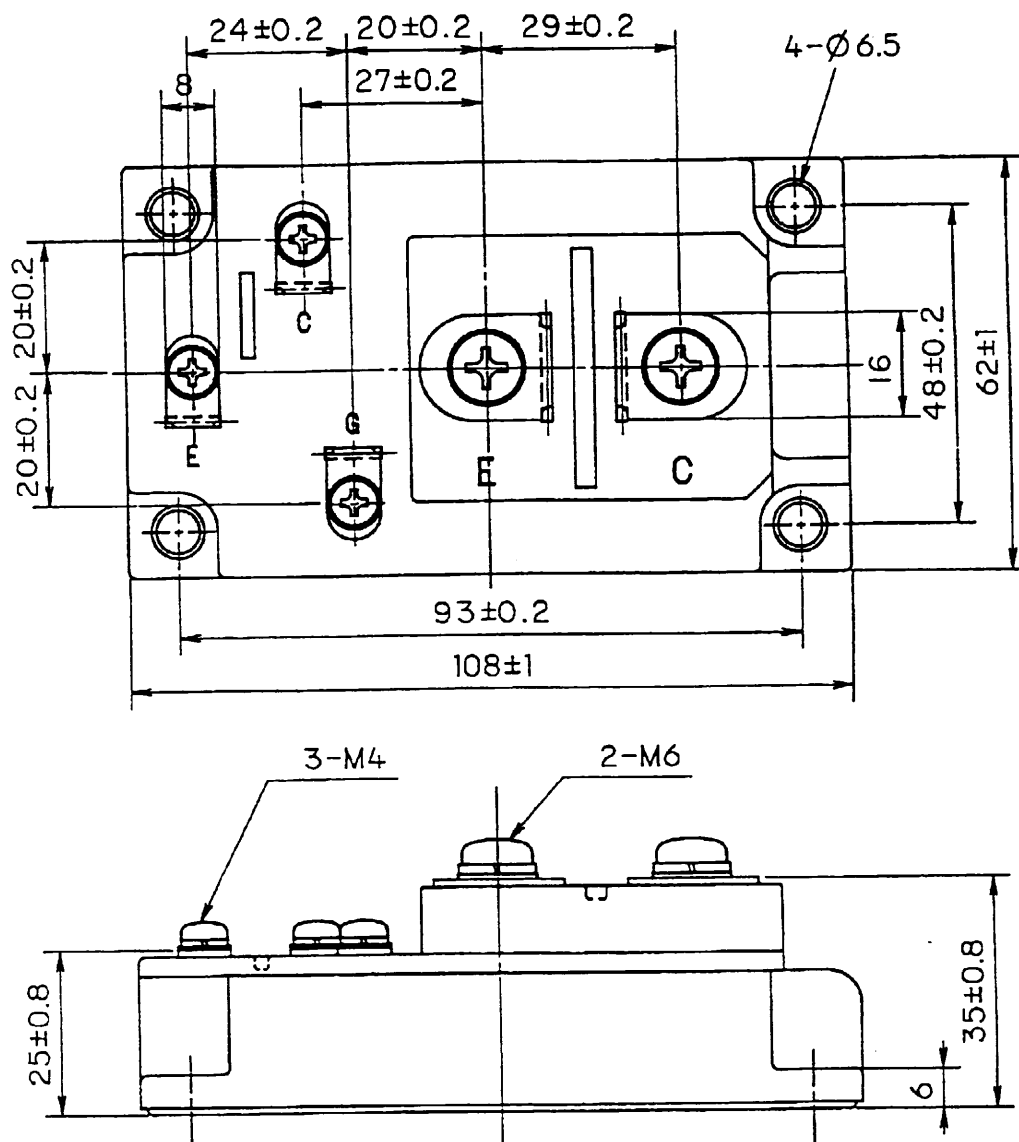
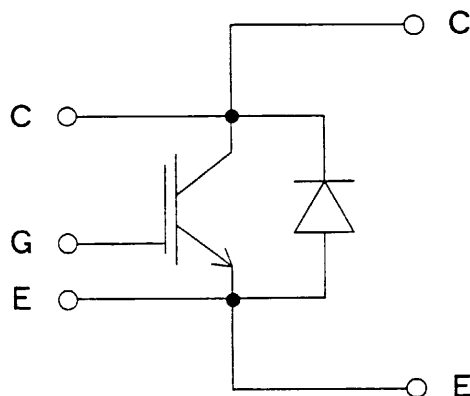


Target Specification of 1MBI300SA-120

1. Outline Drawing (Unit : mm)



2. Equivalent circuit



DATE

NAME

APPROVED

DRAWN: Feb - 11 - 99 N. Arakawa

CHECKED: Feb - 11 - 99 S. Miyatake

Fuji Electric Co., Ltd.

