

Ratings and characteristics of Fuji IGBT

1MBH60-100

1. Absolute maximum ratings (Tc=25°C)

Items	Symbols	Ratings	Units
Collector-Emitter Voltage	V <sub>CEs</sub>	1000	V
Gate-Emitter Voltage	V <sub>GES</sub>	±20	V
Collector Current	Continuous	I <sub>c</sub>	60
	Pulse-50μs	I <sub>c</sub> pulse	180
Max.Power Dissipation	P <sub>c</sub>	260	W
Operating Temperature	T <sub>j</sub>	+ 150	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +150	°C

2. Static electrical Characteristics (at Tc=25°C unless otherwise specified)

Items	Symbols	Characteristics			Conditions	Unit
		min.	typ.	max.		
Zero gate voltage collector current	I <sub>CEs</sub>			100	T <sub>c</sub> =25°C	V <sub>GE</sub> =0V V <sub>CE</sub> =900V
					T <sub>c</sub> =125°C	
Gate-Emitter leakage Current	I <sub>GES</sub>			100	V <sub>CE</sub> = 0V V <sub>GE</sub> = ±20V	nA
Gate-Emitter Threshold Voltage	V <sub>GE (th)</sub>	2.0		6.0	V <sub>CE</sub> = 10V I <sub>c</sub> = 10mA	V
Collector-Emitter Saturation Voltage	V <sub>CE (sat)</sub>			3.2	V <sub>GE</sub> = 15V I <sub>c</sub> = 60A	V

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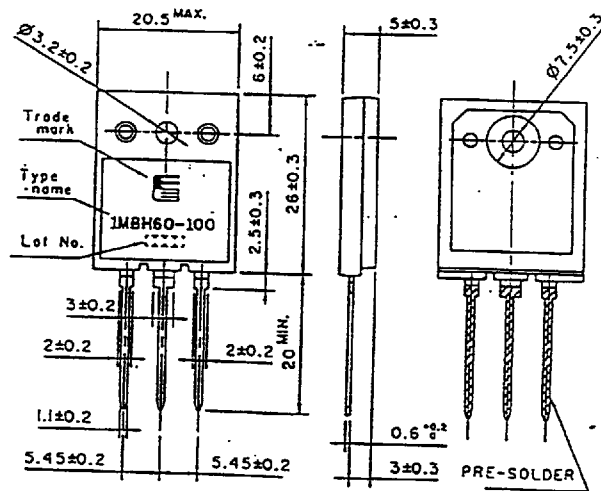
3. Dynamic ratings ( at  $T_c=25\text{ }^\circ\text{C}$  unless otherwise specified )

Items	Symbols	Characteristics			Conditions	Unit
		min.	typ.	max.		
Input capacitance	Cies		3000		$V_{GE} = 0V$ $V_{CE} = 25V$ $f = 1MHz$	pF
Output capacitance	Coes		—			
Reverse transfer capacitance	Cres		—			
Turn-on time	ton			—	$V_{CC} = 200V$ $I_C = 60A$ $V_{GE} = \pm 15V$ $R_G = 8\ \Omega$ $R_L = 3.3\ \Omega$ See Fig.1	$\mu S$
	tr			—		
Turn-off time	toff			—		
	tf			0.85		

4. Thermal resistance characteristics

Items	Symbols	Characteristics			Conditions	Unit
		min.	typ.	max.		
Thermal resistance	Rth(j-c)			0.481		$^\circ\text{C}/W$

5. Outline Drawing



DIMENSIONS ARE IN MILLIMETERS.

