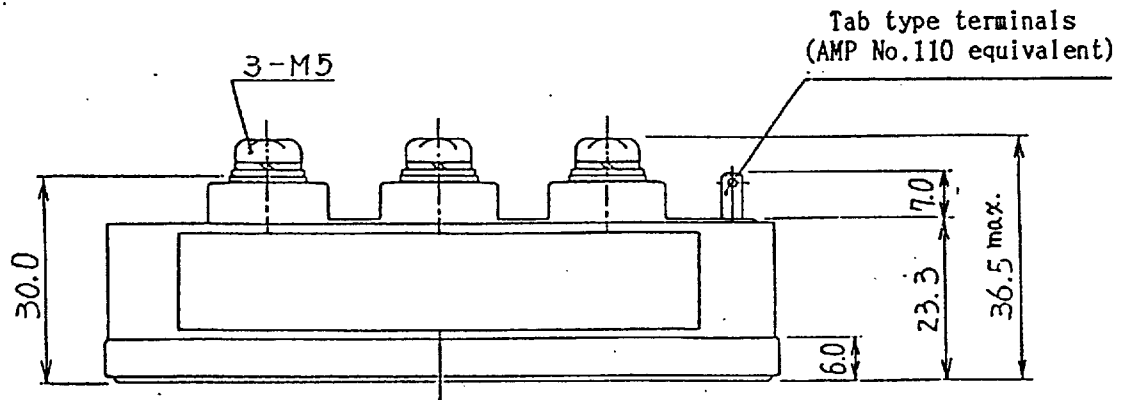
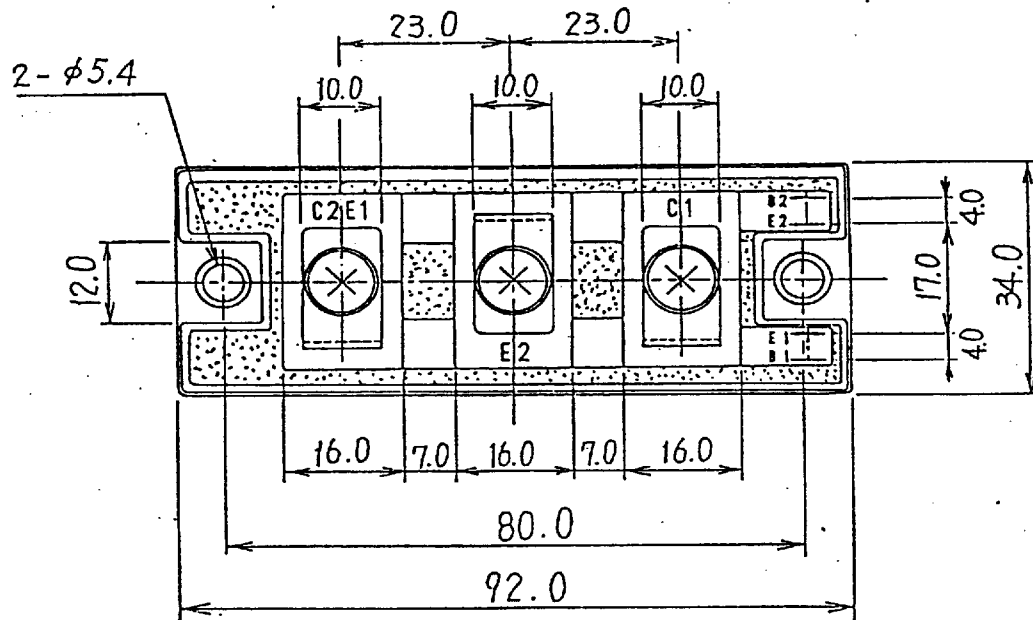


2MBI75J-060 (TENTATIVE)

1. Outline Drawing

Unit : mm

* Isolation Voltage : AC 2500 V 1 minute



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REVISIONS	a) Revised page 7	Jan. 21, '93	A. Yamaguchi
	b) Revised page 9	Jan. 27, '93	A. Yamaguchi
	c) Revised page 2, 4, 9, 10	Apr. 6, '93	A. Yamaguchi

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CHECKED	Jan - 14 - '93	T. Miyazaki	

