

TO-220 Plastic-Encapsulate Transistors

3DD13003 TRANSISTOR(NPN)

FEATURES

Power dissipation

P_{CM} : 1.5W ($T_{amb}=25^{\circ}C$)

Collector current

I_{CM} : 1.5 A

Collector-base voltage

$V_{(BR)CBO}$: 700 V

Operating and storage junction temperature range

T_J, T_{stg} : $-55^{\circ}C$ to $+150^{\circ}C$

TO-220

1.BASE

2.COLLECTOR

3.EMITTER

1 2 3

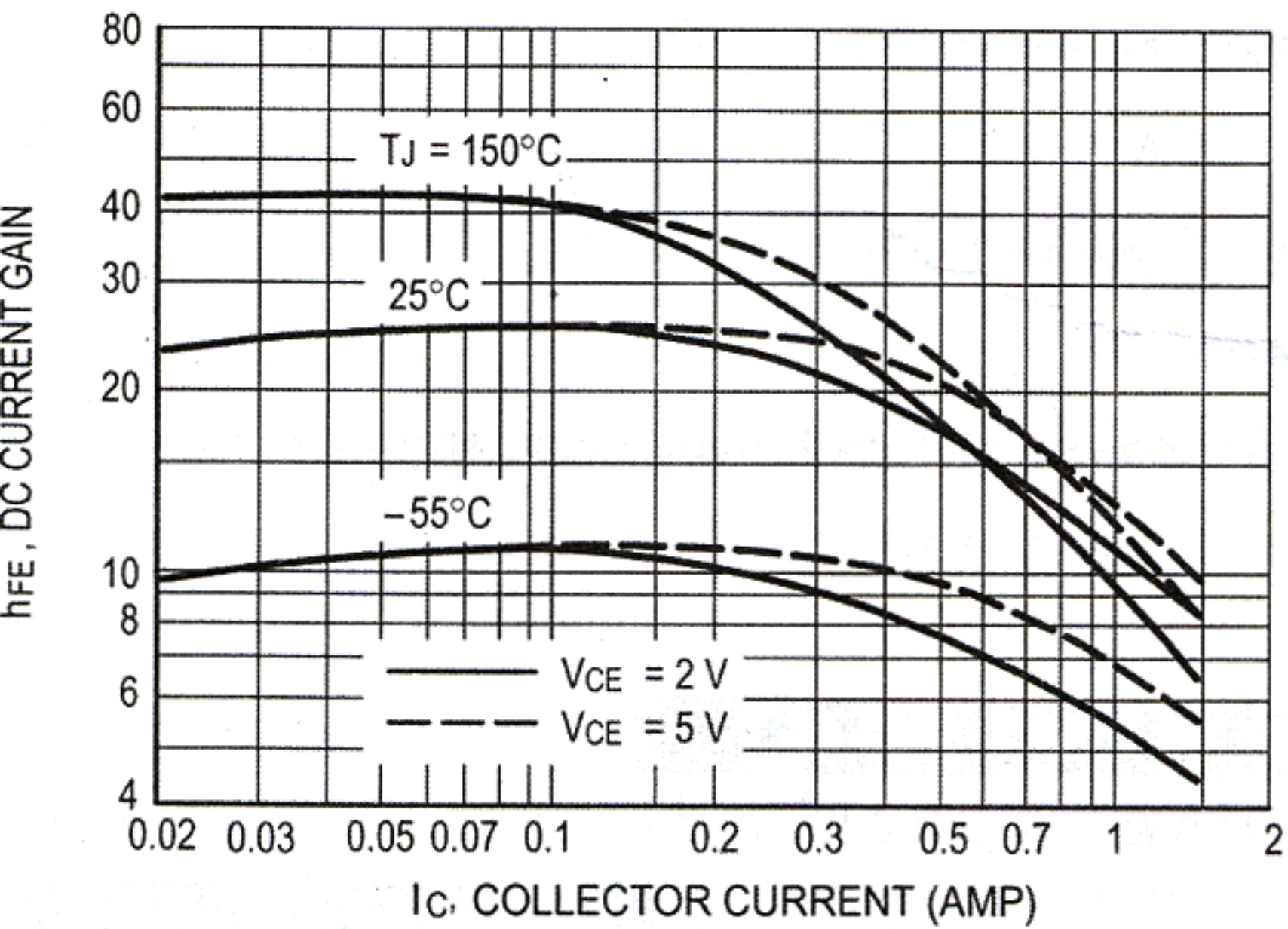
ELECTRICAL CHARACTERISTICS

($T_{amb}=25^{\circ}C$ unless otherwise specified)

