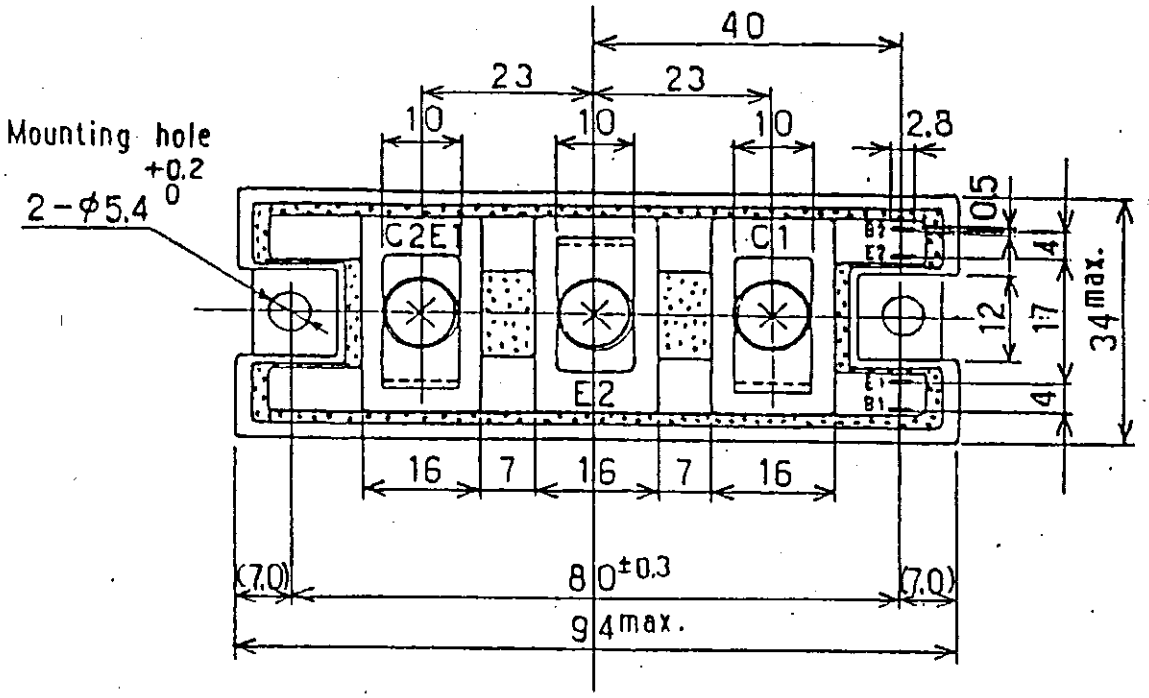
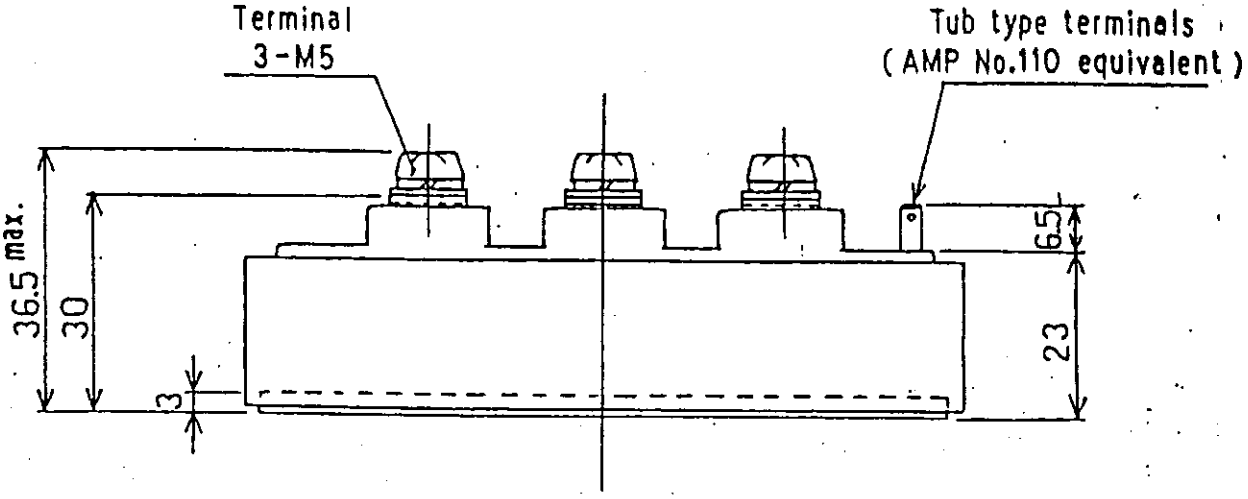
2DI50Z-140 (TENTATIVE)

1. Outline Drawing

Unit : mm

*Isolation Voltage : AC 2500 V 1 minute





	DATE	NAME	APPROVED
DRAWN	Oct.-31-'87	S.Fukuzawa	
CHECKED	Nov-5-'87	H.Hagiwara	

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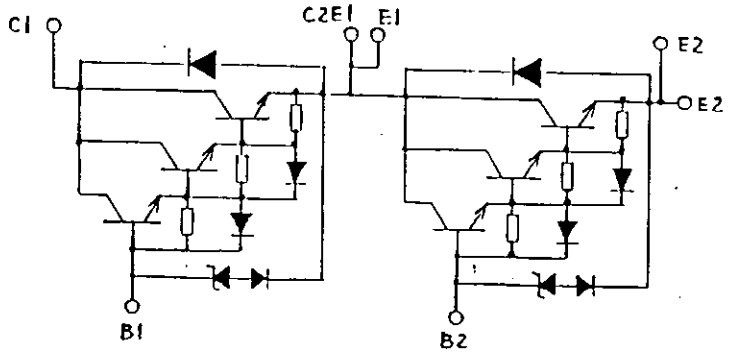
2. Equivalent Circuit



