SPECIFICATION

DEVICE NAME : IGBT

TYPE NAME : 1MBH03D-120

SPEC. No. :

DATE :

Fuji Electric Co.,Ltd.

This Specification is subject to change without notice.

	DATE	NAME	APPROVED
DRAWN			
CHECKED			

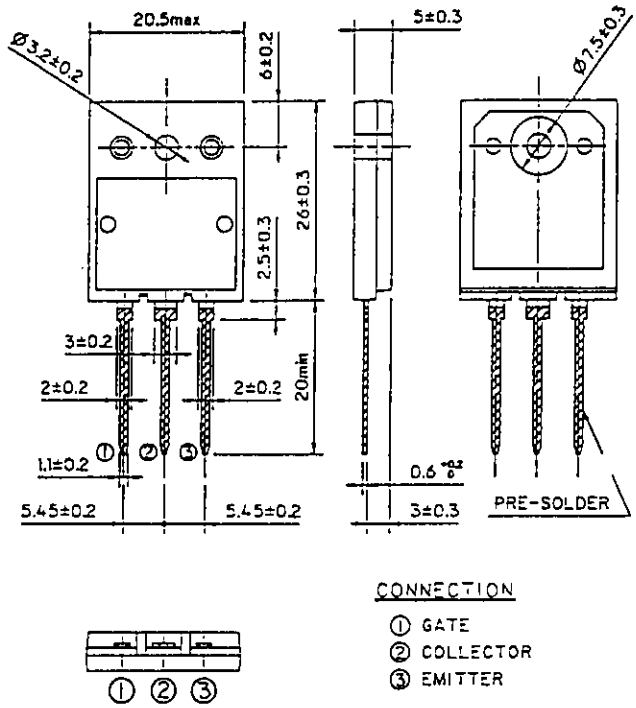
Fuji Electric Co.,Ltd.

WG.NO.

Ratings and characteristics of Fuji IGBT

1MBH03D—120

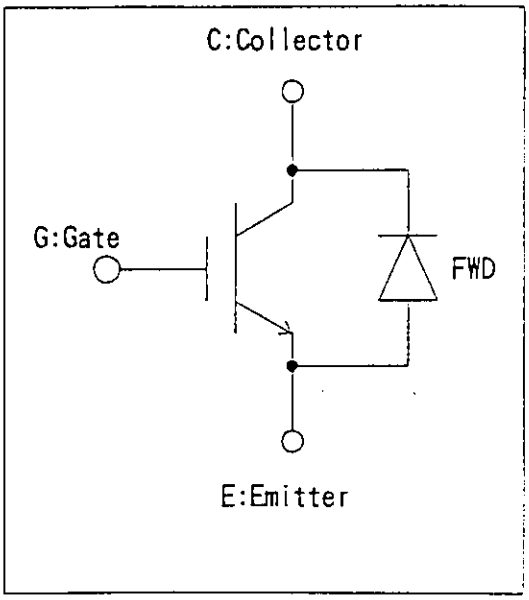
1. Outline Drawing



CONNECTION

① GATE
② COLLECTOR
③ EMITTER

2. Equivalent circuit



3. Absolute maximum ratings (Tc=25℃)

Items			Symbols	Ratings	Units
Collector-Emitter Voltage			V_{CES}	1200	V
Gate-Emitter Voltage			V_{GES}	±20	V
Collector Current	DC	Tc=25 ℃	Ic_{25}	5.5	A
		Tc=105℃	Ic_{105}	2.5	A
	1ms	Tc=25 ℃	Icp	15	A
IGBT Max. Power Dissipation			Pc	80	W
FWD Max. Power Dissipation			Pc	50	W
Operating Temperature			Tj	+ 150	℃
Storage Temperature			Tstg	-40 ～ +150	℃
Mounting Screw Torque			——	70	N・cm

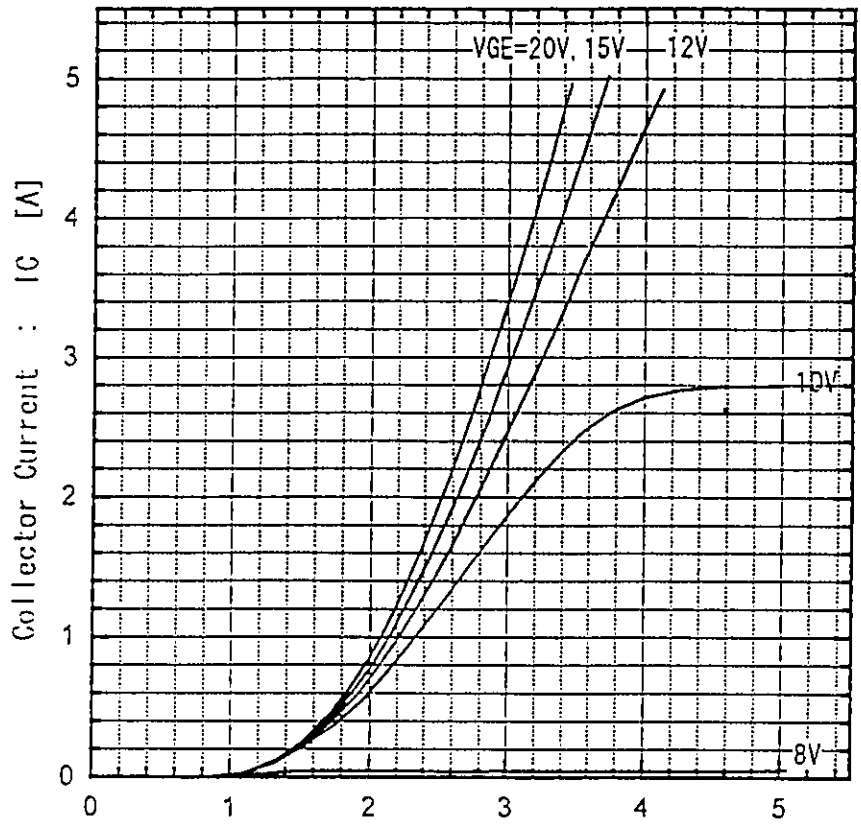
4. Electrical Characteristics (at Tc=25℃ unless otherwise specified)