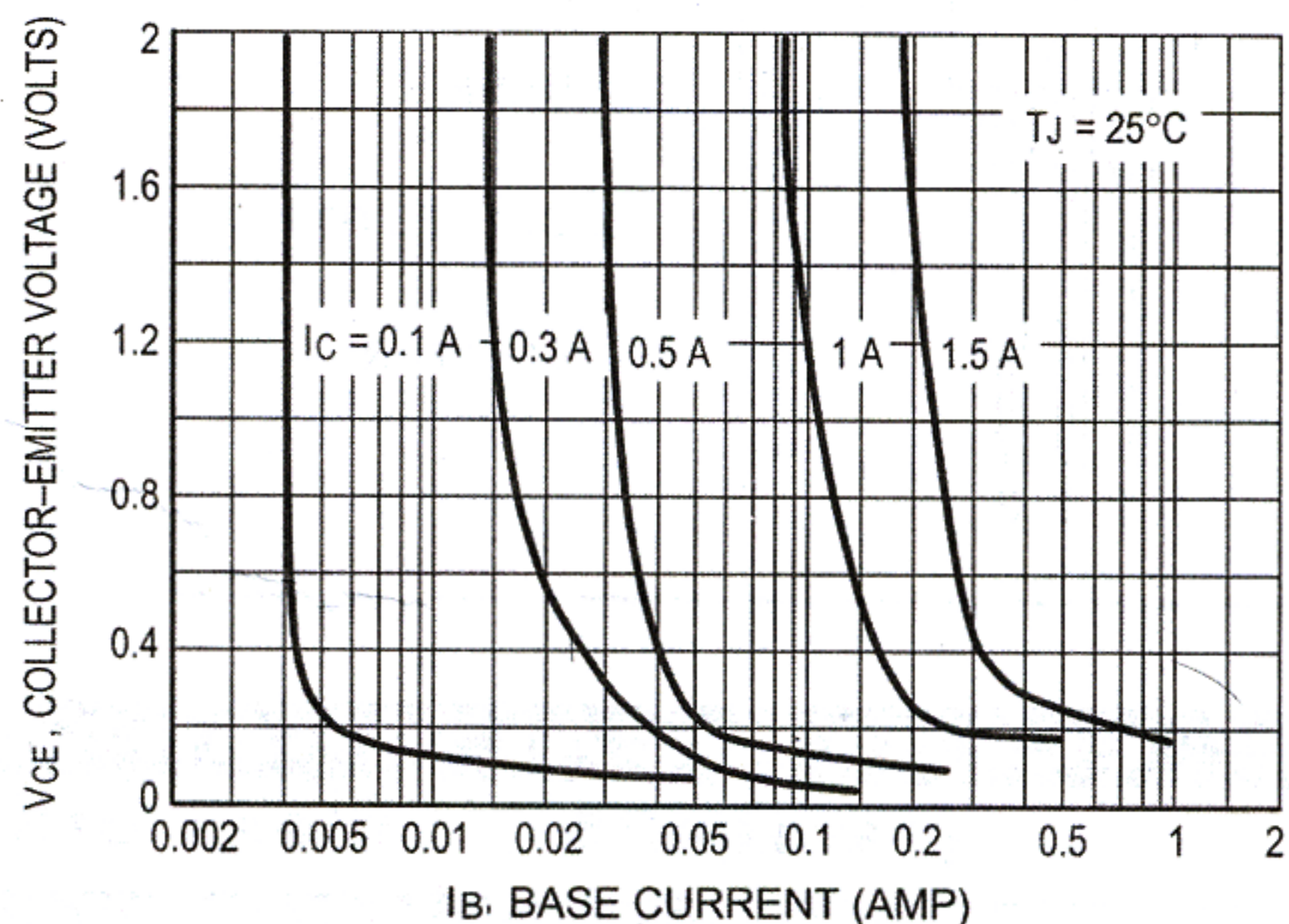
Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = 1mA, I_E = 0$	700		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 10mA, I_B = 0$	400		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = 1mA, I_C = 0$	9		V
Collector cut-off current	I_{CBO}	$V_{CB} = 700V, I_E = 0$		1	mA
Collector cut-off current	I_{CEO}	$V_{CE} = 400V, I_B = 0$		500	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 9V, I_C = 0$		1	mA
DC current gain	$h_{FE(1)}$	$V_{CE} = 2V, I_C = 0.5A$	8	40	
	$h_{FE(2)}$	$V_{CE} = 10V, I_C = 0.5mA$	5		
Collector-emitter saturation voltage	V_{CEsat}	$I_C = 1A, I_B = 250mA$		1	V
Base-emitter saturation voltage	V_{BEsat}	$I_C = 1A, I_B = 250mA$		1.2	V
Base-emitter voltage	V_{BE}	$I_E = 2A$		3	V
Transition frequency	f_T	$V_{CE} = 10V, I_C = 100mA$ $f = 1MHz$	5		MHz
Fall time	t_f	$I_C = 1A, I_{B1} = -I_{B2} = 0.2mA,$ $V_{CC} = 100V$		0.5	μS
Storage time	t_s			2.5	μS

