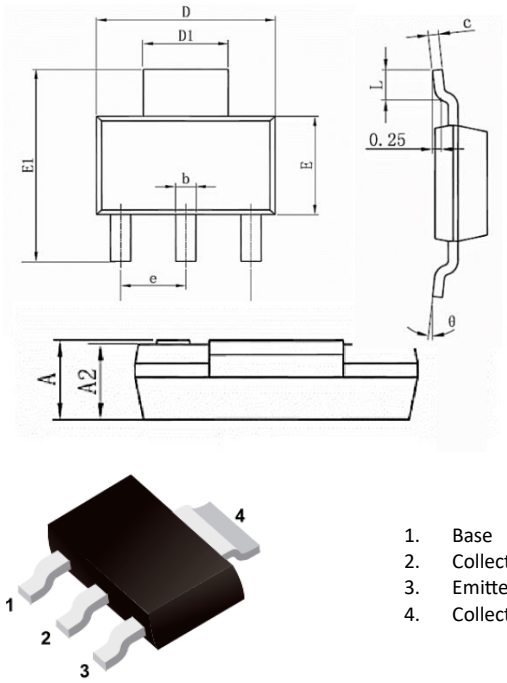
NPN Transistors

Primary characteristics			
Symbol	**Parameter**	**Value**	**Unit**
V_{CBO}	Collector-base voltage	40 ~ 100	V
V_{CEO}	Collector-emitter voltage	45 ~ 80	V
V_{EBO}	Emitter-base voltage	5.0	V
P_C	Collector power dissipation	1.5	W

Features

- **SOT-223** case for easy automatic insertion.
- Pb-free and **RoHS** compliant
- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary to BCP51, BCP52, BCP53

Case dimensions



1. Base
2. Collector
3. Emitter
4. Collector

SOT-223

Unit	A	A2	b	c	D	D1	E	e	e1	L	e
mm	1.66 ±0.14	1.6 ±0.1	0.74 ±0.08	0.30 ±0.05	6.3 ±0.1	3.0 ±0.1	3.5 ±0.2	2.3 (BSC)	4.6 ±0.1	1.0 +0.15 -0.10	5° ±5

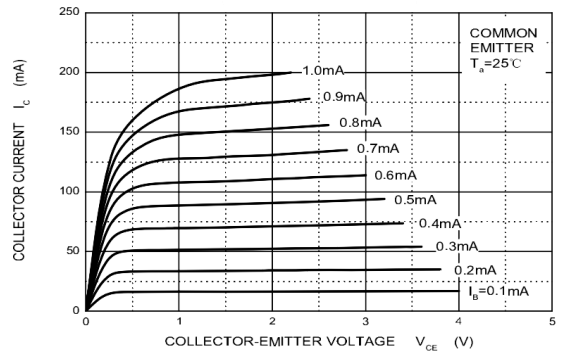
Part numbering system			
BCP5	**6**	**-**	**16**
↓	↓		↓
Series code	V_{CBO} classification (see: Absolute maximum ratings)		h_{FE} classification (see: Characteristics)

Absolute maximum ratings (T_a = 25°C)				
Parameter		**Symbol**	**Value**	**Unit**
Collector-base voltage	BCP54	V_{CBO}	45	V
	BCP55		60	
	BCP56		100	
Collector-emitter voltage	BCP54	V_{CEO}	45	V
	BCP55		60	
	BCP56		80	
Emitter-base voltage	BCP54, BCP55, BCP56	V_{EBO}	5.0	V
Collector current		I_C	1.0	A
Power dissipation		P_C	1.5	W
Thermal resistance junction to ambient		$R_{\theta JA}$	83.3	°C/W
Junction temperature		T_J	150	°C
Storage temperature range		T_{STG}	-65 ~ 150	