Items		Symbols	Characteristics min.	Characteristics typ.	Characteristics max.	Conditions	Unit
Zero gate voltage Collector Current		I_{CES}			1.0	V_{GE} = 0V V_{CE} =1200V	mA
Gate-Emitter leakage Current		I_{GES}			20	V_{CE} = 0V V_{GE} = ±20V	μA
Gate-Emitter Threshold Voltage		$V_{GE(th)}$	5.5		8.5	V_{CE} = 20V Ic = 2.5mA	V
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			3.5	V_{GE} = 15V Ic = 2.5A	V
Input capacitance		Cies		400		V_{GE} = 0V V_{CE} = 10V f = 1MHz	pF
Output capacitance		Coes		70			
Reverse transfer capacitance		Cres		20			
Switching Time	Turn-on time	ton			1.2	Vcc = 600V Ic = 2.5A V_{GE} = ±15V R_G = 430Ω (Half Bridge)	μs
		tr			0.6		
	Turn-off time	toff			1.5		
		tf			0.5		
	Turn-on time	ton		0.16		Vcc = 600V Ic = 2.5A V_{GE} = +15V R_G = 43 Ω (Half Bridge)	
		tr		0.11			
	Turn-off time	toff		0.30			
		tf			0.50		
FWD forward voltage drop		VF			3.0	I_F =2.5A	V
Reverse recovery time		trr			0.35	IF=2.5A, VGE=-10V VR= 200V di/dt=100A/μs	μs

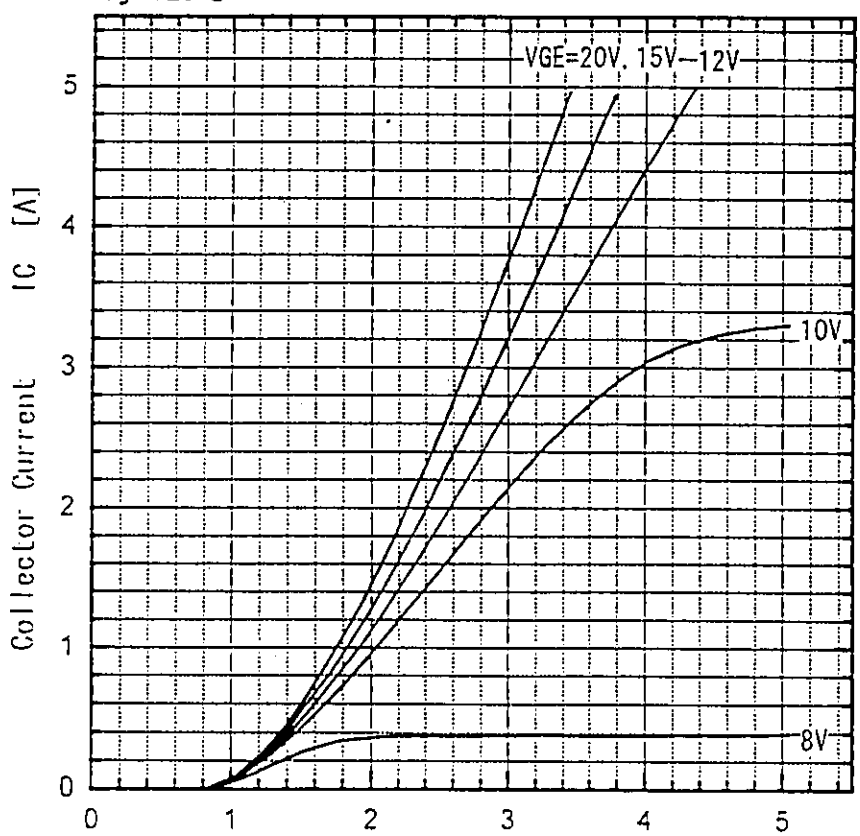
5. Thermal resistance characteristics

Items	Symbols	Characteristics min.	Characteristics typ.	Characteristics max.	Conditions	Unit
Thermal resistance	Rth(j-c)			1.56	IGBT	℃/W
	Rth(j-c)			2.50	FWD	

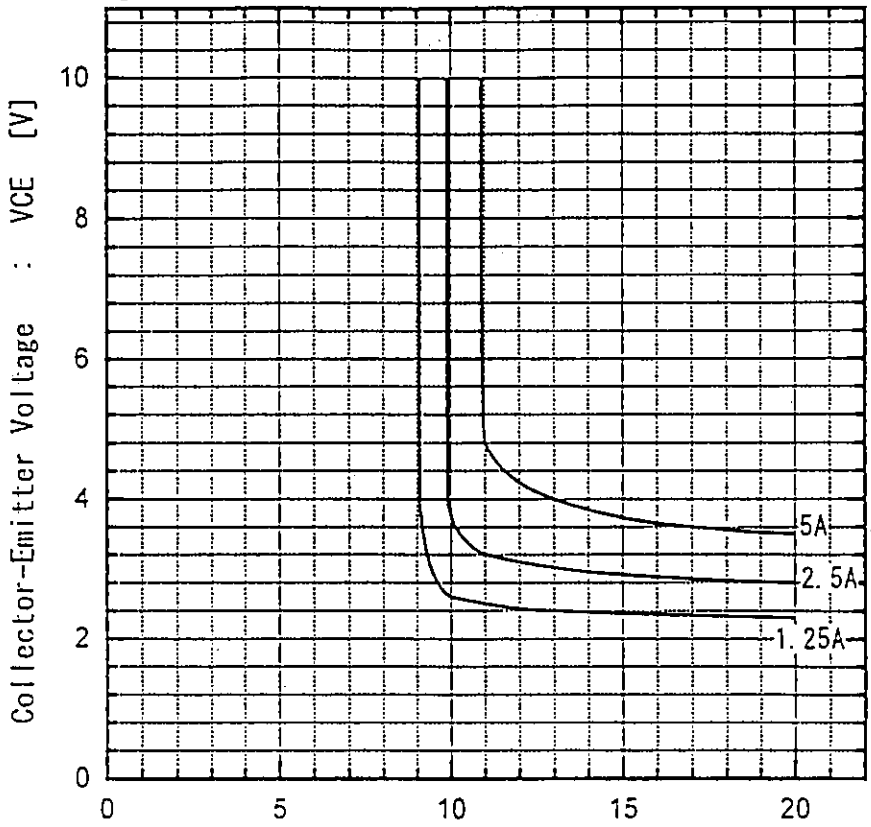
Collector Current vs. Collector-Emitter Voltage
Tj=25℃



