

Ratings and characteristics of Fuji IGBT

1MBH60-100

1. Absolute maximum ratings (Tc=25°C)

Items	Symbols	Ratings	Units
Collector-Emitter Voltage	V _{CEs}	1000	V
Gate-Emitter Voltage	V _{GES}	±20	V
Collector Current	Continuous	I _c	60
	Pulse-50μs	I _{c pulse}	180
Max.Power Dissipation	P _c	260	W
Operating Temperature	T _j	+ 150	°C
Storage Temperature	T _{stg}	-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 _{CEs}			100	T _c =25°C	V _{GE} =0V V _{CE} =900V	μA
					T _c =125°C		
Gate-Emitter leakage Current	I _{GES}			100	V _{CE} = 0V V _{GE} = ±20V		nA
Gate-Emitter Threshold Voltage	V _{GE(Lth)}	2.0		6.0	V _{CE} = 10V I _c = 10mA		V
Collector-Emitter Saturation Voltage	V _{CE(sat)}			3.2	V _{GE} = 15V I _c = 60A		V

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Drawn by revised (Ch. Inui checked) Feb. 16 '92

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CHECKED Feb. 4 '92	T. Igarashi	

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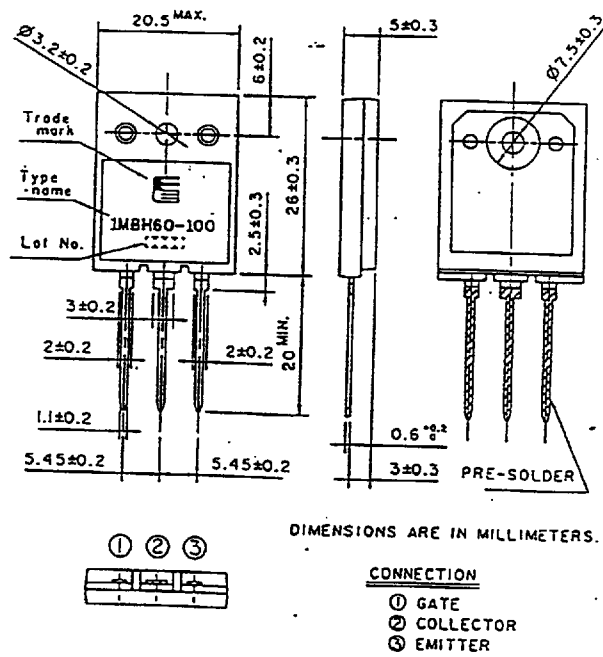
3. Dynamic ratings (at $T_c=25\text{ }^\circ\text{C}$ unless otherwise specified)

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	μs
	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



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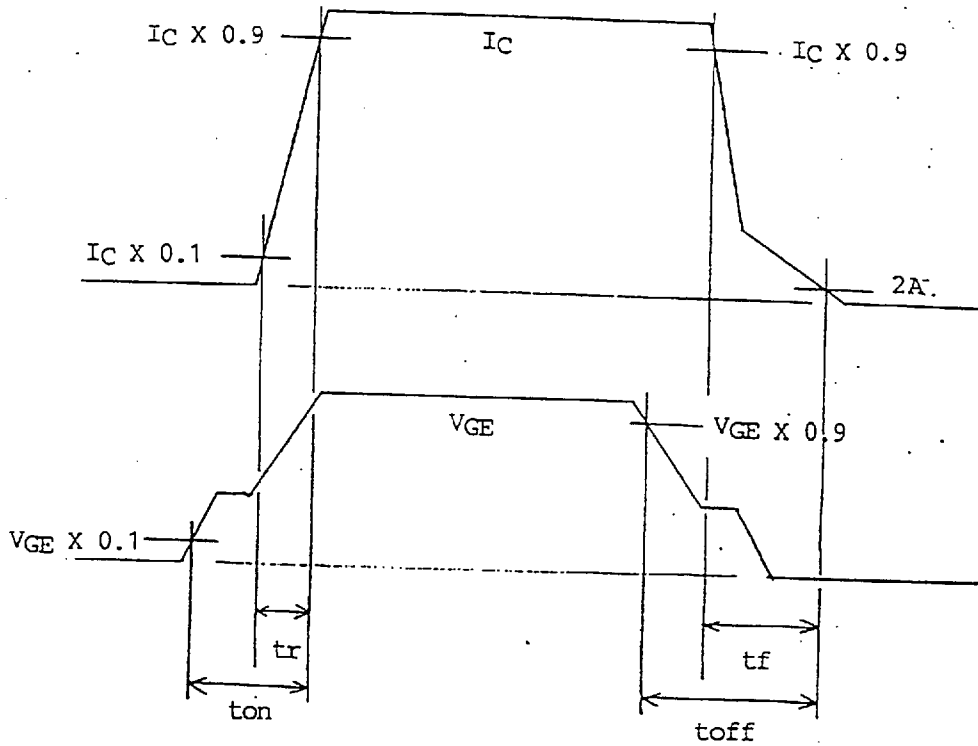
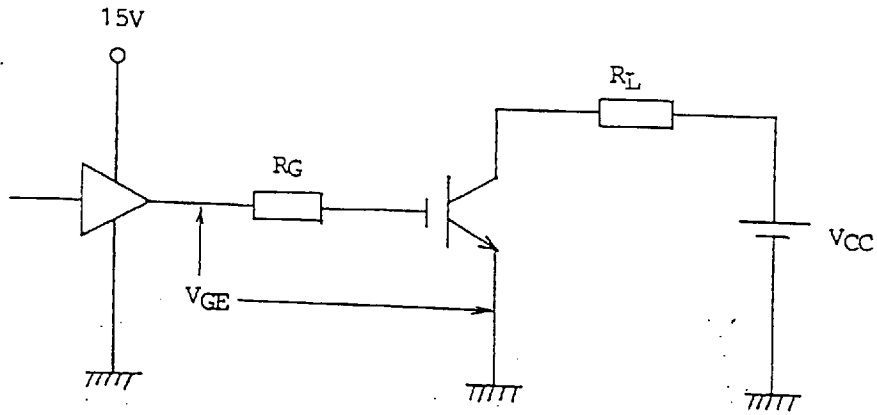
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Fig.1 Test circuit of switching characteristics



