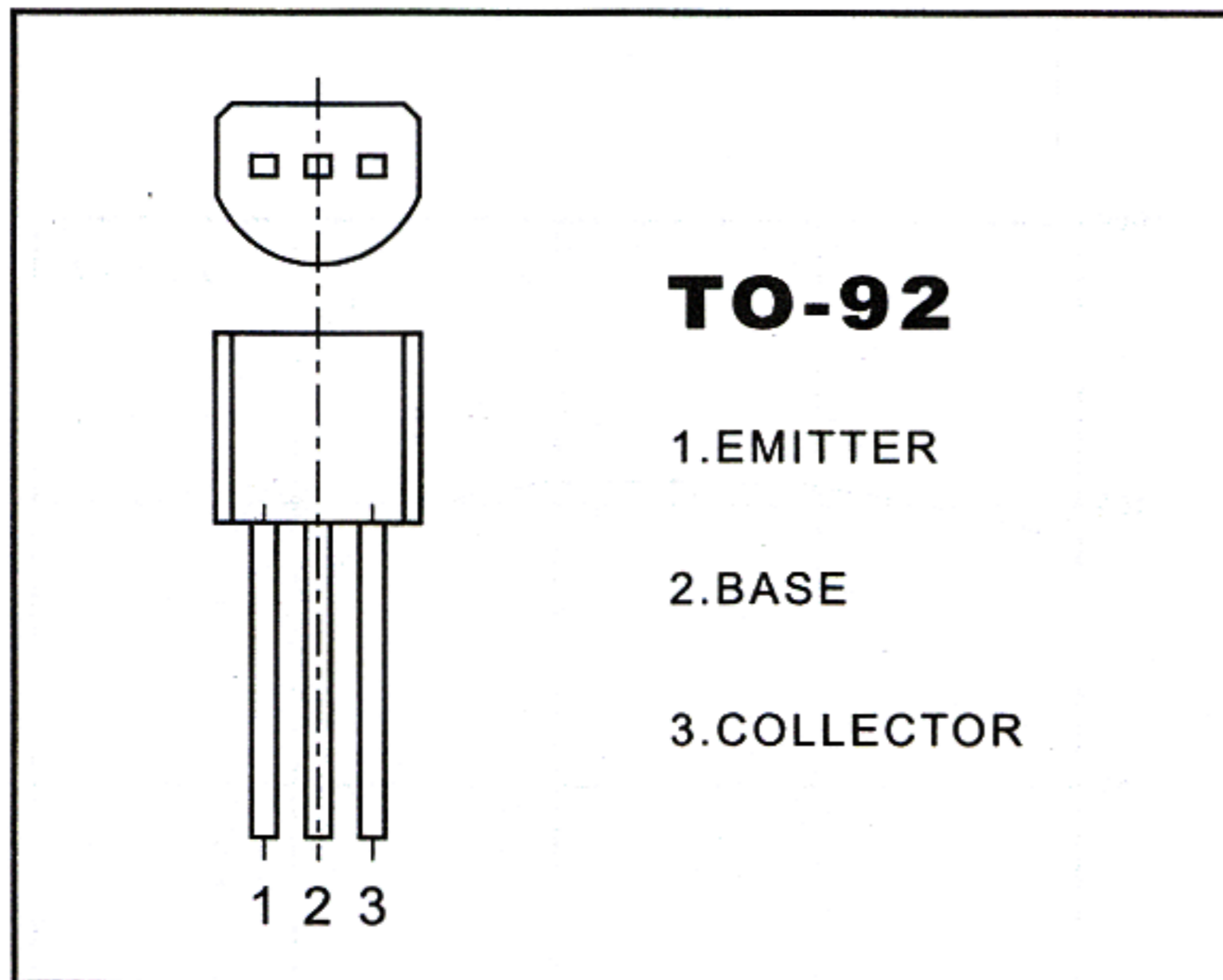


S9013 TRANSISTOR(NPN)



FEATURES

Power dissipation

P_{CM} : 0.625W ($T_{amb}=25^{\circ}C$)

