SPECIFICATION

DEVICE NAME : BIPOLAR TRANSISTOR

TYPE NAME : 2SC4538R

SPEC. No. :

DATE :

Fuji Electric Co.,Ltd.

This Specification is subject to change without notice.

	DATE	NAME	APPROVED		Fuji Electric Co.,Ltd.
DRAWN					
CHECKED				DWG.NO.	1/12

Y 0257-R-004a

Ratings and Characteristics of Fuji Power Transistor

2SC4538R

1. Outline Drawings TO-3PF
2. Absolute Maximum Ratings (Tc=25℃)

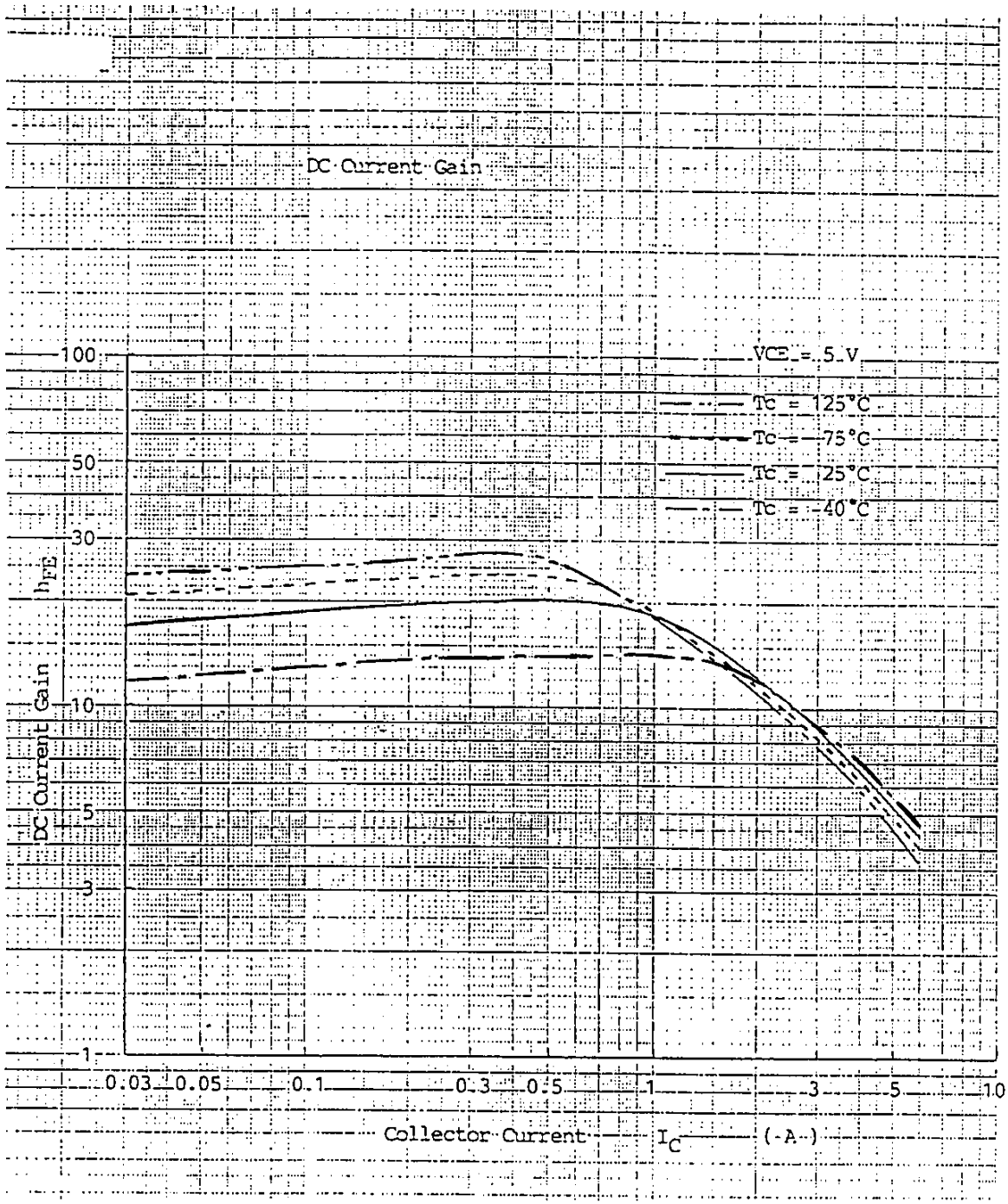
Item	Symbol	Maximum Rating	Unit
Collector-Base Voltage	V_{CBO}	900	V
Collector-Emitter Voltage	V_{CEO}	800	
Emitter-Base Voltage	V_{EBO}	10	
Collector Current	I_C	5	A
Base Current	I_B	3	
Collector Power Dissipation	Pc	80	W
Operating Temperature	Tj	+150	℃
Storage Temperature	Tstg	−55 ～ +150	

