

TRANSISTOR (NPN)

SOT-223 Plastic-Encapsulate Transistors

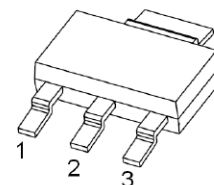
FEATURES

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCP51 ... BCP53 (PNP)
- AEC-Q101 qualified (Automotive grade with suffix "Q")
- Expsemi electronics

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

Symbol	Parameter	BCP54	BCP55	BCP56	Unit
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	83.3			$^{\circ}\text{C}/\text{W}$
T_J	Junction Temperature	$-55\sim+150$			$^{\circ}\text{C}$
T_{stg}	Storage Temperature Range	$-65\sim+150$			$^{\circ}\text{C}$

SOT-223



1. BASE
2. COLLECTOR
3. EMITTER

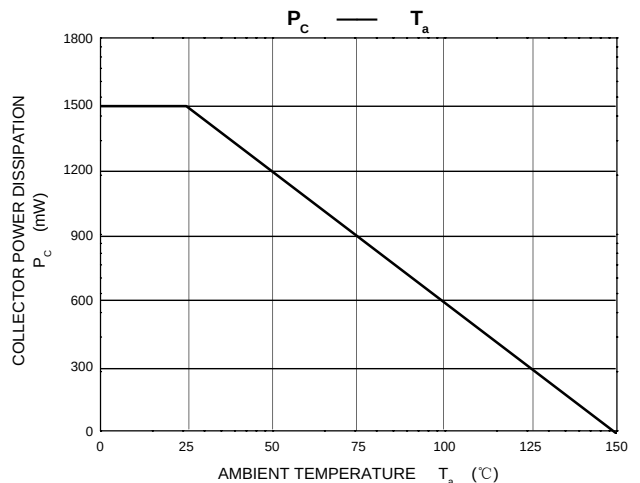
