５５０	－	ｎC
	スイッチング時間 Switching Time	上昇時間 Rise Time	tr	Vcc= 600V Ls=38nH I_C= 50A Inductive Load R_G= 15Ω V_{GE}= ±15V Tj= 150℃		－	６０	－	ｎs
		ターンオン遅延時間 Turn-on Delay Time	td(on)			－	１１０	－	
		下降時間 Fall Time	tf			－	１８０	－	
		ターンオフ遅延時間 Turn-off Delay Time	td(off)			－	５００	－	
FWD	順電圧 Peak Forward Voltage		V_F	I_F= 50A,V_{GE}=0V (chip level)	T_j=25℃	－	２．００	２．６０	V
					T_j=125℃	－	１．９８	－	
					T_j=150℃	－	１．９５	－	
	逆回復時間 Reverse Recovery Time		t_{rr}	Vcc= 600V Ls=38nH I_C= 50A Inductive Load R_G= 15Ω V_{GE}= ±15V Tj= 150℃		－	１３０	－	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 Terminal３ - Main Terminal２		－	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）	－	－	０．５４	℃／W
	FWD			－	－	０．９７	
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	－	

☐ 特性図 ：*CHARACTERISTICS CURVES*

Fig.1- Output Characteristics (Typical)

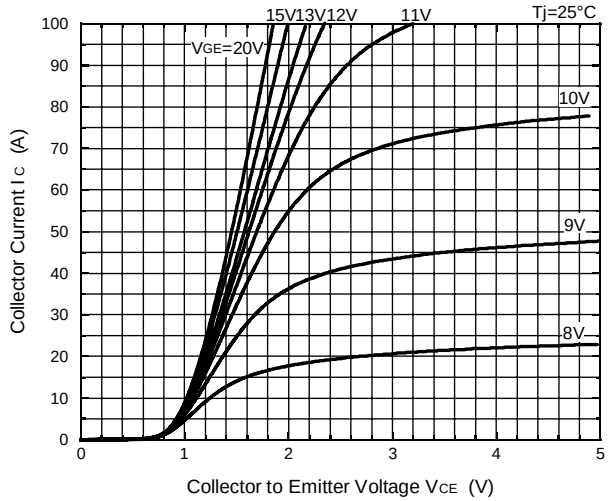


Fig.2- Saturation Voltage Characteristics (Typical)

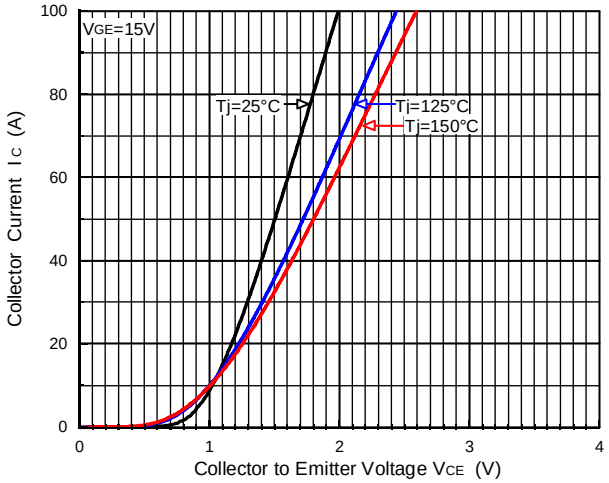


Fig.3- Transfer Characteristics (Typical)

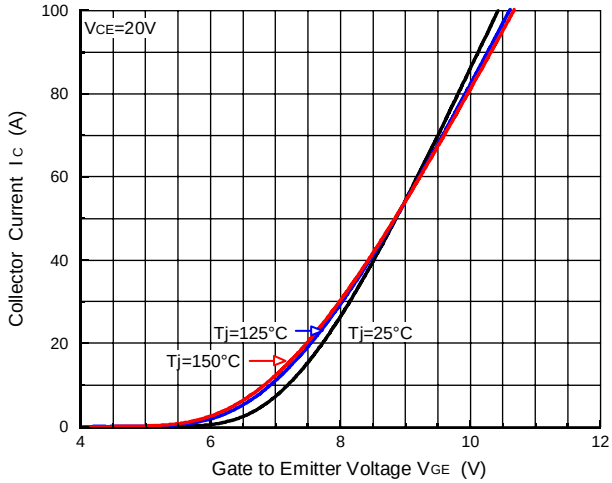


Fig.4- Gate Charge vs. Collector to Emitter Voltage (Typical)