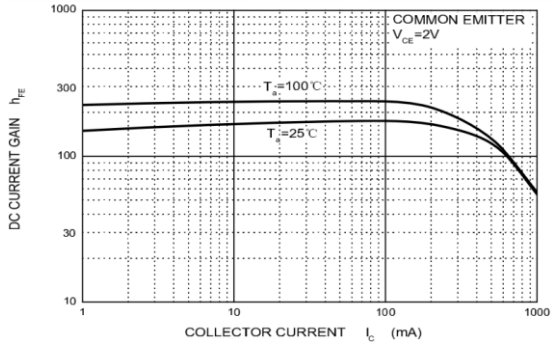
Characteristics (T_a = 25°C)							
Parameter		**Symbol**	**Test conditions**	**Value**			**Unit**
				Min	**Typ.**	**Max**	
DC current gain	$h_{FE(1)}$	h_{FE}	V_{CE}=2.0V, I_C=5.0mA	25	-	-	-
	$h_{FE(2)}$		V_{CE}=2.0V, I_C=150mA	63	-	250	
	$h_{FE(3)}$		V_{CE}=2.0V, I_C=500mA	25	-	-	
Classification of h_{FE}	BCP5x-10		-	63	-	160	
	BCP5x-16		-	100	-	250	
Collector-base cutoff current	BCP54	I_{CBO}	V_{CB}=45V, I_E=0	-	-	100	nA
	BCP55		V_{CB}=60V, I_E=0	-	-		
	BCP56		V_{CB}=100V, I_E=0	-	-		
Collector-base breakdown voltage	BCP54	$V_{(BR)CBO}$	I_C=100μA, I_E=0	45	-	-	V
	BCP55			60	-	-	
	BCP56			100	-	-	
Collector-emitter breakdown voltage	BCP54	$V_{(BR)CEO}$	I_C=10mA, I_B=0	45	-	-	V
	BCP55			60	-	-	
	BCP56			80	-	-	
Emitter-base breakdown voltage		$V_{(BR)EBO}$	I_E=100μA, I_C=0	5.0	-	-	V
Collector-emitter saturation voltage		$V_{CE(sat)}$	I_C=500mA, I_B=50mA	-	-	500	mV
Base-emitter saturation voltage		$V_{BE(sat)}$	I_C=500mA, I_B=50mA	-	-	1.2	V
Base emitter voltage		V_{BE}	V_{CE}=2.0V, I_C=500mA	-	-	1.0	V
Transition frequency		f_T	V_{CE}=10V, I_C=50mA, f=100MHz	100	-	-	MHz