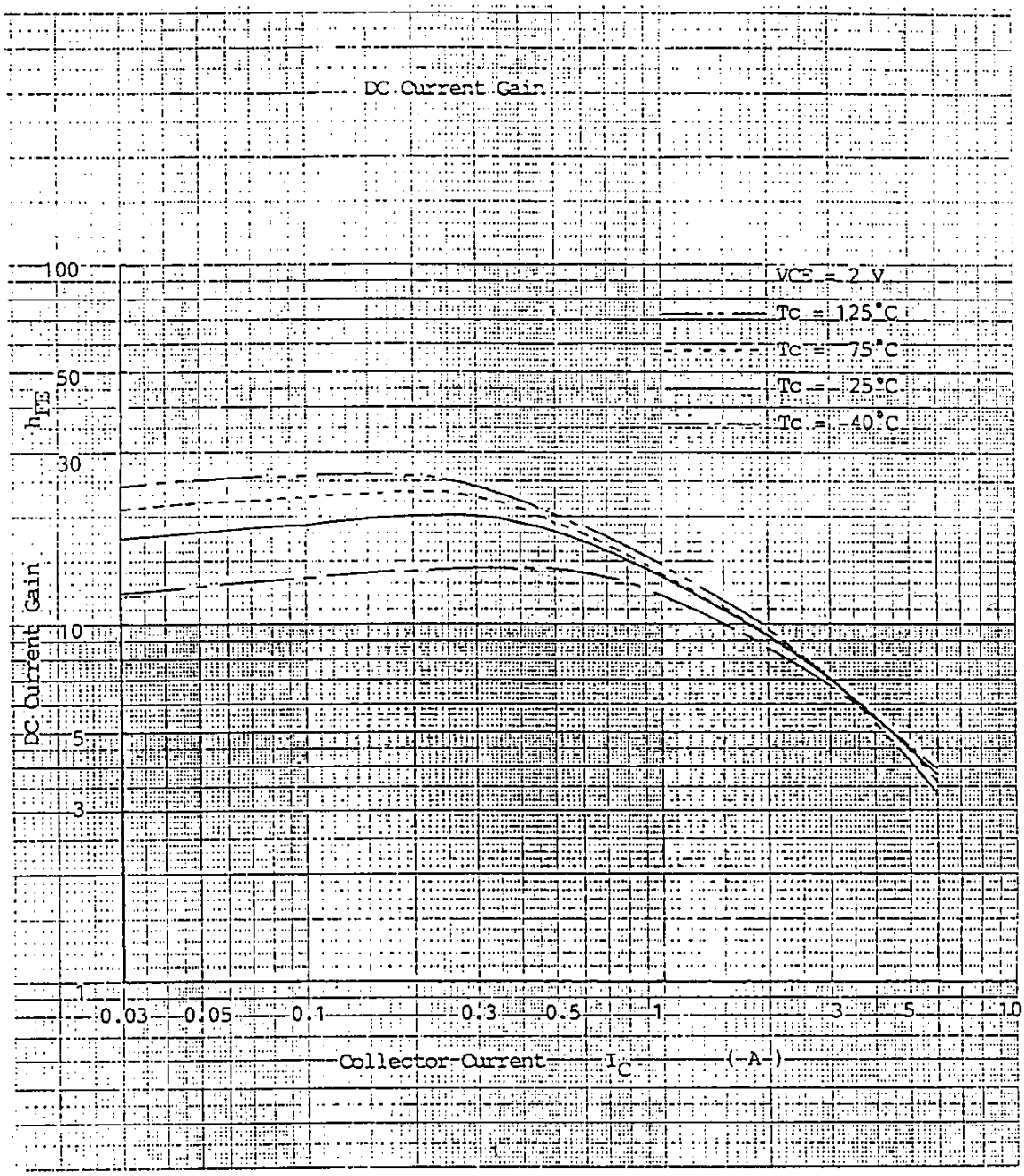
3. Electrical Characteristics (Tc=25℃)