CLASSIFICATION OF $h_{FE(1)}$

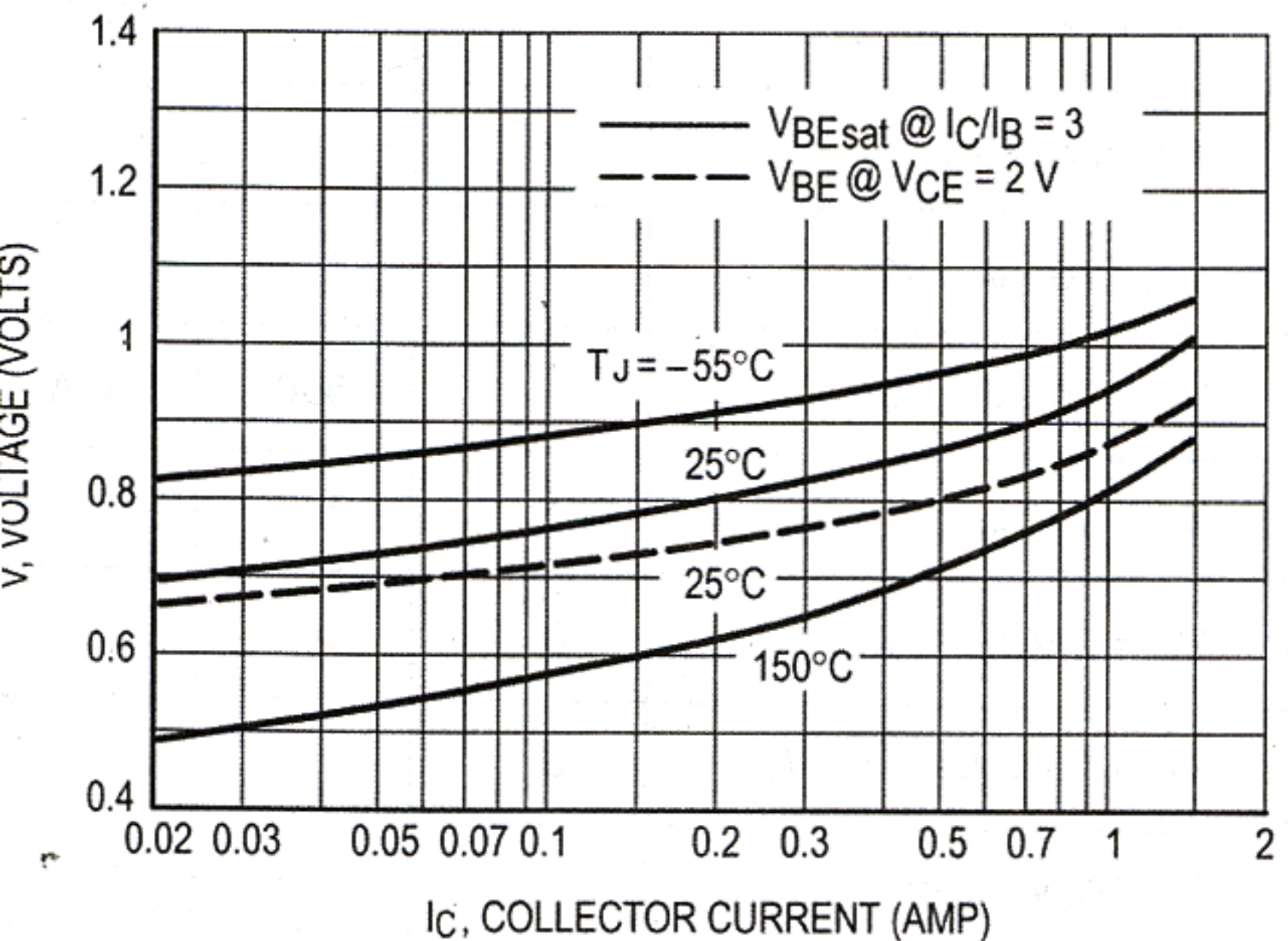
Rank						
Range	8-15	15-20	20-25	25-30	30-35	35-40