DWG. NO.

MT5F 9778

1/5

REVISIONS

T. Hiyasaka

3. Absolute Maximum Ratings (at Tc= 25℃ unless otherwise specified)

Items	Symbols	Conditions		Maximum Ratings	Units
Collector-Emitter voltage	V _{CES}			1200	V
Gate-Emitter voltage	V _{GES}			± 20	V
Collector current	I _c	Continuous	T _c =25℃	400	A
			T _c =80℃	300	
	I _c pulse	1ms	T _c =25℃	800	
			T _c =80℃	600	
	-I _c			300	
	-I _c pulse	1ms		600	
Collector Power Dissipation	P _c	1 device		1900	W
Junction temperature	T _j			150	℃
Storage temperature	T _{stg}			-40 ~ +125	℃
Isolation voltage ^(*)	Viso	AC : 1min.		2500	V
Screw Torque	Mounting ^(*)			3.5	N · m
	Terminals ^(*)			4.5	
	Terminals ^(*)			1.7	

(*1) All terminals should be connected together when isolation test will be done.

(*2) Recommendable Value : 2.5~3.5 N · m (M5) or (M6)

(*3) Recommendable Value : 3.5~4.5 N · m (M6)

(*4) Recommendable Value : 1.3~1.7 N · m (M4)

4. Electrical characteristics (at Tj= 25℃ unless otherwise specified)

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	Max.	
Zero gate voltage Collector current	ICES	V _{GE} = 0 V, V _{CE} = 1200 V			4.0	mA
Gate-Emitter leakage current	IGES	V _{CE} = 0 V, V _{GE} = ±20 V			0.8	μA
Gate-Emitter threshold voltage	V _{GE(th)}	V _{CE} = 20 V, I _c = 300 mA	5.5	7.2	8.5	V
Collector-Emitter saturation voltage	V _{CE(sat)}	V _{GE} = 15 V, T _j = 25℃		2.3	2.6	V
		I _c = 300 A, T _j = 125℃		2.8		
Input capacitance	C _{ies}	V _{GE} = 0 V		36000		pF
Output capacitance	C _{oes}	V _{CE} = 10 V		7500		
Reverse transfer capacitance	C _{res}	f = 1 MHz		6600		
Turn-on time	ton	V _{cc} = 600 V			1.2	μs
	tr	I _c = 300 A			0.6	
	tr(i)	V _{GE} = ±15 V		0.1		
Turn-off time	t _{off}	RG = 2.7 Ω			1.0	
	tf			0.08	0.3	
Forward on voltage	VF	IF = 300 A, T _j = 25℃		2.5	3.3	V
		T _j = 125℃		2.1		
Reverse recovery time	trr	IF = 300 A			0.35	μs

5. Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	Max.	
Thermal resistance (1 device)	R _{th(j-c)}	IGBT			0.066	℃/W
		FWD			0.220	
Contact Thermal resistance	R _{th(c-f)}	with Thermal Compound (*)		0.0125		

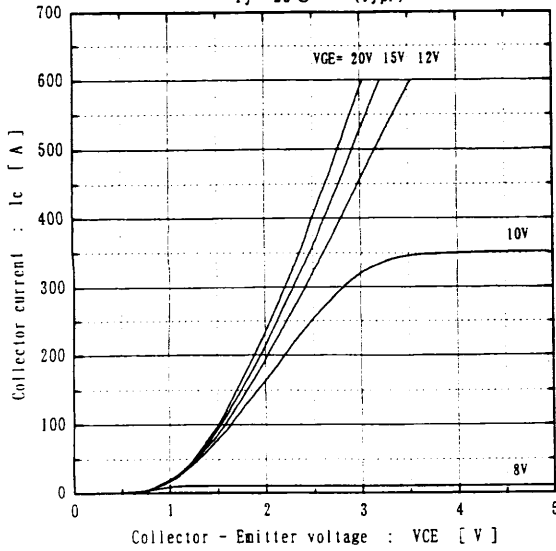
※ This is the value which is defined mounting on the additional cooling fin with thermal compound.

