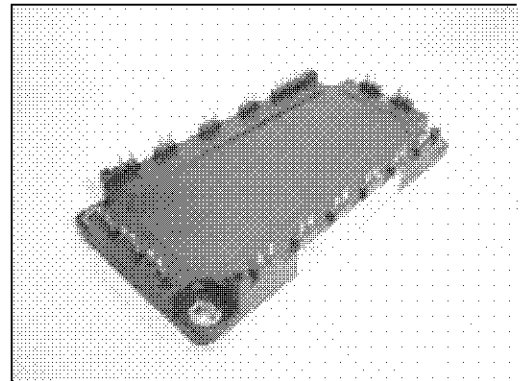


### IGBT MODULE (S series) 1200V / 50A / PIM



#### ■ Features

- Low  $V_{CE(sat)}$
- Compact package
- P.C. board mount
- Converter diode bridge, Dynamic brake circuit

#### ■ Applications

- Inverter for motor drive
- AC and DC servo drive amplifier
- Uninterruptible power supply

#### ■ Maximum ratings and characteristics

● Absolute maximum ratings ( $T_c=25^\circ\text{C}$  unless without specified)

Item	Symbol	Condition	Rating	Unit	
Inverter	Collector-Emitter voltage	$V_{CES}$	1200	V	
	Gate-Emitter voltage	$V_{GES}$	$\pm 20$	V	
	Collector current	$I_C$	Continuous	$T_c=25^\circ\text{C}$ $T_c=80^\circ\text{C}$	75 50
			$I_{CP}$	1ms	$T_c=25^\circ\text{C}$ $T_c=80^\circ\text{C}$
		$<I_C$			50
	Collector power dissipation	$P_C$	1 device	360	W
Brake	Collector-Emitter voltage	$V_{CES}$	1200	V	
	Gate-Emitter voltage	$V_{GES}$	$\pm 20$	V	
	Collector current	$I_C$	Continuous	$T_c=25^\circ\text{C}$ $T_c=80^\circ\text{C}$	35 25
			$I_{CP}$	1ms	$T_c=25^\circ\text{C}$ $T_c=80^\circ\text{C}$
		Collector power dissipation	$P_C$	1 device	180
	Repetitive peak reverse voltage	$V_{RRM}$		1200	V
Converter	Repetitive peak reverse voltage	$V_{RRM}$	1600	V	
	Average output current	$I_O$	50Hz/60Hz sine wave	50	
	Surge current (Non-Repetitive)	$I_{FSM}$	$T_j=150^\circ\text{C}$ , 10ms	520	
	$I^2t$ (Non-Repetitive)	$I^2t$	half sine wave	1352	
Operating junction temperature	$T_j$		+150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$		-40 to +125	$^\circ\text{C}$	
Isolation voltage	between terminal and copper base *2	$V_{iso}$	AC : 1 minute	AC 2500	
	between thermistor and others *3			AC 2500	
Mounting screw torque			3.5 *1	N·m	

\*1 Recommendable value : 2.5 to 3.5 N·m (M5)

\*2 All terminals should be connected together when isolation test will be done.

\*3 Terminal 8 and 9 should be connected together. Terminal 1 to 7 and 10 to 24 should be connected together and shorted to copper base.

● Electrical characteristics (Tj=25°C unless otherwise specified)