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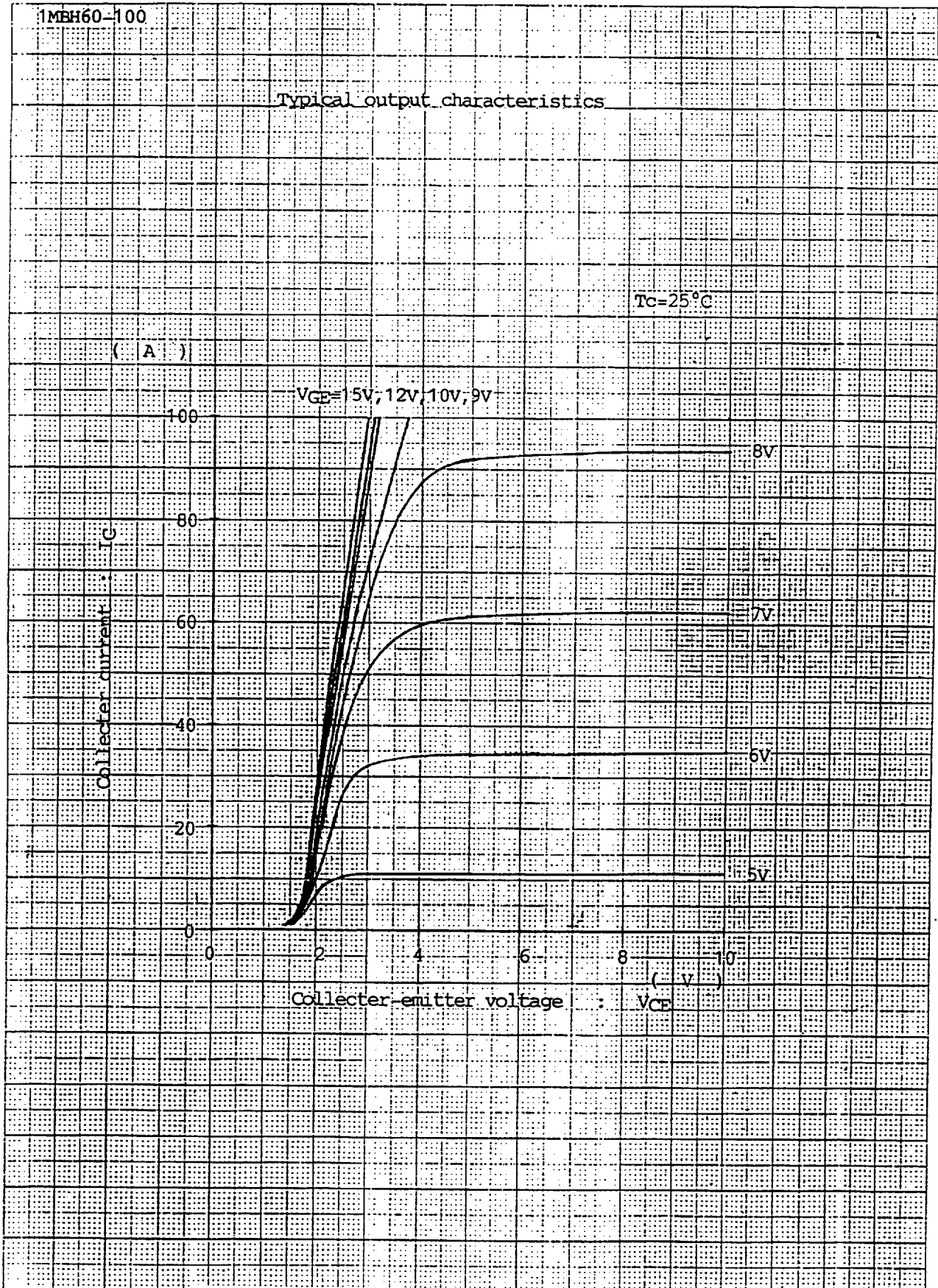
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