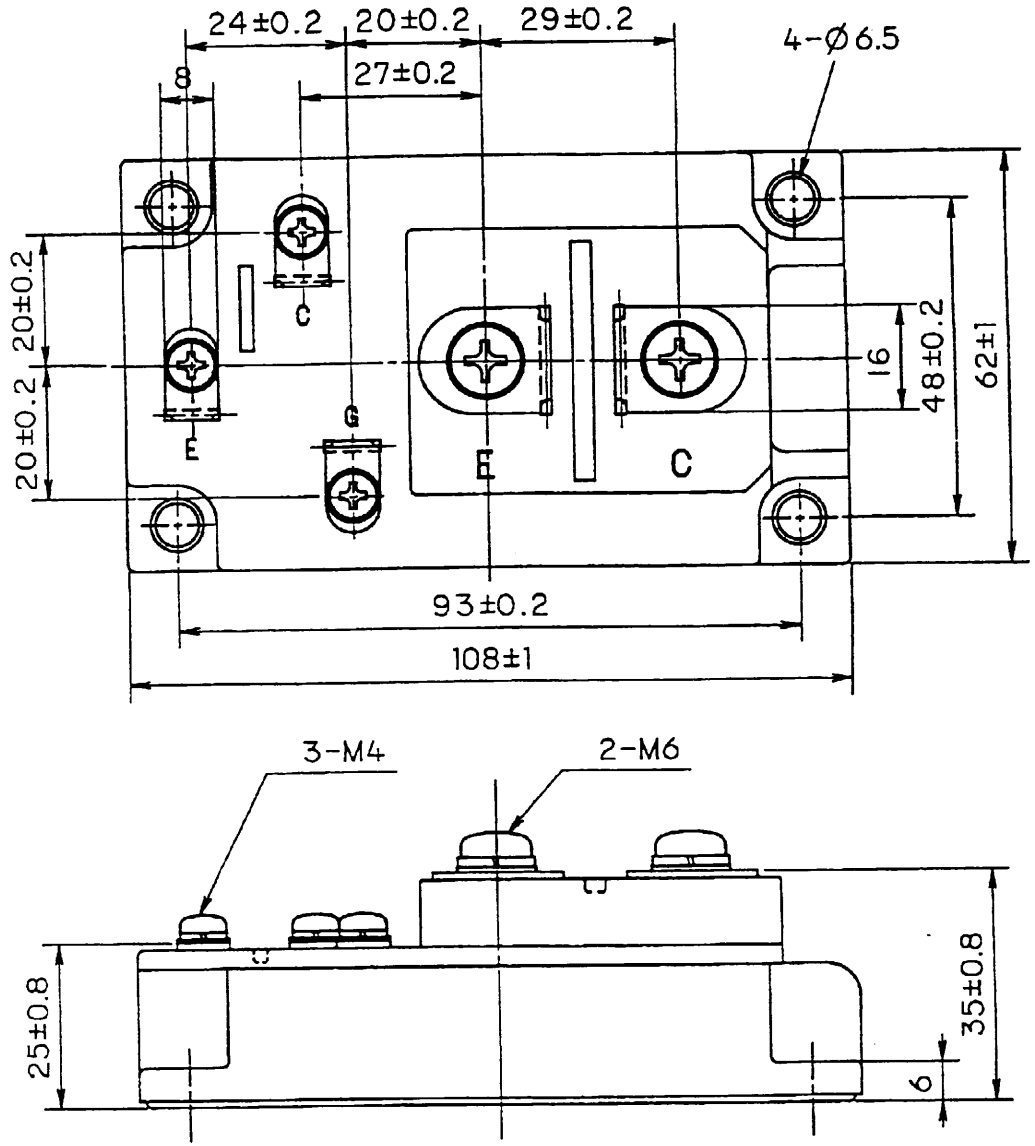
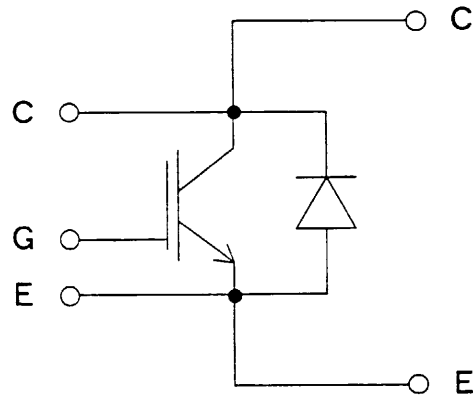