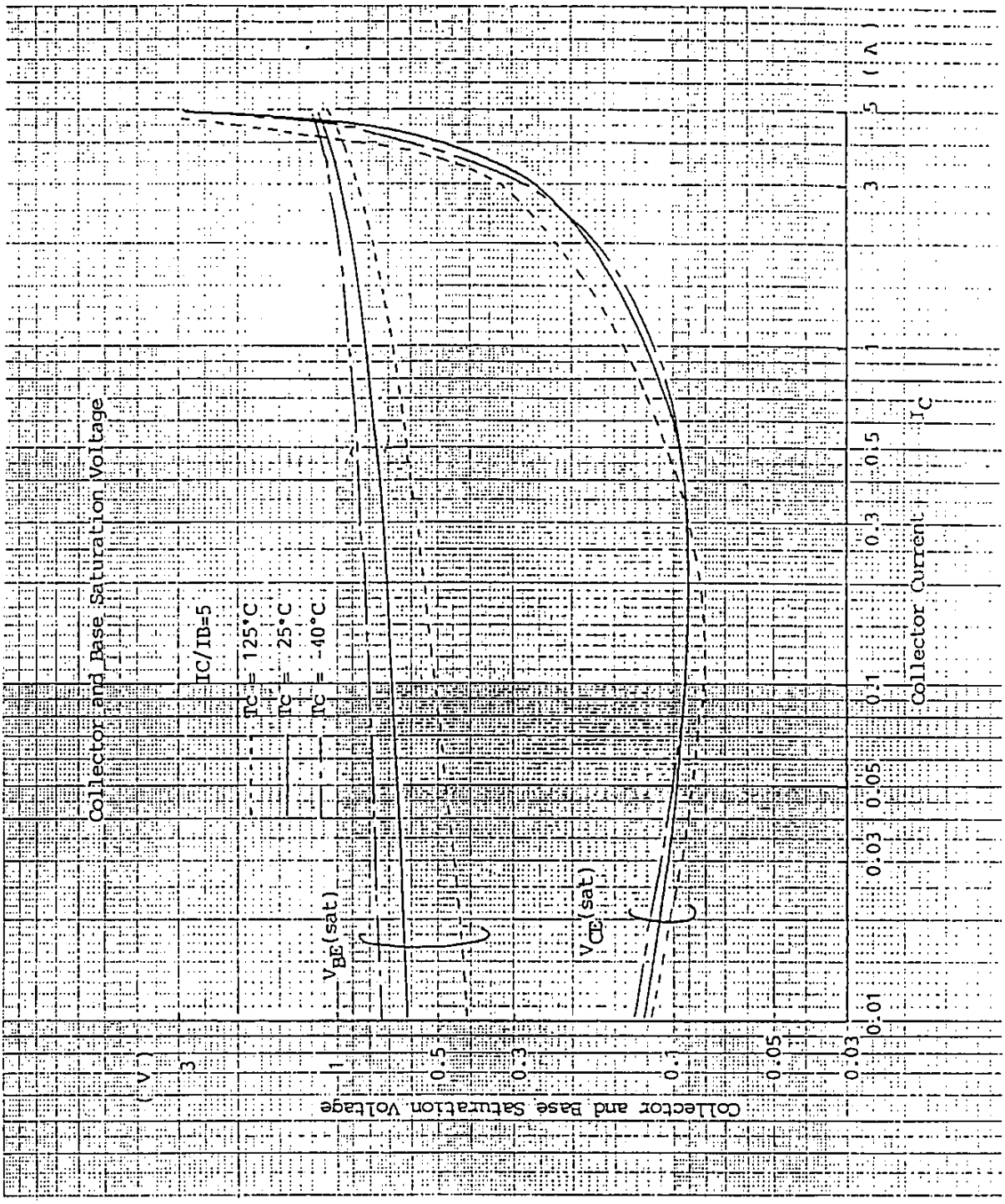
Item	Symbol	Conditions	Min	Max	Unit
Collector-Base Voltage	V_{CBO}	I_{CBO} = 1mA	900		V
Collector-Emitter Voltage	V_{CEO}	I_{CEO} = 10mA	800		
Emitter-Base Breakdown Voltage	V_{EBO}	I_{EBO} = 1mA	10		
Collector Cutoff Current	I_{CBO}	V_{CB} = 900V		1.0	mA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 10V		1.0	
DC Current Gain	h_{FE}	Ic=2A V_{CE}=5V	10		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	Ic = 2A		1.0	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_B = 0.4A		1.5	
Switching Time	ton	Ic = 3 A I_{B1}=+0.6A I_{B2}=-1.2A Pw =20us, Duty≦2% RL =100Ω		1.0	μs
	tstg			4.0	
	tf			0.8	