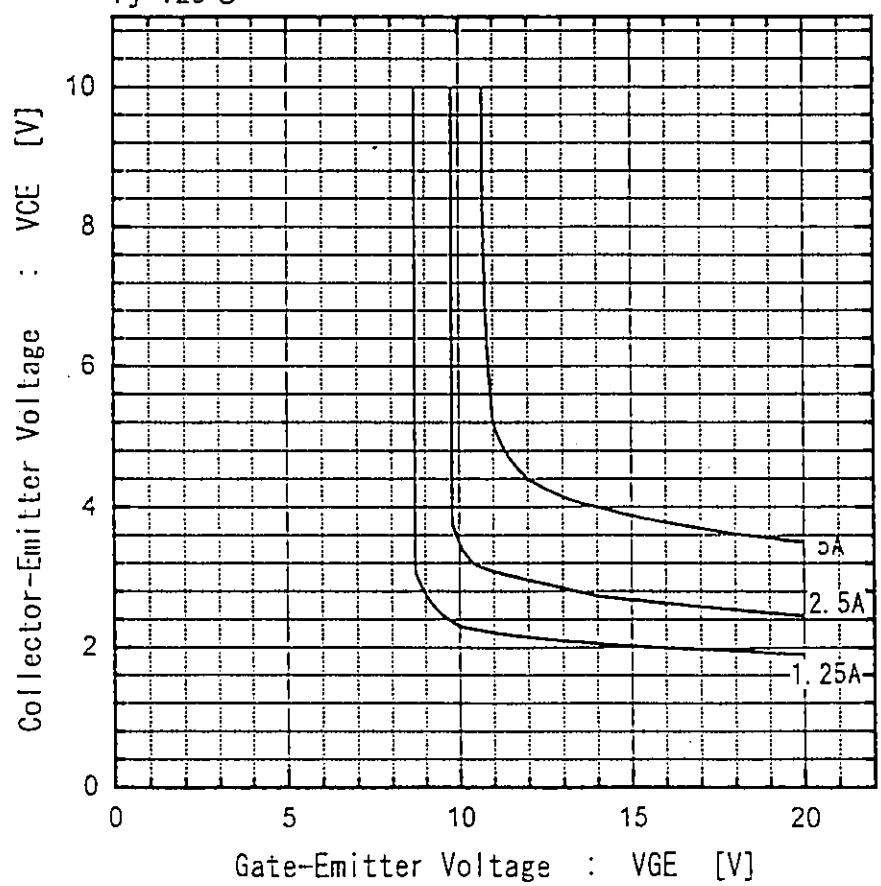
Collector Current vs. Collector-Emitter Voltage
Tj=125℃



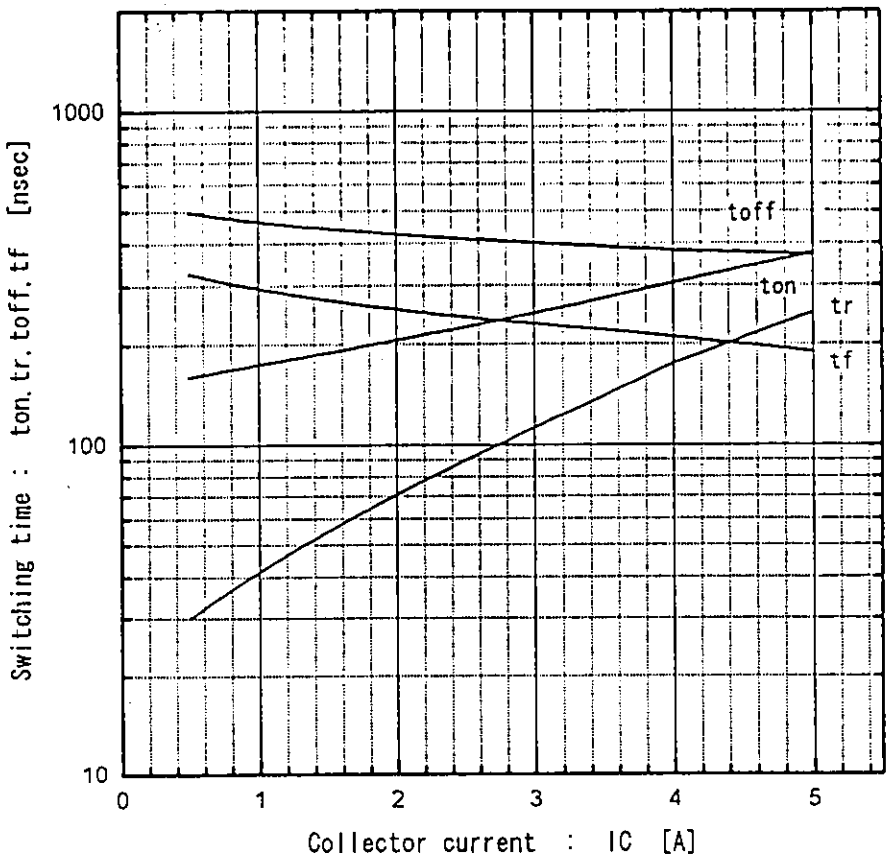
Collector-Emitter Voltage vs Gate-Emitter Voltage
Tj=25℃