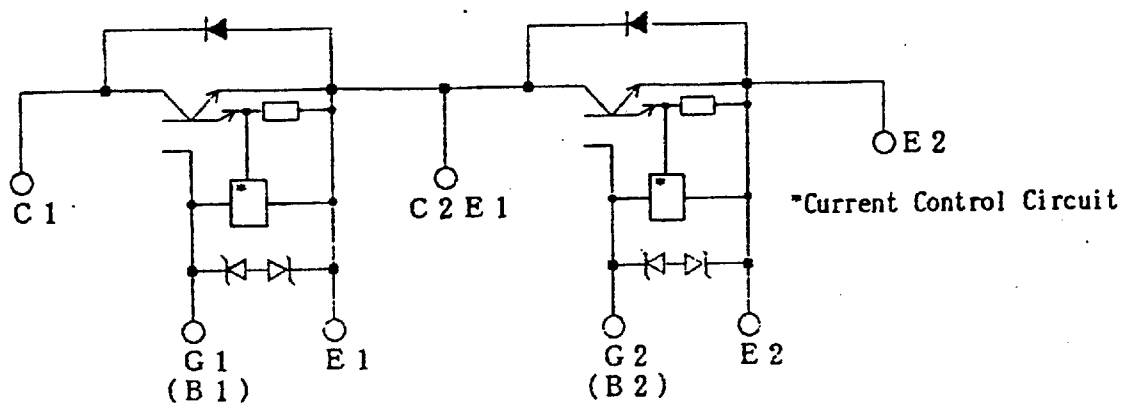
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α	
β	
γ	

2. Equivalent Circuit



3. Absolute Maximum Ratings (Tj=25 °C)

Items		Symbols	Ratings	Units
Collector-emitter voltage		V_{CES}	600	V
Gate-emitter voltage		V_{GES}	± 20	V
Collector current	Continuous	I_C	7.5	A
	1 ms	I_C pulse	150	
		$-I_C$	7.5	
	1 ms	$-I_C$ pulse	150	
Max.power dissipation		PC	245	W
Operating temperature		Tj	+150	°C
Storage temperature		Tstg	-40 ~ +125	°C
Isolation voltage		Vis	AC 2500 (1 min)	V
Screw Torque		Mounting * 1	3.5	N · m
		Terminals * 1	3.5	

Note : *1 Recommendable Value : 2.5 ~ 3.5 N · m (M5)

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4. Static electrical characteristics (at $T_j=25^\circ\text{C}$ unless otherwise specified)

Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Zero gate voltage collector current	I_{CES}			1.0	$T_j = 25^\circ\text{C}$ $V_{GE} = 0\text{V}$	mA
					$T_j = 125^\circ\text{C}$ $V_{CE} = 600\text{V}$	mA
Gate-emitter leakage current	I_{GES}			15	$V_{CE} = 0\text{V}$ $V_{GE} = \pm 20\text{V}$	μA
Gate-emitter threshold voltage	$V_{GE(th)}$	3.5	5.0	6.5	$V_{CE} = 20\text{V}$ $I_C = 75\text{mA}$	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		1.7	2.5	$V_{GE} = 15\text{V}$ $I_C = 75\text{A}$	V

5. Dynamic ratings (at $T_j=25^\circ\text{C}$ unless otherwise specified)

Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Input capacitance	C_{ies}		4800		$V_{GE} = 0\text{V}$	pF
Output capacitance	C_{oes}				$V_{CE} = 10\text{V}$	
Reverse transfer capacitance	C_{res}				$f = 1\text{MHz}$	
Turn-on time	t_{on}		0.6	1.2	$V_{CC} = 300\text{V}$ $I_C = 75\text{A}$ $V_{GE} = \pm 15\text{V}$ $R_\theta = 33^\circ\text{C/W}$	μs
	t_r		0.2	0.6		
Turn-off time	t_{off}		0.8	1.5		
	t_f		0.15	0.35		

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6. Characteristics of reverse diode (at $T_j=25^{\circ}\text{C}$ unless otherwise specified)

Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Diode forward on-voltage	V_F		2.3	3.0	$I_F=75\text{A}$ $V_{GE}=0\text{V}$	V
Reverse recovery time	t_{rr}			300	$I_F=75\text{A}$ $-di/dt=225\text{A}/\mu\text{s}$	ns

7. Thermal resistance characteristics

Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Thermal resistance	$R_{th(j-c)}$			0.510	IGBT	$^{\circ}\text{C}/\text{W}$
	$R_{th(j-c)}$			1.060	Diode	
	* $R_{th(c-f)}$		0.05		the base to cooling fin	