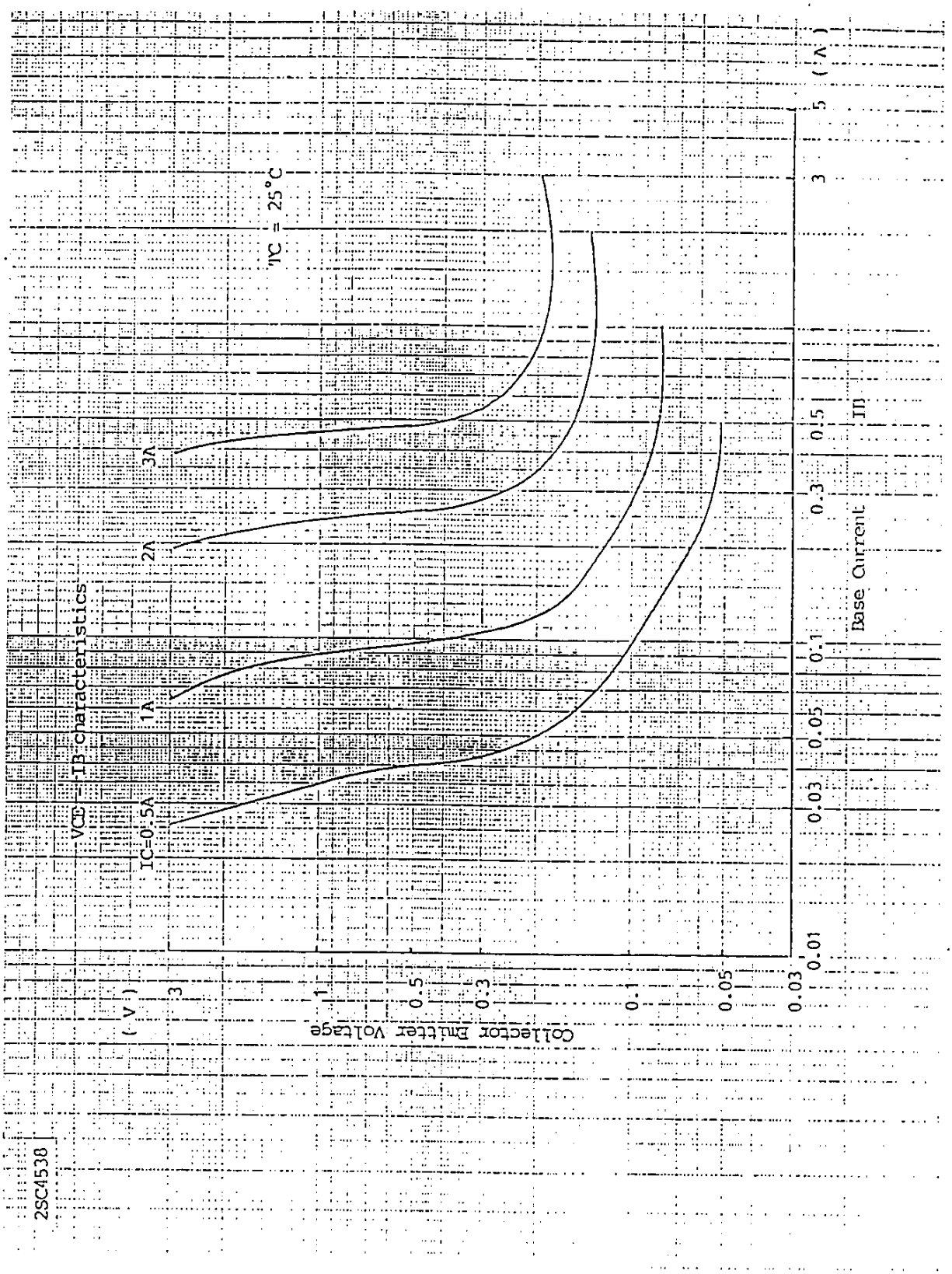
4. Thermal Characteristics

Item	Symbol	Conditions	Min	Max	Unit
Thermal Resistance	Rth(j-c)	Junction to Case		1.5	℃/W