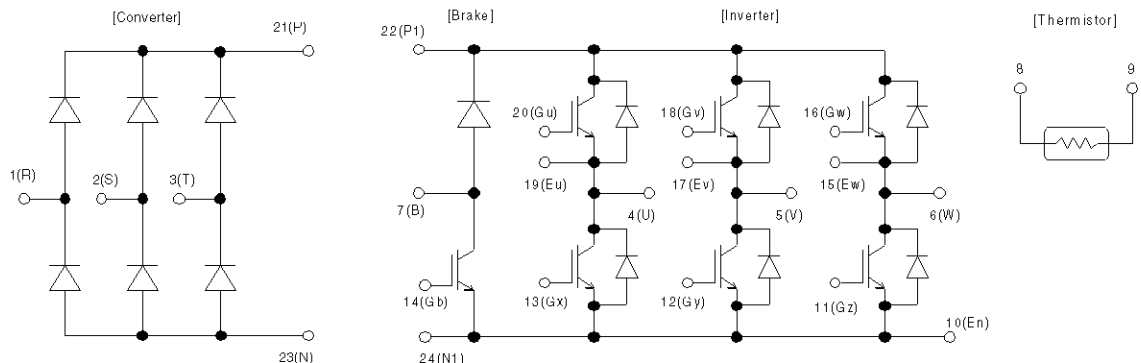
Item	Symbol	Condition	Characteristics			Unit			
			Min.	Typ.	Max.				
Inverter	Zero gate voltage collector current	ICES	VCE=1200V, VGE=0V			1.0	mA		
	Gate-Emitter leakage current	IGES	VCE=0V, VGE=±20V			0.2	µA		
	Gate-Emitter threshold voltage	VGE(th)	VCE=20V, IC=50mA			5.5	7.2	8.5	V
	Collector-Emitter saturation voltage	VCE(sat)	VGE=15V, IC=50A	chip	2.1		V		
				terminal	2.3			2.7	
	Input capacitance	Cies	VGE=0V, VCE=10V, f=1MHz			6000		µF	
	Turn-on time	ton	VCC=600V			0.35	1.2	µs	
		tr	IC=50A			0.25	0.6		
		tr(i)	VGE=±15V			0.1			
	Turn-off	toff	RG=24Ω			0.45	1.0		
ti					0.08	0.3			
Forward on voltage	VF	IF=50A	chip	2.3		V			
			terminal	2.5			3.3		
Reverse recovery time of FRD	trr	IF=50A			0.35		µs		
Brake	Zero gate voltage collector current	ICES	VCE=1200V, VGE=0V			1.0	mA		
	Gate-Emitter leakage current	IGES	VCE=0V, VGE=±20V			0.2	µA		
	Collector-Emitter saturation voltage	VCE(sat)	IC=25A, VGE=15V	chip	2.1		V		
				terminal	2.25			2.7	
	Turn-on time	ton	VCC=600V			0.35	1.2	µs	
		tr	IC=25A			0.25	0.6		
	Turn-off time	toff	VGE=±15V			0.45	1.0		
		ti	RG=51Ω			0.08	0.3		
	Reverse current	IRRM	VR=1200V			1.0		mA	
	Forward on voltage	VFM	IF=50A	chip	1.1		V		
terminal				1.2		1.5			
Reverse current	IRRM	VR=1600V			1.0		mA		
Thermistor	Resistance	R	T=25°C	5000		Ω			
			T=100°C	465	495		520		
B value	B	T=25/50°C			3305	3375	3450	K	