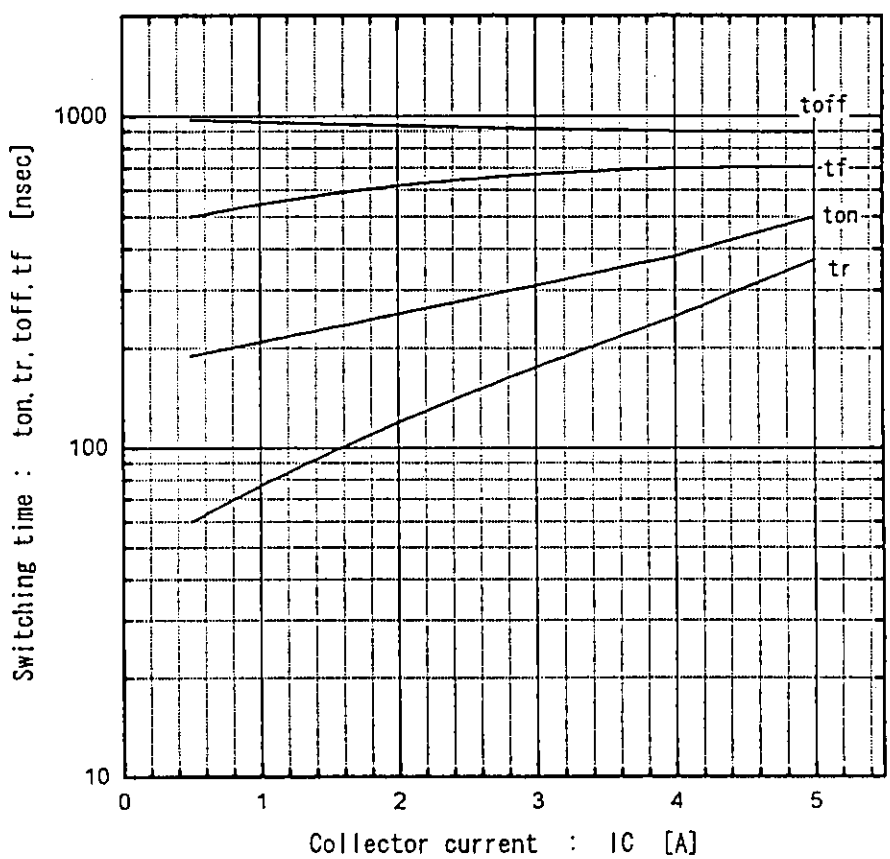
Collector-Emitter Voltage vs Gate-Emitter Voltage
Tj=125℃



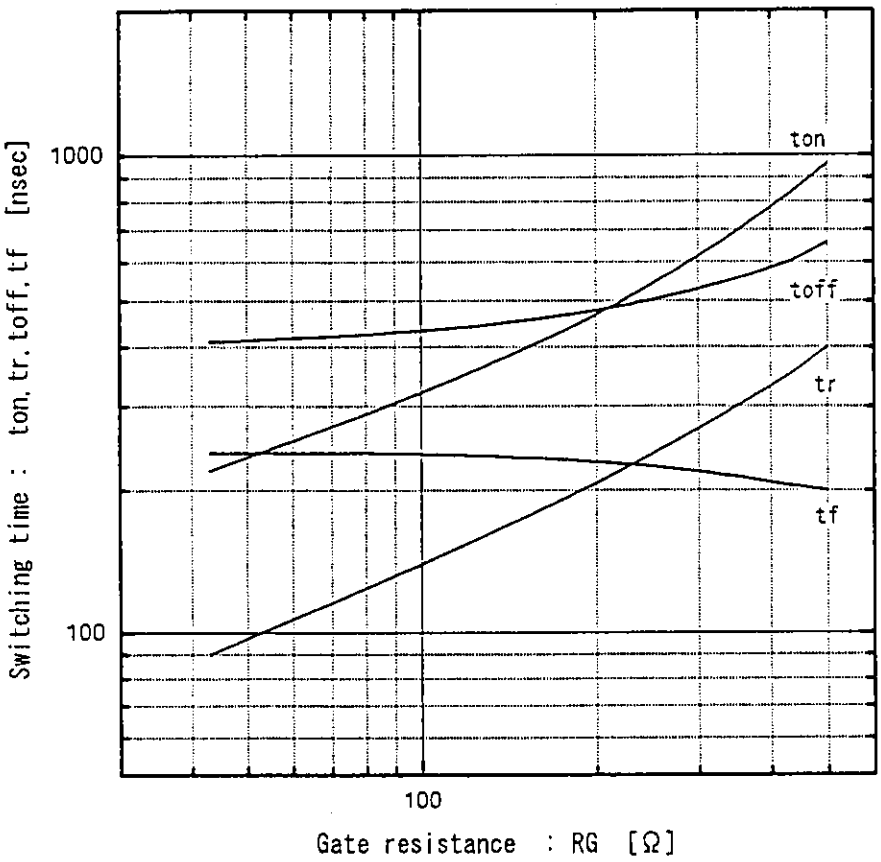
Switching time vs. Collector current
Vcc=600V, RG=43Ω, VGE=±15V, Tj=25°C



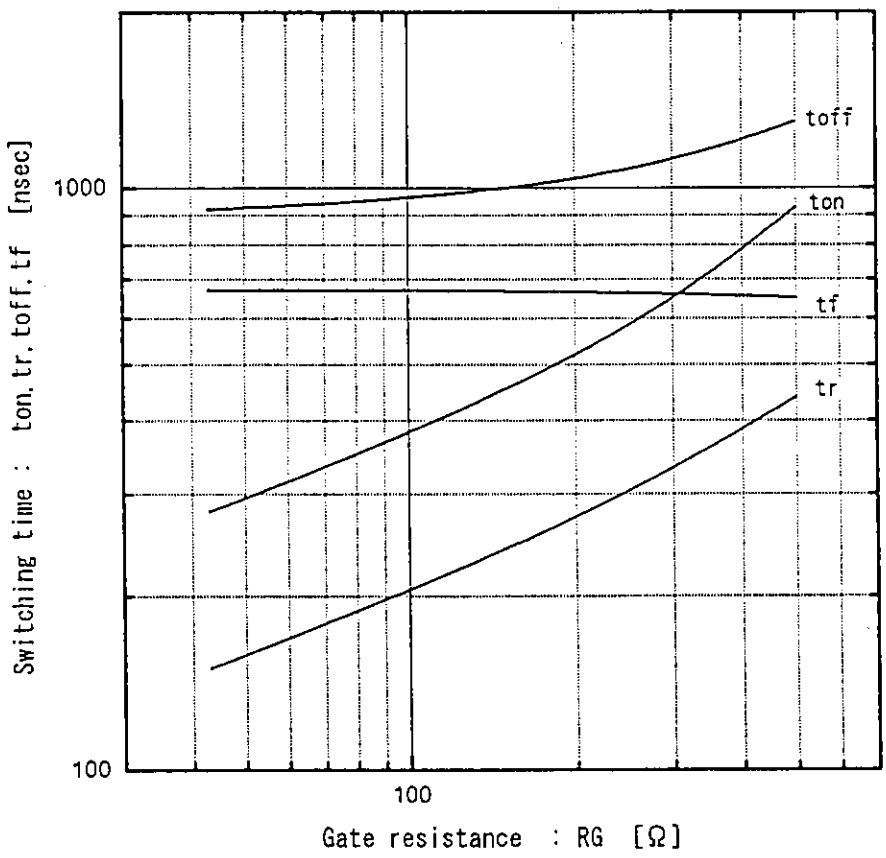
Switching time vs. Collector current
Vcc=600V, RG=43Ω, VGE=±15V, Tj=25°C