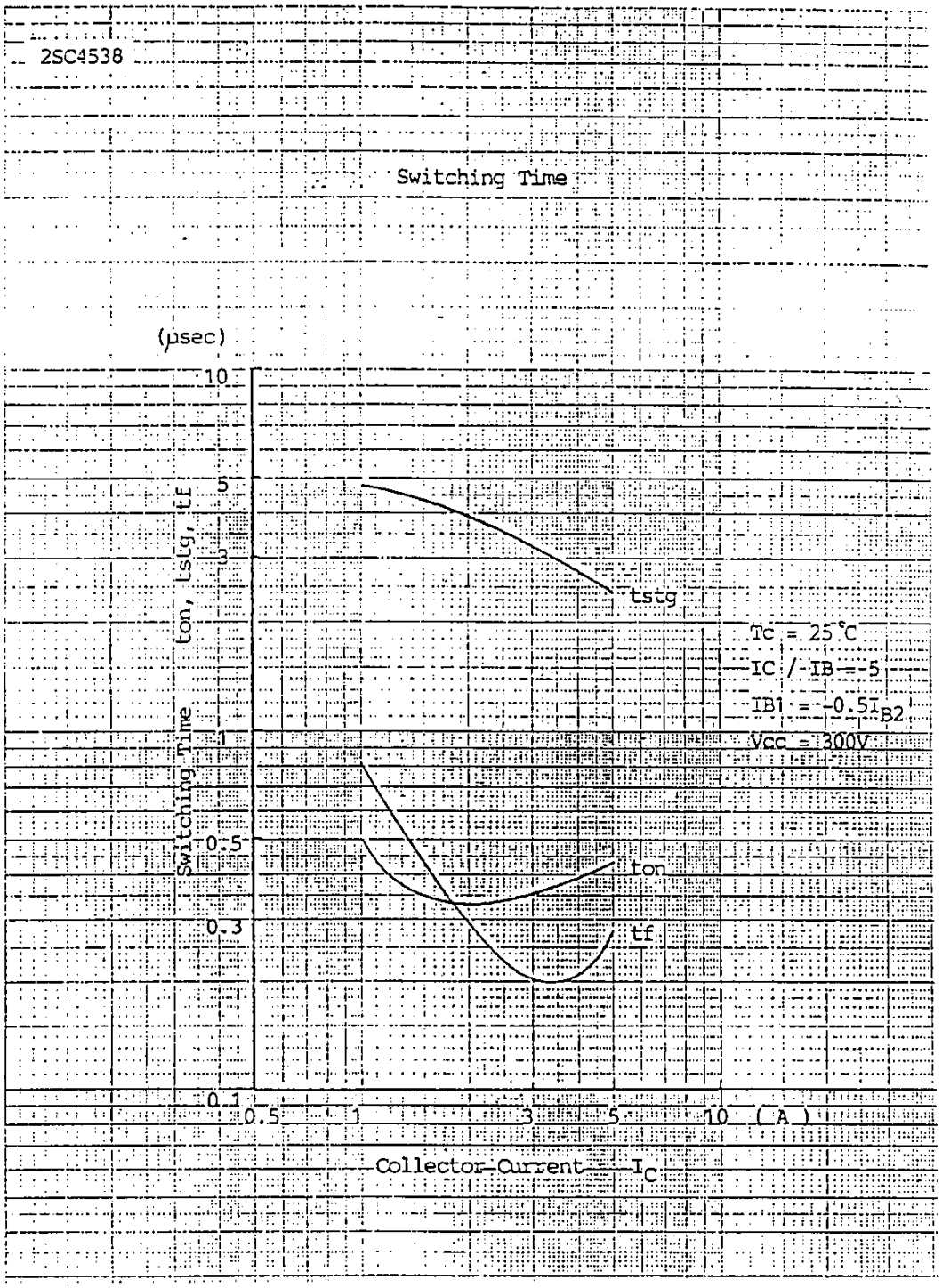

DC Current Gain
VCE = 5 V
Tc = 125°C
Tc = 75°C
Tc = 25°C
Tc = -40°C
100
50
30
10
5
3
1
hFE
DC Current Gain
0.03
0.05
0.1
0.3
0.5
1
3
5
10
Collector Current
IC
(-A-)