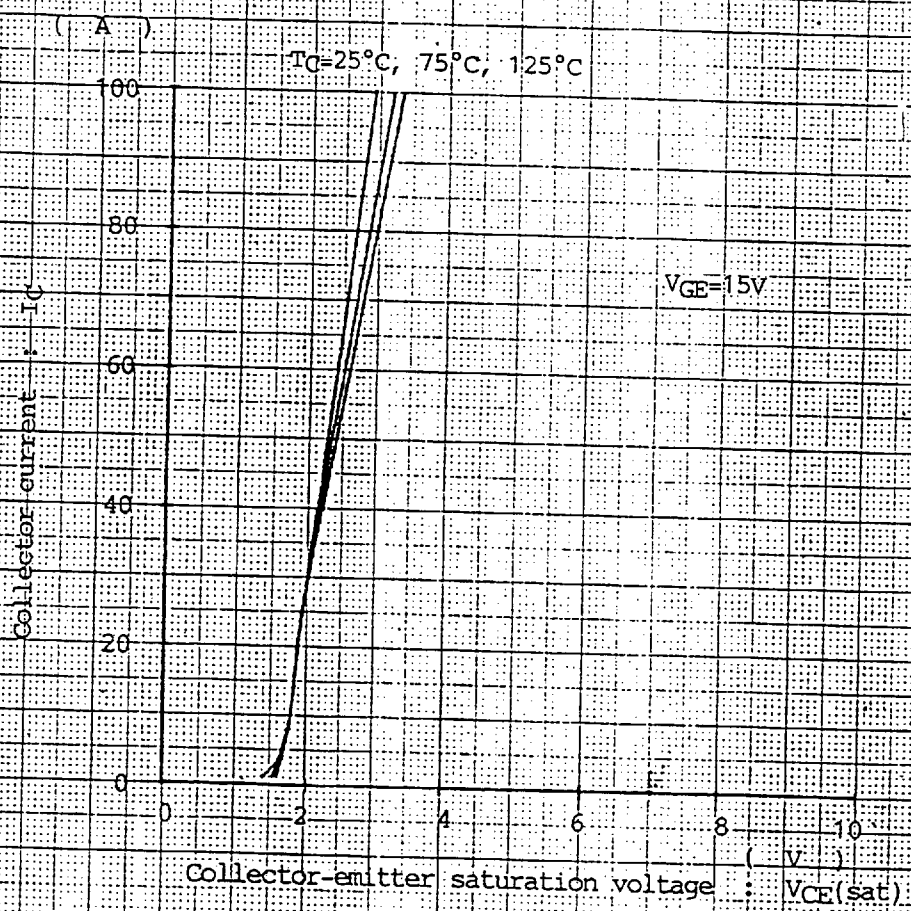
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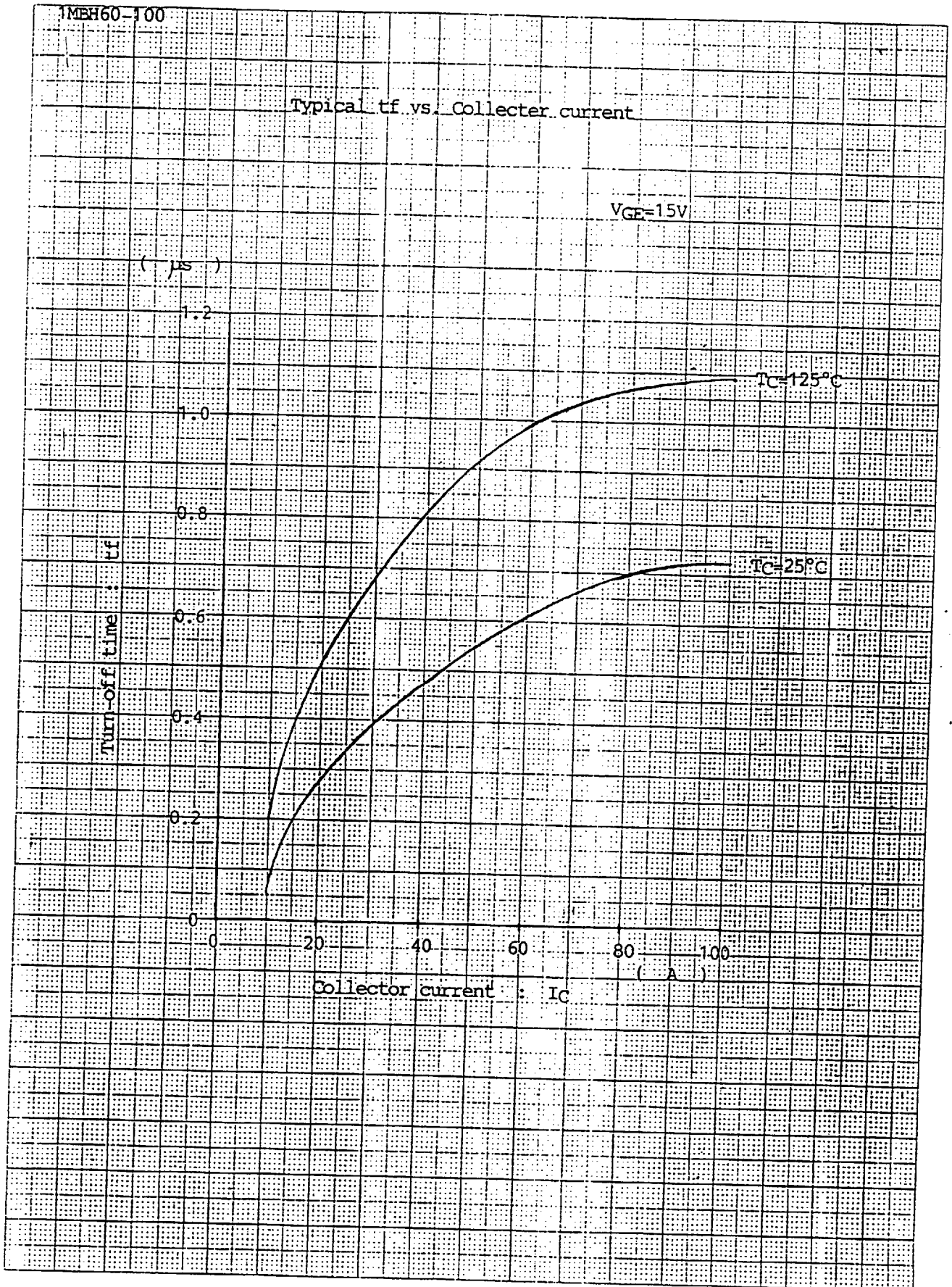
TJSE