3. Absolute Maximum Ratings (TC=25℃)

Item		Symbol	Maximum Ratings	Unit
Collector-Base Voltage		VCBO	1400	V
Collector-Emitter Voltage		VCEO	1400	V
Emitter-Base Voltage		VEBO	10	V
Collector Current	DC	IC	50	A
	1ms	ICP	100	A
	DC	-IC	50	A
Base Current	DC	IB	3	A
	1ms	IBP	6	A
Collector Power Dissipation	One Transistor	PC	400	W
	Two Transistor		800	W
Operating Temperature		Tj	+150	℃
Storage Temperature		Tstg	-40 ~ +125	℃
Screw Torque		Mounting *1	35	kg・cm
		Terminals *1	35	
Isolation Voltage		AC 2500		V

Note :

*1 Recommendable Value : 25 ~ 35 kg・cm (M5)

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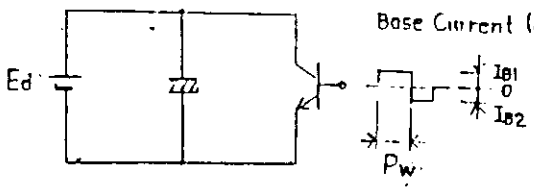
4. Electrical Characteristics (Tj=25℃ unless otherwise specified)

Characteristics	Symbol	Conditions	MIN	MAX	Unit
Collector-Base Voltage	VCBO	ICBO=10mA	1400		V
Collector-Emitter Voltage	VCEO	ICEO=10mA	1400		
Collector-Emitter Voltage	VCEX(SUS)	VBE =-3V	1200		
Emitter-Base Voltage	VEBO	IEBO=200mA	10		
Collector Cutoff Current	ICBO	VCBO=1400V		10	mA
Emitter Cutoff Current	IEBO	VEBO=10V		200	
DC Current Gain	hFE	IC=50A VCE=2.8V Tj=125 ℃	75		
		IC=50A VCE= 5V	100		
Collector Saturation Voltage	VCE(sat)	IC=50A		2.8	V
Base Saturation Voltage	VBE(sat)	IB=0.7A		3.5	
Switching Time	ton	IC=50A		3.0	μs
	tstg	IB1 =+0.7A		15.0	
	tf	IB2 =-1.0A		2.0	
Emitter-Collector Voltage	VECO	IECO=50A		2.0	V
Reverse Recovery Time	trr	IF=50A		0.8	μs
Short Circuit Capability *2	Ed	IB1 =+0.7A IB2 =-1.0A Pw=50μs	750		V

5. Thermal Characteristics

Characteristics	Symbol	Conditions	MIN	MAX	Unit
Thermal Resistance	Rth(j-c)	Power Transistor		0.31	℃/W
		Fast Recovery Diode		1.2	
Contact Thermal Resistance	Rth(c-f)	Mounting torque 35kg・cm with thermal compound	(TYP) 0.06		