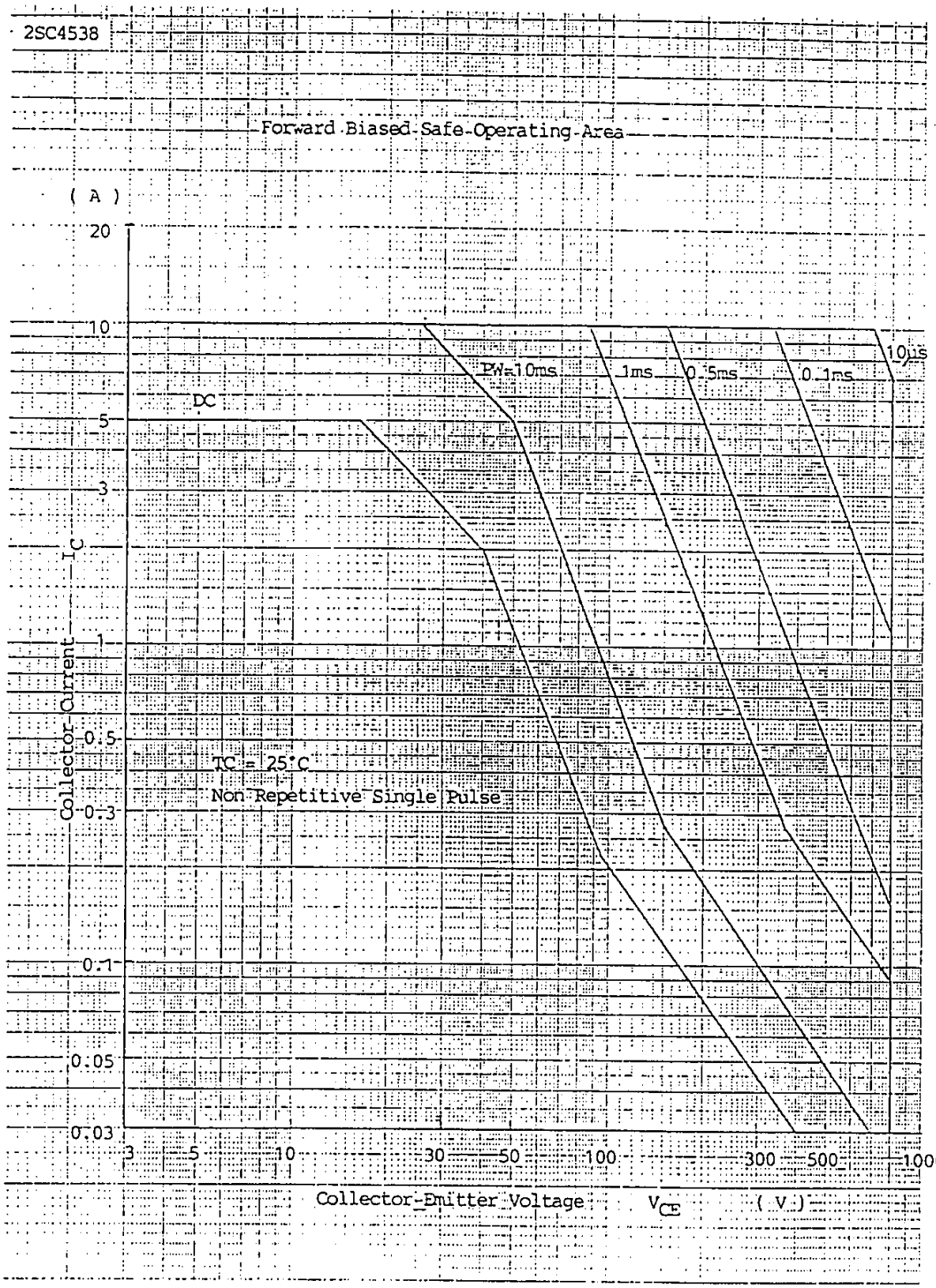

DC Current Gain
VCE = 2 V
Tc = 125°C
Tc = 75°C
Tc = 25°C
Tc = -40°C
hFE
DC Current Gain
100
50
30
10
5
3
1
0.03
0.05
0.1
0.3
0.5
1
3
5
10
Collector-Current IC (-A)

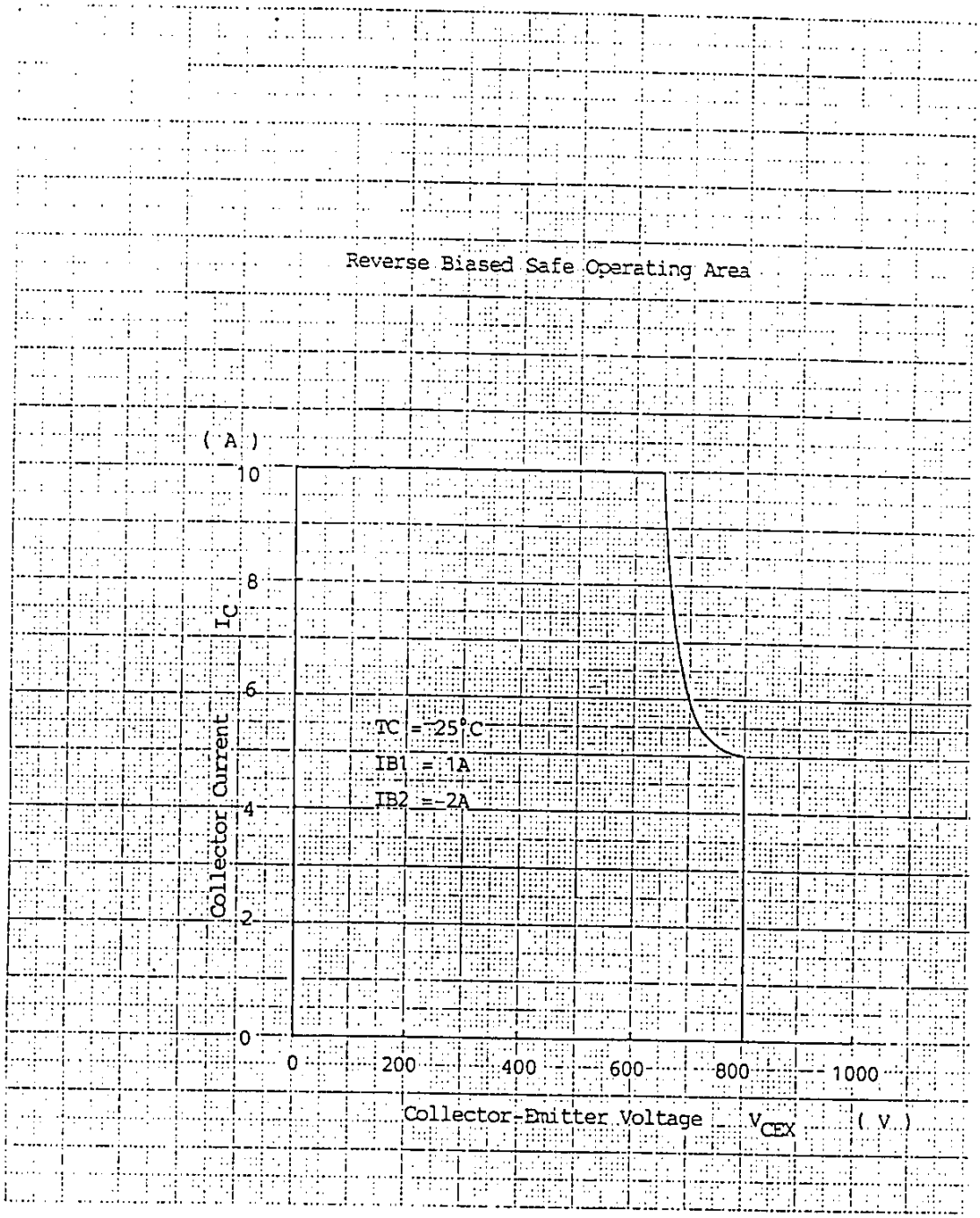

Collector and Base Saturation Voltage
VBE(sat)
VCE(sat)
IC/IB=5
Tc= 125°C
Tc= 25°C
Tc= -40°C
Collector and Base Saturation Voltage
V
3
1
0.5
0.3
0.1
0.05
0.03
Collector Current
IC
A
5
3
1
0.5
0.3
0.1
0.05
0.03
0.01