Target Specification of 1MBI300SA-120

1. Outline Drawing ( Unit : mm )



2. Equivalent circuit



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DATE	NAME	APPROVED
DRAWN: Feb - 11 - 99	N. Arizawa	
CHECKED: Feb - 11 - 99	S. Miyahara	
		J. Hiyasaka

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DWG. NO.	MT5F 9778 1/5

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

Items	Symbols	Conditions	Maximum Ratings		Units
Collector-Emitter voltage	VCES		1200		V
Gate-Emitter voltage	VGES		±20		V
Collector current	Ic	Continuous	Tc=25°C	400	A
			Tc=80°C	300	
	Ic pulse	1ms	Tc=25°C	800	
			Tc=80°C	600	
	-Ic			300	
-Ic pulse		1ms	600		
Collector Power Dissipation	Pc	1 device	1900		W
Junction temperature	Tj		150		°C
Storage temperature	Tstg		-40~+125		°C
Isolation voltage <sup>(*)1</sup>	Viso	AC : 1min.	2500		V
Screw Torque	Mounting <sup>(*)2</sup>		3.5		N · m
	Terminals <sup>(*)3</sup>		4.5		
	Terminals <sup>(*)4</sup>		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°C unless otherwise specified)

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	Max.	
Zero gate voltage Collector current	ICES	VGE = 0 V, VCE = 1200 V			4.0	mA
Gate-Emitter leakage current	IGES	VCE = 0 V, VGE = ±20 V			0.8	μA
Gate-Emitter threshold voltage	VGE(th)	VCE = 20 V, Ic = 300 mA	5.5	7.2	8.5	V
Collector-Emitter saturation voltage	VCE(sat)	VGE = 15 V, Tj = 25 °C		2.3	2.6	V
		Ic = 300 A, Tj = 125 °C		2.8		
Input capacitance	Cies	VGE = 0 V		36000		pF
Output capacitance	Coes	VCE = 10 V		7500		
Reverse transfer capacitance	Cres	f = 1 MHz		6600		
Turn-on time	ton	Vcc = 600 V			1.2	μs
	tr	Ic = 300 A			0.6	
	tr(i)	VGE = ±15 V		0.1		
Turn-off time	toff	RG = 2.7 Ω			1.0	μs
	tf			0.08	0.3	
Forward on voltage	VF	IF = 300 A	Tj = 25 °C	2.5	3.3	V
			Tj = 125 °C	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)	Rth(j-c)	IGBT			0.066	°C/W
		FWD			0.220	
Contact Thermal resistance	Rth(c-f)	with Thermal Compound (*)		0.0125		

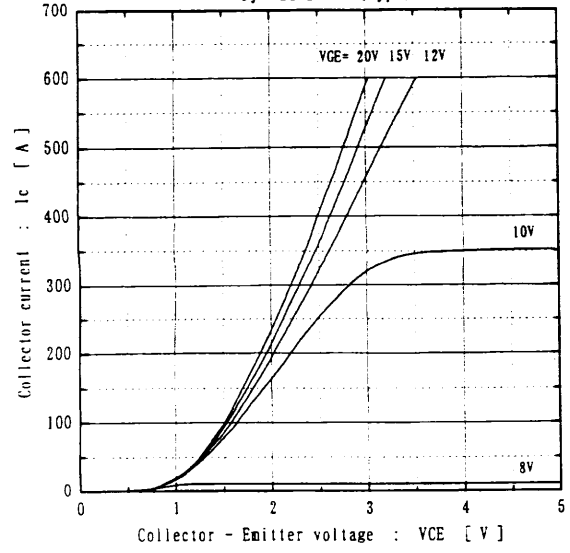
※ This is the value which is defined mounting on the additional cooling fin with thermal compound.