1MBH60-100

Collector current vs.
Collector-emitter saturation voltage

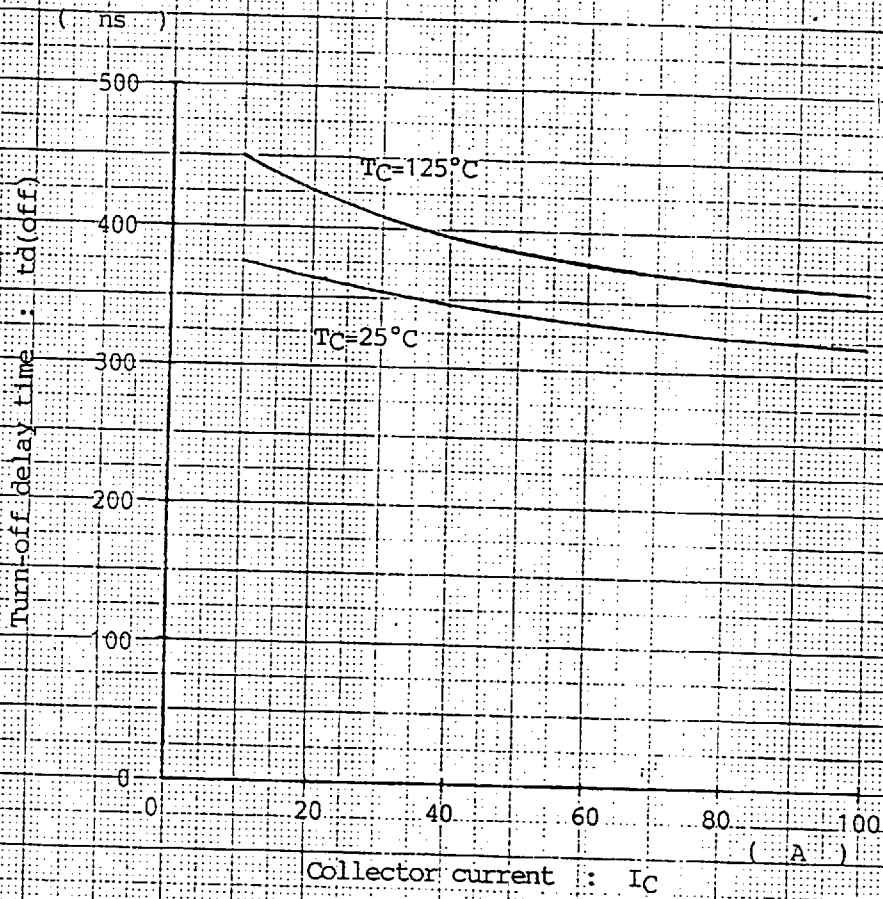




1MBH60-100

Typical turn-off delaytime
vs. Collector current