CONNECTION

- ① GATE
- ② COLLECTOR
- ③ EMITTER

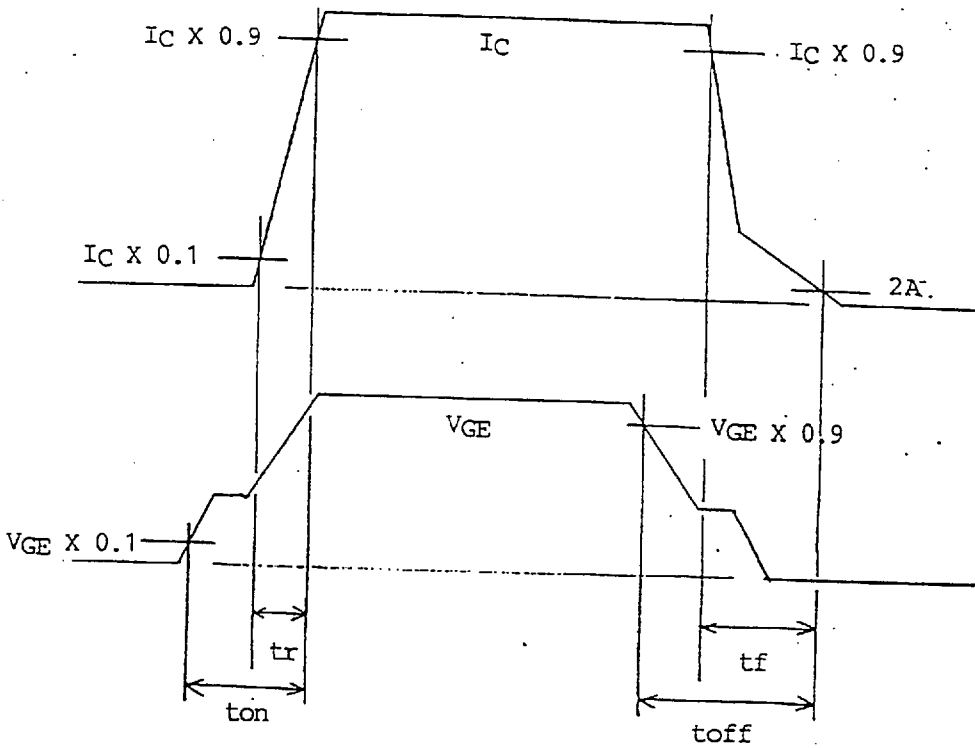
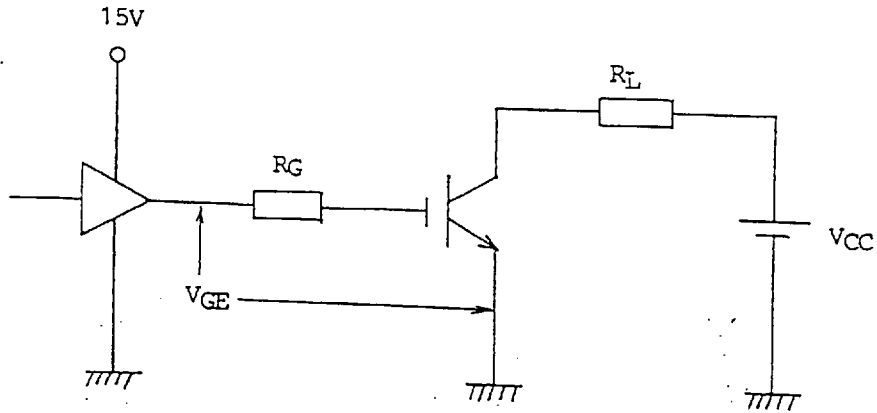
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Fig.1 Test circuit of switching characteristics



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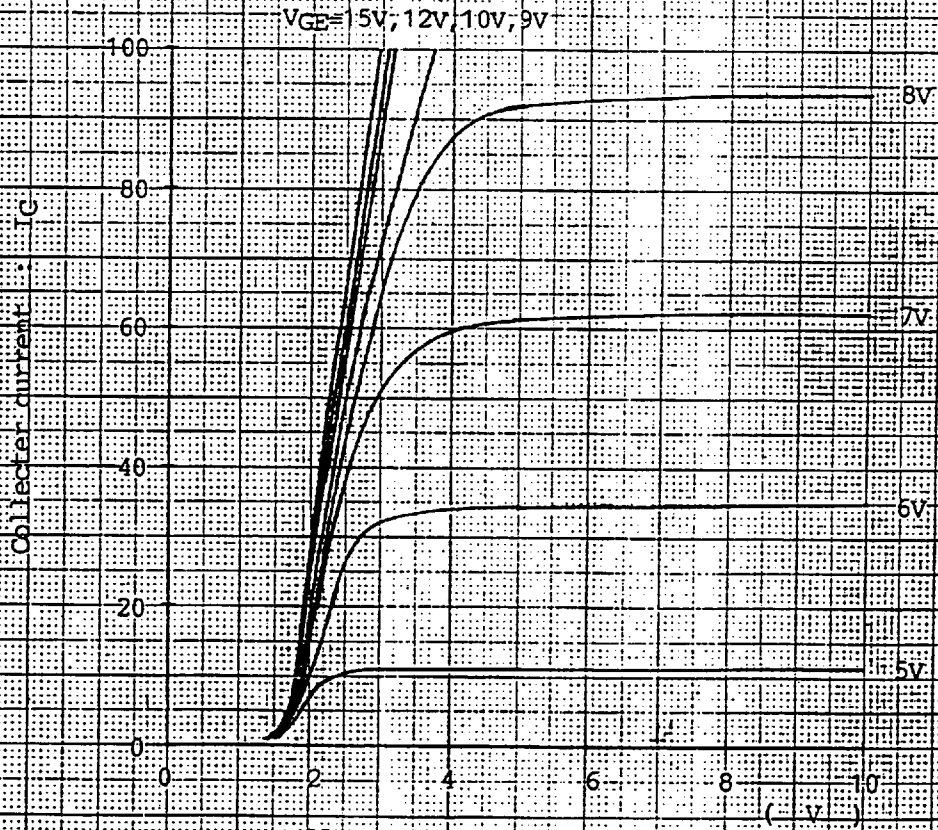
Q