Collector current

I_{CM} : -0.5 A

Collector-base voltage

$V_{(BR)CBO}$: 40 V

Operating and storage junction temperature range

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

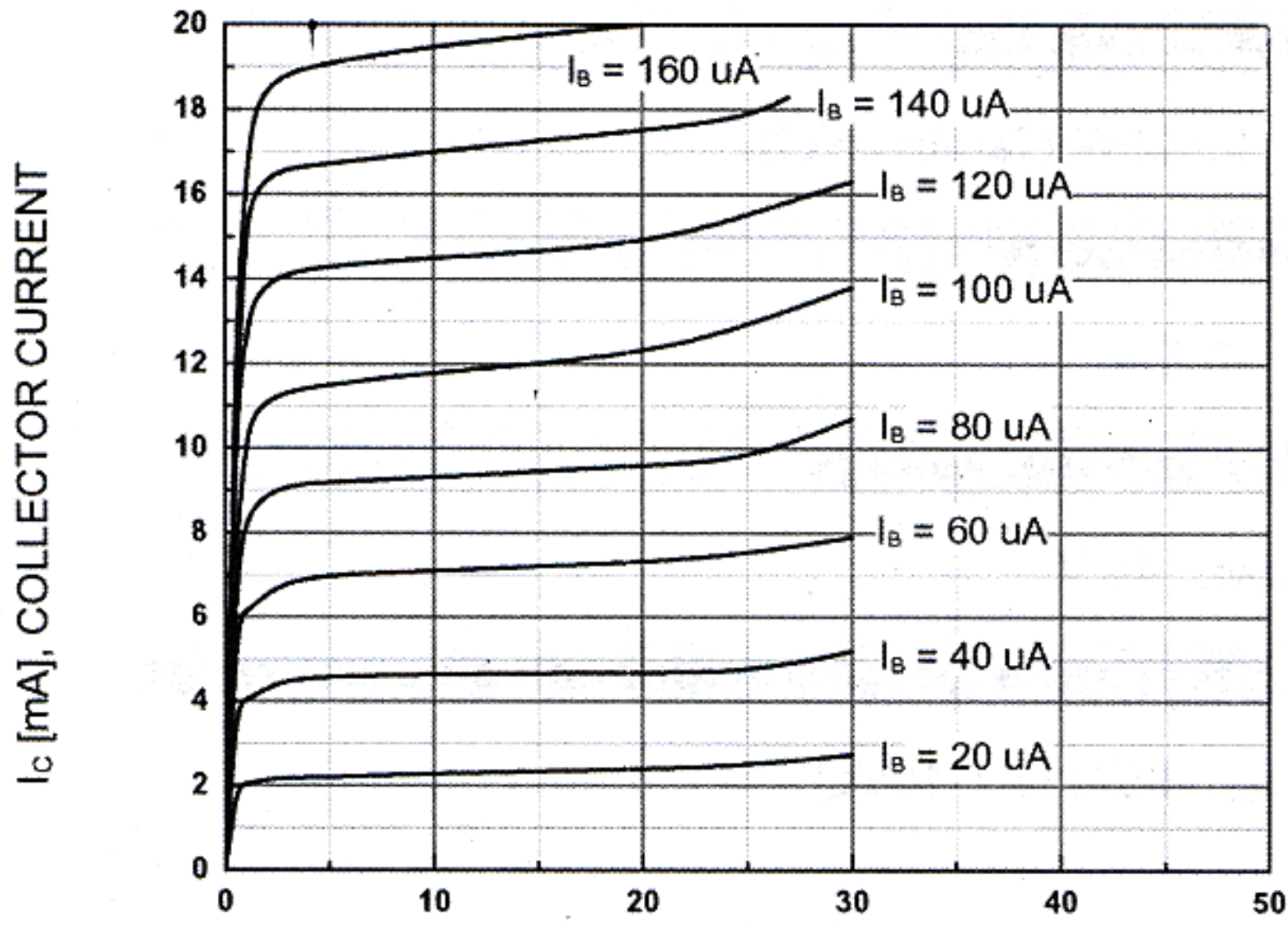
ELECTRICAL CHARACTERISTICS

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

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = 100 \mu A, I_E = 0$	45		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 0.1 mA, I_B = 0$	25		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = 100 \mu A, I_C = 0$	5		V
Collector cut-off current	I_{CBO}	$V_{CB} = 40 V, I_E = 0$		0.1	μA
Collector cut-off current	I_{CEO}	$V_{CE} = 20 V, I_B = 0$		0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 5 V, I_C = 0$		0.1	μA
DC current gain	$h_{FE(1)}$	$V_{CE} = 1 V, I_C = 50 mA$	64	300	
	$h_{FE(2)}$	$V_{CE} = 1 V, I_C = 500 mA$	40		
Collector-emitter saturation voltage	V_{CEsat}	$I_C = 500 mA, I_B = 50 mA$		0.6	V
Base-emitter saturation voltage	V_{BEsat}	$I_C = 500 mA, I_B = 50 mA$		1.2	V
Base-emitter voltage	V_{BE}	$I_E = 100 mA$		1.4	V
Transition frequency	f_T	$V_{CE} = 6 V, I_C = -20 mA$ $f = 30 MHz$	150		MHz