● Thermal resistance Characteristics

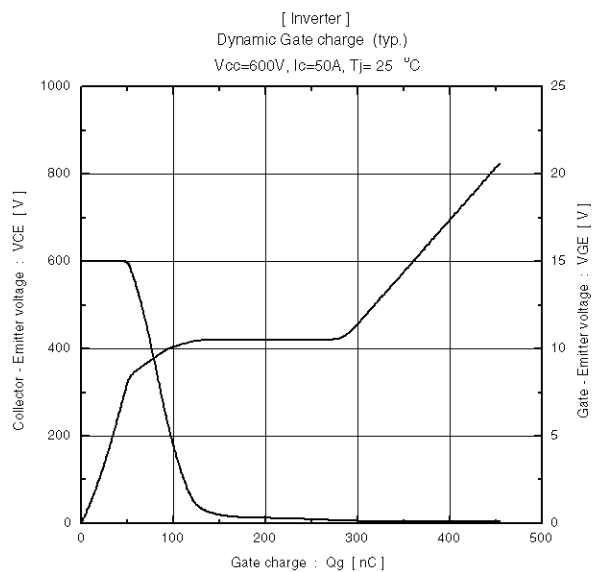
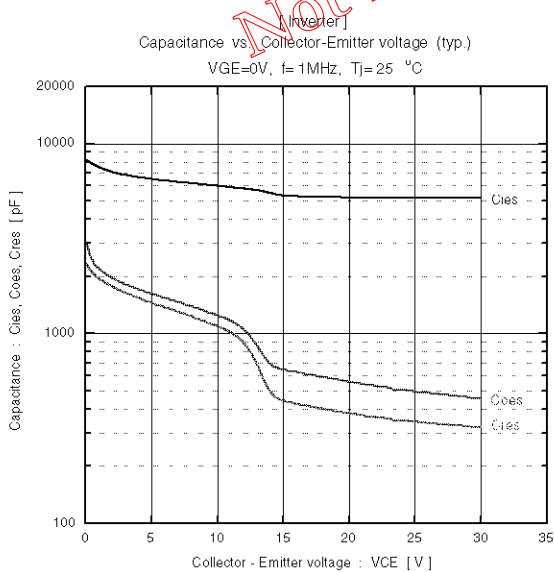
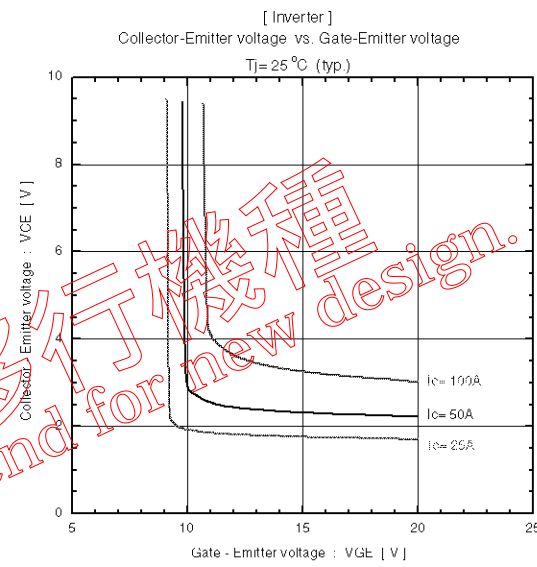
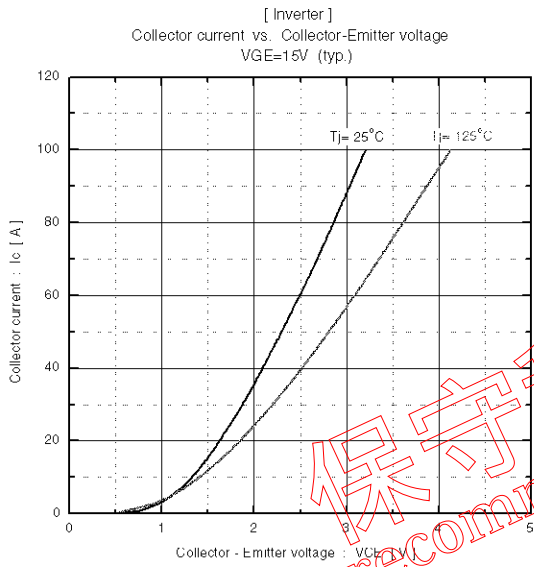
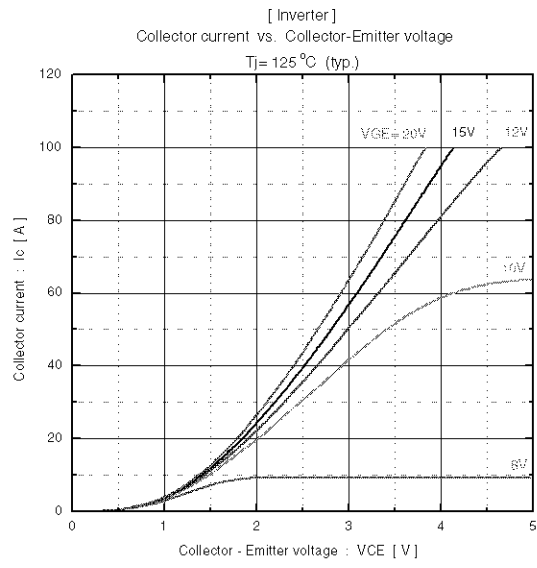
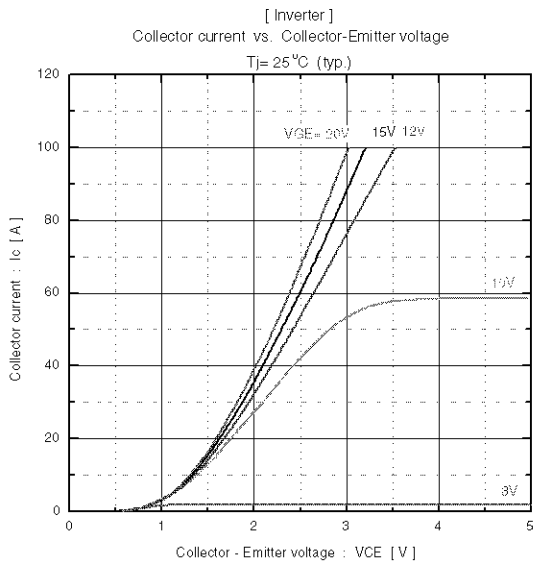
Item	Symbol	Condition	Characteristics			Unit
			Min.	Typ.	Max.	
Thermal resistance ( 1 device )	Rth(j-c)	Inverter IGBT			0.35	°C/W
		Inverter FWD			0.75	
		Brake IGBT			0.69	
		Converter Diode			0.50	
Contact thermal resistance	Rth(c-f)	With thermal compound	0.05			