1MBH60-100

Typical output characteristics

Tc=25°C

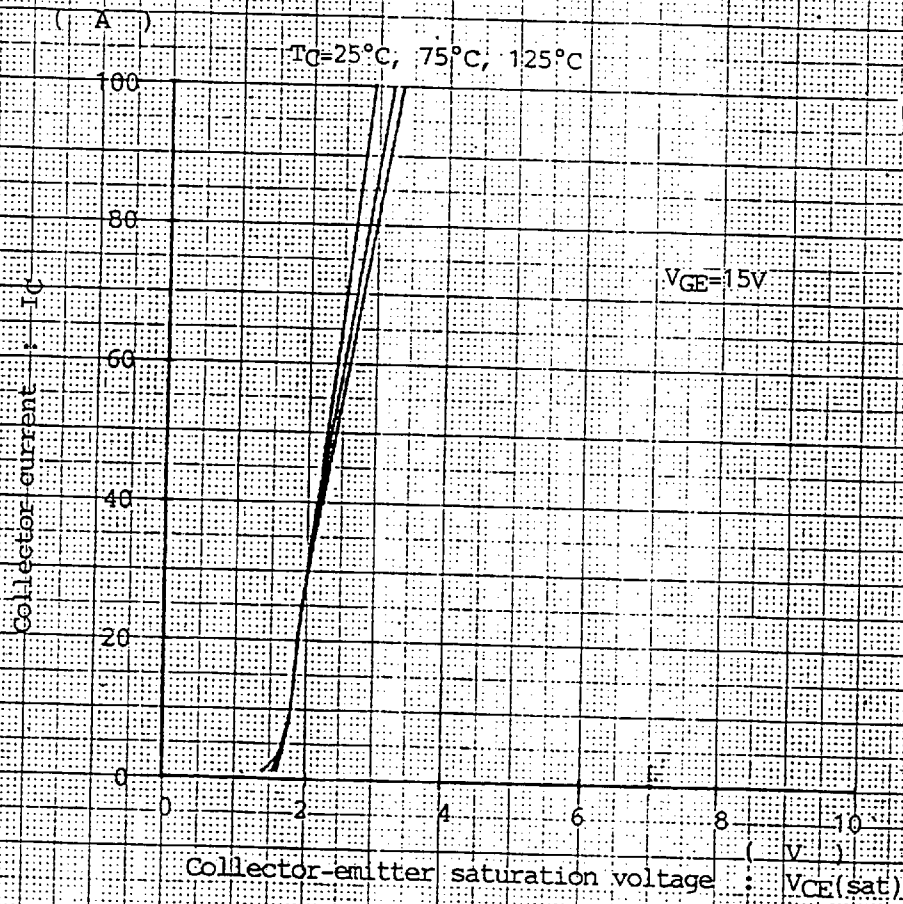
( A )



Collector-emitter voltage : V<sub>CE</sub>

1MBH60-100

Collector current vs.  
Collector-emitter saturation voltage



1MEH60-100

Typical  $t_f$  vs. Collector current

$V_{GE} = 15V$

( $\mu s$ )

