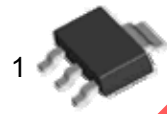


TRANSISTOR (NPN)

FEATURES

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCP51 ... BCP53 (PNP)

SOT-223



1. BASE
2. COLLECTOR
3. EMITTER

MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	BCP54	BCP55	BCP56	Units
V_{CBO}	Collector-Base Voltage	45	60	100	V
V_{CEO}	Collector-Emitter Voltage	45	60	80	V
V_{EBO}	Emitter-Base Voltage		5		V
I_C	Collector Current -Continuous		1		A
P_C	Collector Power Dissipation		1.5		W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient		94		$^{\circ}\text{C/W}$
T_{stg}	Storage Temperature Range		-65to+150		$^{\circ}\text{C}$

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

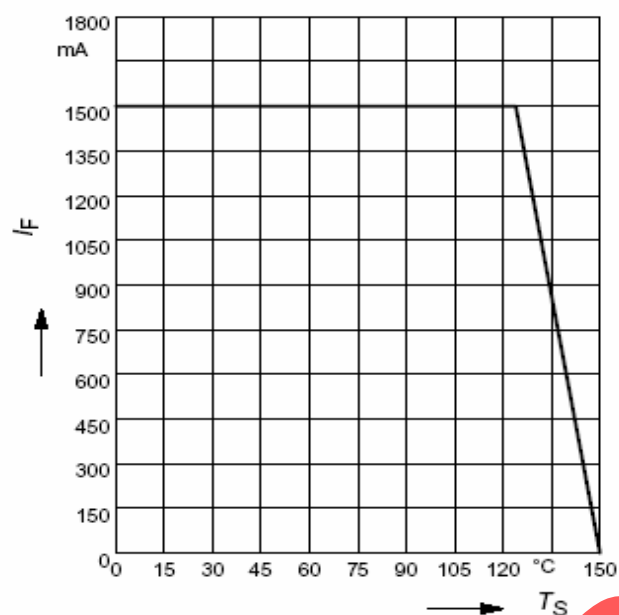
Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = 0.1\text{mA}, I_E = 0$	45 60 100		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}, I_B = 0$	45 60 80		V
Base-emitter breakdown voltage	$V_{(BR)EBO}$	$I_C = 10\mu\text{A}, I_E = 0$	5		V
Collector cut-off current	I_{CBO}	$V_{CB} = 30\text{V}, I_E = 0$		100	nA
DC current gain	$h_{FE(1)}$	$V_{CE} = 2\text{V}, I_C = 5\text{mA}$	25		
	$h_{FE(2)}$	$V_{CE} = 2\text{V}, I_C = 150\text{mA}$	63	250	
	$h_{FE(3)}$	$V_{CE} = 2\text{V}, I_C = 500\text{mA}$	25		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 500\text{mA}, I_B = 50\text{mA}$		0.5	V
Base-emitter voltage	V_{BE}	$V_{CE} = 2\text{V}, I_C = 500\text{mA}$		1	V
Transition frequency	f_T	$V_{CE} = 10\text{V}, I_C = 50\text{mA}, f = 100\text{MHz}$	100		MHz

CLASSIFICATION OF $h_{FE(2)}$

Rank	BCP54-10, BCP55-10, BCP56-10	BCP54-16, BCP55-16, BCP56-16
Range	63-160	100-250