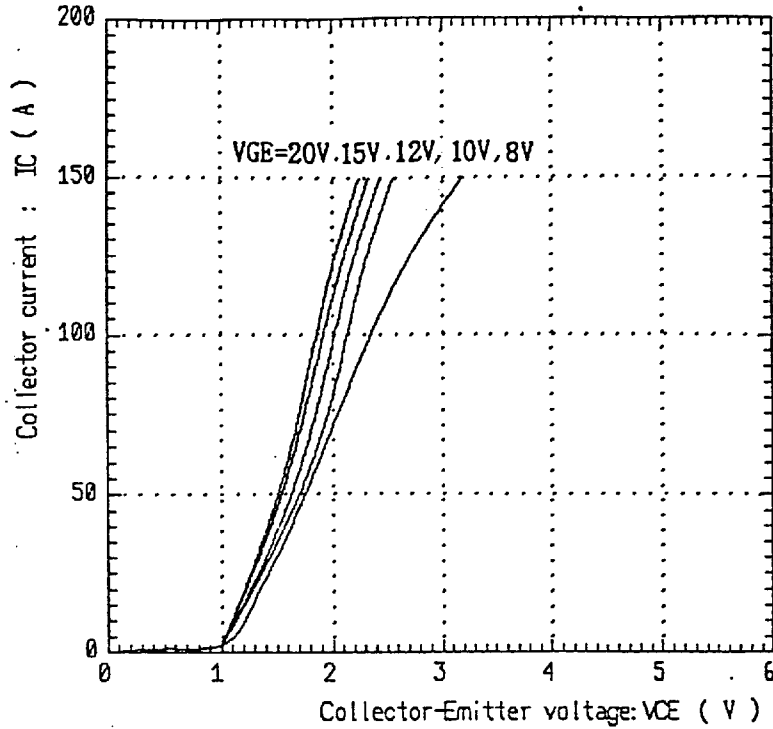
* This is the value which is defined mounting on the additional cooling fin with thermal compound.

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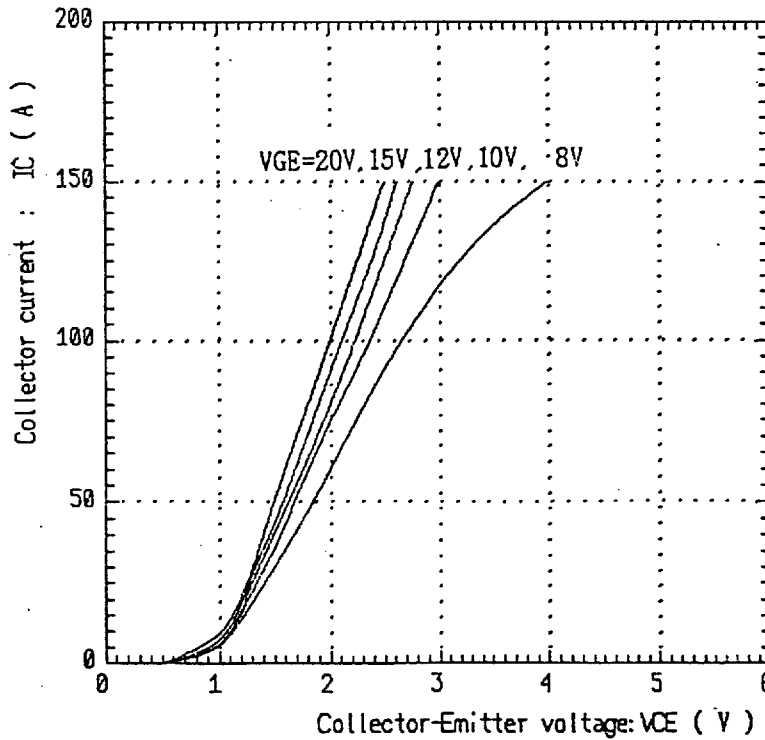
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Collector current vs. Collector-Emitter voltage
Tj=25°C



Collector current vs. Collector-Emitter voltage
Tj=125°C



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Collector current (mA)