Note :

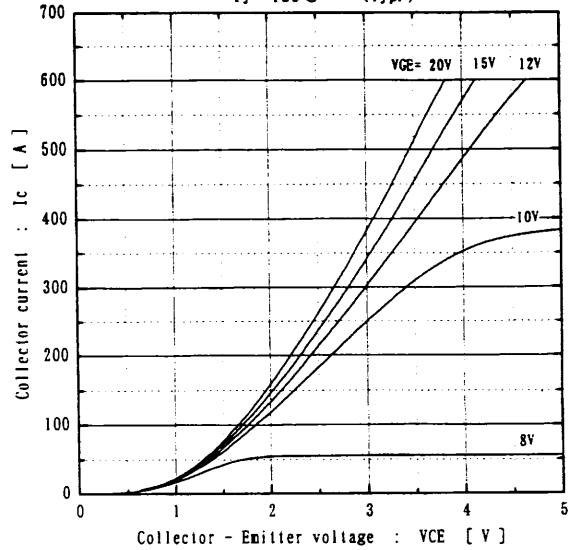
- This specification is only for technical considerations, and not for contract.
- This specification is subject to be changed without notices.

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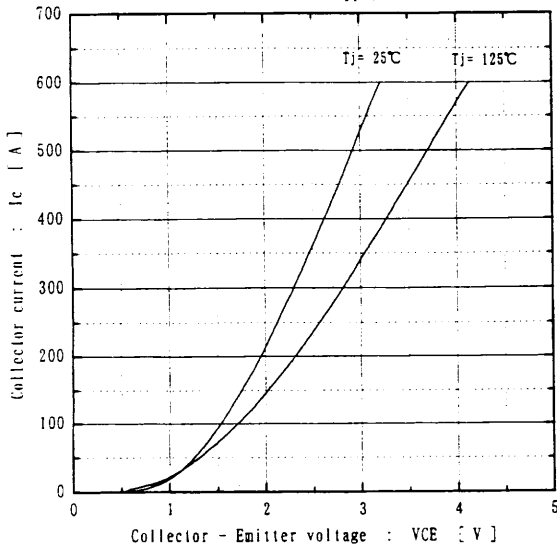
Collector current vs. Collector-Emitter voltage
 $T_j = 25^\circ\text{C}$ (typ.)



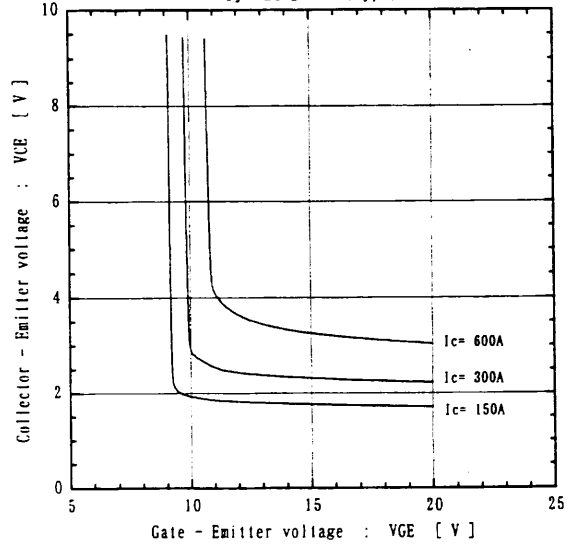
Collector current vs. Collector-Emitter voltage
 $T_j = 125^\circ\text{C}$ (typ.)



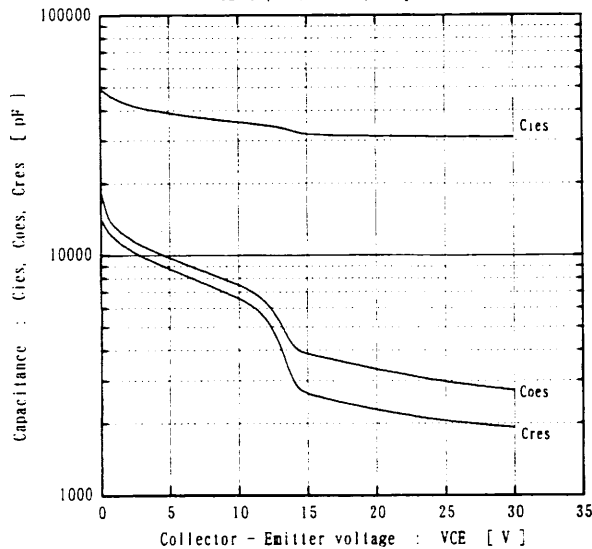
Collector current vs. Collector-Emitter voltage
 $V_{GE} = 15\text{V}$ (typ.)