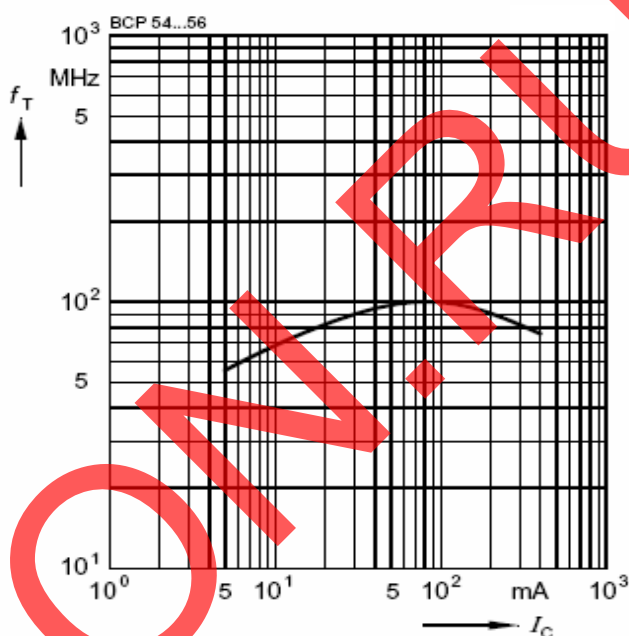
Typical Characteristics

Total power dissipation $P_{\text{tot}} = f(T_S)$



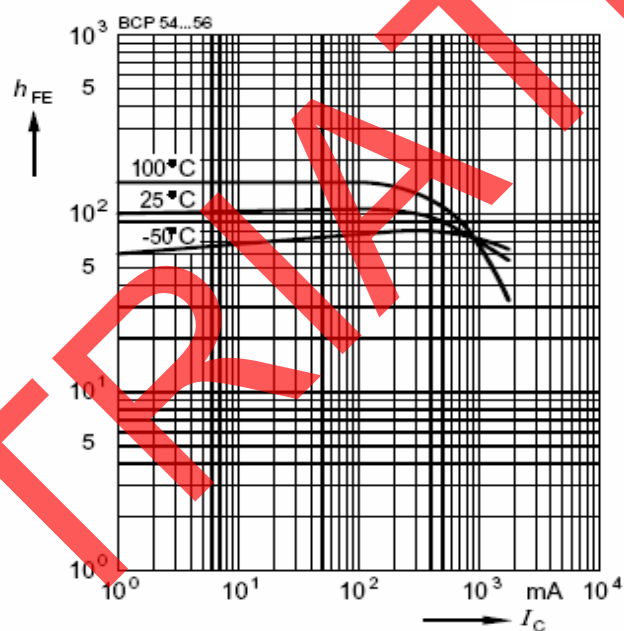
Transition frequency $f_T = f(I_C)$

$V_{CE} = 10V$



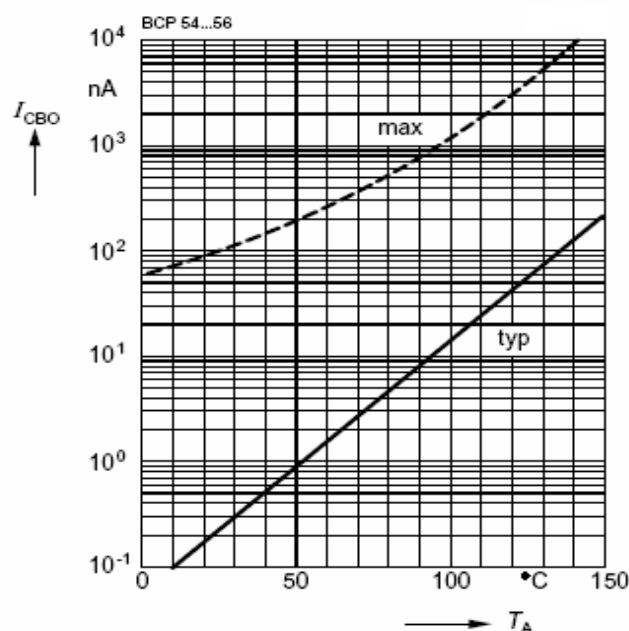
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 2V$



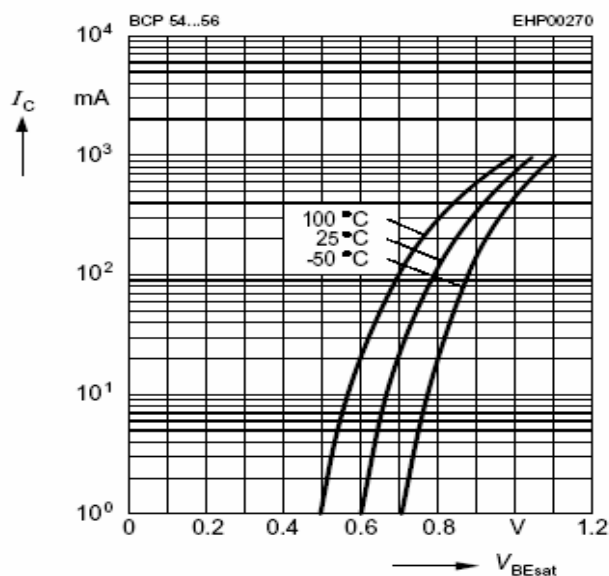
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = 30V$



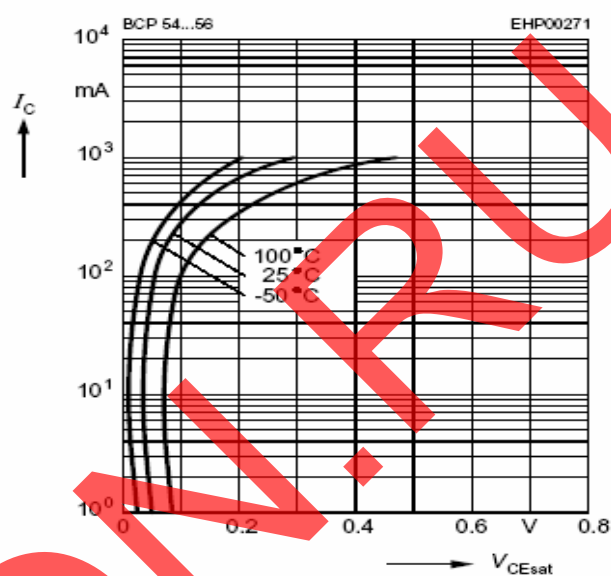
Base-emitter saturation voltage

$$I_C = f(V_{BEsat}), h_{FE} = 10$$



Collector-emitter saturation voltage

$$I_C = f(V_{CEsat}), h_{FE} = 10$$



Permissible pulse load

$$P_{totmax} / P_{totDC} = f(t_p)$$