2SC4538
VCE-IB characteristics
TC = 25°C
IC=0.5A
1A
2A
3A
Collector Emitter Voltage
(V)
Base Current
IB
(A)

2SC4538


Switching Time
(μsec)
10
5
3
1
0.5
0.3
0.1
ton, tstg, tf
Switching Time
tstg
ton
tf
Tc = 25°C
IC / IB = -5
IB1 = -0.5IB2
Vcc = 300V
0.5
1
3
5
10 (A)
Collector Current — IC


2SC4538
Forward Biased Safe-Operating-Area
(A)
20
10
5
3
1
0.5
0.3
0.1
0.05
0.03
Collector Current I_C
PW=10ms
1ms
0.5ms
0.1ms
10μs
DC
TC = 25°C
Non Repetitive Single Pulse
3
5
10
30
50
100
300
500
1000
Collector-Emitter Voltage V_{CE} (V)


Reverse Biased Safe Operating Area
(A)
10
8
6
4
2
0
Collector Current Ic
TC = −25°C
IB1 = 1A
IB2 = −2A
0
200
400
600
800
1000
Collector-Emitter Voltage VCEX (V)

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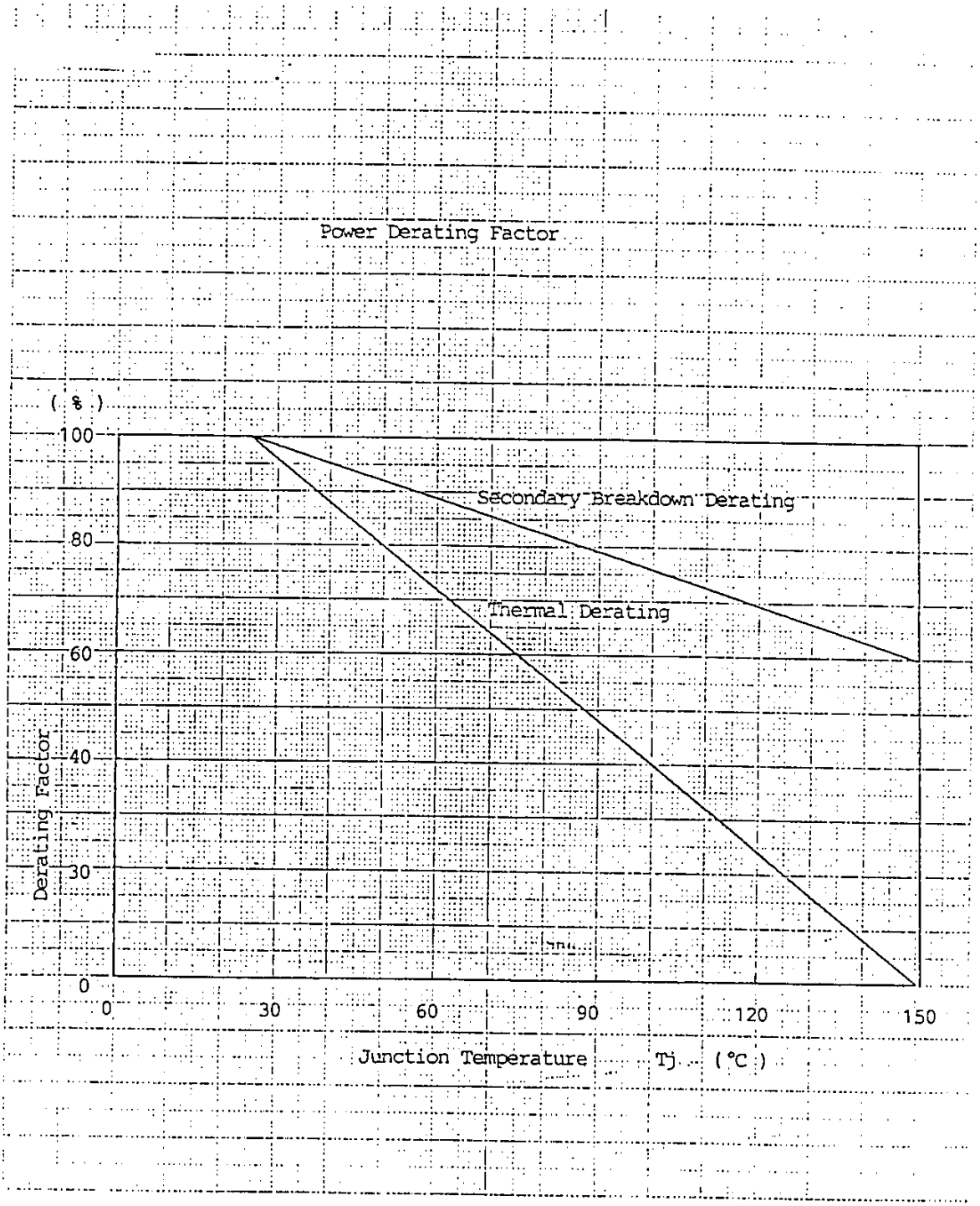
DWG.NO.