Turn-off time :  $t_f$

1.2

1.0

0.8

0.6

0.4

0.2

0

0

20

40

60

80

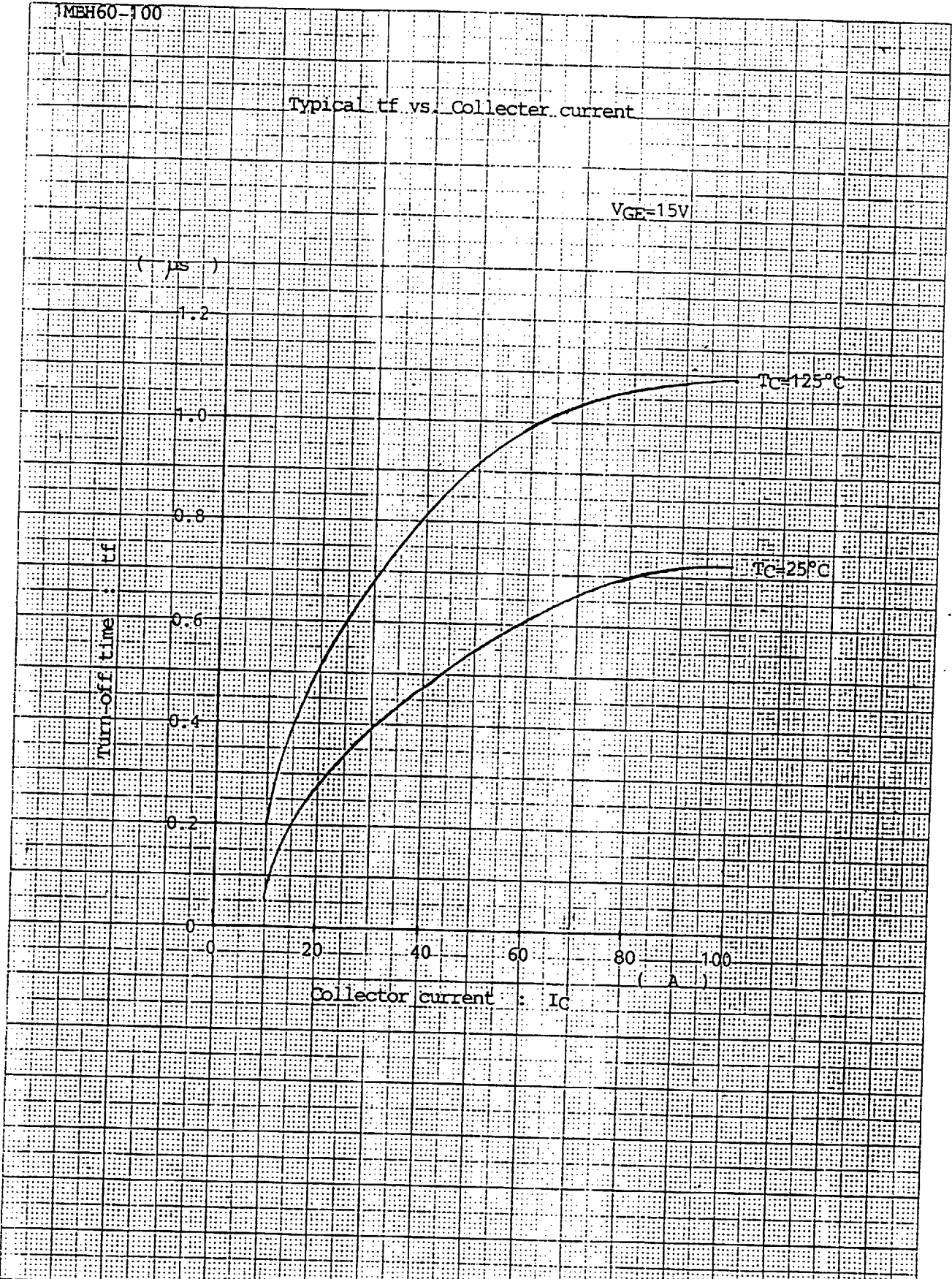
100

Collector current :  $I_C$

(A)