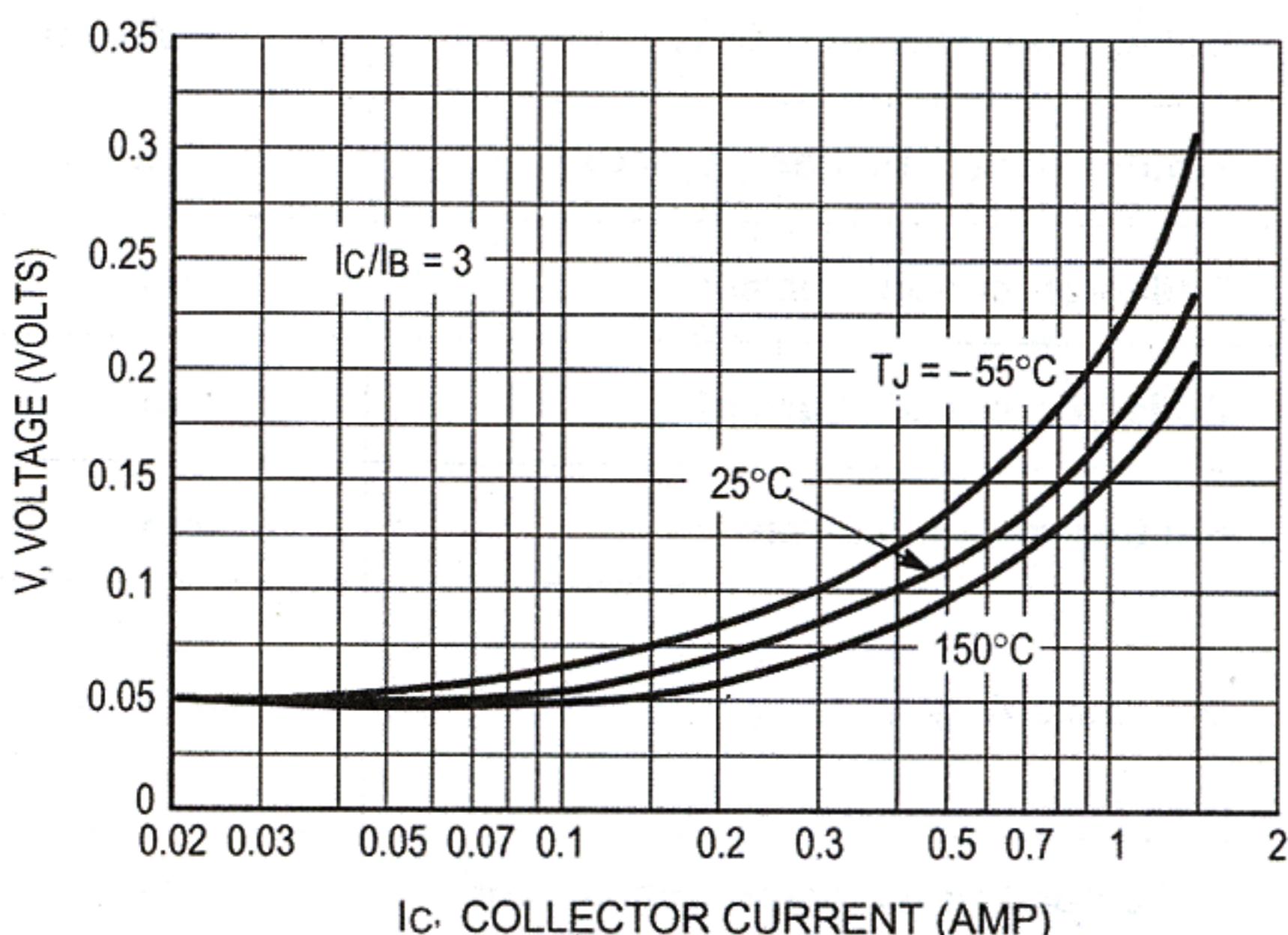
DC Current Gain



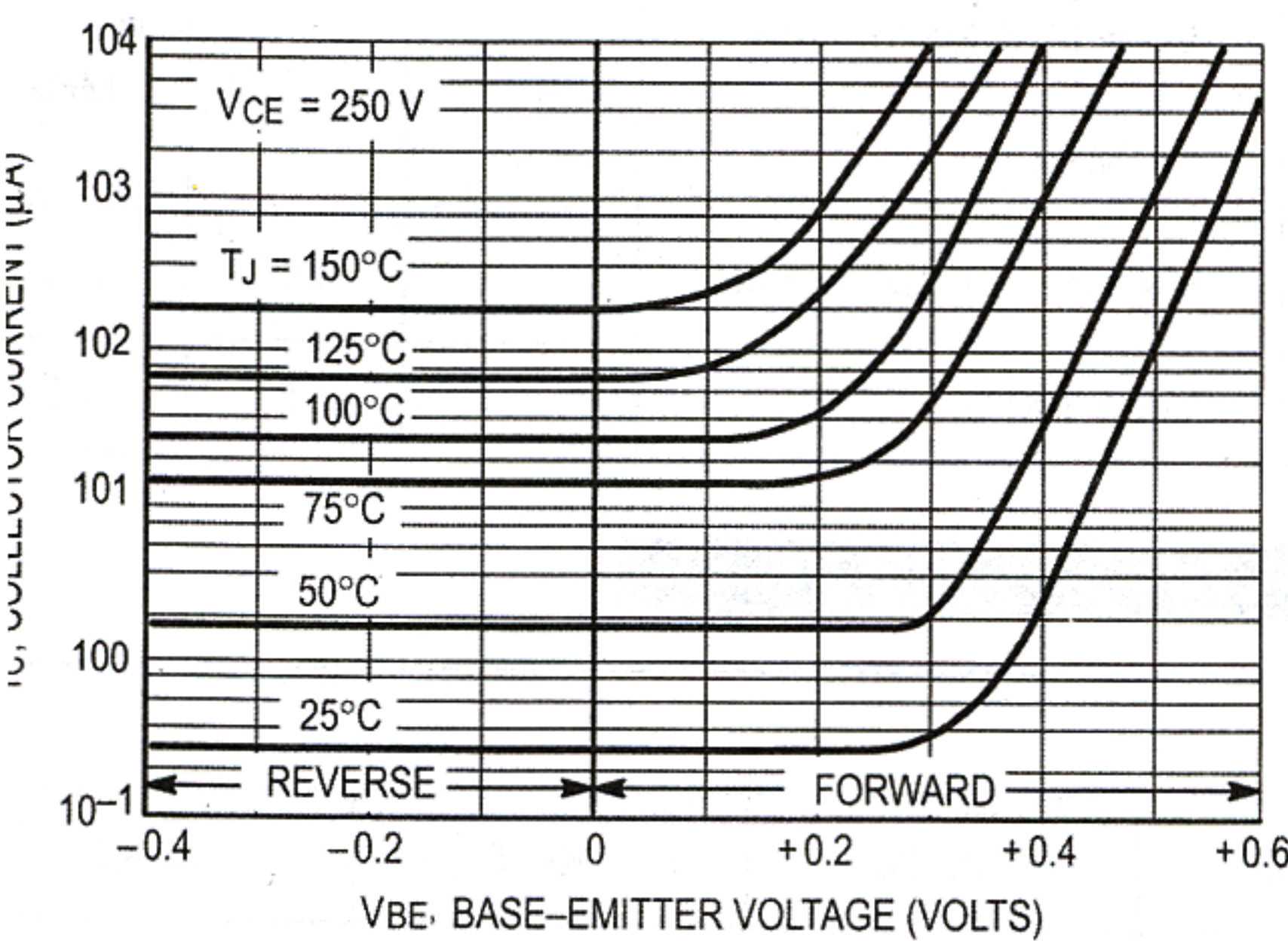