Note :

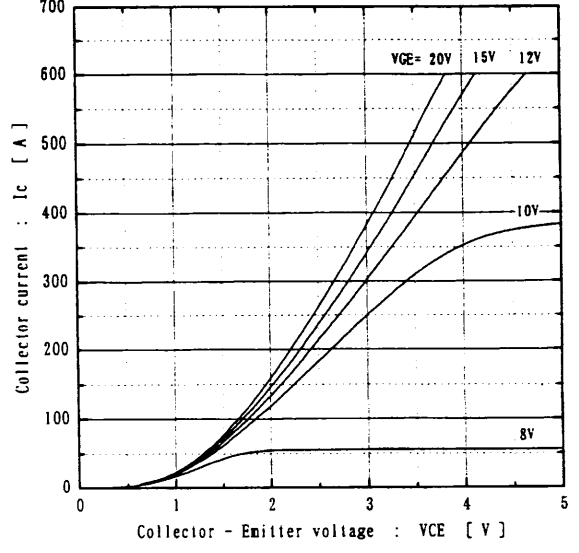
- This specification is only for technical considerations, and not for contract.
- This specification is subject to be changed without notices.

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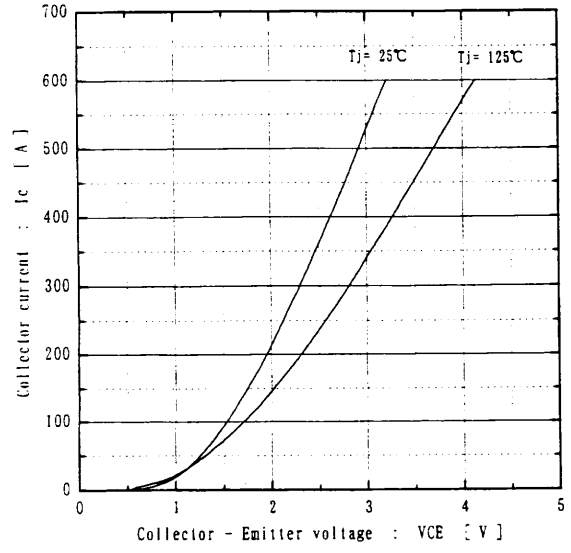
Collector current vs. Collector-Emittter voltage  
 $T_j = 25^\circ\text{C}$  (typ.)



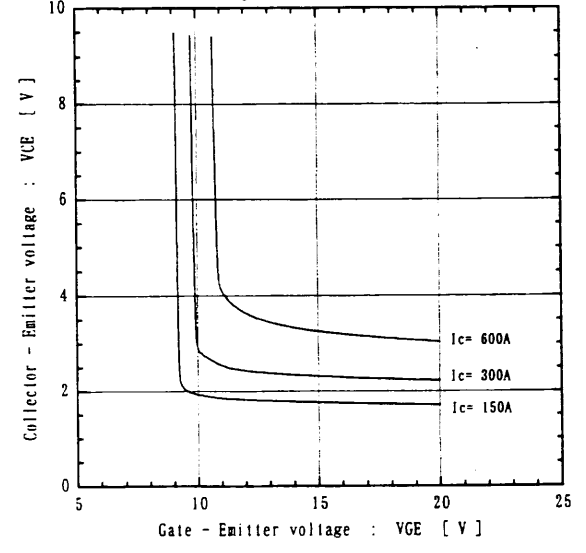
Collector current vs. Collector-Emittter voltage  
 $T_j = 125^\circ\text{C}$  (typ.)