$T_C = 125^\circ C$

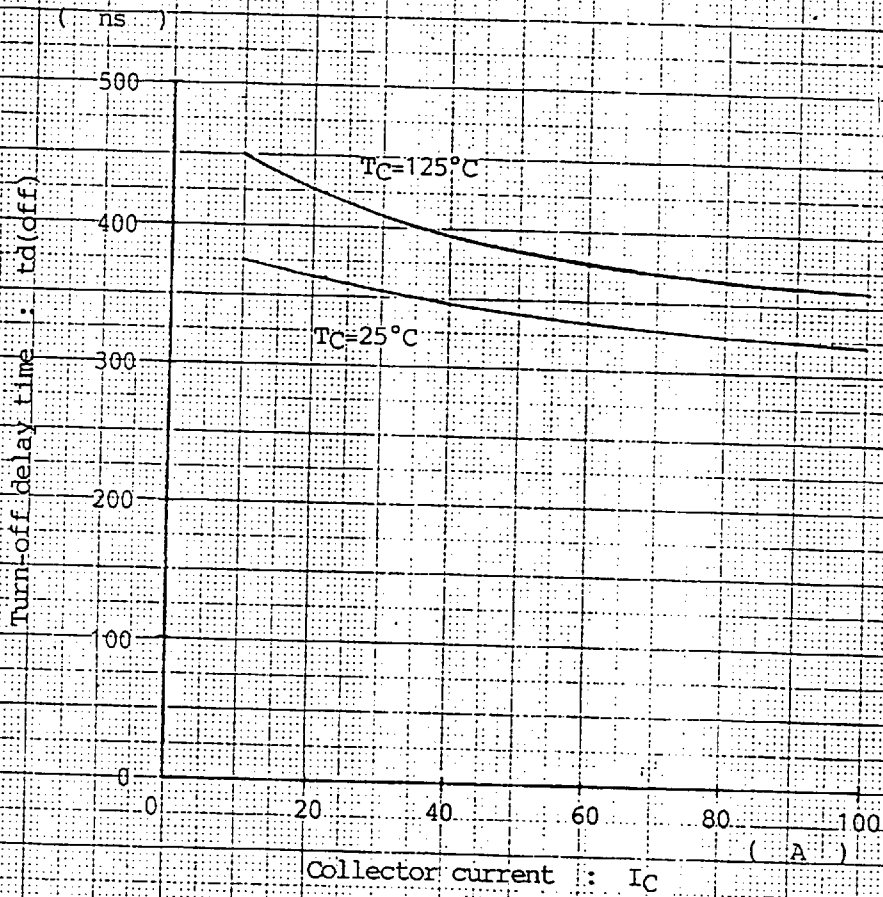
$T_C = 25^\circ C$



1MBH60-100

Typical turn-off delaytime  
vs. Collector current

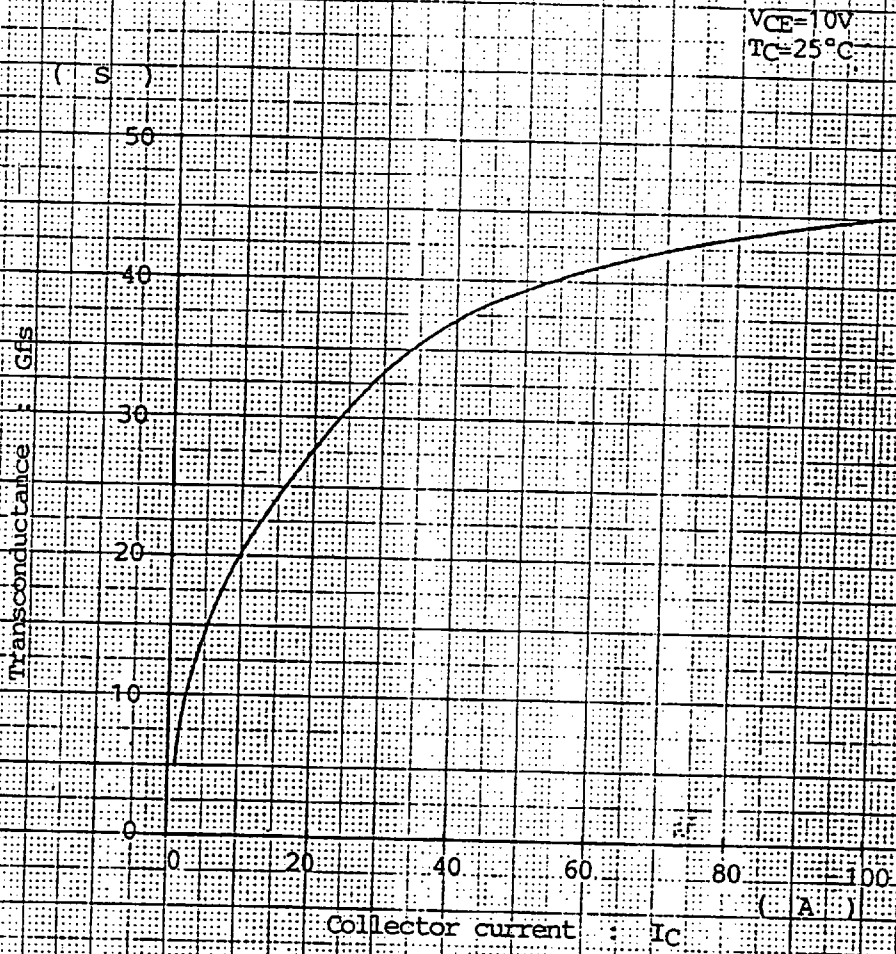
$V_{GE}=15V$





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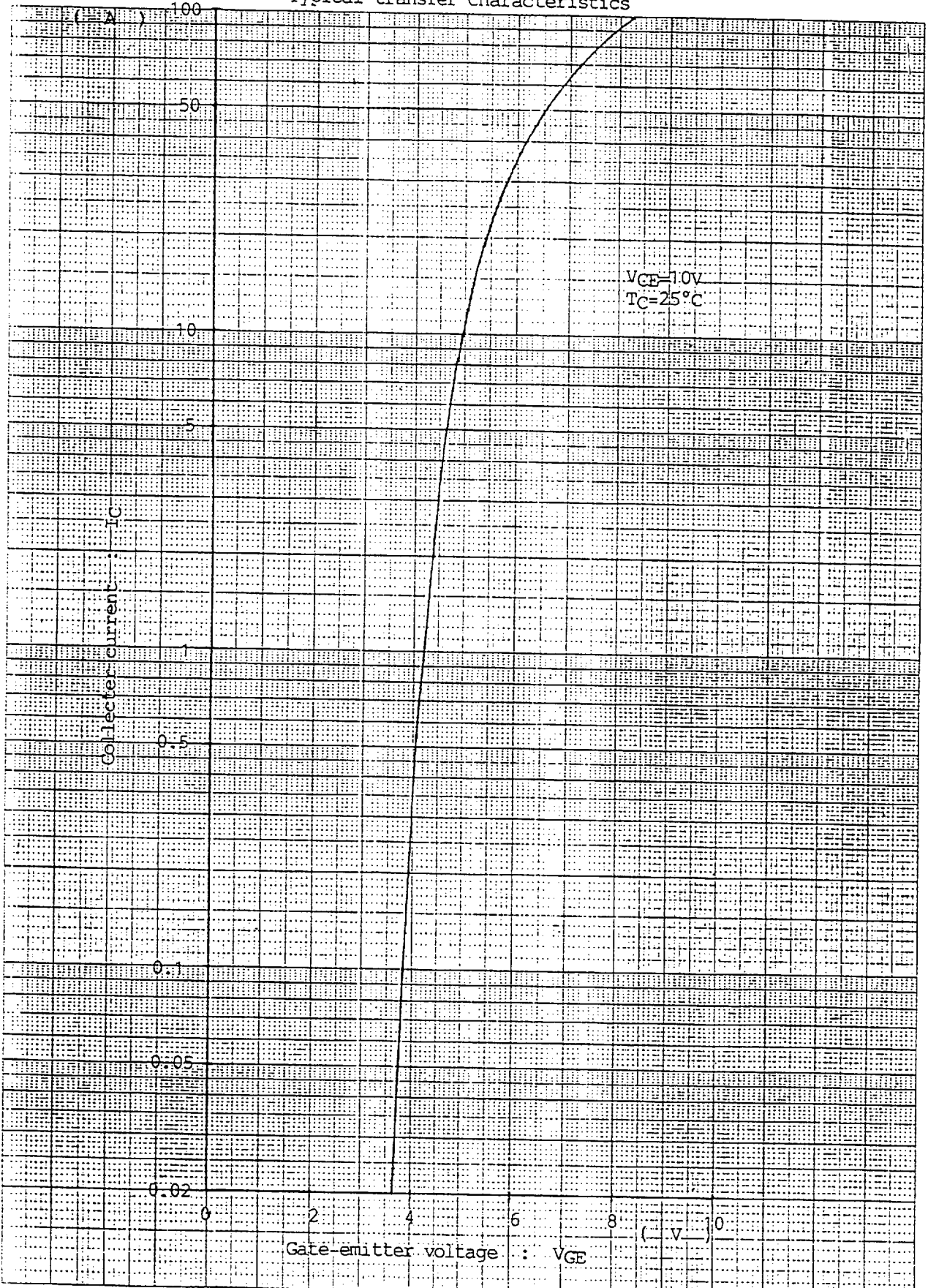
Typical transconductance