Collector Saturation Region



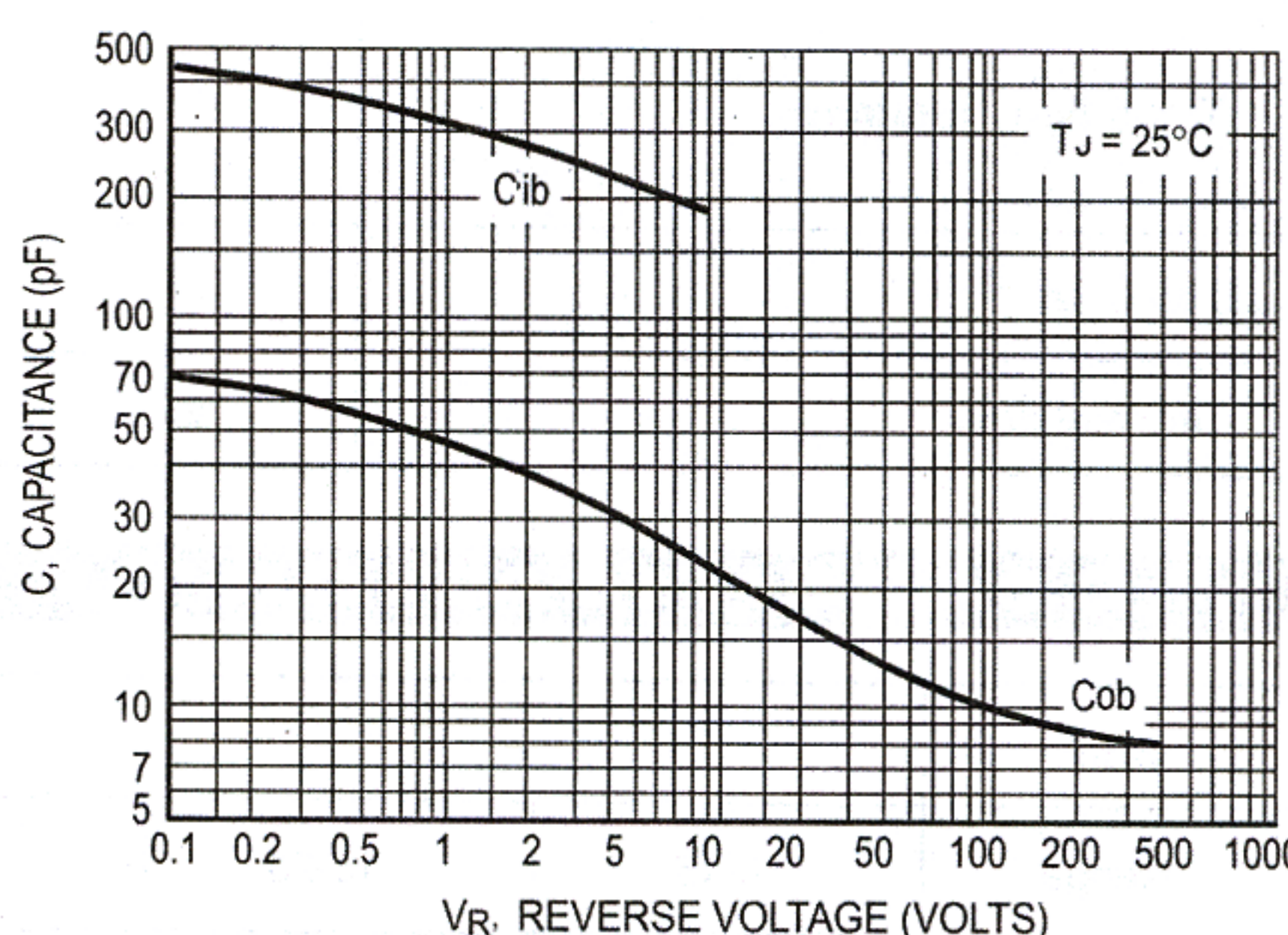
Base-Emitter Voltage



Collector-Emitter Saturation Region



Collector Cutoff Region



Capacitance