$V_{GE}=15V$



1MBH60-100

Typical transconductance

(S)

Transconductance : g_{fs}

50

40

30

20

10

0

0

20

40

60

80

100

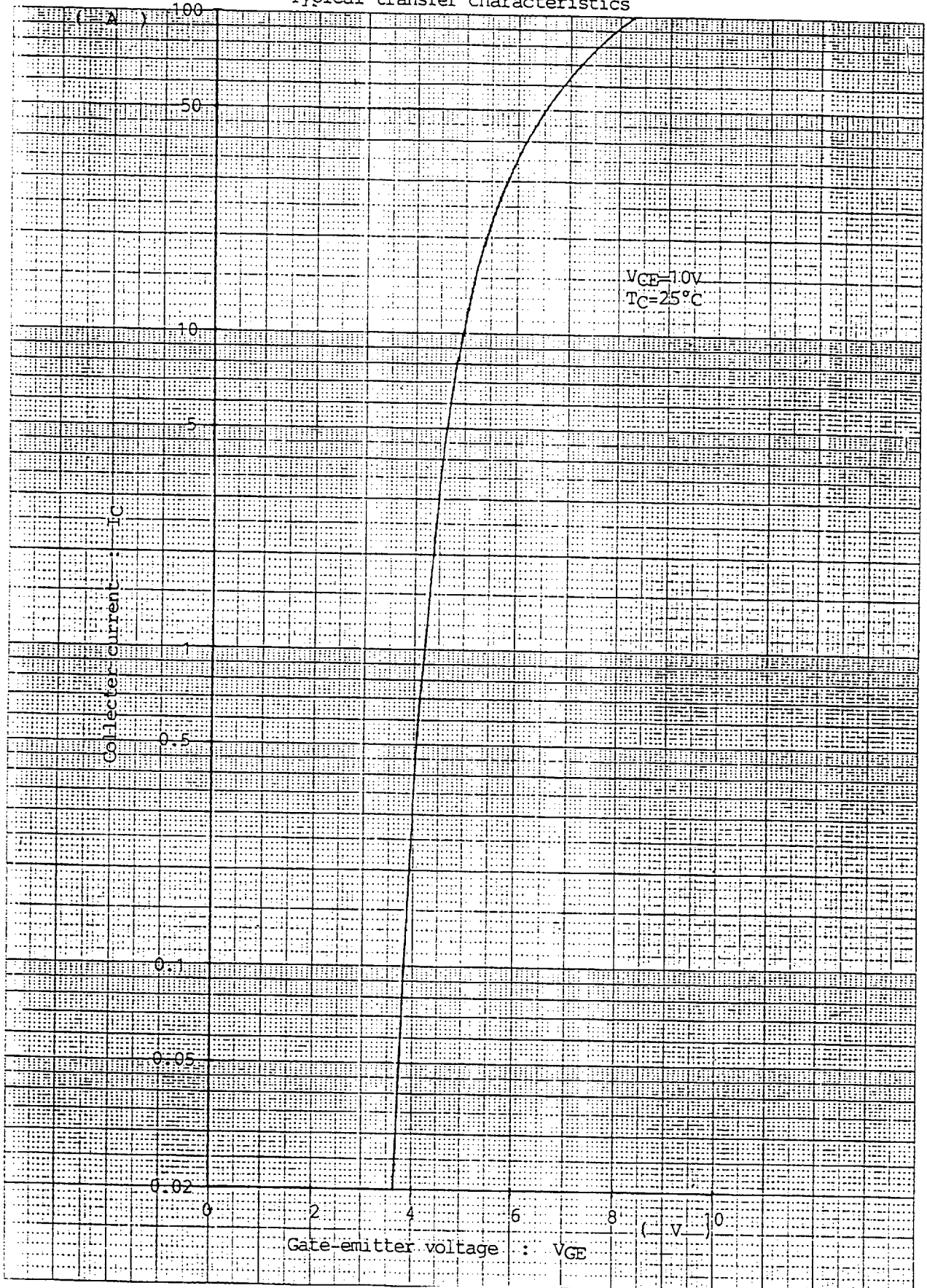
(A)