\* This is the value which is defined mounting on the additional cooling fin with thermal compound

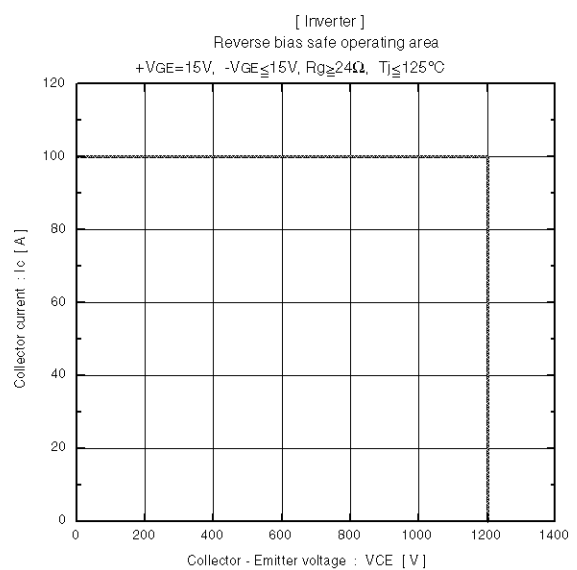
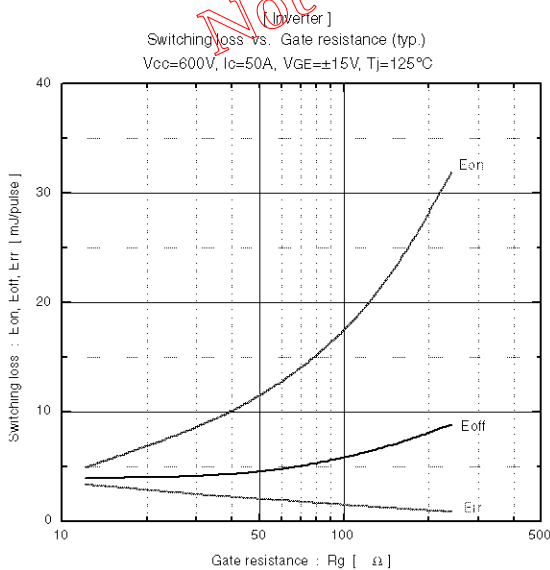
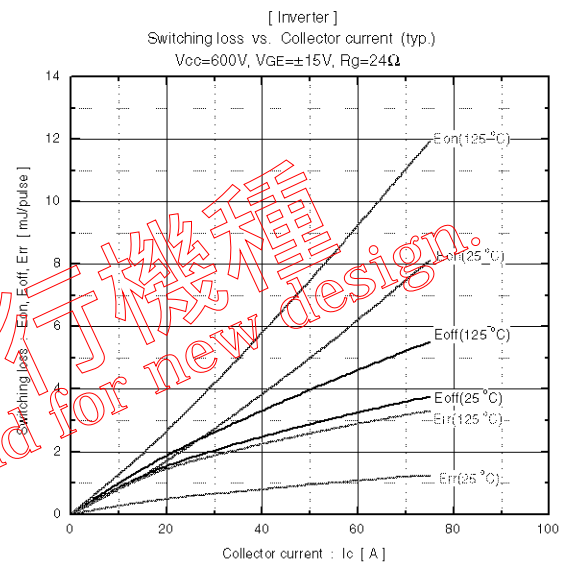
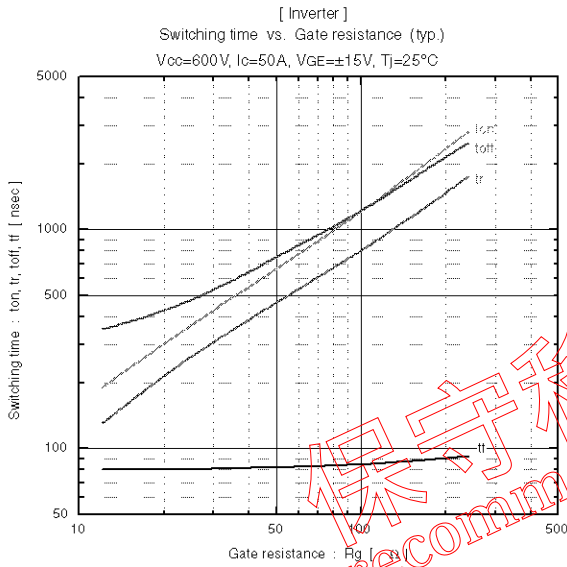
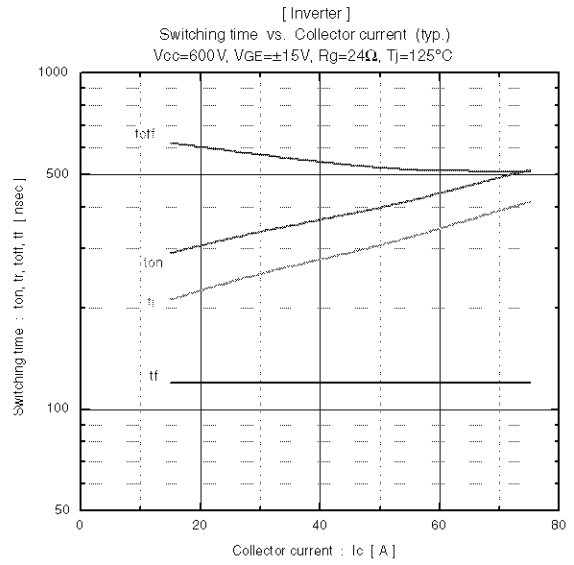
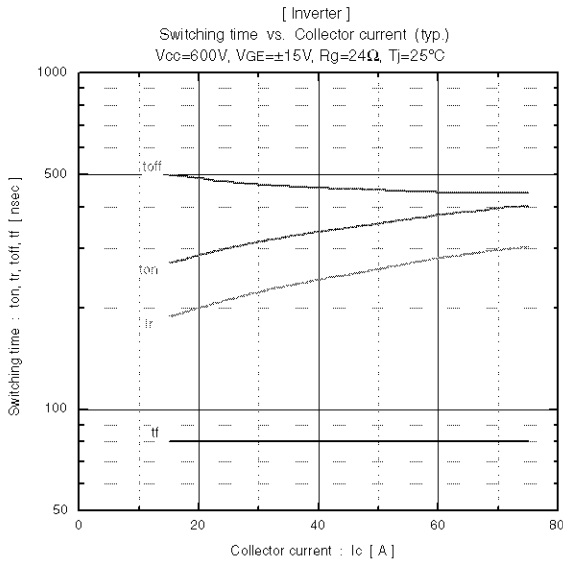
■ Equivalent Circuit Schematic