Switching time vs. RG
Vcc=600V, IC=2.5A, VGE=±15V, Tj=25°C



Switching time vs. RG
Vcc=600V, IC=2.5A, VGE=±15V, Tj=125°C



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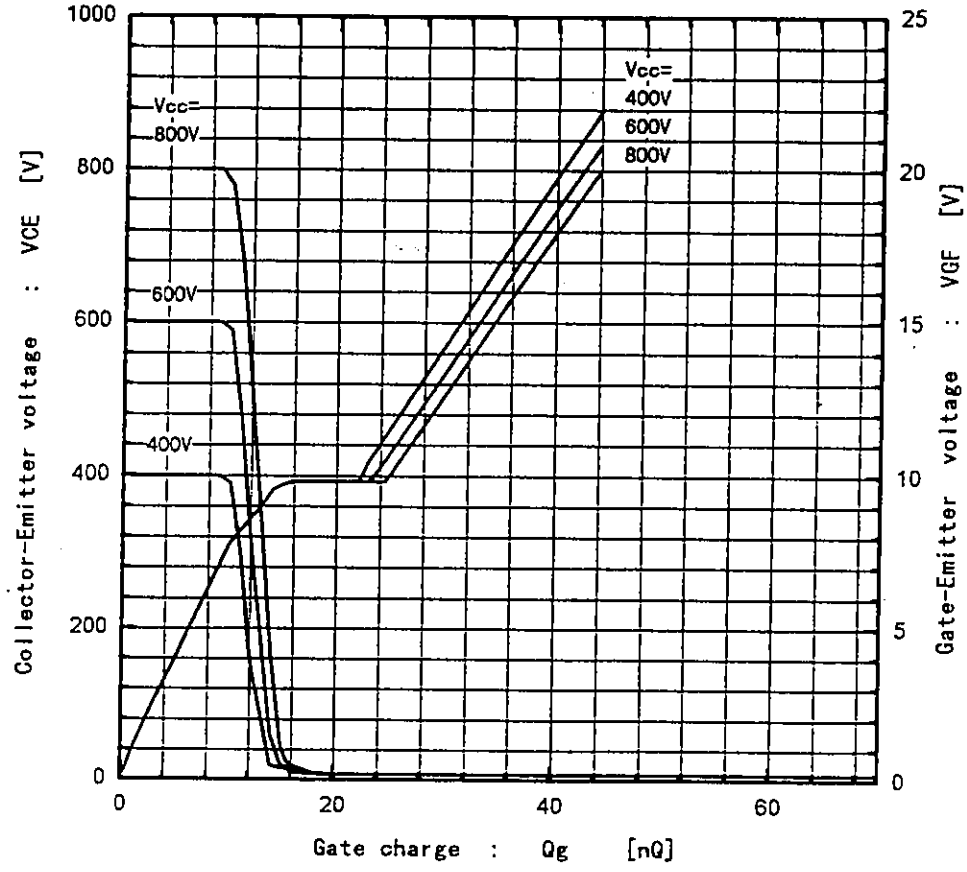
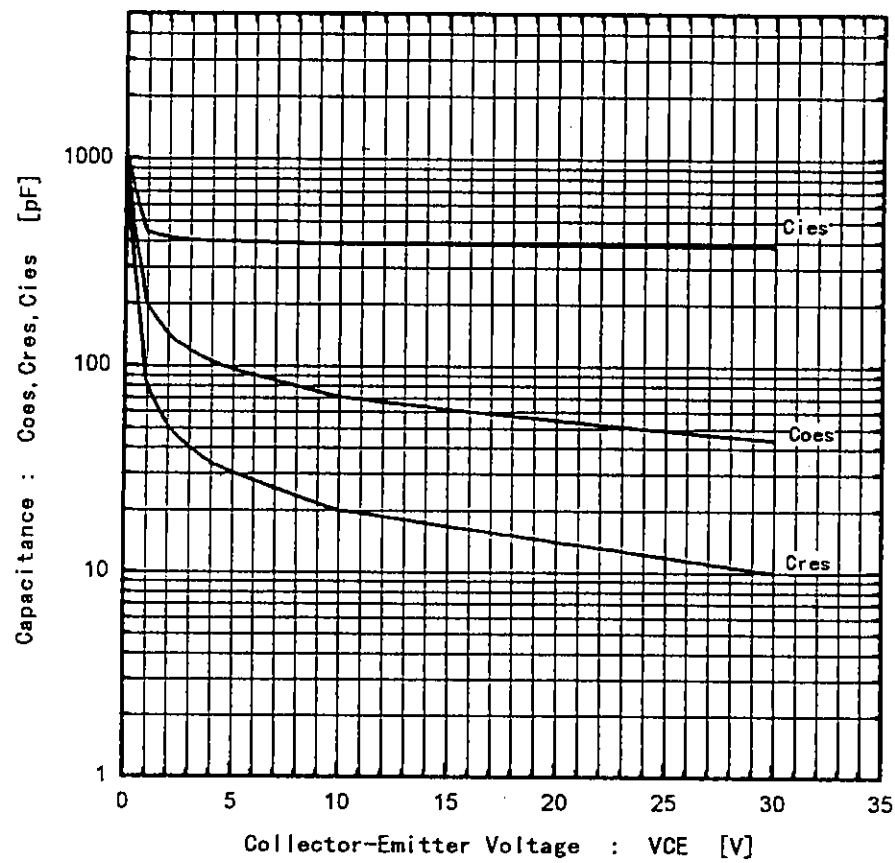
Dynamic input characteristics
Tj=25°C