*2 Test Circuit



Wiring Length

Collector : ≦ 10 cm

Emitter : ≦ 10 cm

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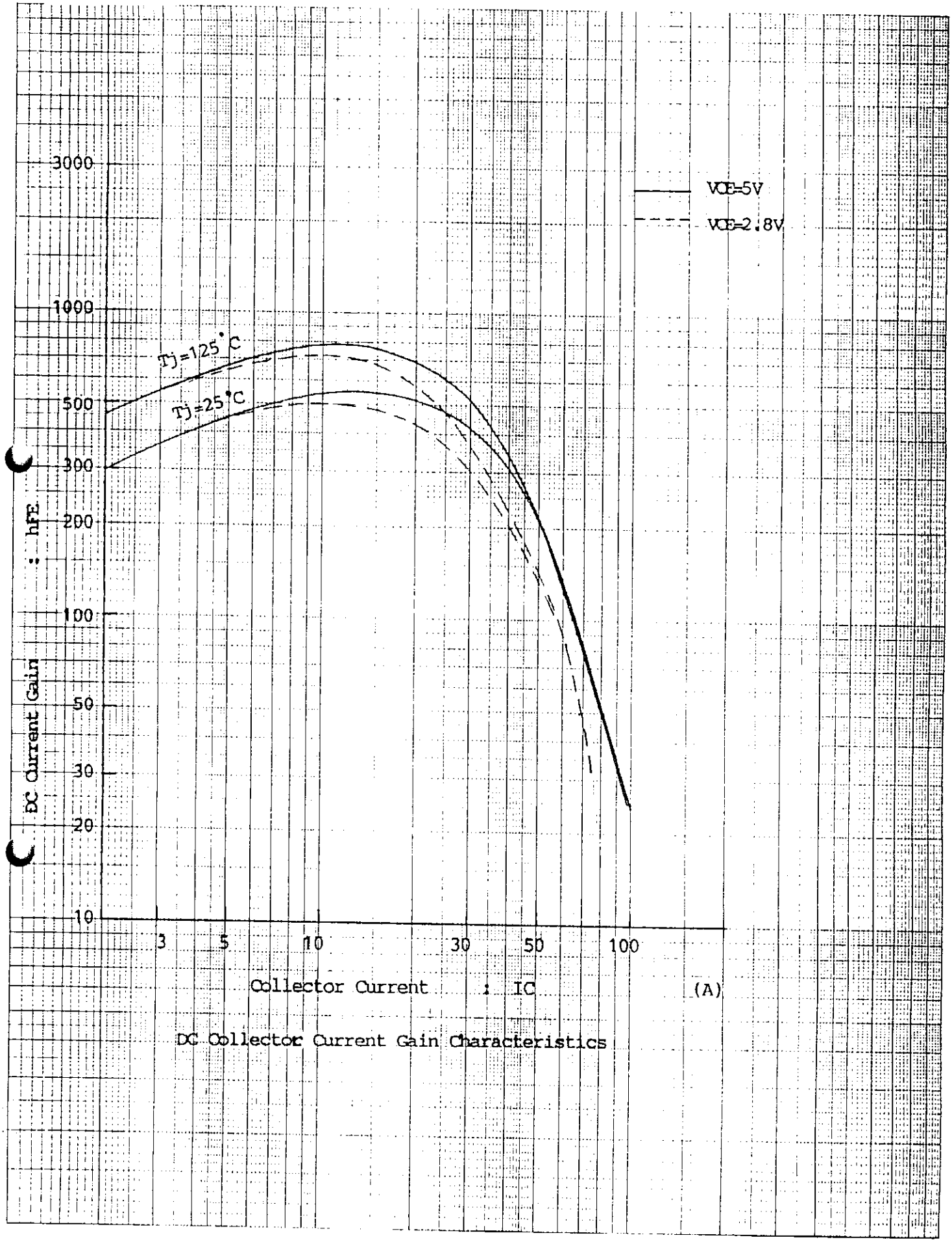
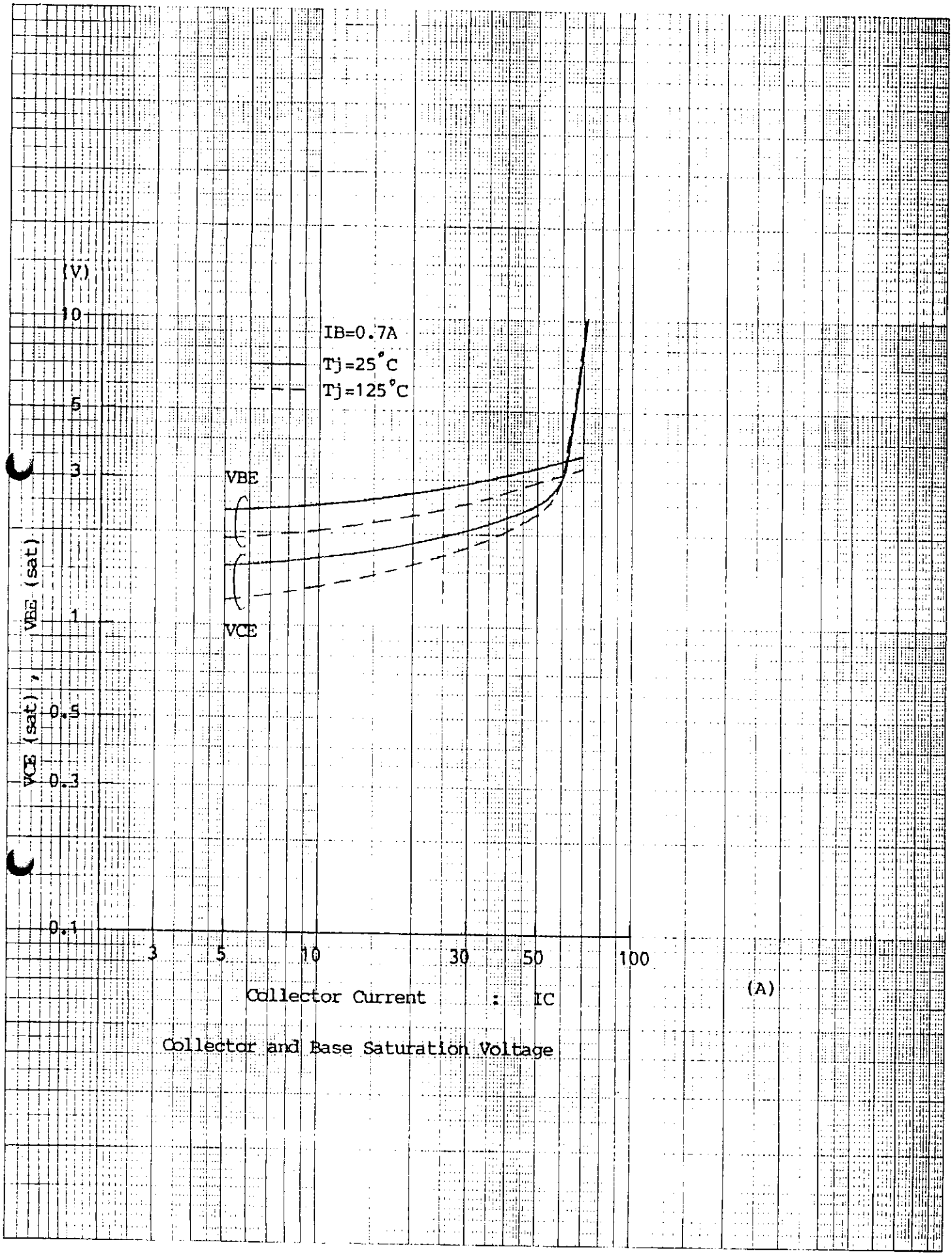
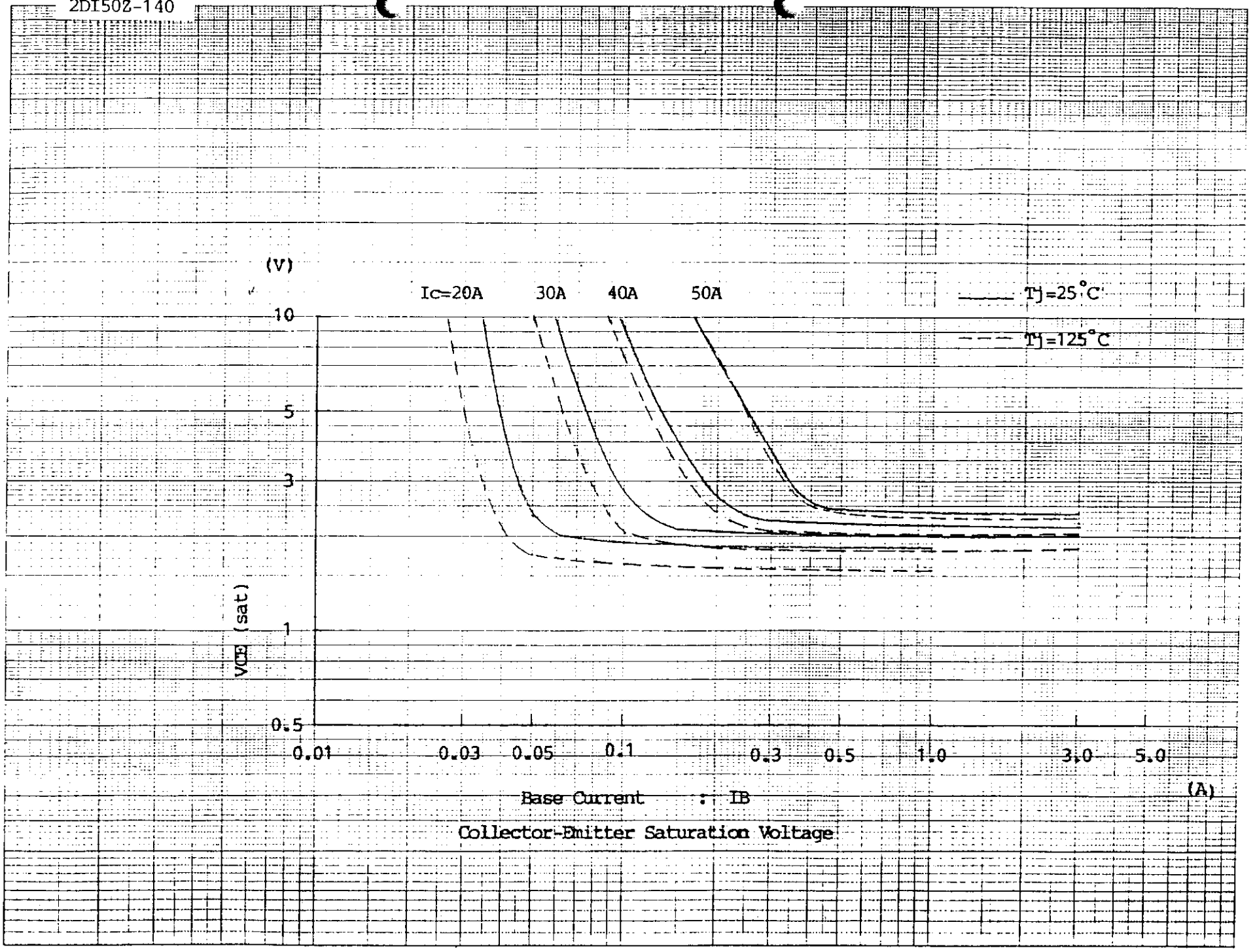