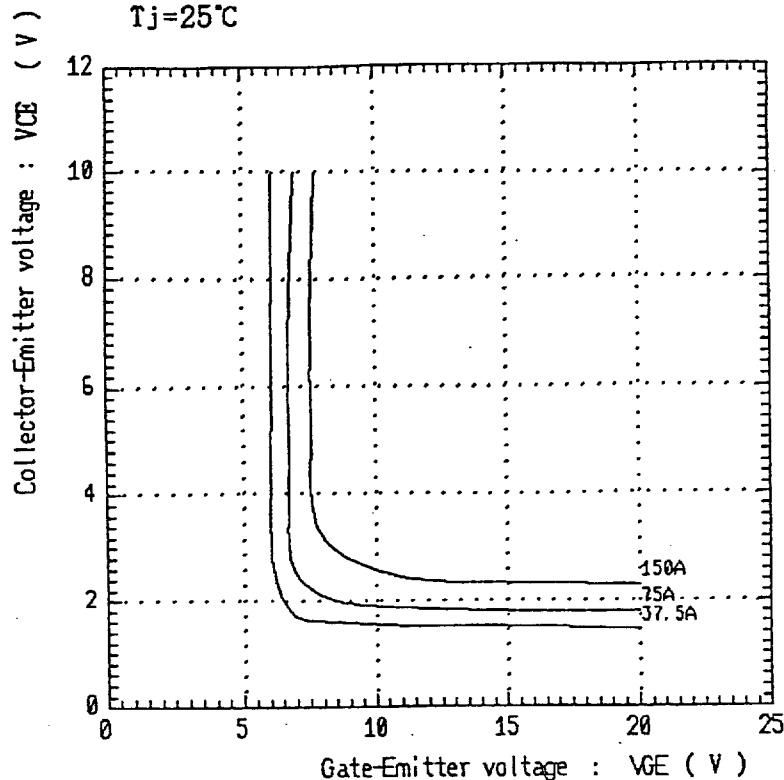
Collector-Emitter voltage: VCE (V)

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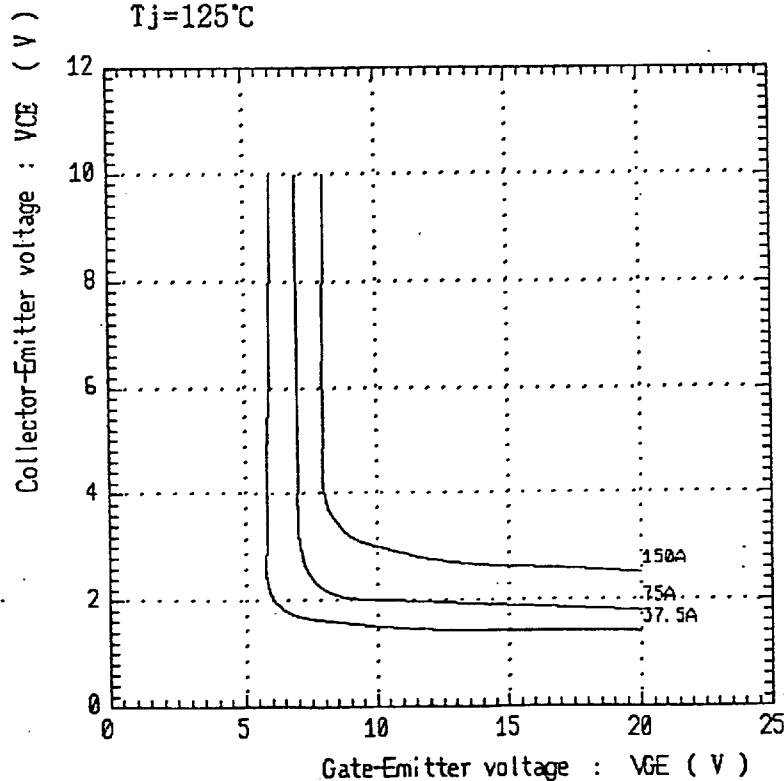
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Collector-Emitter voltage vs. Gate-Emitter voltage
Tj=25°C



Collector-Emitter voltage vs. Gate-Emitter voltage
Tj=125°C



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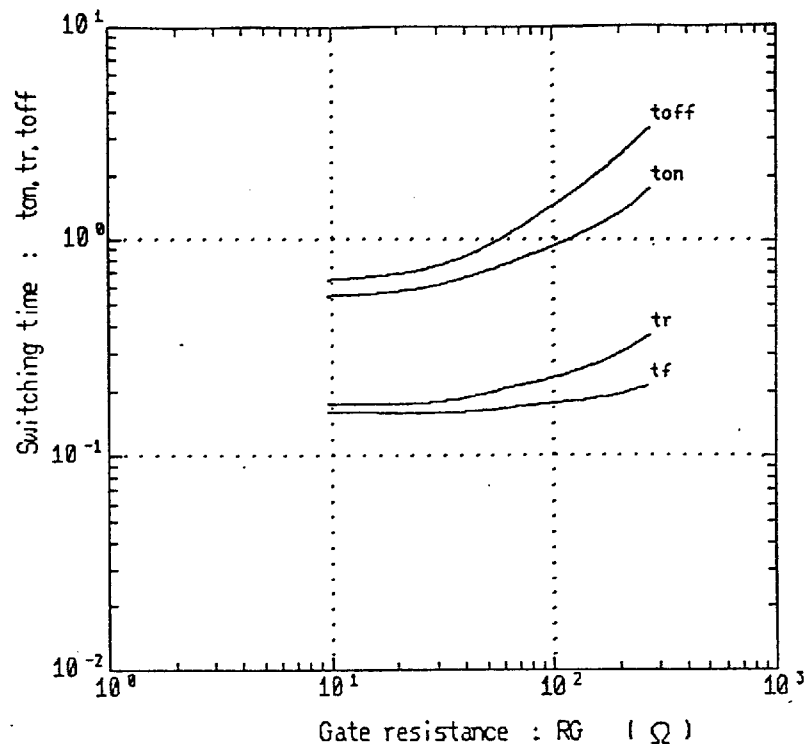
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A
B
C