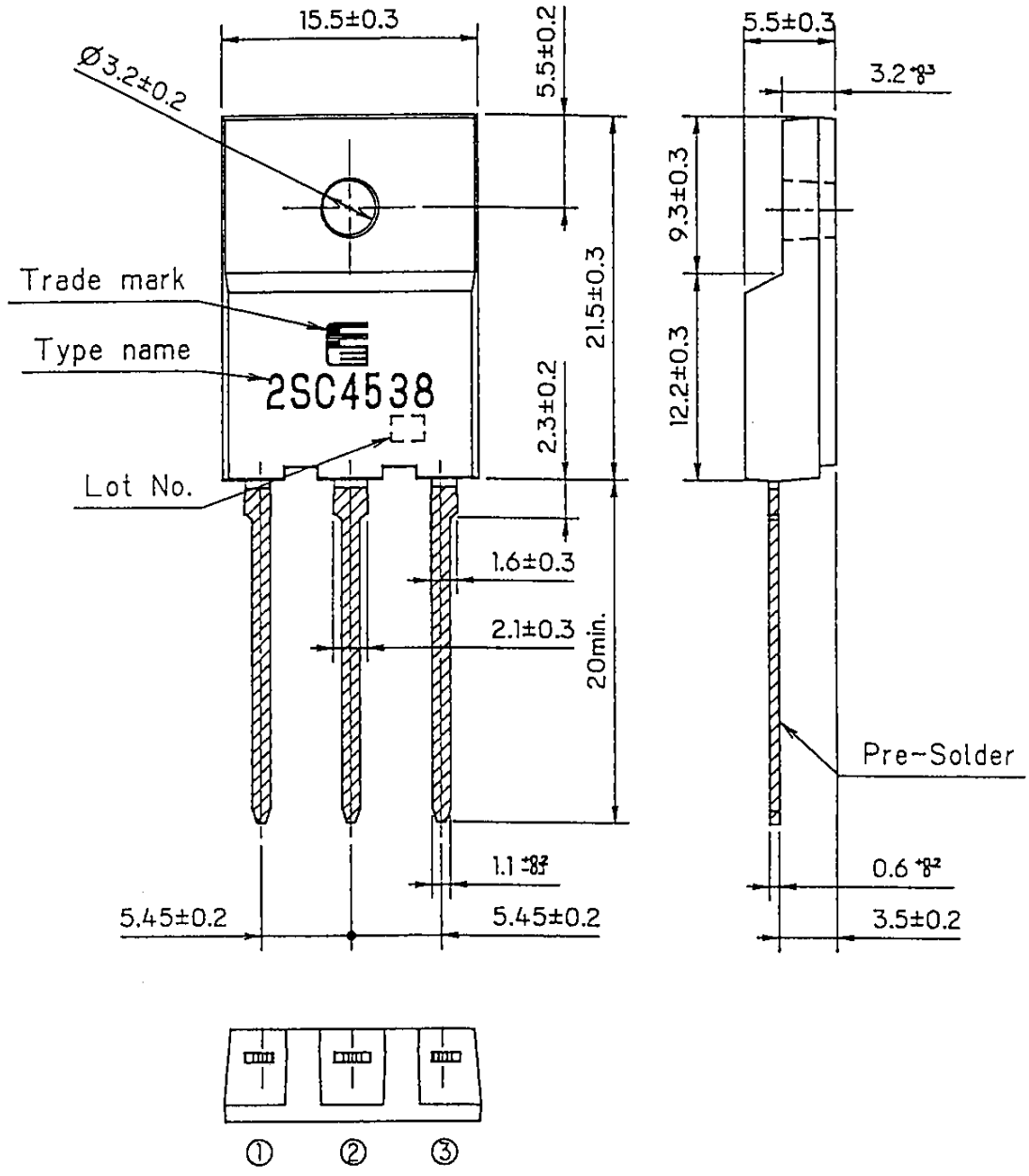
10/12

Y 0257-R-003a


Power Derating Factor
(%)
100
80
60
40
30
0
Derating Factor
Secondary Breakdown Derating
Thermal Derating
0
30
60
90
120
150
Junction Temperature Tj (°C)

FUJI POWER TRANSISTOP

TYPE : 2SC4538R



CONNECTION

① BASE
② COLLECTOR
③ EMITTER

DIMENSIONS ARE IN MILLIMETERS.

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Y 0257-R-003a