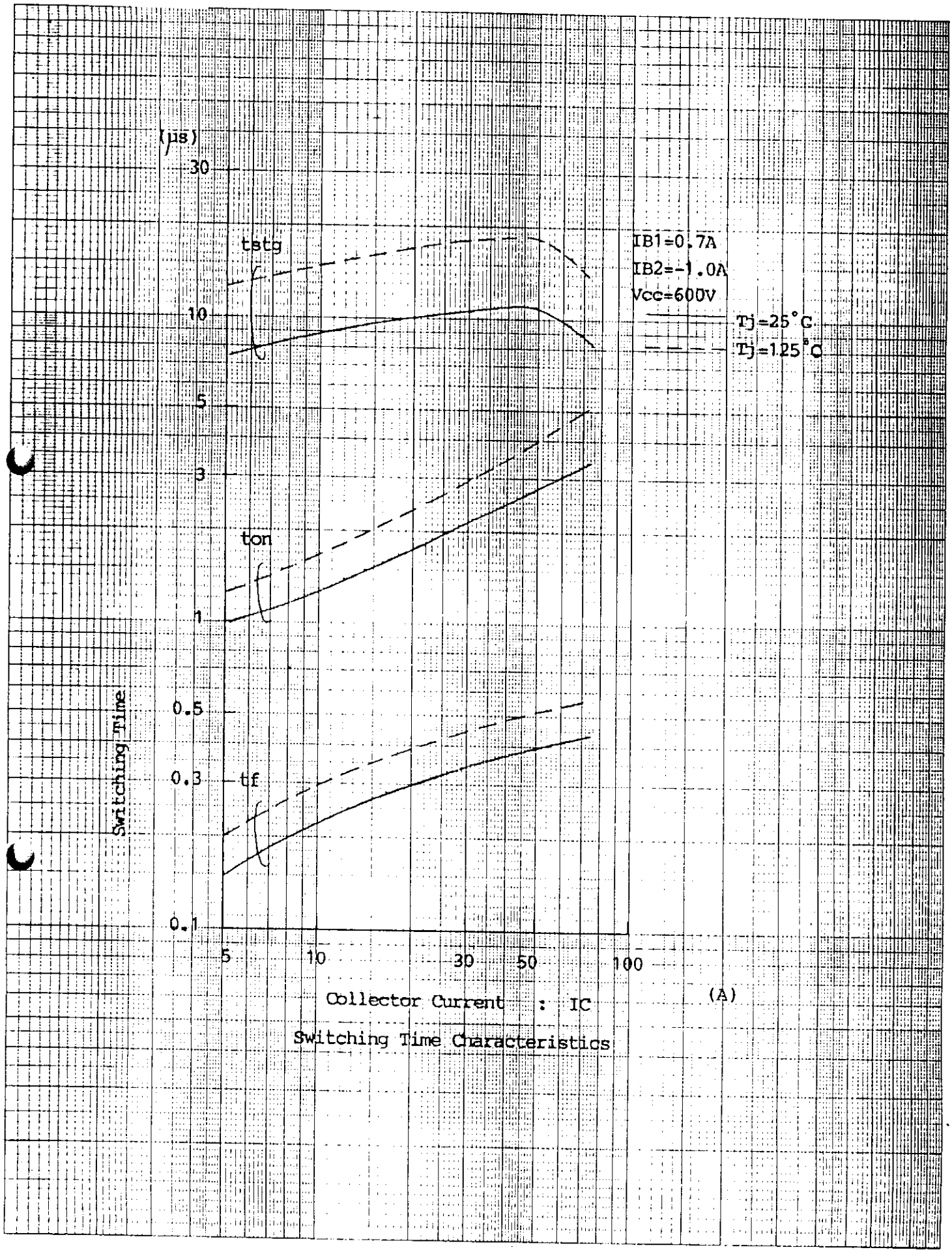
DC Collector Current Gain Characteristics