Capacitance vs. Collector-Emitter voltage
Tj=25°C



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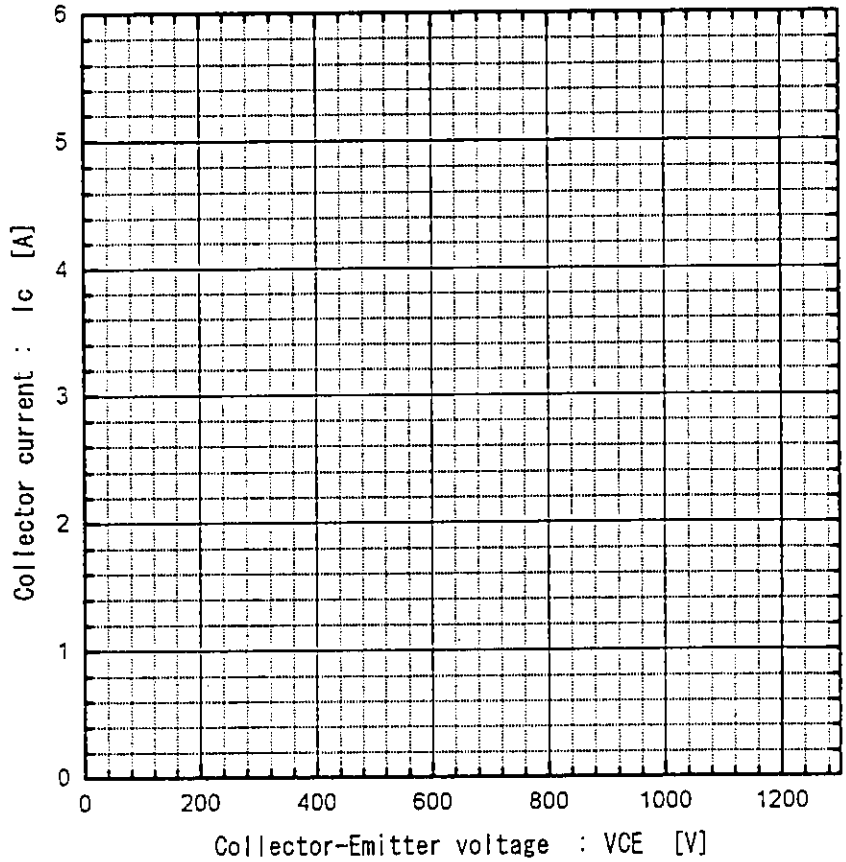
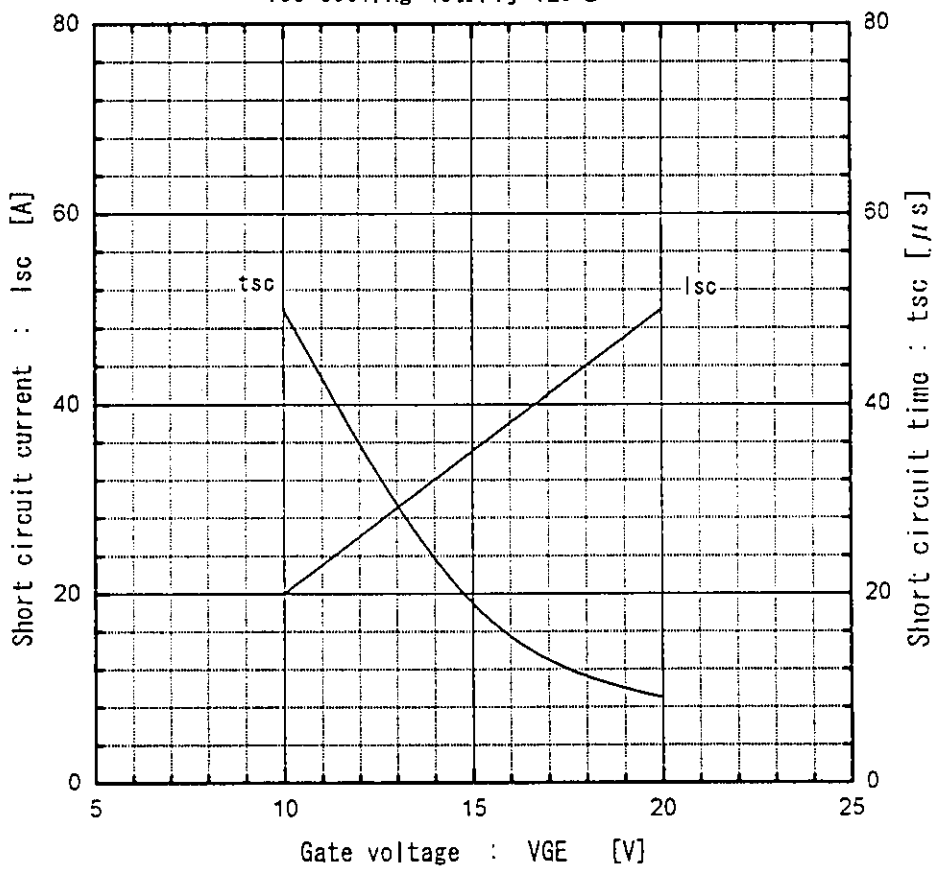
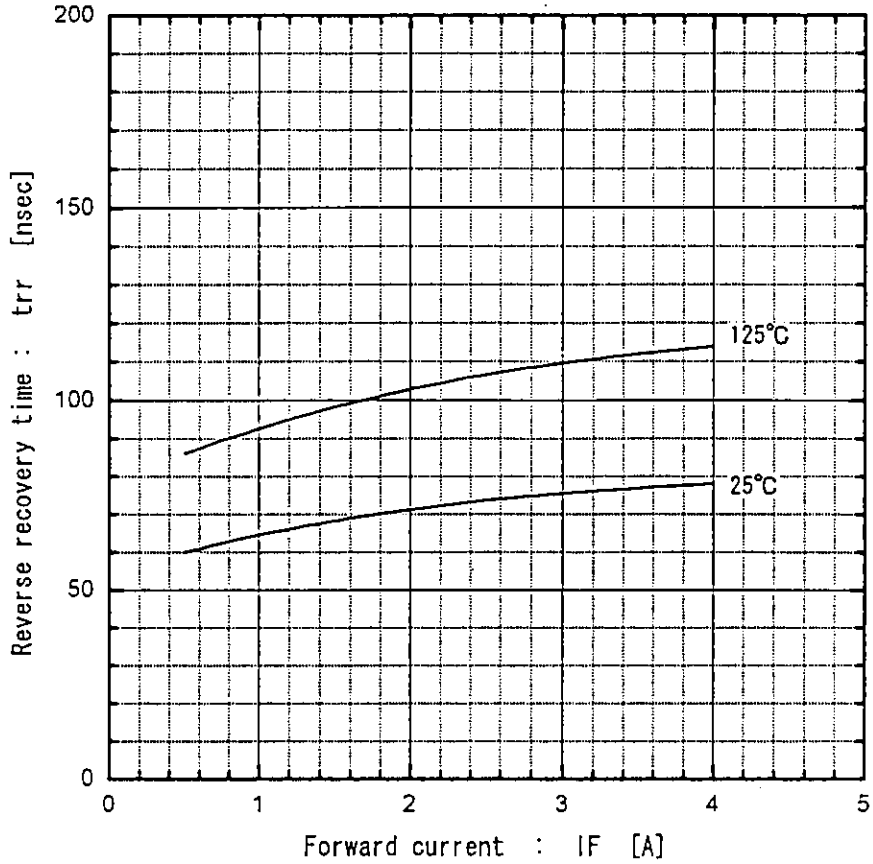
Reverse Biased Safe Operating Area
+VGE=15V, -VGE≦15V, Tj≦125°C, RG≧43Ω