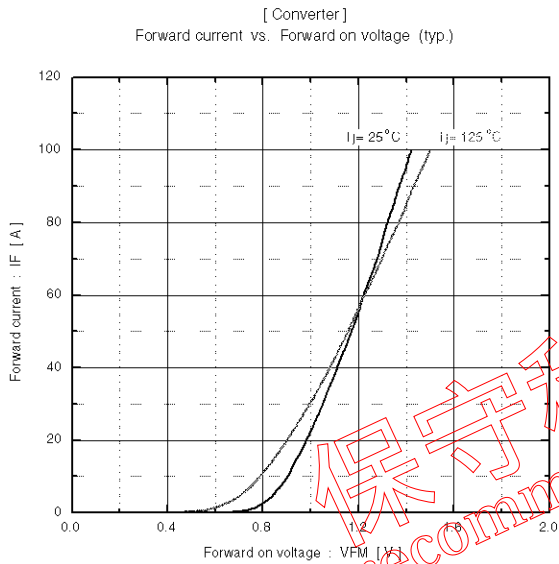
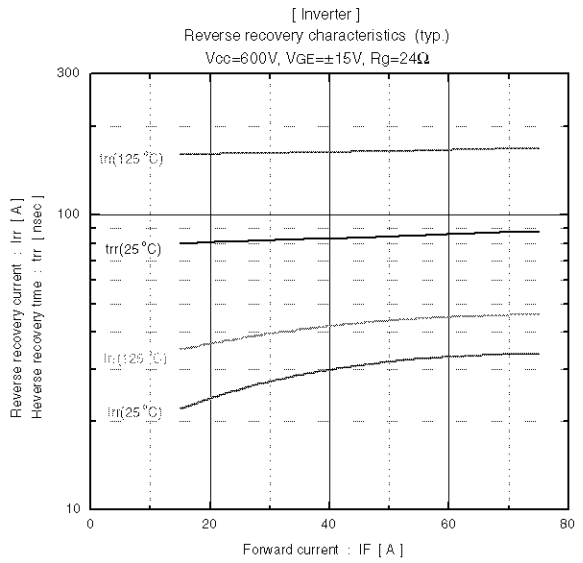
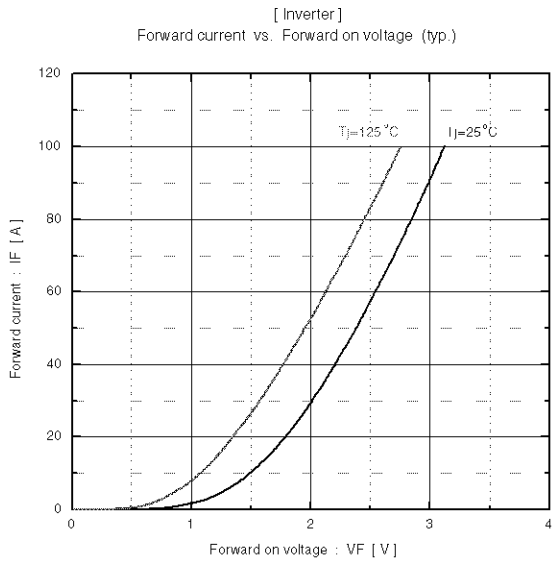
■ Characteristics (Representative)