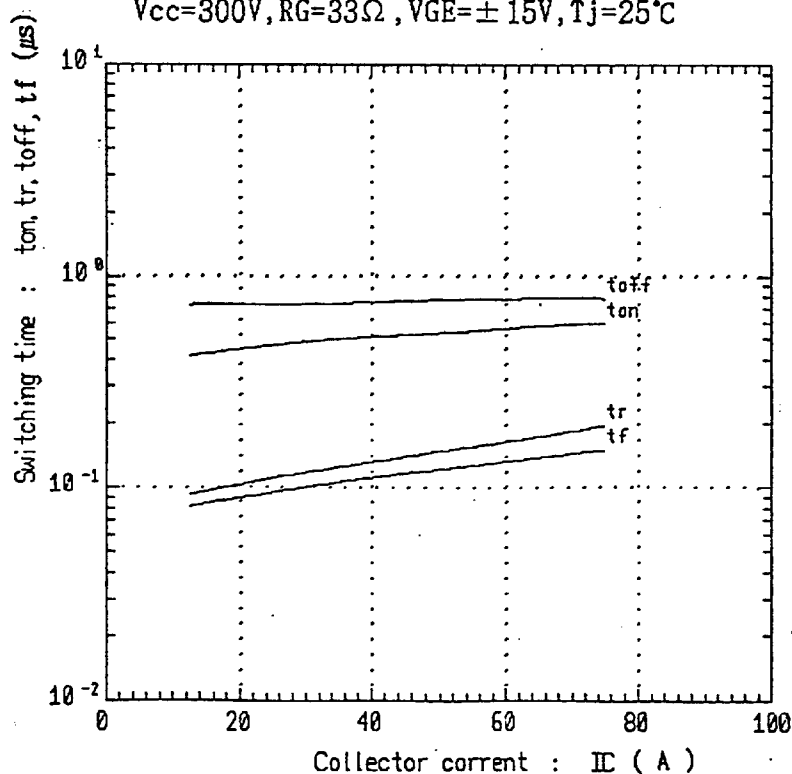
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Switching time - RG
 $V_{cc}=300V, I_c=75A, V_{GE}=\pm 15V, T_j=25^\circ C$



Switching time vs. Collector current
 $V_{cc}=300V, R_G=33\Omega, V_{GE}=\pm 15V, T_j=25^\circ C$