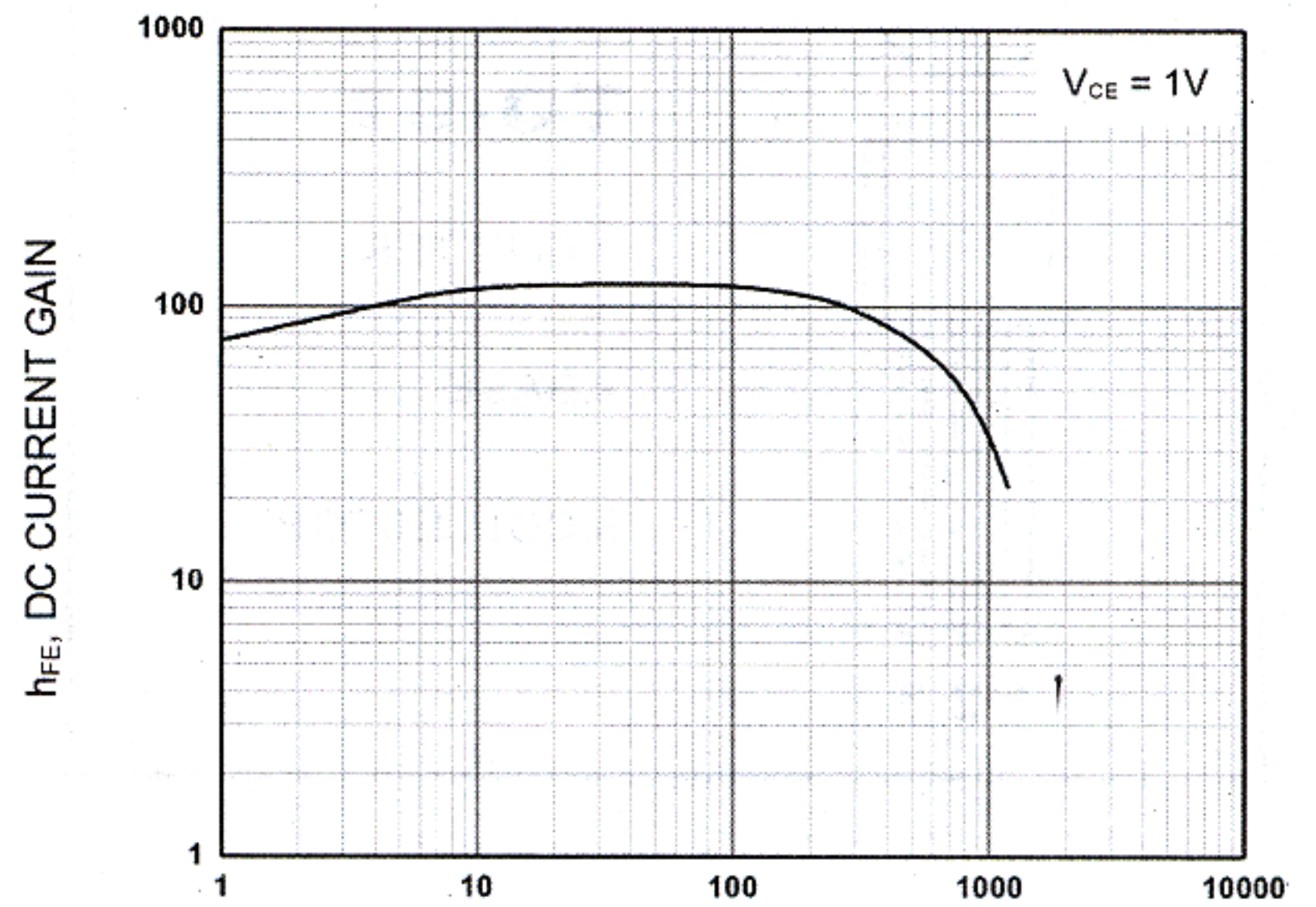
CLASSIFICATION OF $h_{FE(1)}$

Rank	D	E	F	G	H	I
Range	64-91	78-112	96-135	112-166	144-202	190-300



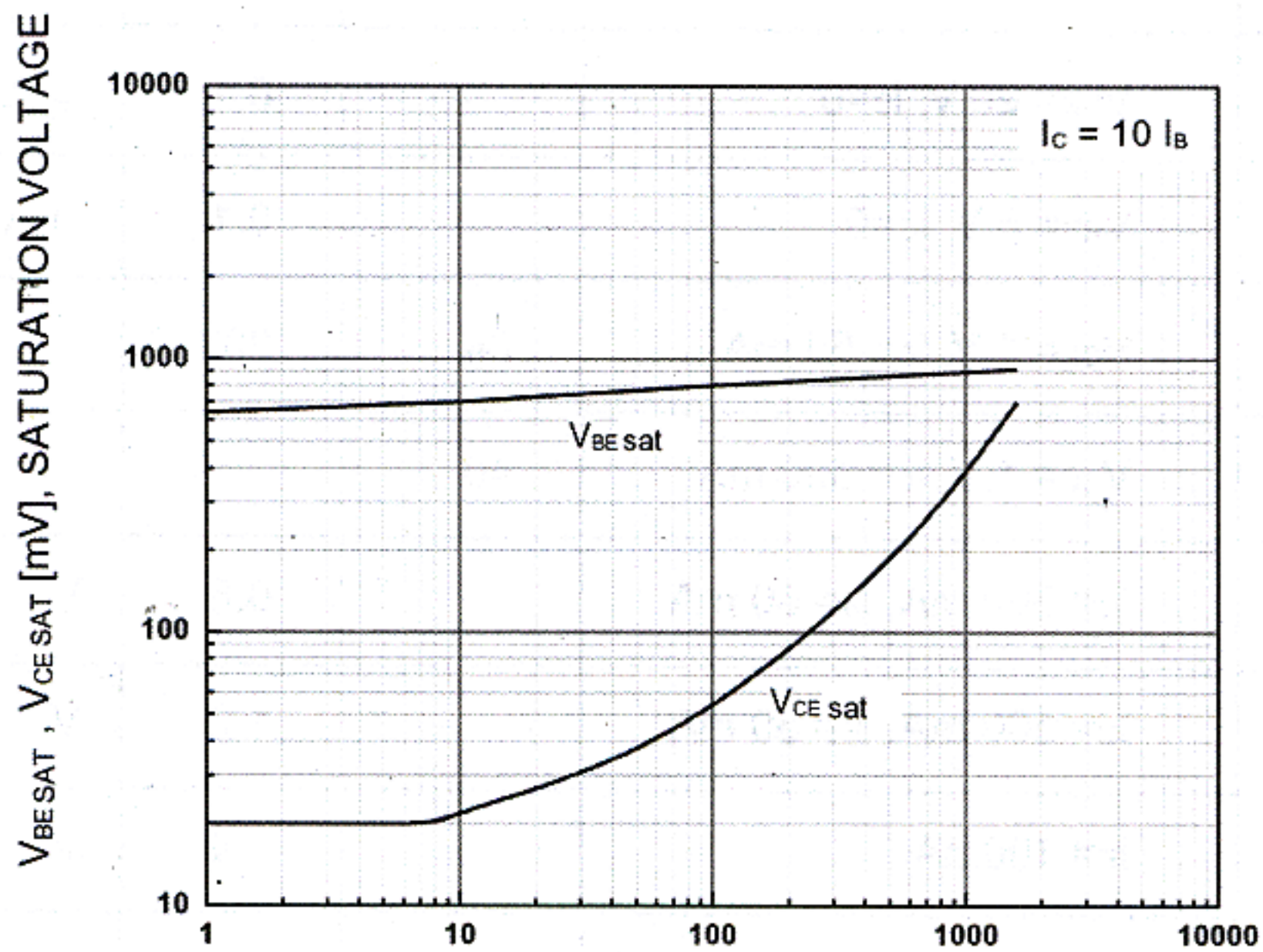