Collector current : I_C

$V_{CE} = 10V$
 $T_C = 25^\circ C$

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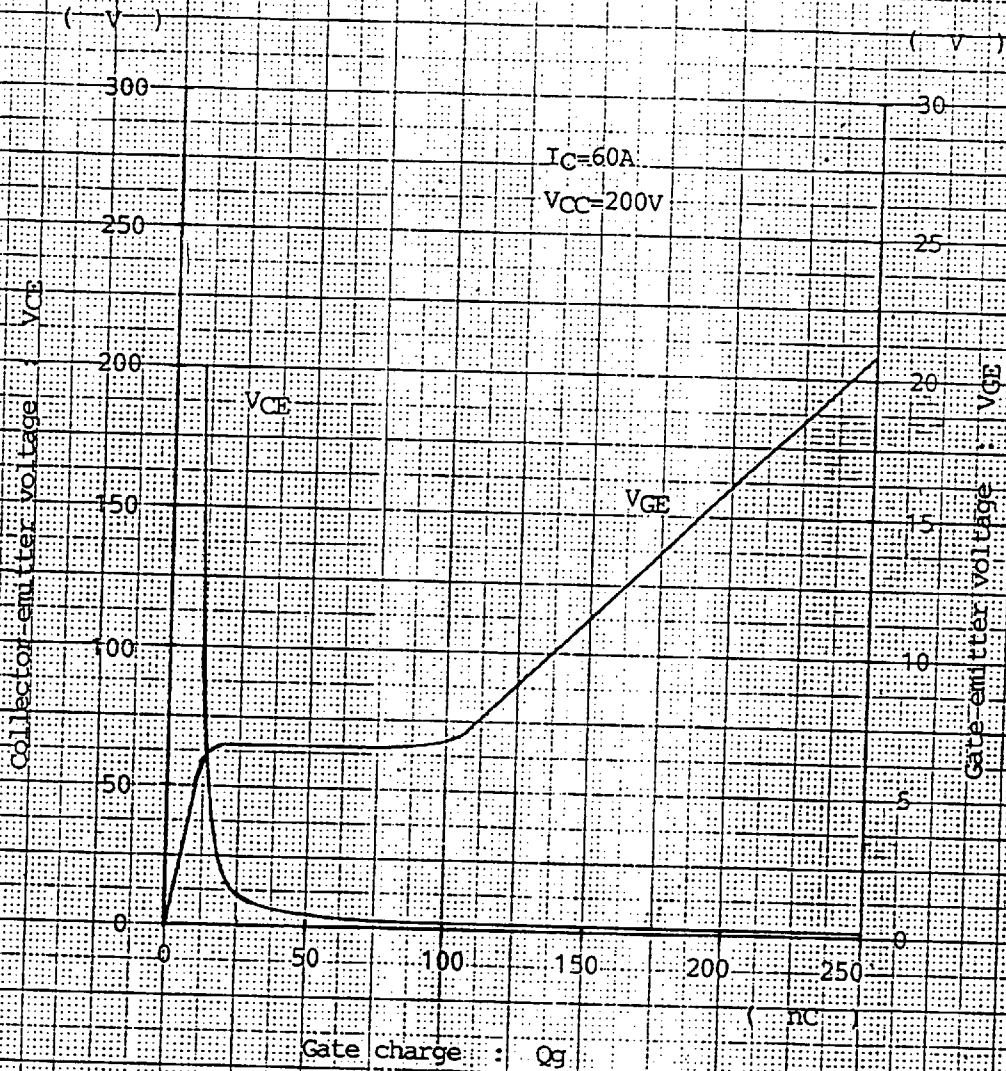
Typical transfer characteristics