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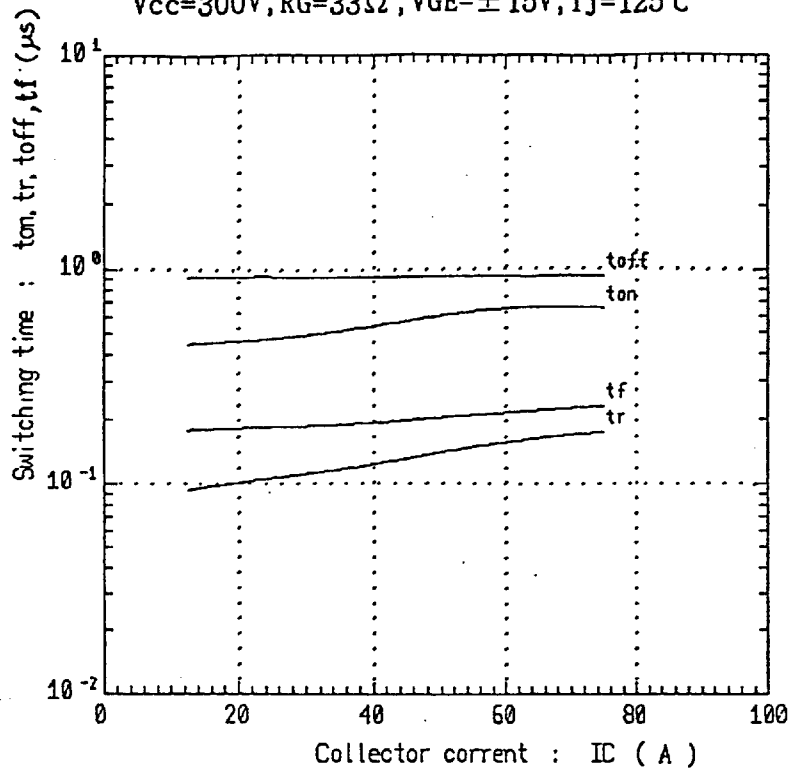
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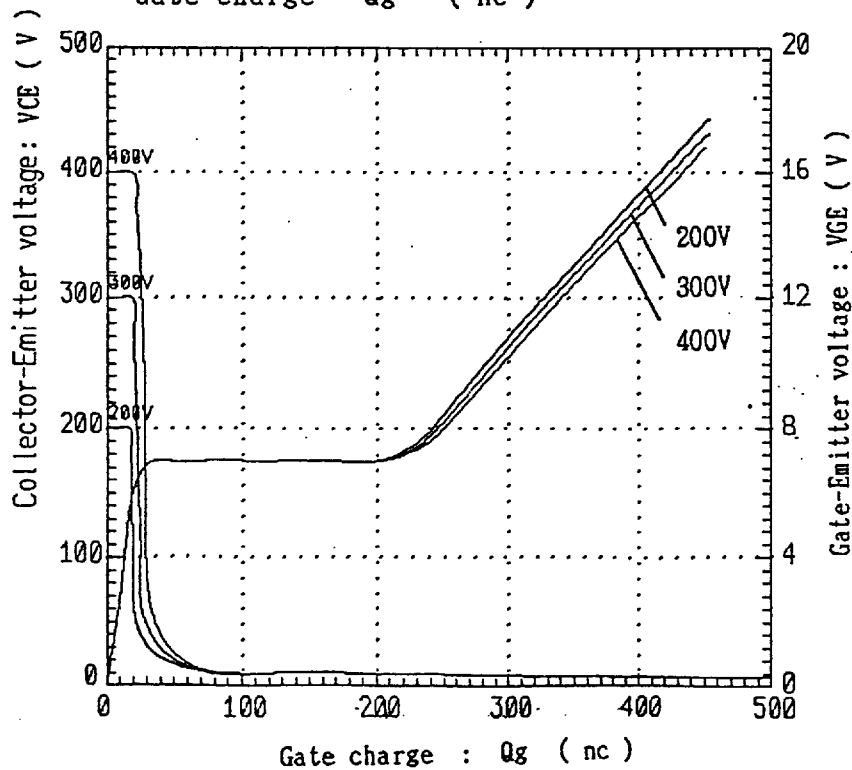
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Switching time vs. Collector current
 $V_{CC}=300V, R_G=33\Omega, V_{GE}=\pm 15V, T_j=125^\circ C$