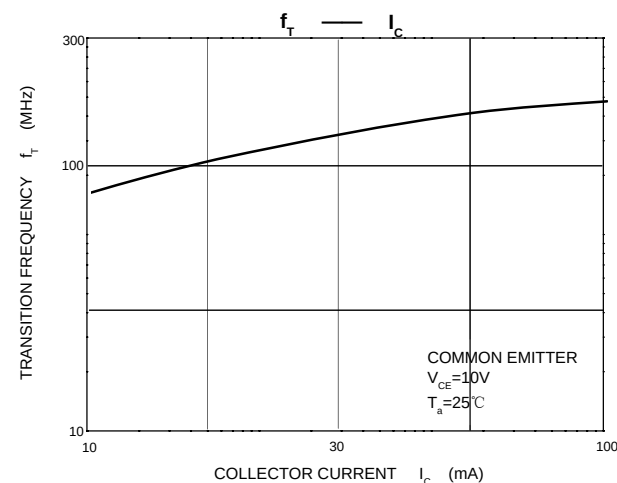
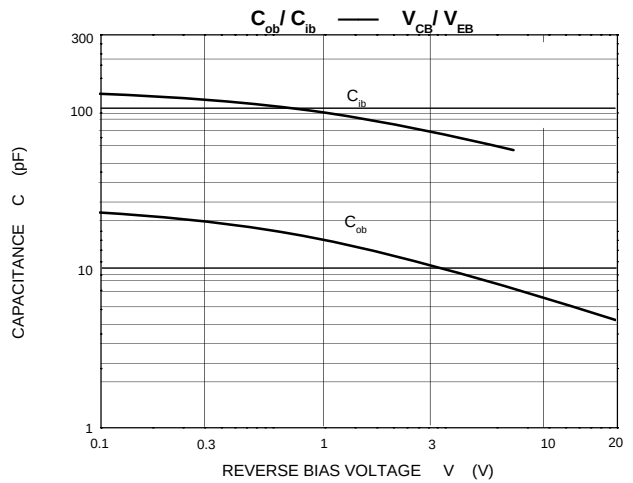
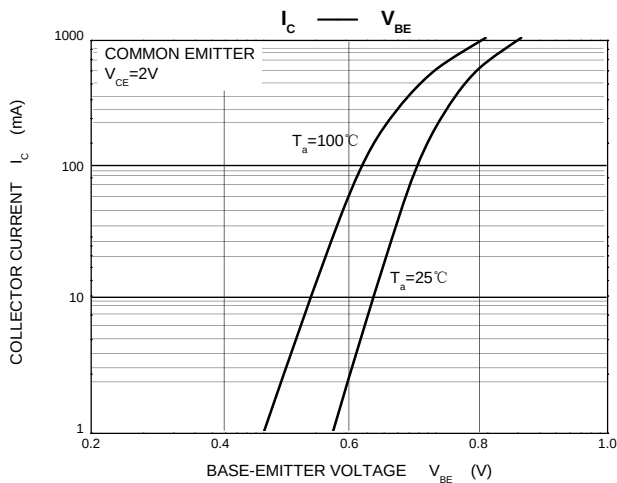
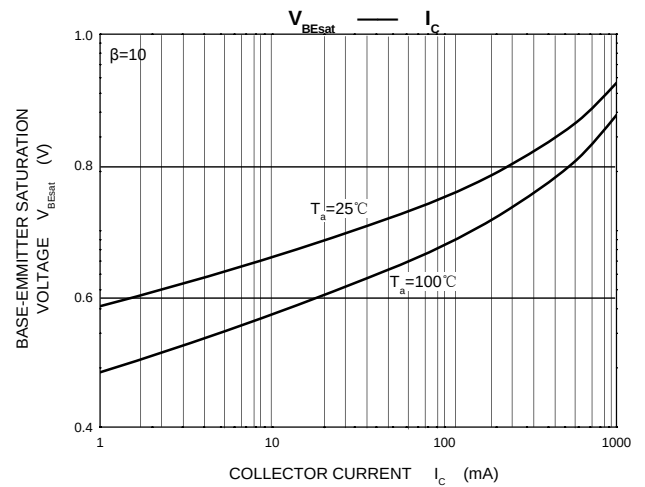
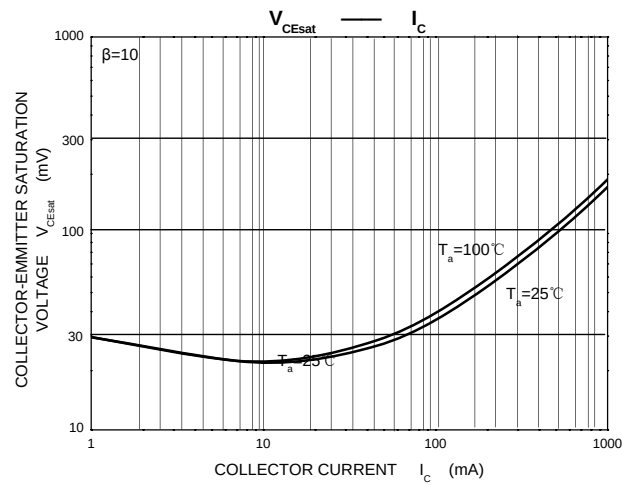
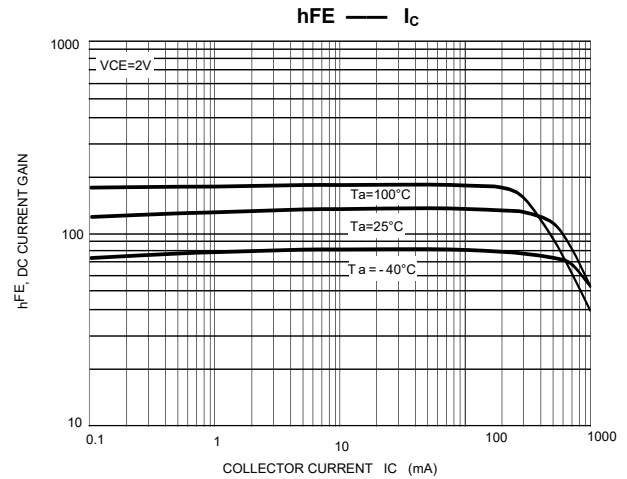
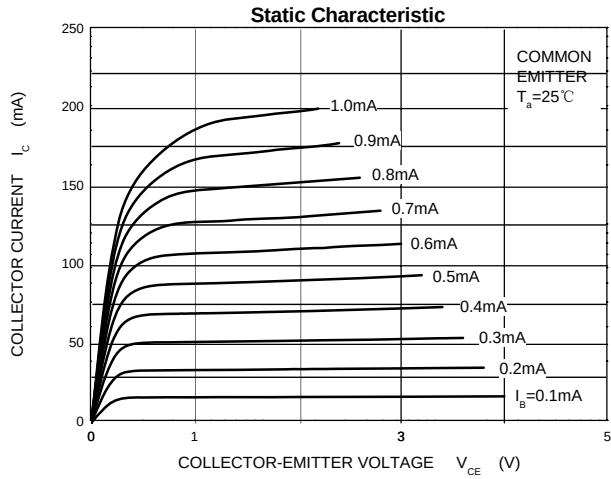
ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	BCP54 BCP55 BCP56 $V_{(BR)CBO}$	$I_C = 0.1\text{mA}, I_E = 0$	45 60 100		V
Collector-emitter breakdown voltage	BCP54 BCP55 BCP56 $V_{(BR)CEO}$	$I_C = 10\text{mA}, I_B = 0$	45 60 80		V
Base-emitter breakdown voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}, I_C = 0$	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