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Dynamic input characteristics



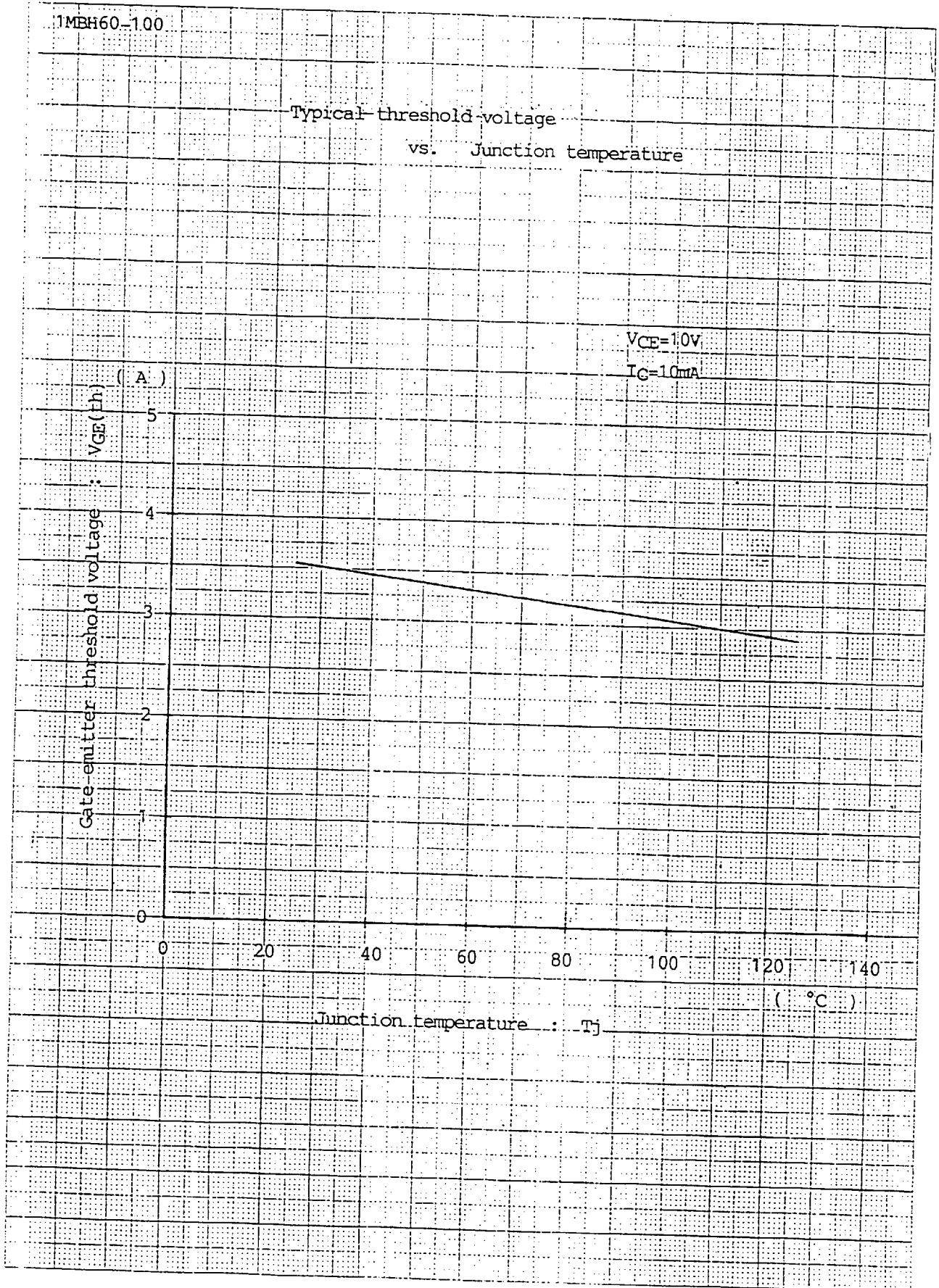
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Typical threshold voltage
vs. Junction temperature

Gate-emitter threshold voltage : $V_{GE(th)}$ (V)

$V_{CE}=1.0V$
 $I_C=10mA$

Junction temperature : T_j (°C)



1MBH60-T00

Safe operating area (RBSOA)