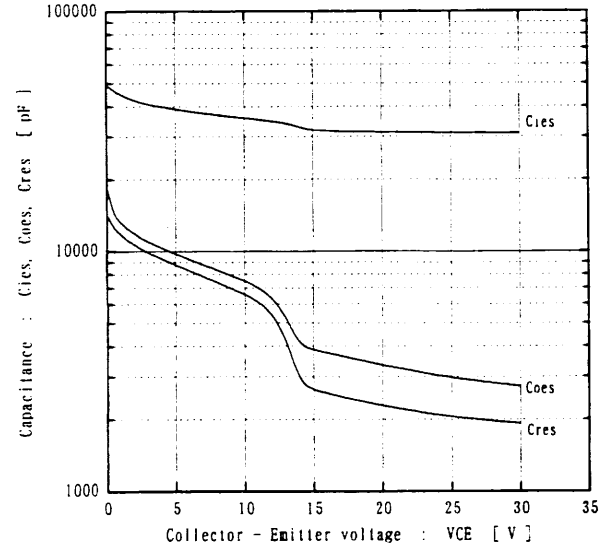
Collector current vs. Collector-Emittter voltage  
 $V_{GE} = 15\text{V}$  (typ.)



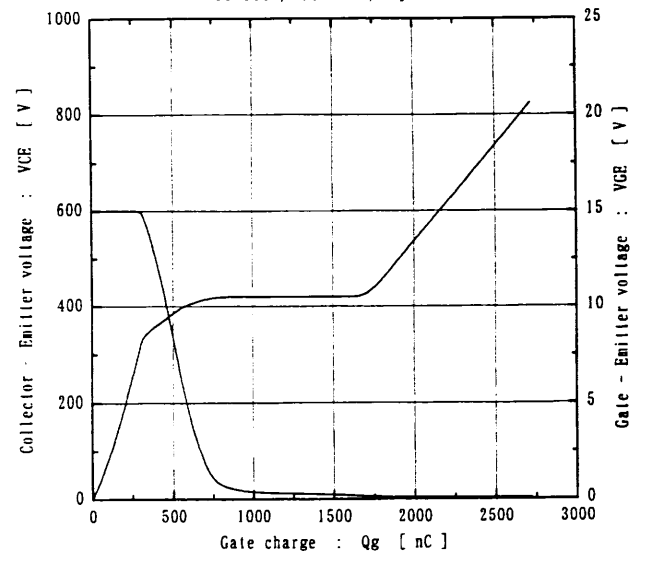
Collector-Emittter voltage vs. Gate-Emittter voltage  
 $T_j = 25^\circ\text{C}$  (typ.)



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

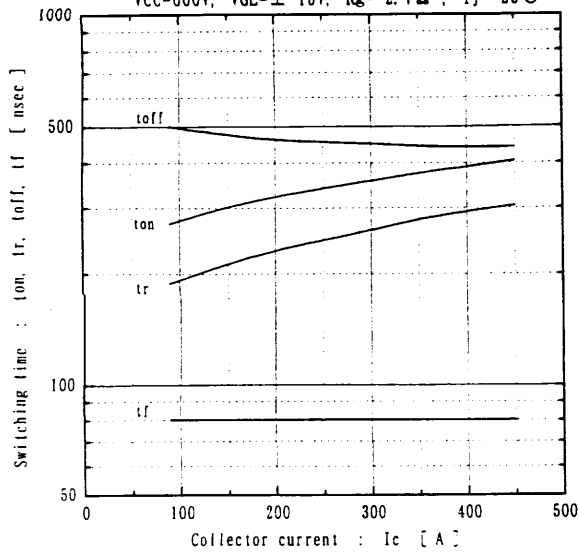


Dynamic Gate charge (typ.)  
 $V_{cc} = 600\text{V}$ ,  $I_c = 300\text{A}$ ,  $T_j = 25^\circ\text{C}$