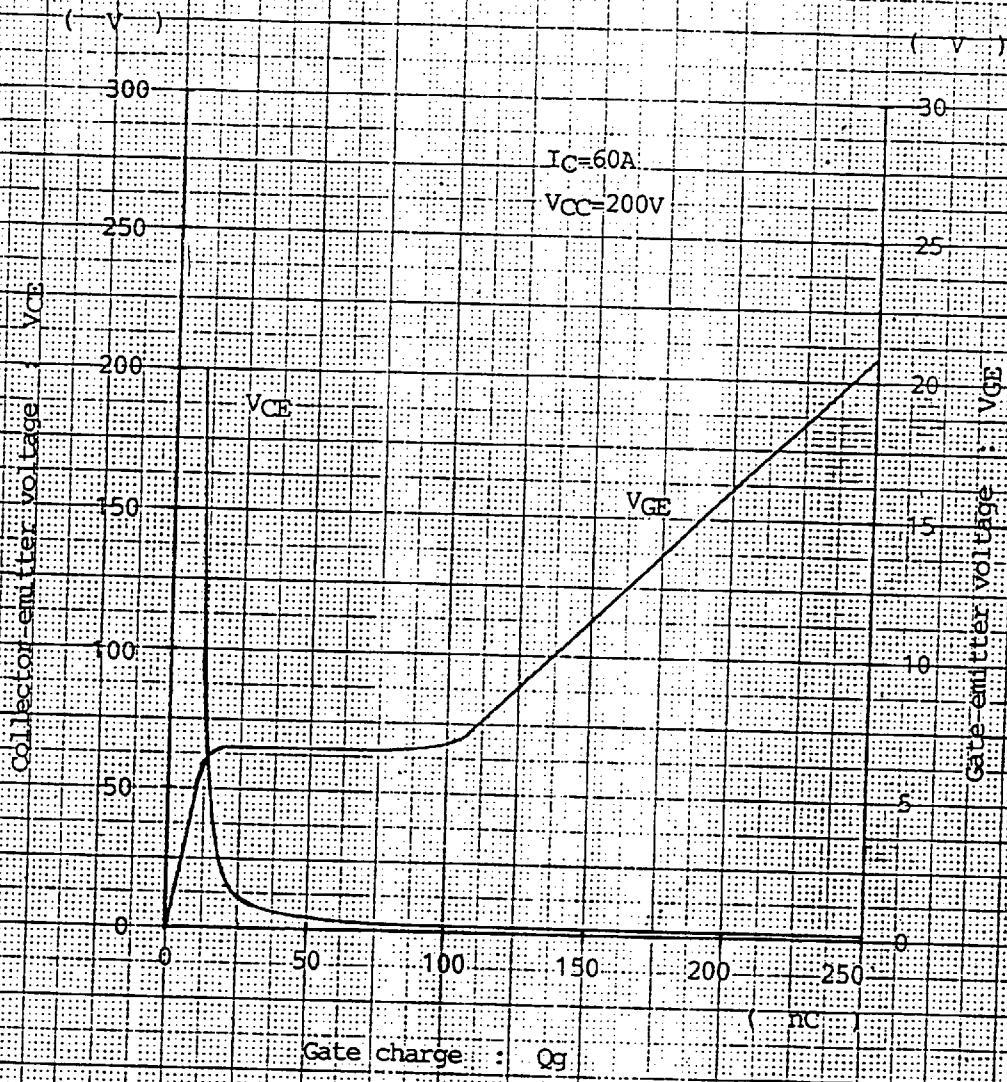
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Typical transfer characteristics