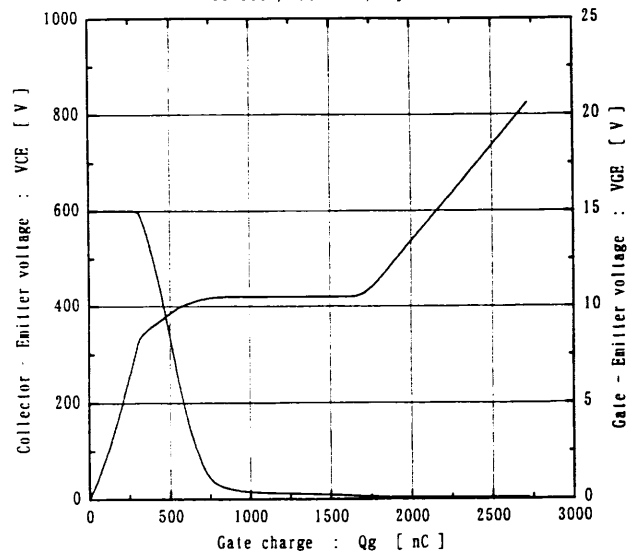
Collector-Emitter voltage vs. Gate-Emitter voltage
 $T_j = 25^\circ\text{C}$ (typ.)



Capacitance vs. Collector-Emitter voltage (typ.)
 $V_{GE} = 0\text{V}$, $f = 1\text{MHz}$, $T_j = 25^\circ\text{C}$

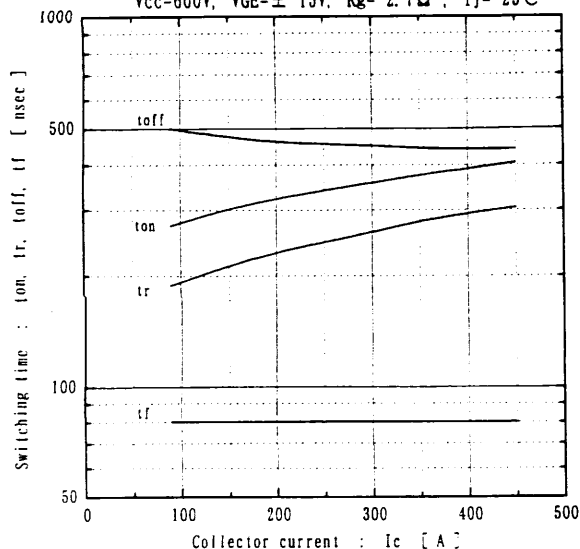


Dynamic Gate charge (typ.)
 $V_{cc} = 600\text{V}$, $I_c = 300\text{A}$, $T_j = 25^\circ\text{C}$