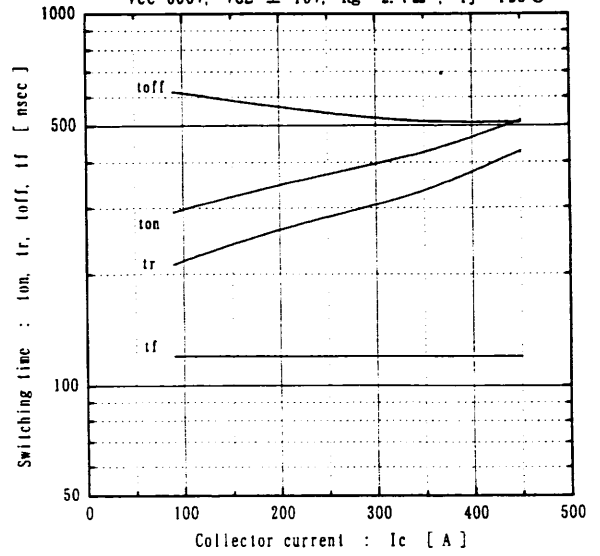


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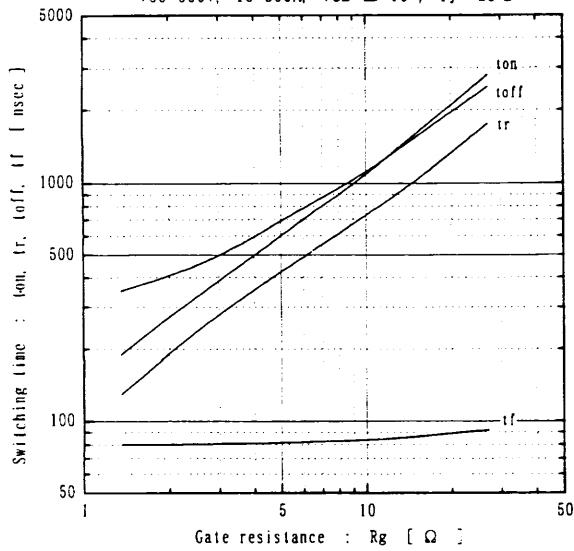
Switching time vs. Collector current (typ.)  
 $V_{CC}=600V$ ,  $V_{GE}=\pm 15V$ ,  $R_g=2.7\Omega$ ,  $T_j=25^\circ C$



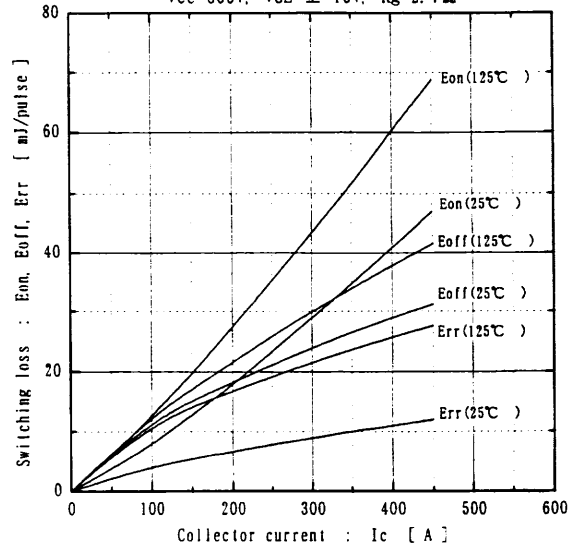
Switching time vs. Collector current (typ.)  
 $V_{CC}=600V$ ,  $V_{GE}=\pm 15V$ ,  $R_g=2.7\Omega$ ,  $T_j=125^\circ C$