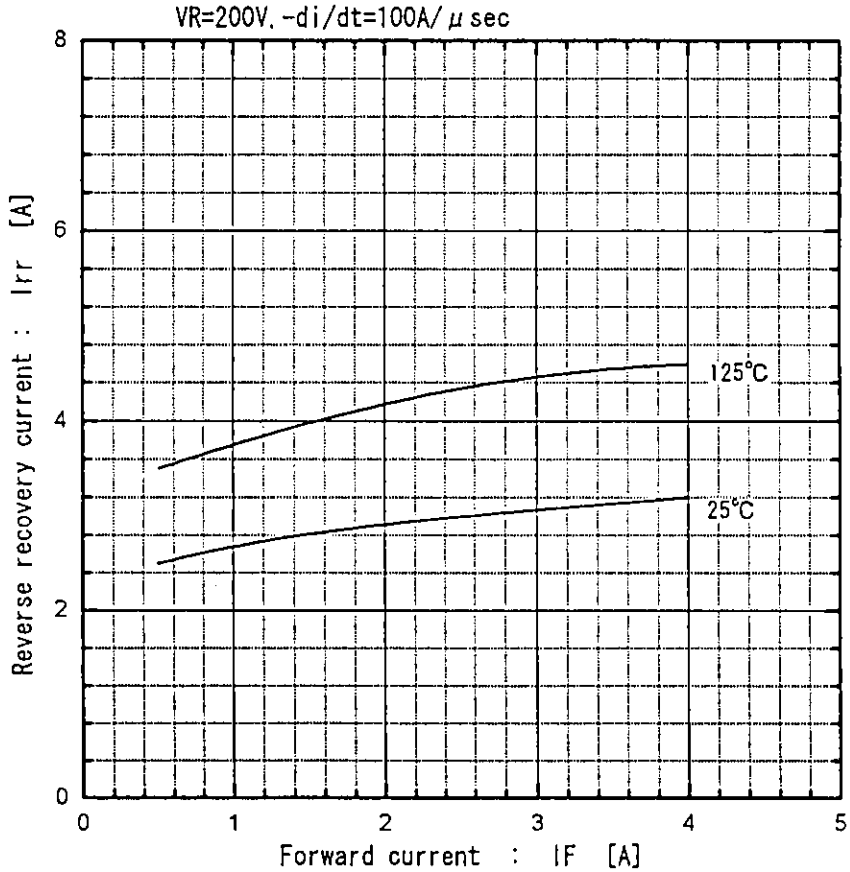
Typical short circuit capability
Vcc=800V, Rg=43Ω, Tj=125°C



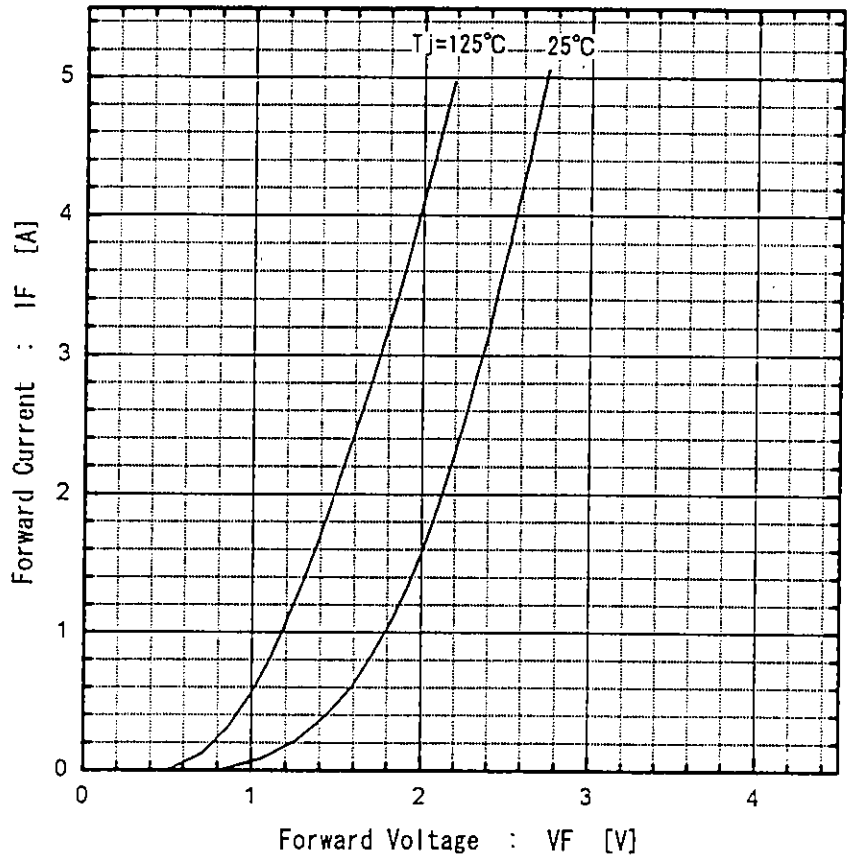
Reverse recovery time vs. Forward current
VR=200V, -di/dt=100A/μsec