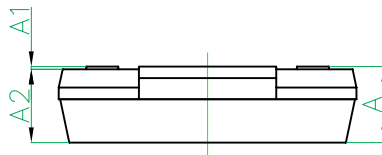
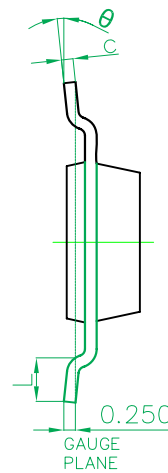
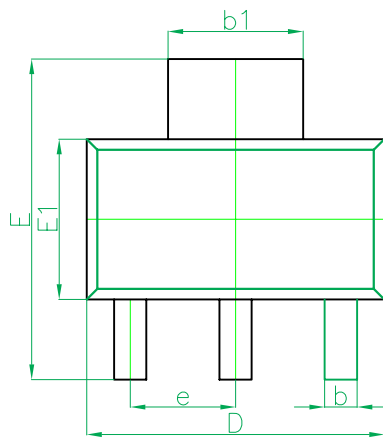
CLASSIFICATION OF $h_{FE(2)}$

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

Typical Characteristics

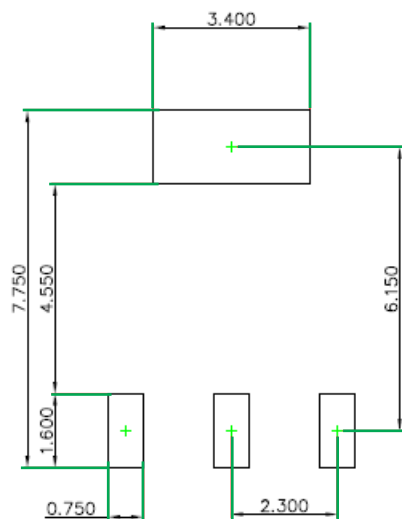


SOT-223 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	—	1.800	—	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b_1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E1	3.300	3.700	0.130	0.146
e	2.300(BSC)		0.091(BSC)	
L	0.750	—	0.030	—
θ	0°	10°	0°	10°

SOT-223 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.050\text{mm}$.
3. The pad layout is for reference purposes only.

Ordering information

Device	Package	Reel
BCP54 55 56	SOT-223	2500/Tape