Collector and Base Saturation Voltage

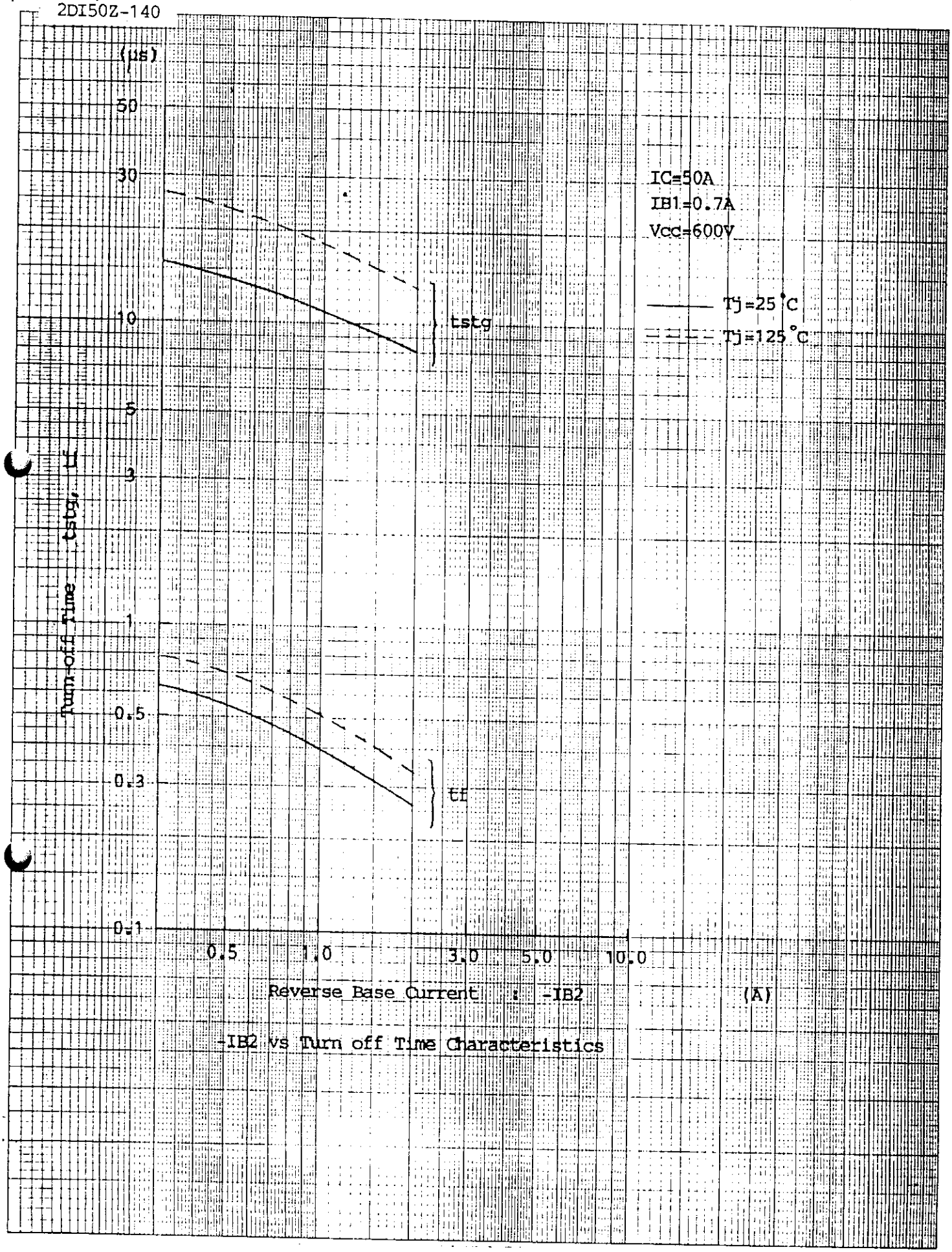


Collector-Emitter Saturation Voltage



Switching Time Characteristics

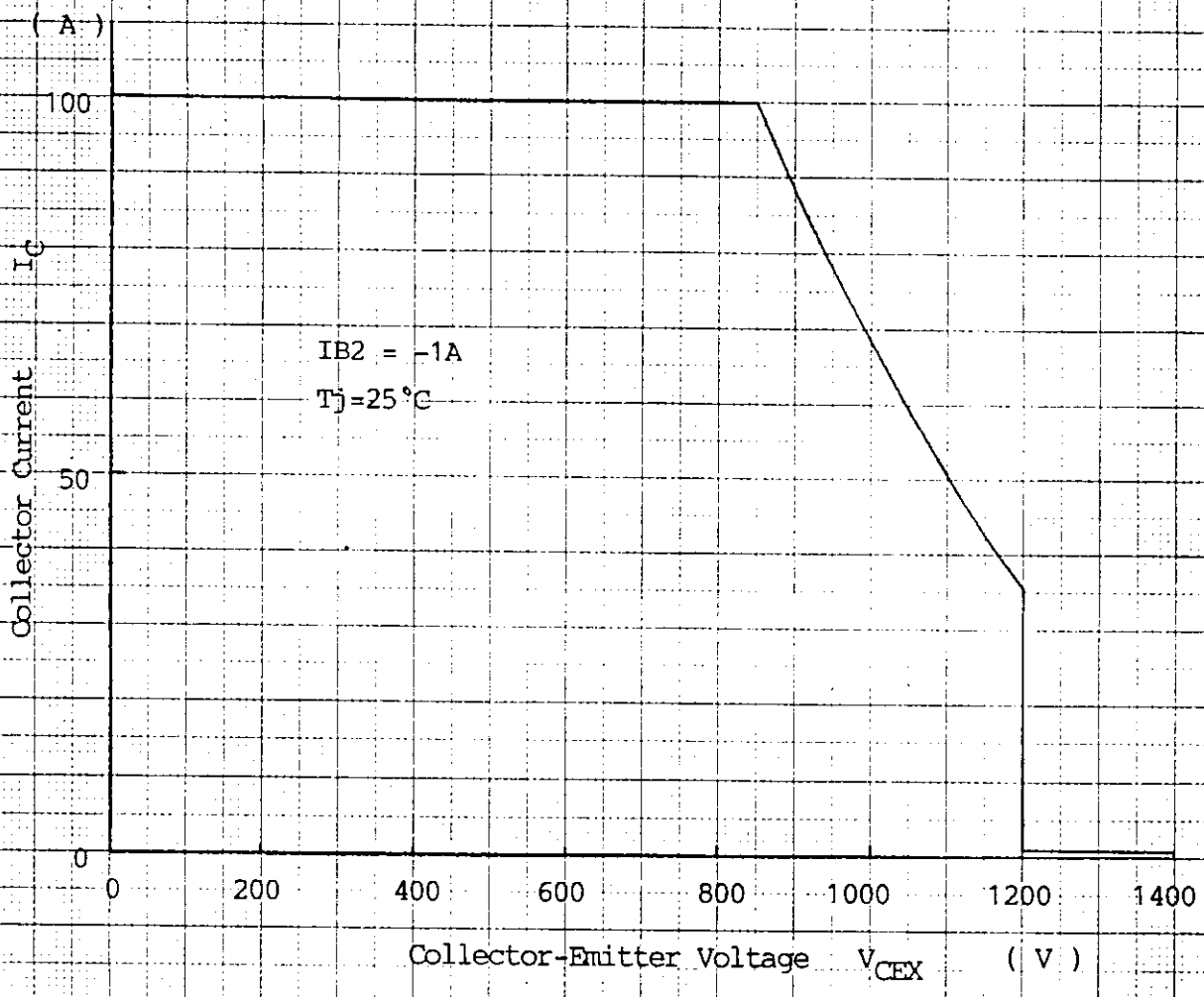
2DI50Z-140



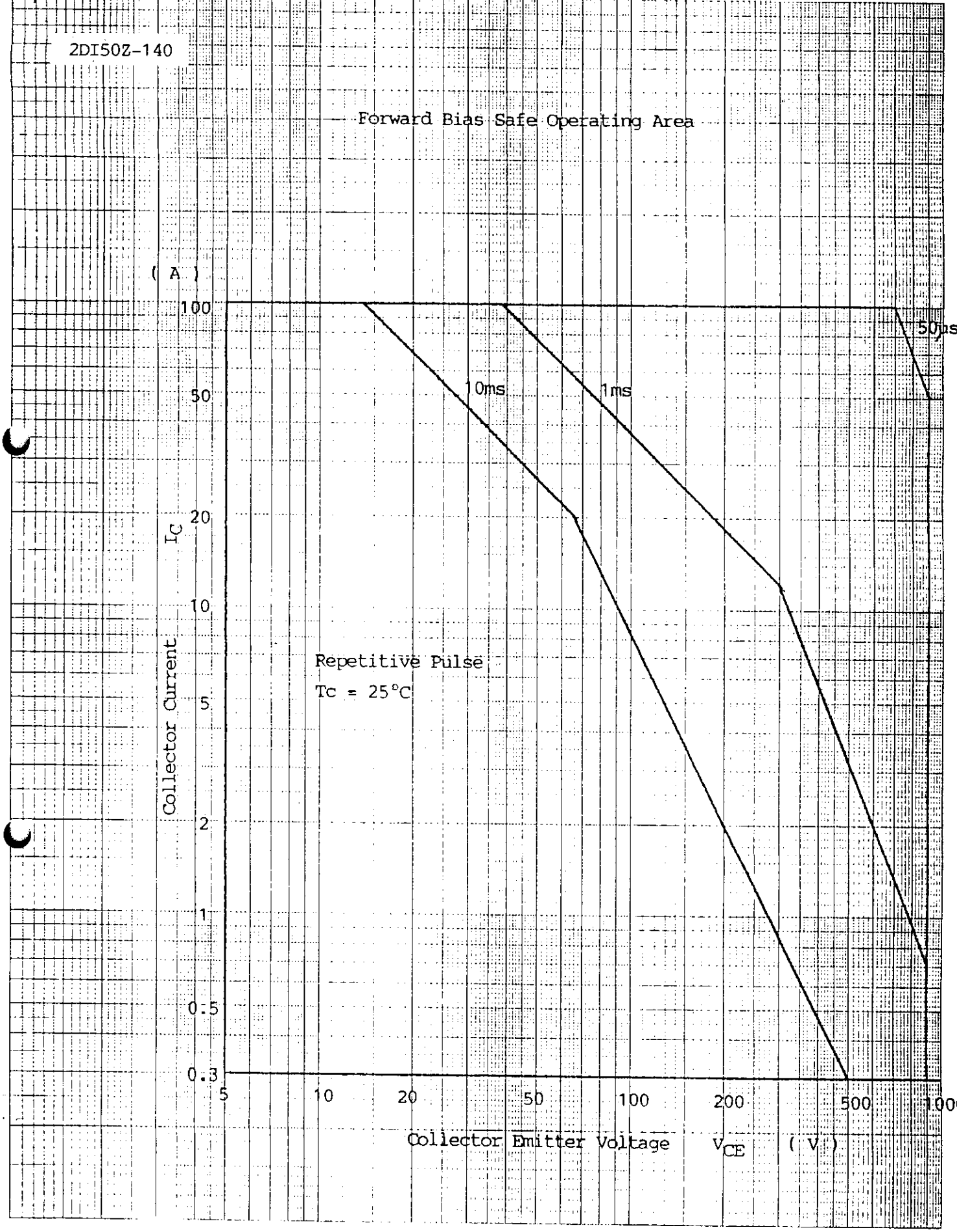