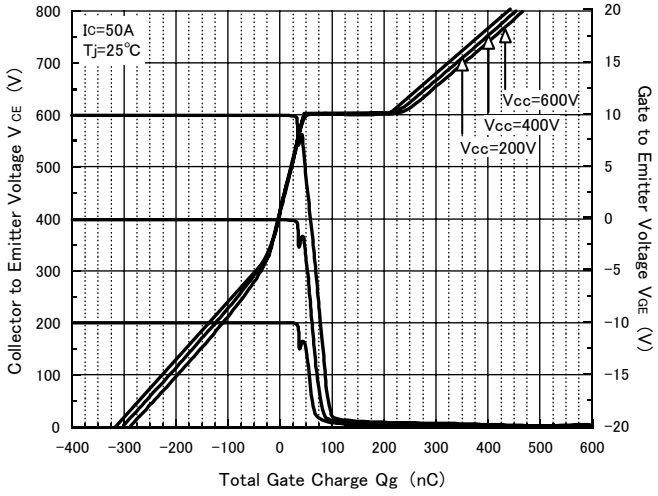


Fig.5- Collector Current vs. Switching Time

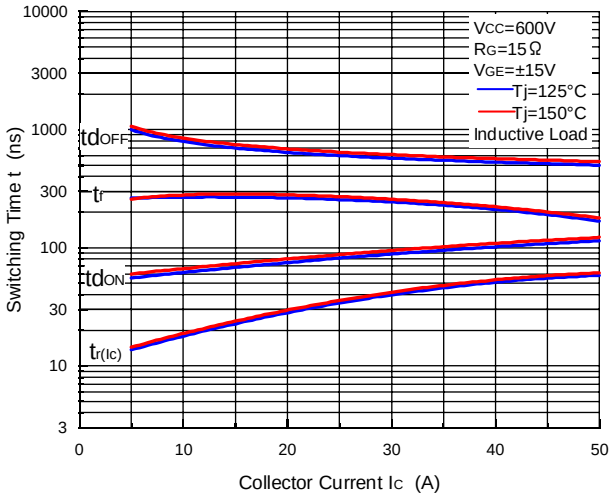
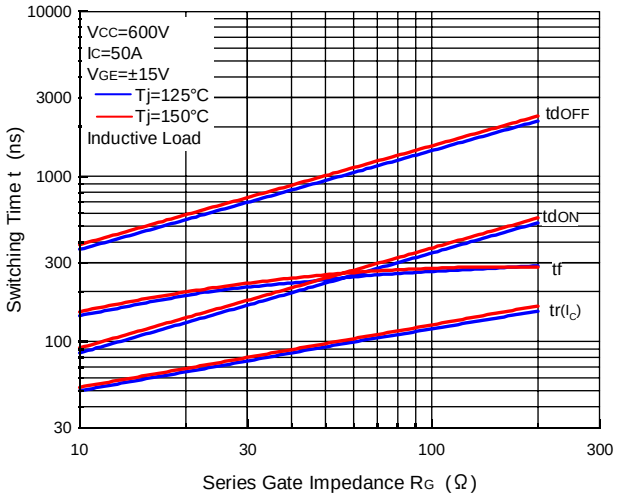