V_{CE} [V], COLLECTOR-EMITTER VOLTAGE

Static Characteristic



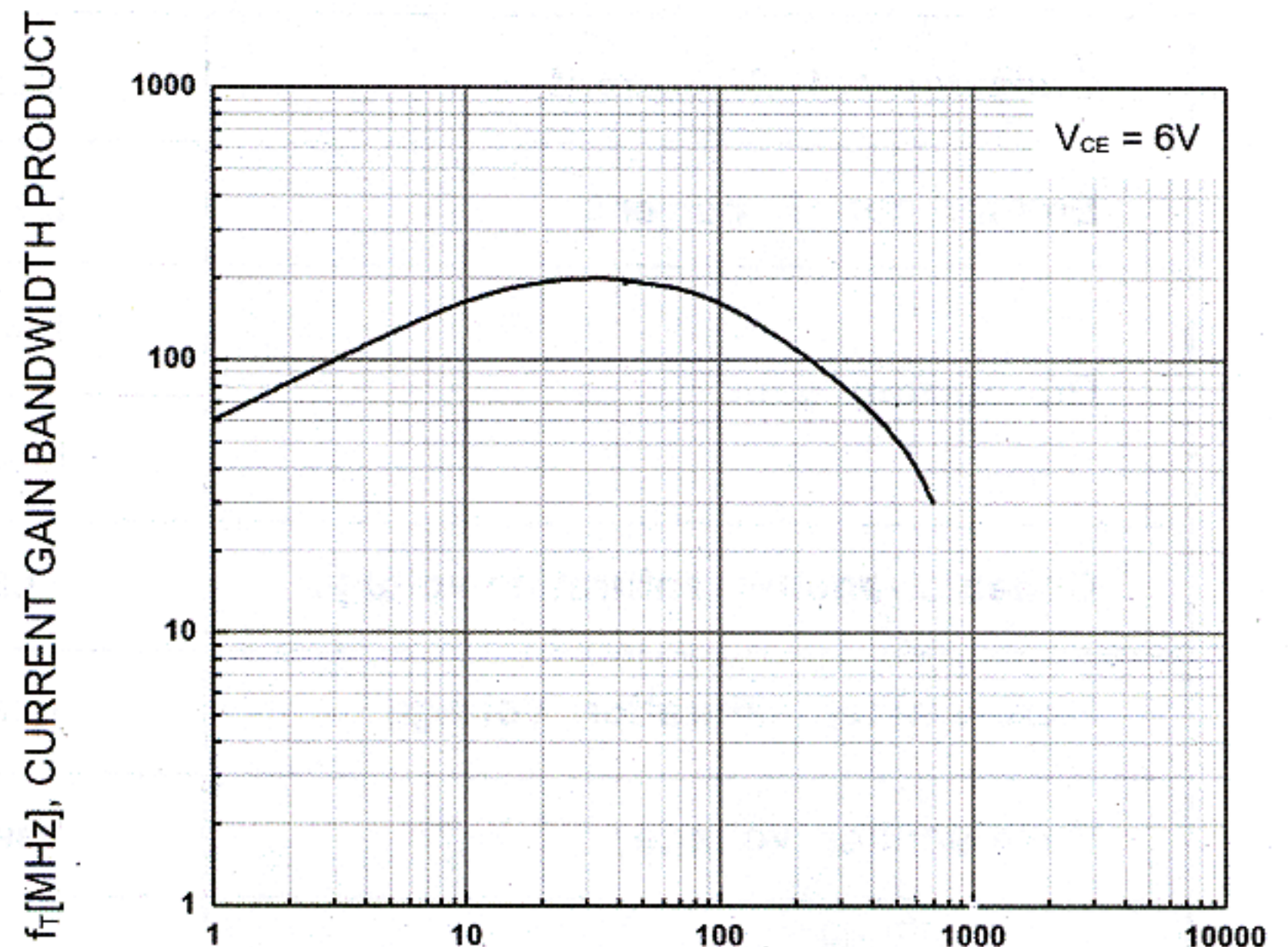
I_c [mA], COLLECTOR CURRENT

DC current Gain



I_c [mA], COLLECTOR CURRENT

**Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage**



I_c [mA], COLLECTOR CURRENT

Current Gain Bandwidth Product