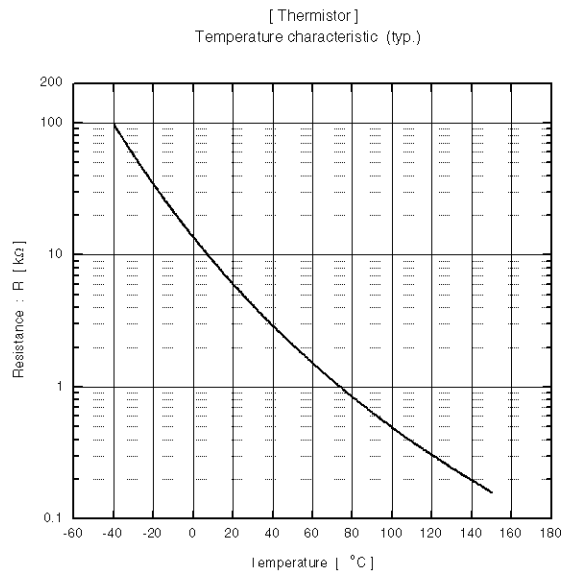
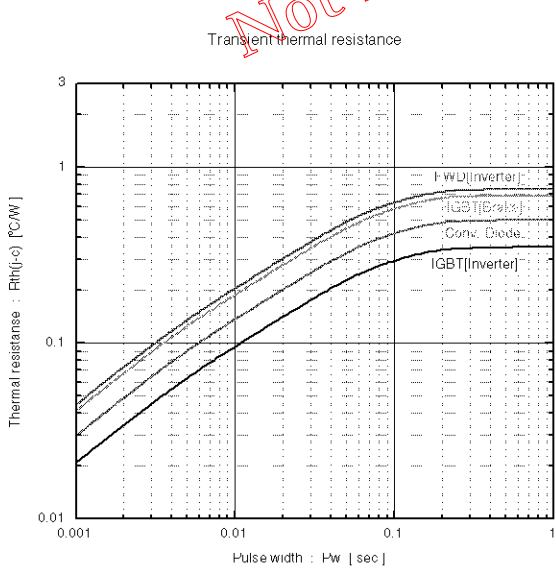
保守移行機種  
Not recommend for new design.