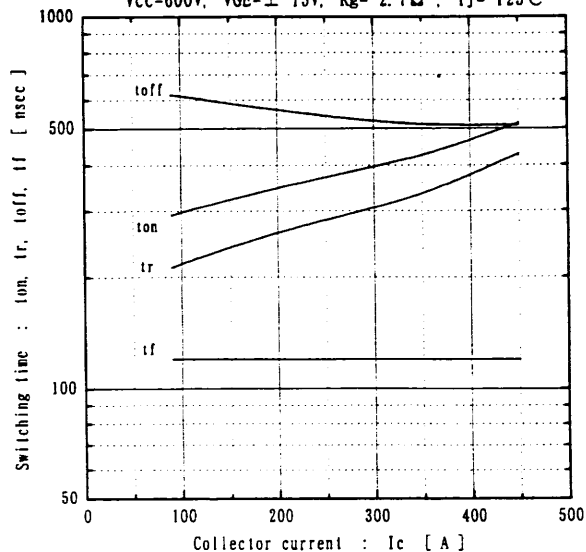


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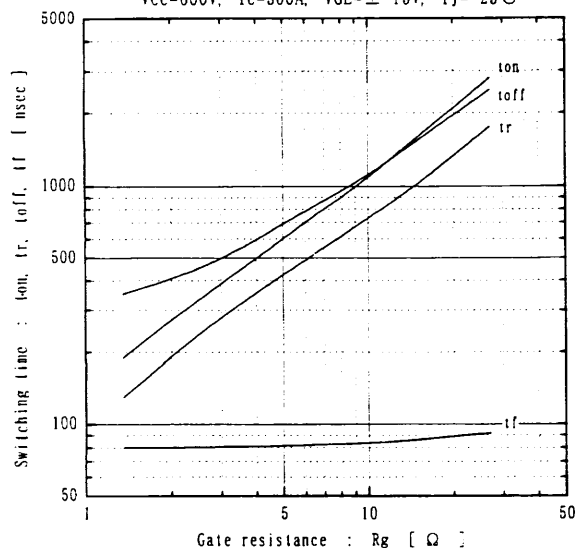
Switching time vs. Collector current (typ.)
 $V_{CC}=600V$, $V_{GE}=\pm 15V$, $R_g=2.7\Omega$, $T_j=25^\circ C$



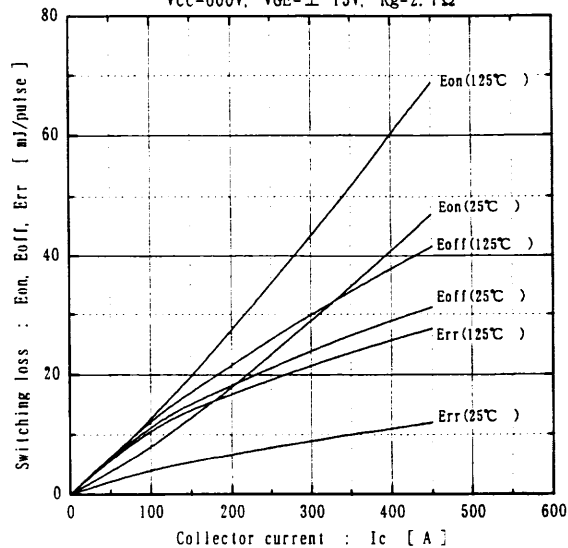
Switching time vs. Collector current (typ.)
 $V_{CC}=600V$, $V_{GE}=\pm 15V$, $R_g=2.7\Omega$, $T_j=125^\circ C$



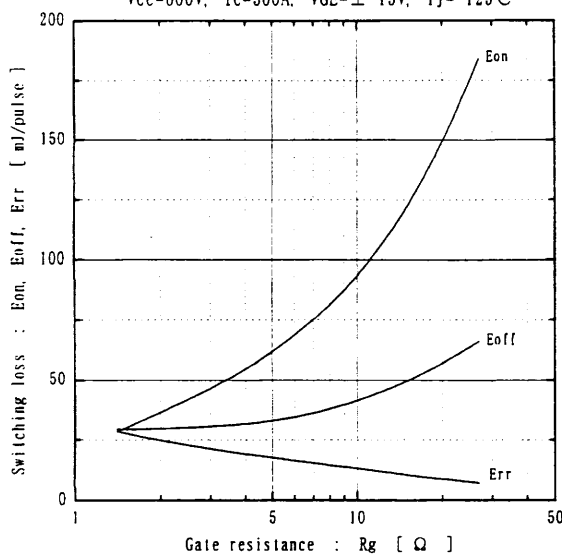
Switching time vs. Gate resistance (typ.)
 $V_{CC}=600V$, $I_c=300A$, $V_{GE}=\pm 15V$, $T_j=25^\circ C$



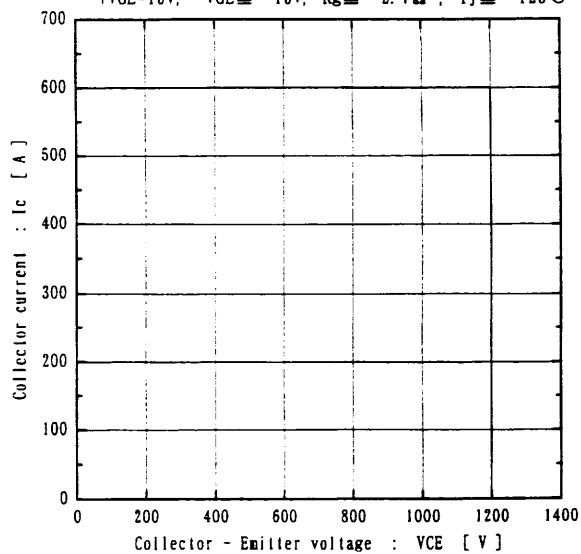
Switching loss vs. Collector current (typ.)
 $V_{CC}=600V$, $V_{GE}=\pm 15V$, $R_g=2.7\Omega$