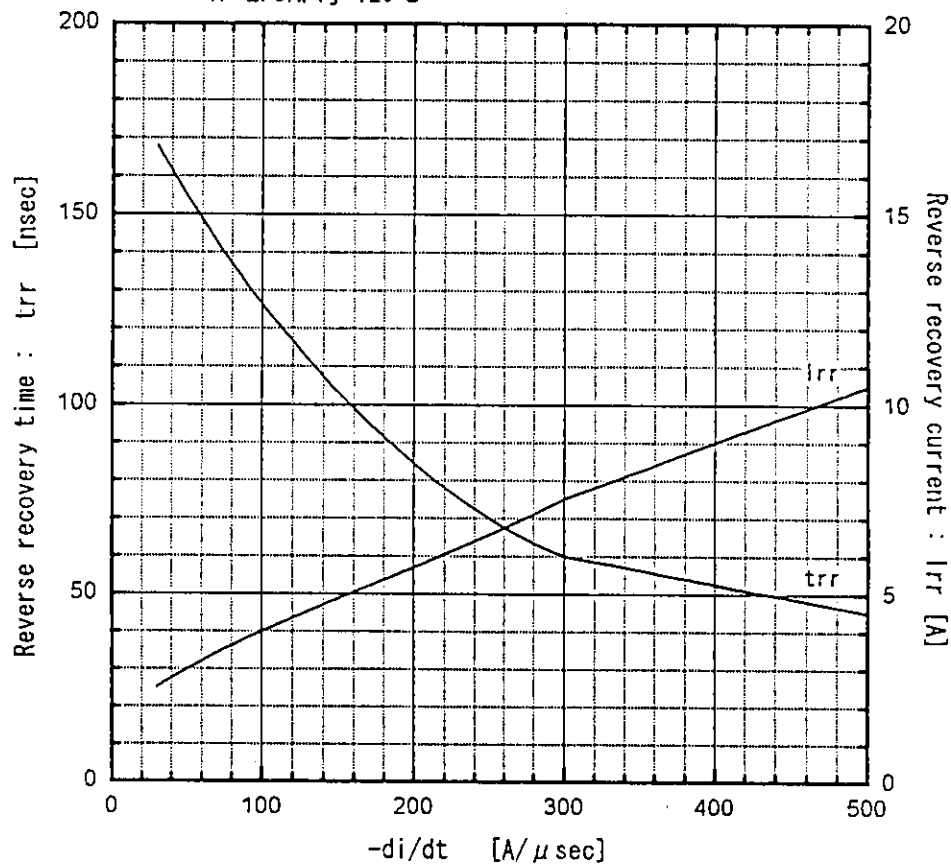
Reverse recovery current vs. Forward current
VR=200V, -di/dt=100A/μsec



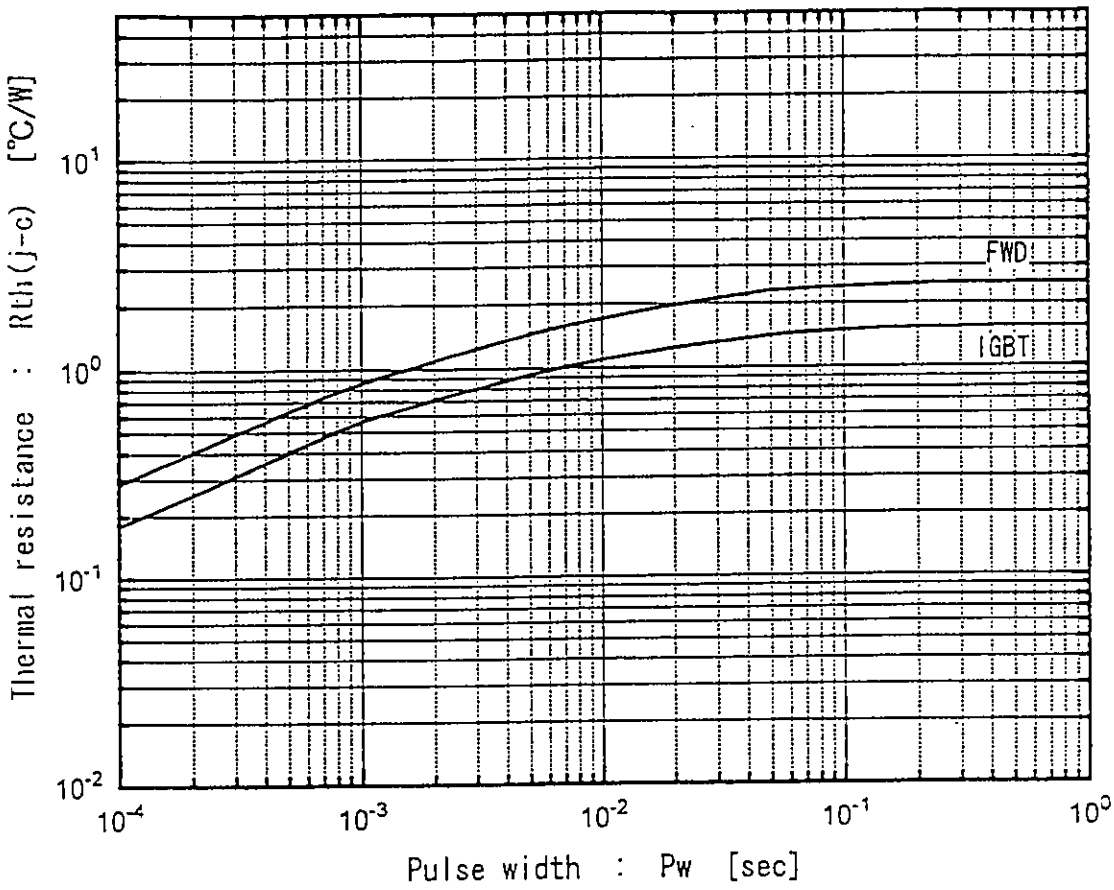
Forward voltage vs. Forward current



Reverse recovery chracteristics vs. -di/dt
IF=2.5A, Tj=125°C



Transient thermal resistance



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