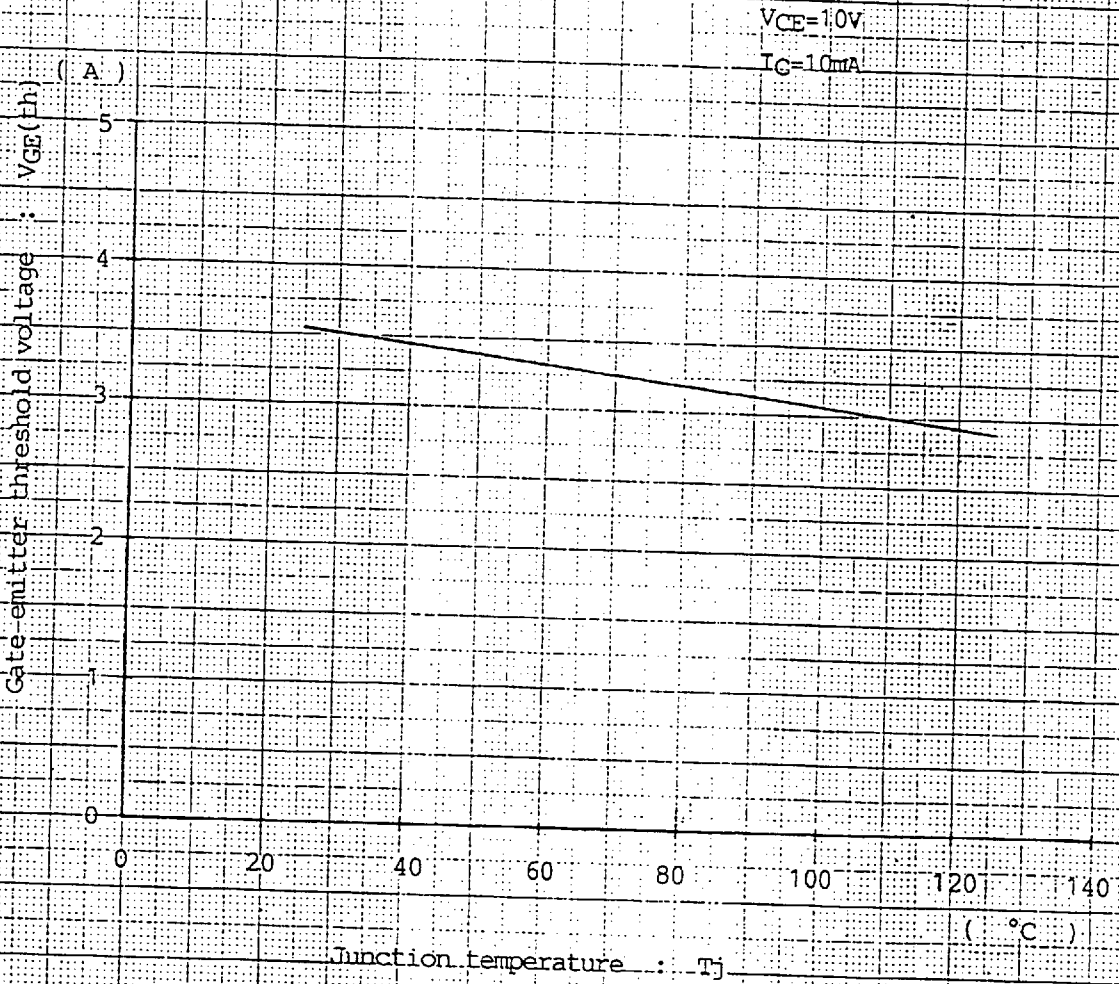
1MBH60-100

Dynamic input characteristics



1MBH60-100

Typical threshold voltage  
vs. Junction temperature



1MBH60-T00

Safe operating area (FSOA)

(A.)

300

100

50

30

10

5

3

1

0.5

0.3

2

5

10

50

100

500

1000

Collector current :  $I_C$

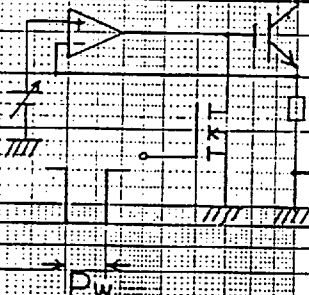
Collector-emitter voltage : VCE

(V)