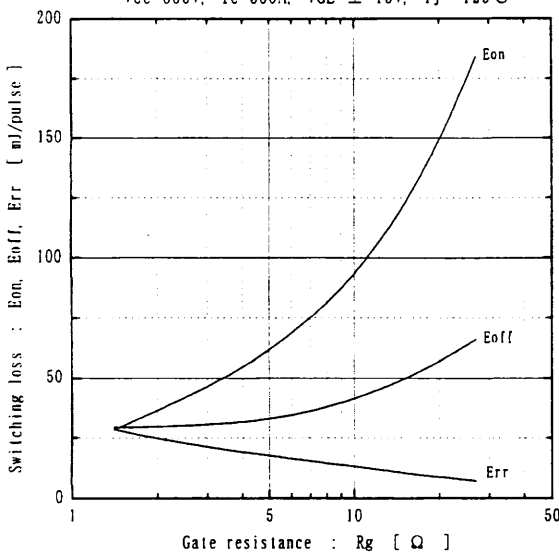
Switching time vs. Gate resistance (typ.)  
 $V_{CC}=600V$ ,  $I_c=300A$ ,  $V_{GE}=\pm 15V$ ,  $T_j=25^\circ C$



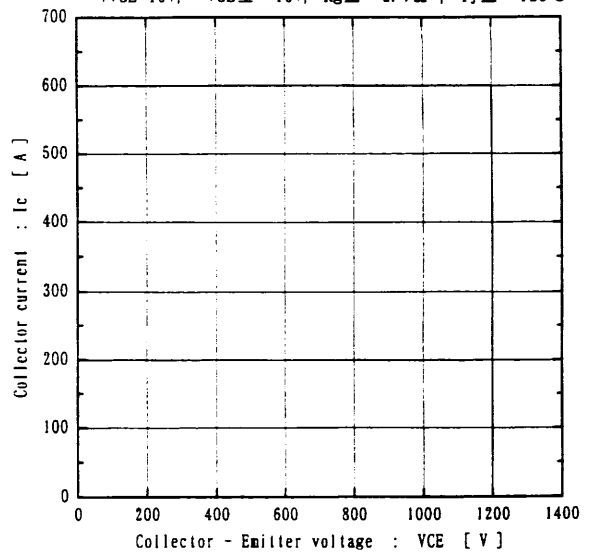
Switching loss vs. Collector current (typ.)  
 $V_{CC}=600V$ ,  $V_{GE}=\pm 15V$ ,  $R_g=2.7\Omega$



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



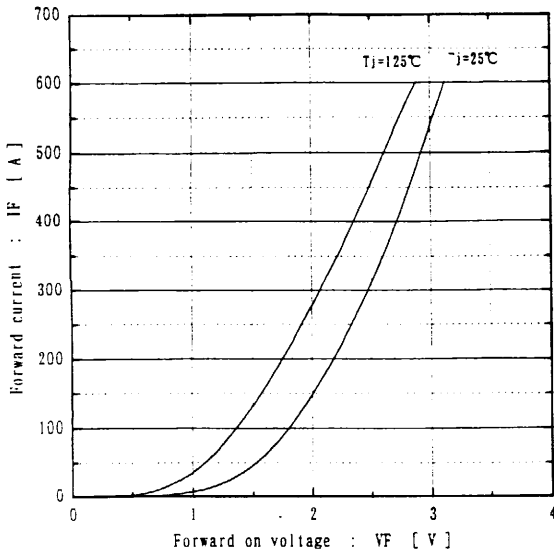
Reverse bias safe operating area  
 $+V_{GE}=15V$ ,  $-V_{GE}\le 15V$ ,  $R_g\ge 2.7\Omega$ ,  $T_j\le 125^\circ C$