-IB2 vs Turn off Time Characteristics

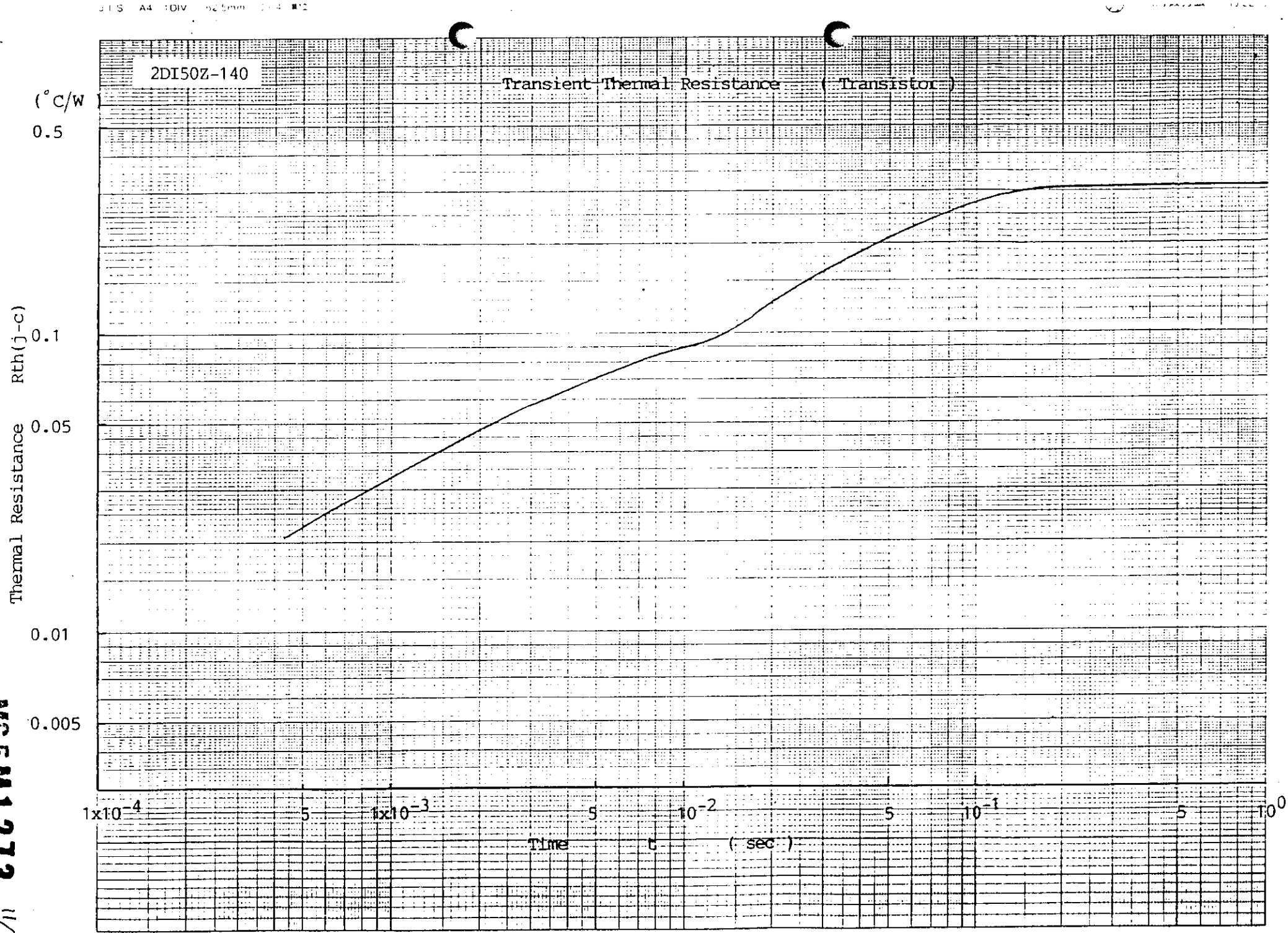
2DI50Z-140

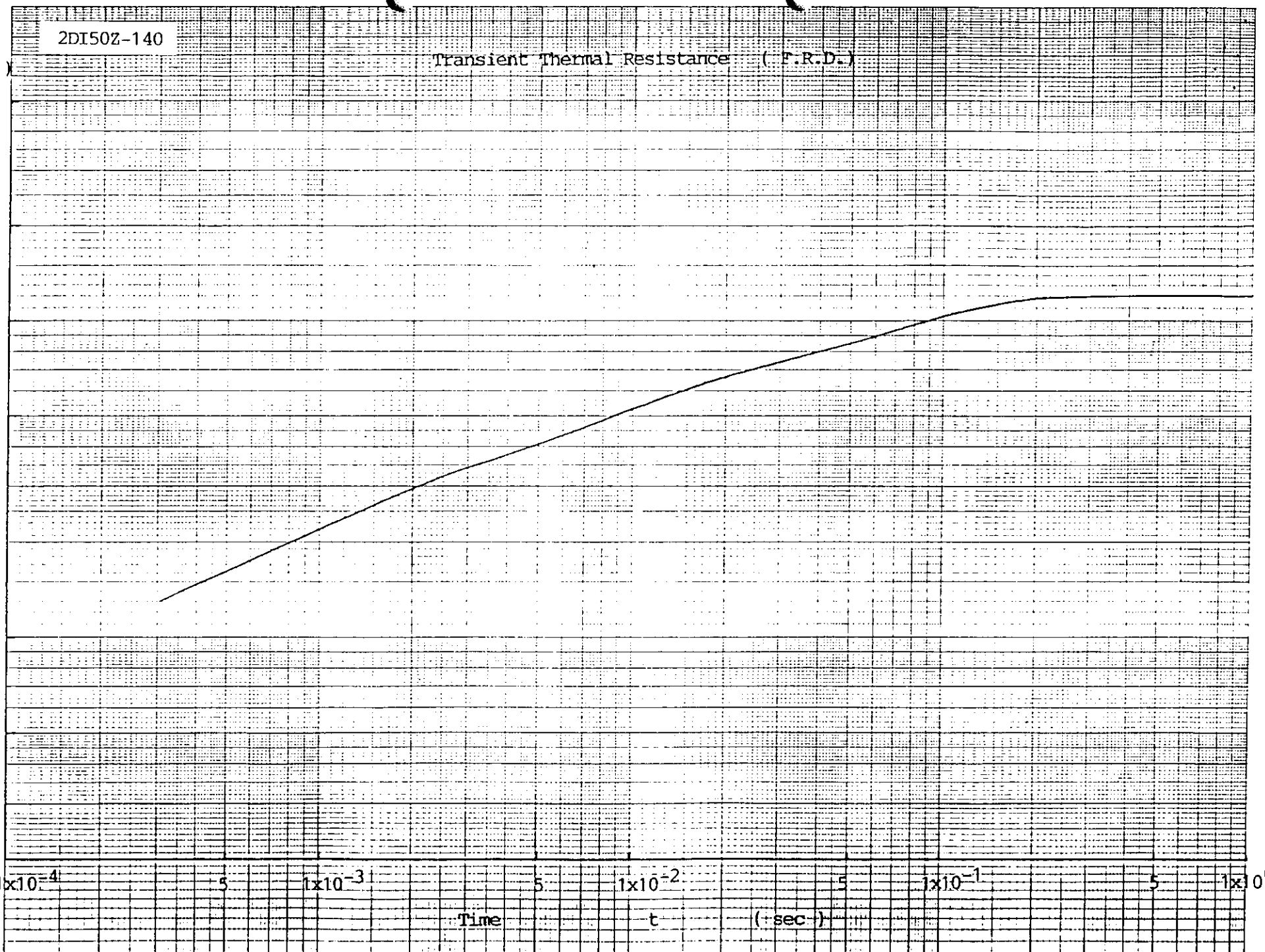
Reverse Biased Safe Operating Area

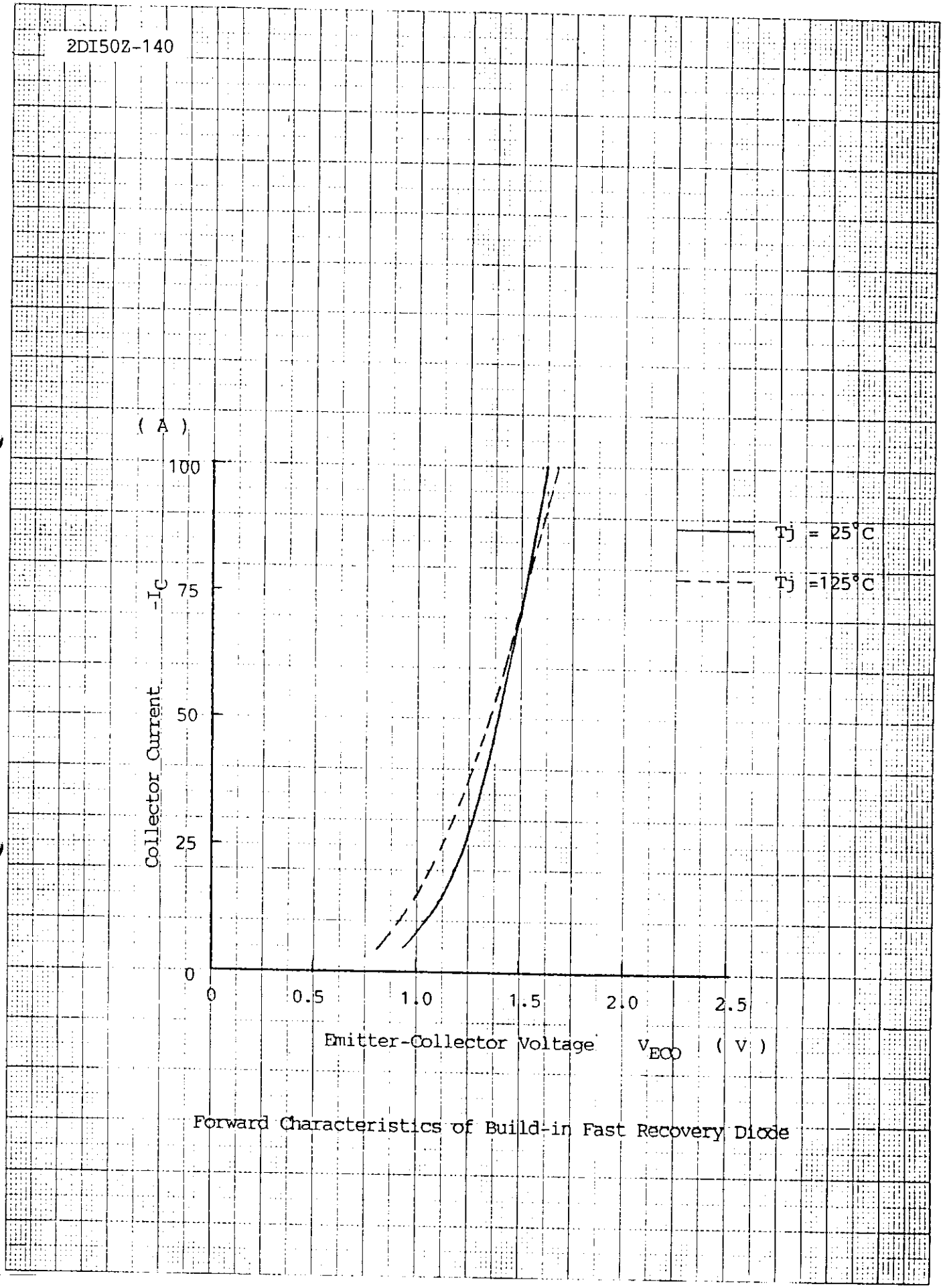


2DI50Z-140


Forward Bias Safe Operating Area
(A)
100
50
20
10
5
2
1
0.5
0.3
Collector Current I_C
10ms
1ms
50μs
Repetitive Pulse
Tc = 25°C
5
10
20
50
100
200
500
Collector Emitter Voltage V_{CE} (V)


2DI50Z-140
Transient Thermal Resistance (Transistor)
(°C/W)
0.5
0.1
0.05
0.01
0.005
Thermal Resistance Rth(j-c)
1x10-4
5
1x10-3
5
10-2
5
10-1
5
100
Time t (sec)


2DI50Z-140
Transient Thermal Resistance (F.R.D.)
(°C/W)
Thermal Resistance Rth(j-c)
5
1
0.5
0.1
0.05
1x10⁻⁴
5
1x10⁻³
5
1x10⁻²
5
1x10⁻¹
5
1x10⁰
Time t (sec)



Forward Characteristics of Build-in Fast Recovery Diode

2DI50Z-140