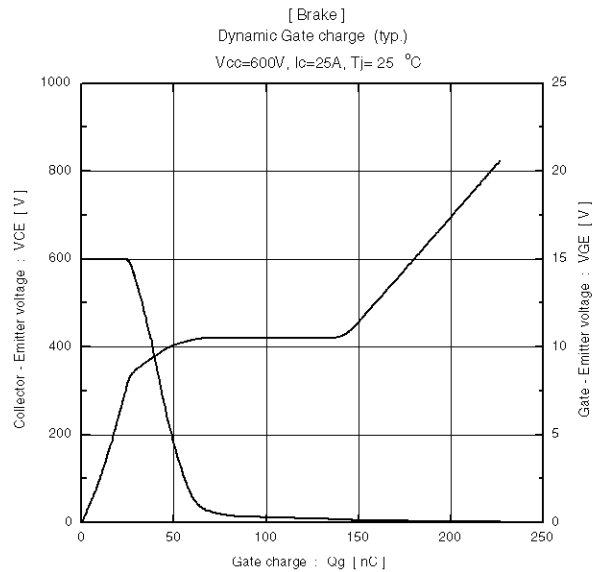
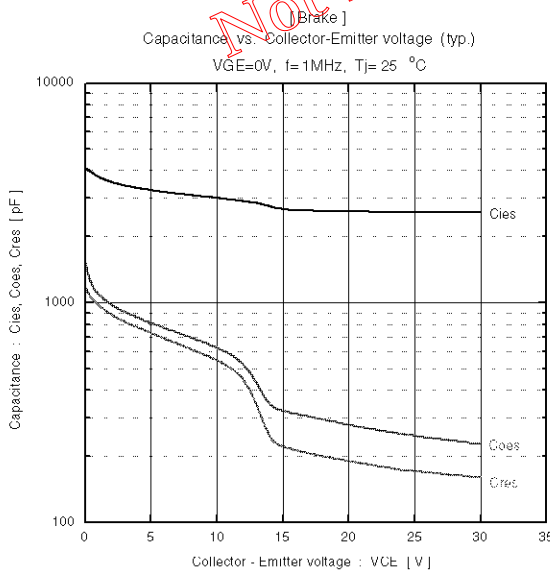
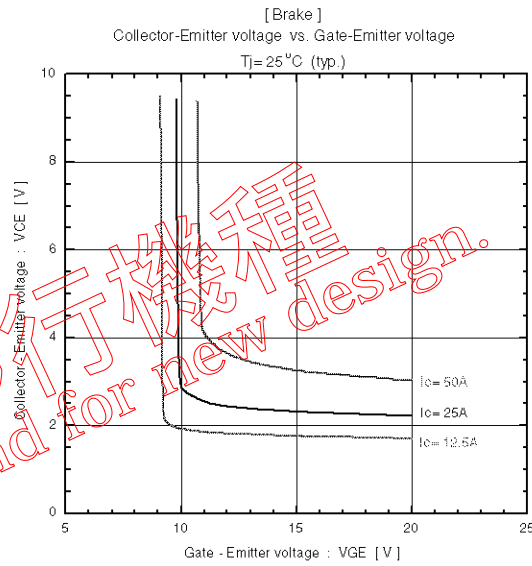
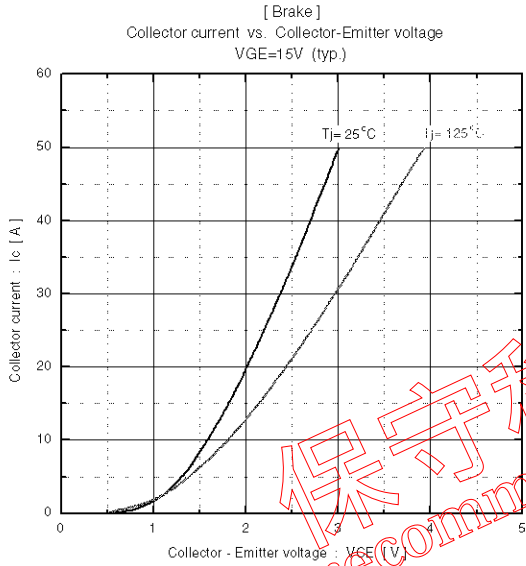
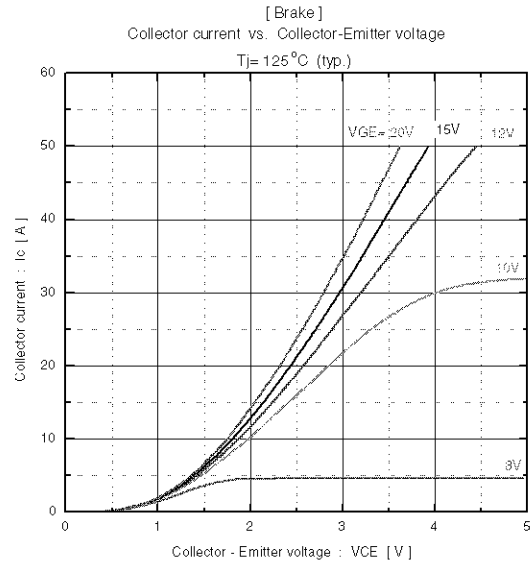
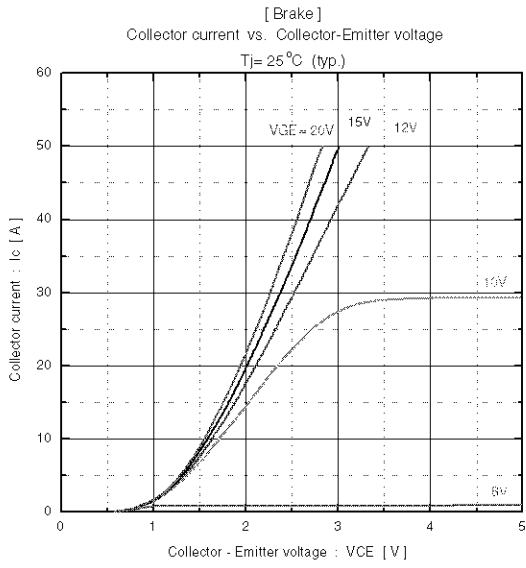


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