Typical characteristics

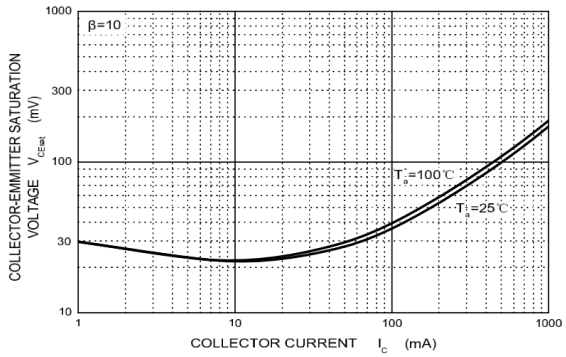
Static characteristic



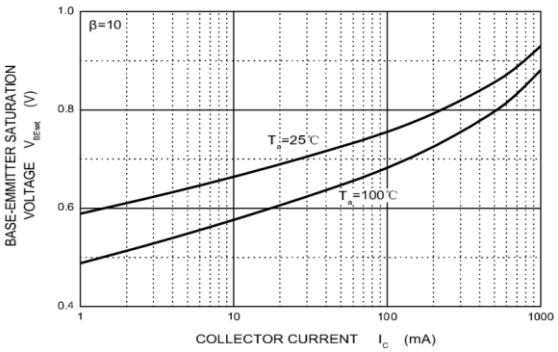
h_{FE} vs. I_C



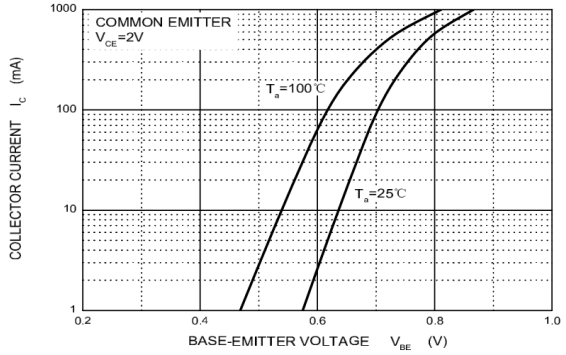
$V_{CE(sat)}$ vs. I_C



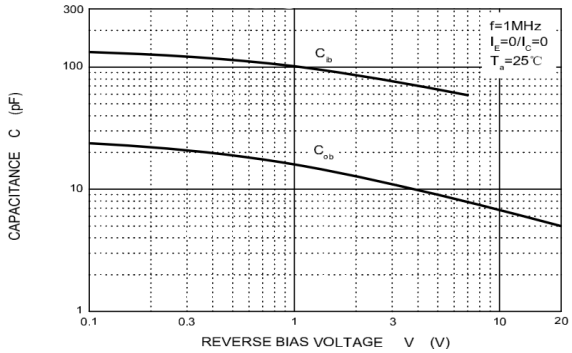
$V_{BE(sat)}$ vs. I_C



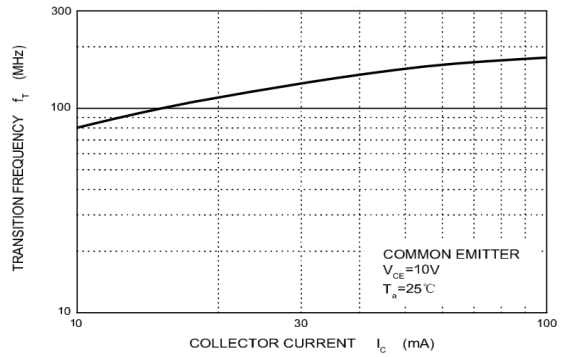
I_C vs. V_{BE}



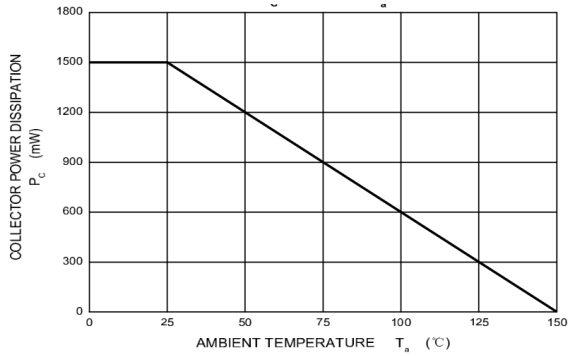
C_{ob}/C_{ib} vs. V_{CB}/V_{EB}



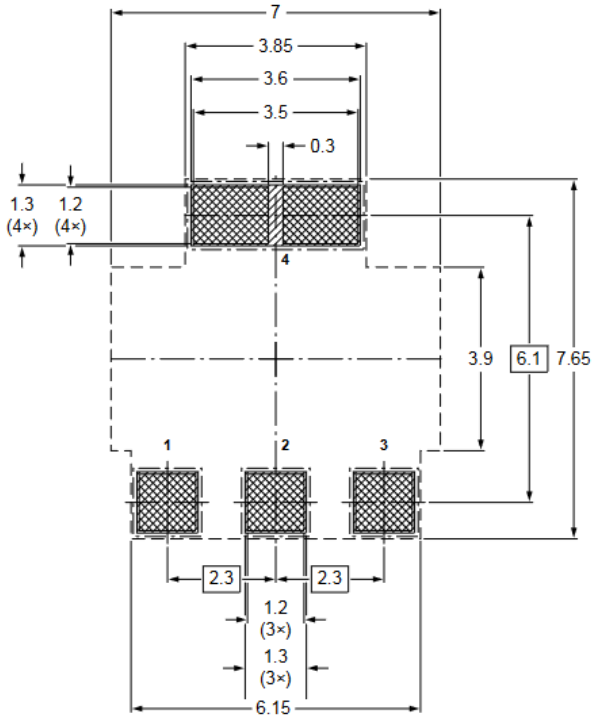
f_T vs. I_C



P_C vs. T_a



Suggested soldering pad layout



SOT-223

Ordering information			
Part Number	**Package**	**Shipping Quantity**	**Dimensions**
BCP54 ~ BCP56	SOT-223	**1000 pcs / reel**	---

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