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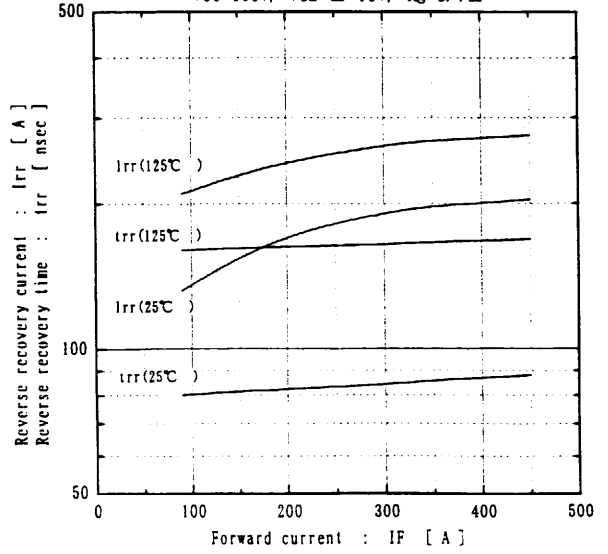
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Forward current vs. Forward on voltage (typ.)

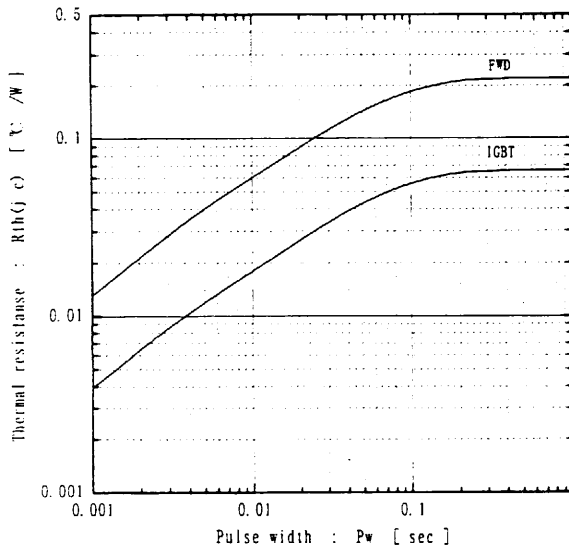


Reverse recovery characteristics (typ.)

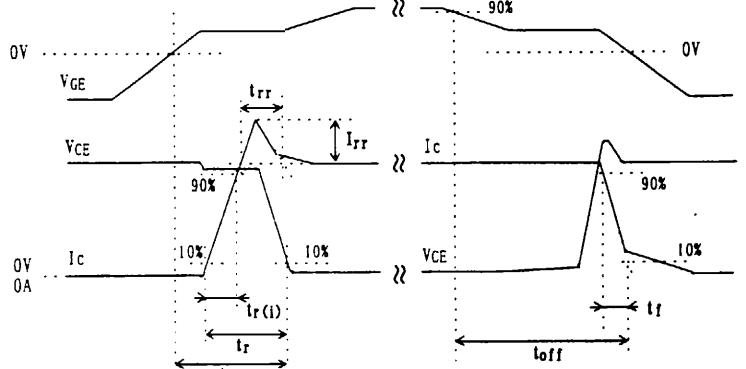
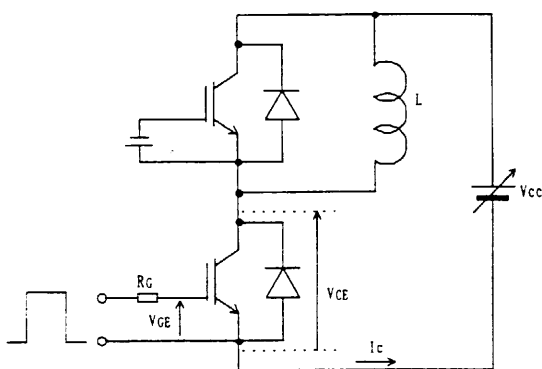
Vcc=600V, VGE=±15V, Rg=2.7Ω



Transient thermal resistance



Definitions of switching time



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