Dynamic input characteristics
 Gate charge $Q_g (nc)$



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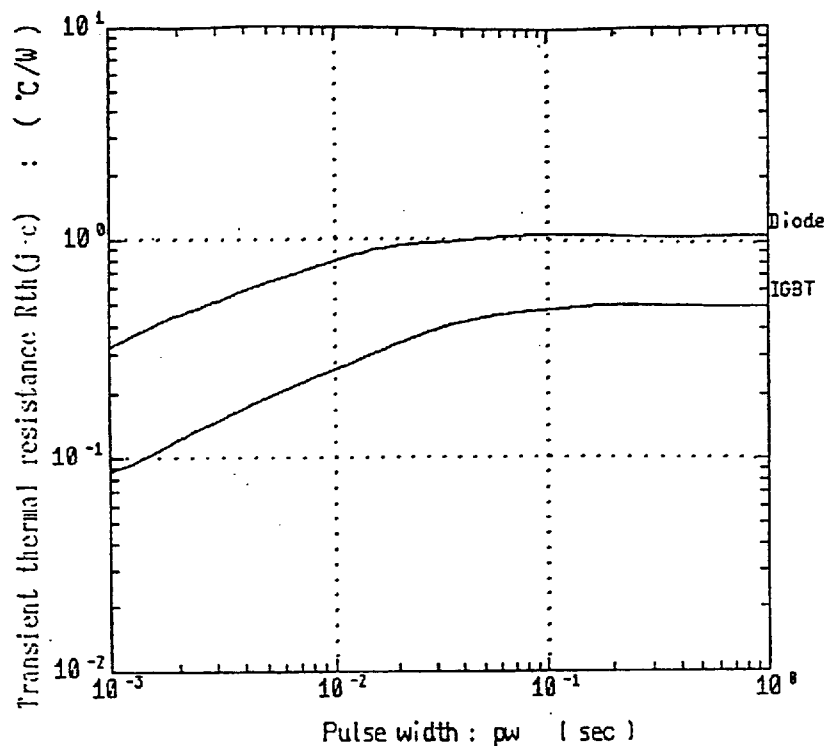
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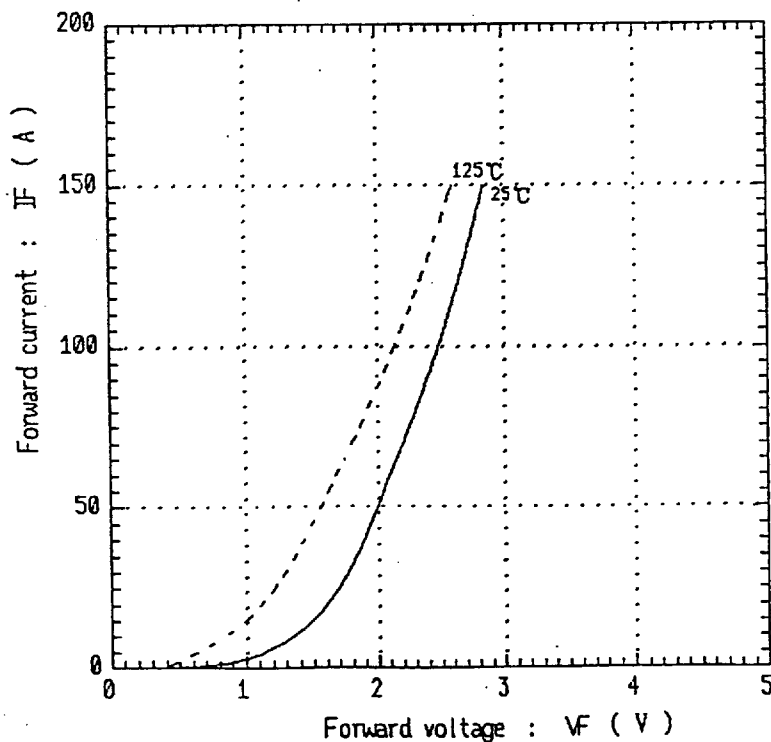
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Transient thermal resistance - pulse width



Forward current vs. Forward voltage VGE=0V



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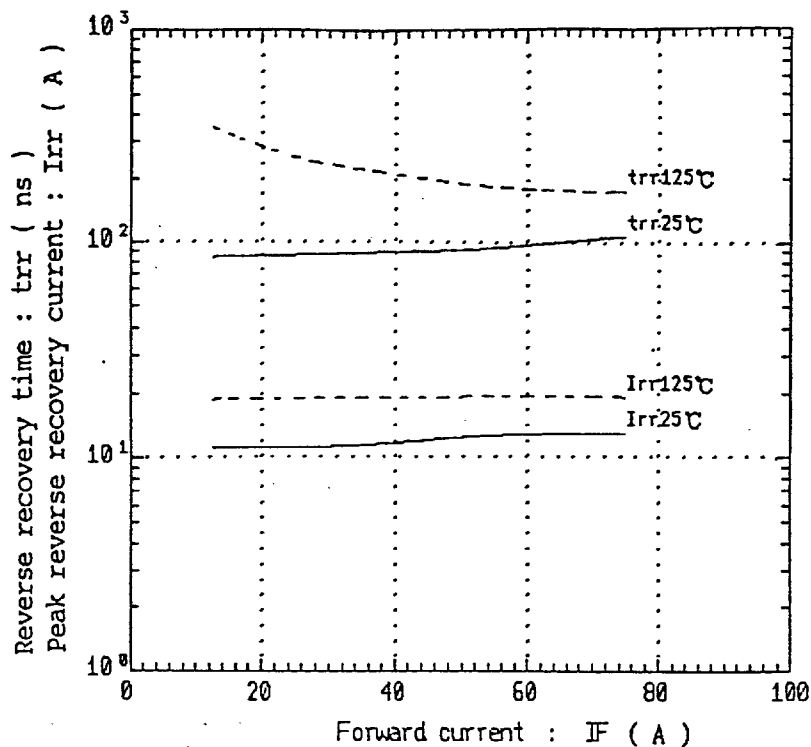
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a	
b	
c	