(-A-)

300

100

50

30

10

5

3

1

0.5

0.3

2

5

10

50

100

500

1000

IC

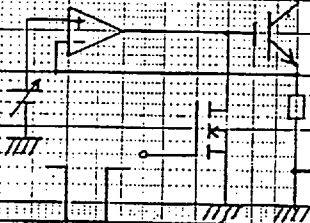
Collector current

: IC

Condition

Tc=25°C

Test circuit



DC

1ms

100µs

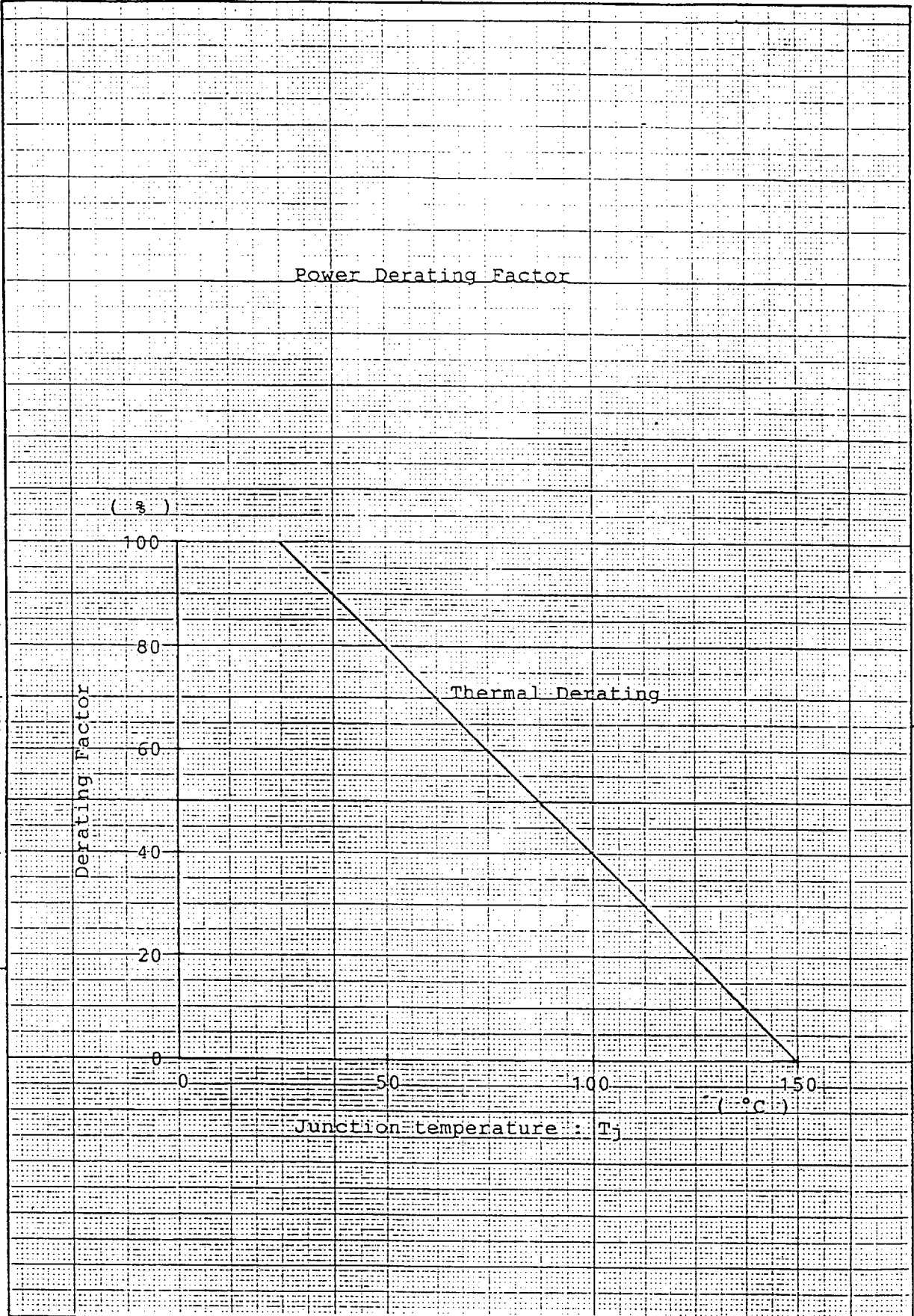
Pw=10µs

Collector-emitter voltage : VCE

(V)

1.1.1 V1 (00A) 05.000000 1.1.1 000000

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