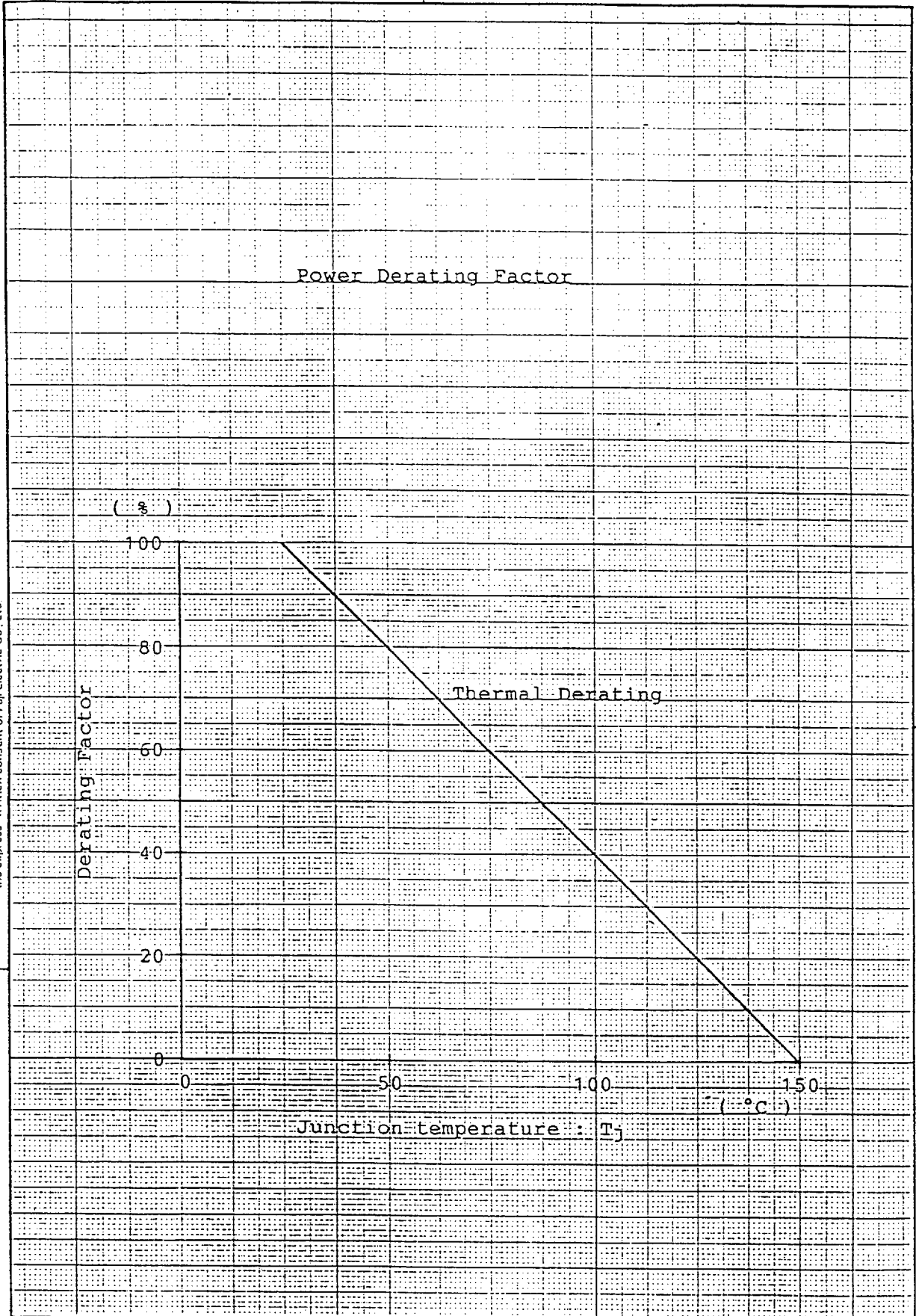
Condition

$T_C = 25^\circ C$

Test circuit



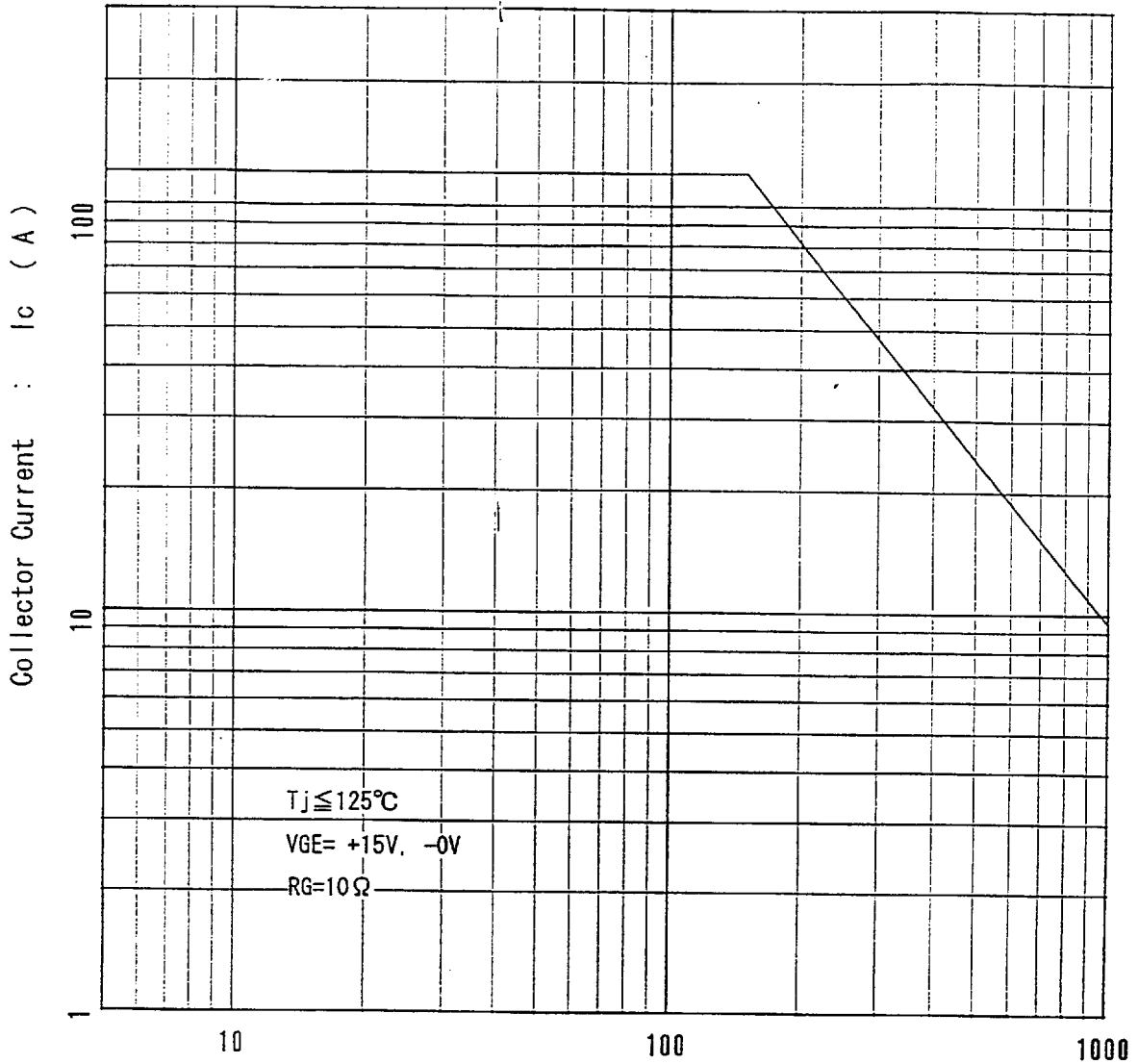
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# Reverse Biased Safe Operating Area (RBSOA)



Collector Current :  $I_c$  ( A )

Collector-Emitter Voltage :  $V_{CE}$  ( V )

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