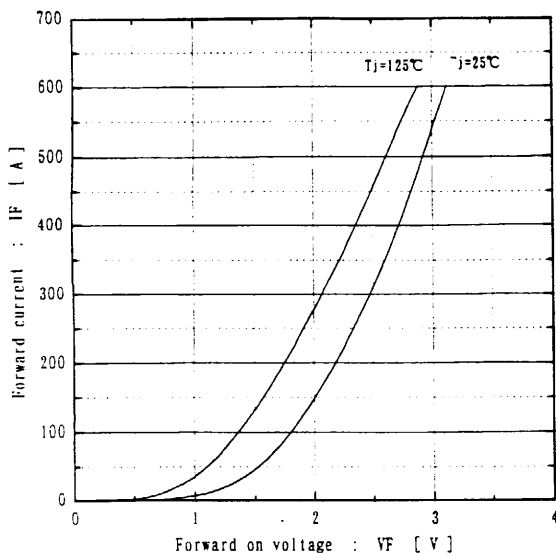
Switching loss vs. Gate resistance (typ.)
 $V_{CC}=600V$, $I_c=300A$, $V_{GE}=\pm 15V$, $T_j=125^\circ C$



Reverse bias safe operating area
 $+V_{GE}=15V$, $-V_{GE}\leq 15V$, $R_g\geq 2.7\Omega$, $T_j\leq 125^\circ C$

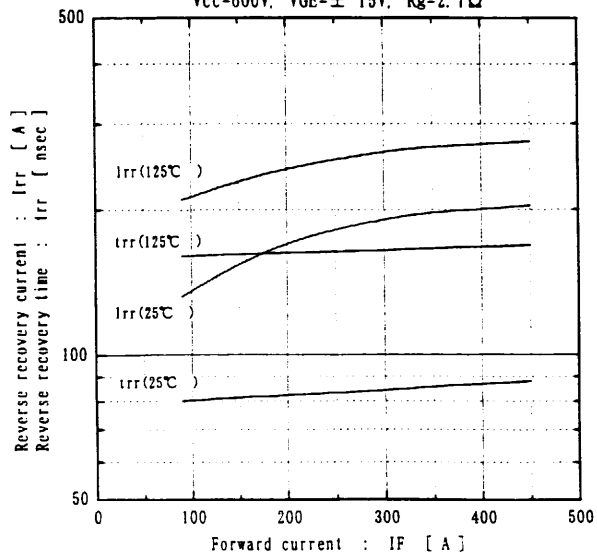


Forward current vs. Forward on voltage (typ.)

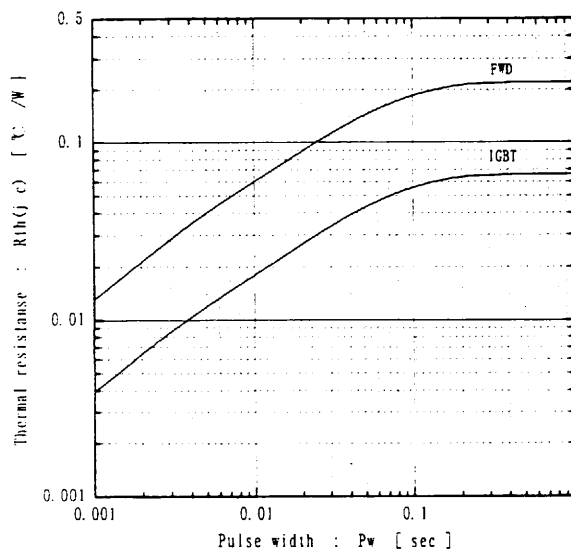


Reverse recovery characteristics (typ.)

$V_{CC} = 600\text{V}$, $V_{GE} = \pm 15\text{V}$, $R_g = 2.7\Omega$



Transient thermal resistance



Definitions of switching time