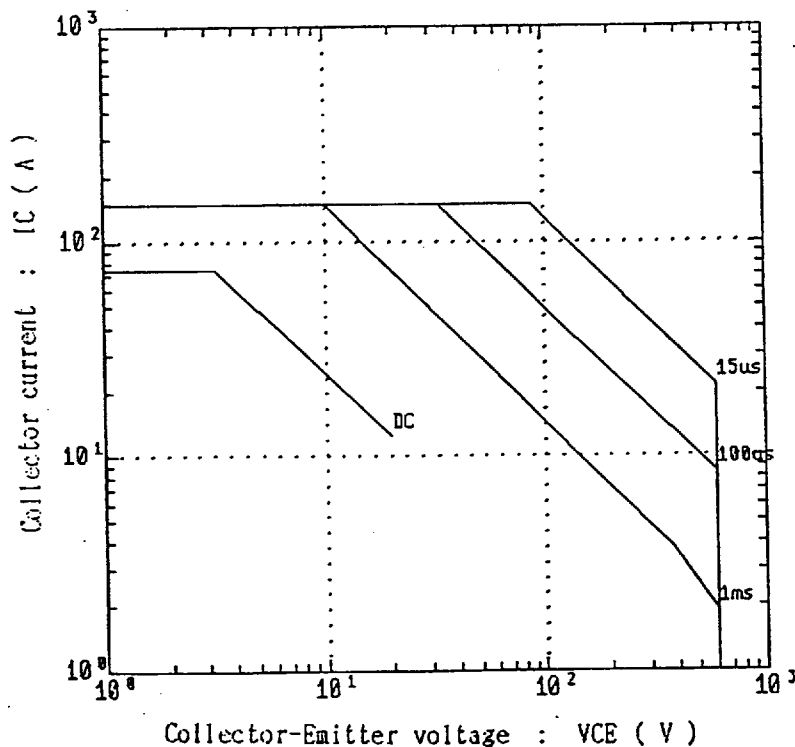
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IF - trr, Irr
-di/dt=225A/ μ s



Safe operating area (FBSOA)
Repetitive pulse $T_j = 25^\circ\text{C}$



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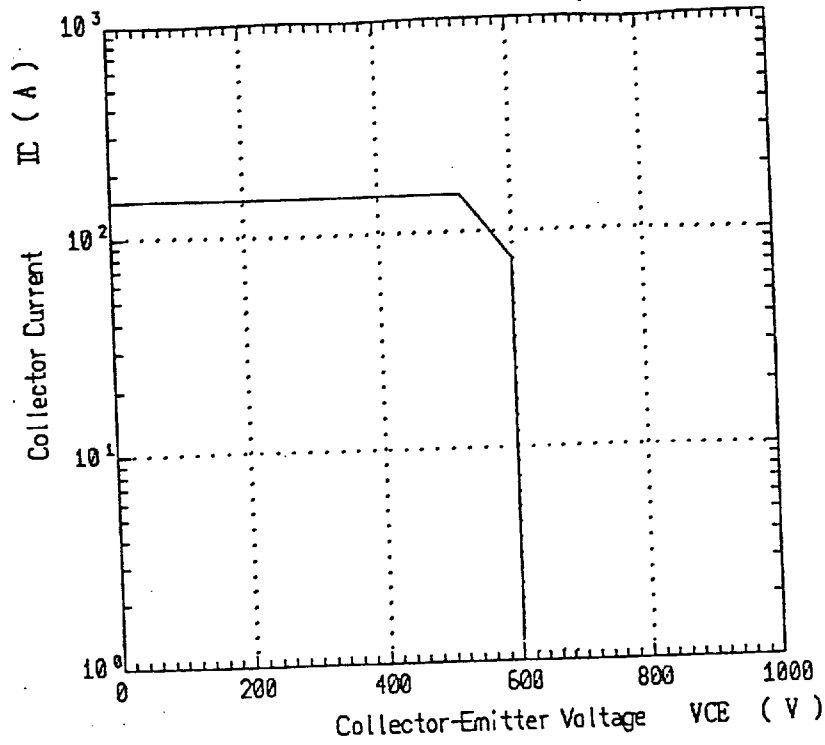
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a	
b	
c	

Reverse biased safe operating area
 $T_j = 25^\circ\text{C}$, $+V_{GE} = 15\text{V}$, $-V_{GE} \leq 15\text{V}$, $R_G = 33\Omega$



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α
β
γ