Fig.6- Series Gate Impedance vs. Switching Time



□ 特性図 ：*CHARACTERISTICS CURVES*

Fig.7- Collector Current vs. Switching Loss

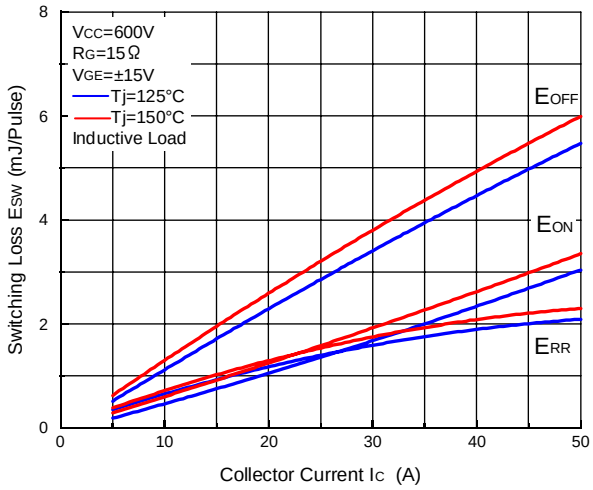


Fig.8- Series Gate Impedance vs. Switching Loss

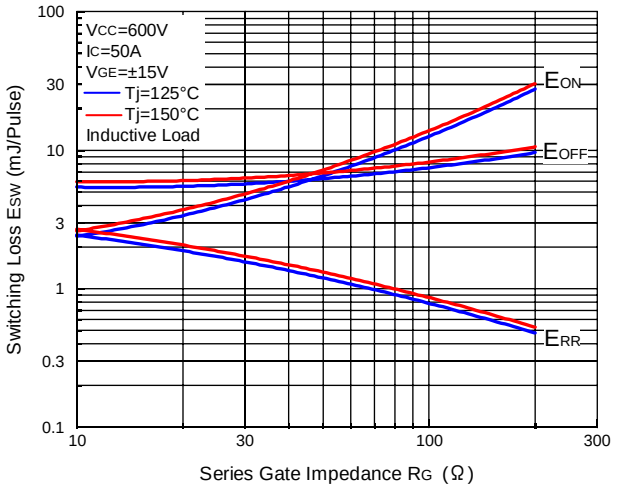


Fig.9 - Forward Characteristics of FWD (Typical)

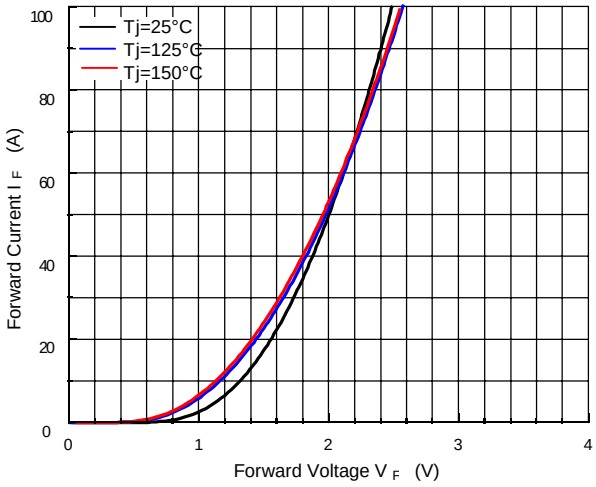


Fig.10- FWD Reverse Recovery Characteristics (Typical)

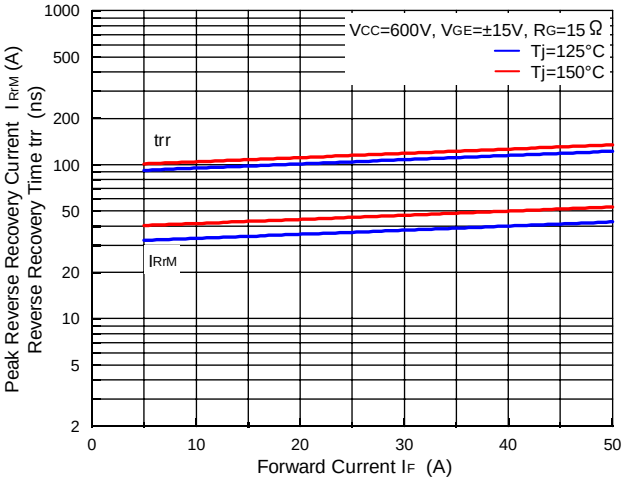


Fig.11- Reverse Bias Safe Operating Area

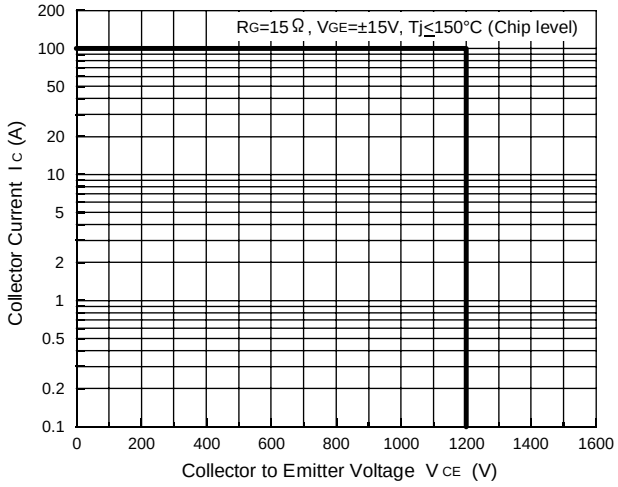


Fig.12- Transient Thermal Impedance