

BCP51-10 / 16 Thru BCP53-10 / 16**List**

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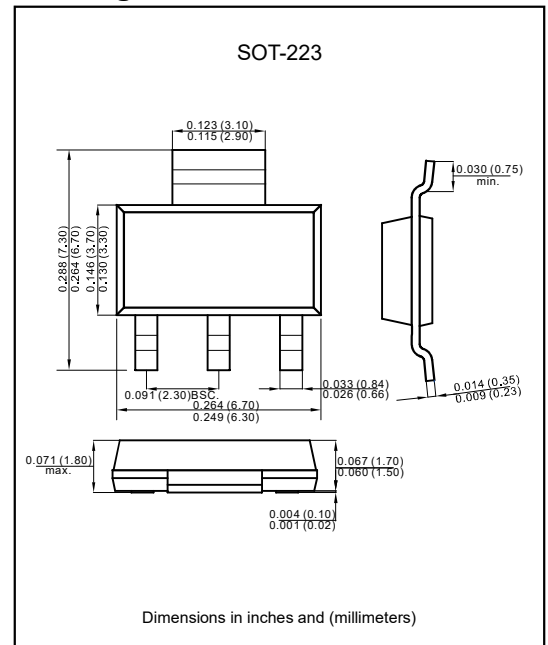
**1.0A -45V / -60V / -80V General Purpose
Transistor PNP Silicon**

Features

- For AF driver and output stages.
- High collector current.
- Low collector-emitter saturation voltage.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex.BCP51-10-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, SOT-223.
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026.
- Mounting Position : Any.
- Weight : Approximated 0.1171 gram.

Package outline**Maximum ratings** (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	BCP51	BCP52	BCP53	Unit
Collector-base voltage	$-V_{CBO}$	45	60	100	V
Collector-emitter voltage	$-V_{CEO}$	45	60	80	V
Emitter-base voltage	$-V_{EBO}$	5			V
Collector current -continuous	$-I_C$	1			A
Peak pulse collector current	$-I_{CM}$	2			A
Base current-continuous	$-I_B$	100			mA
Peak pulse base current	$-I_{BM}$	200			mA
Collector power dissipation	P_C	1.5			W
Thermal resistance,junction to ambient	$R_{\theta JA}$	94			$^{\circ}\text{C/W}$
Operation junction temperature	T_J	+150			$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-55 to +150			$^{\circ}\text{C}$

BCP51-10 / 16 Thru BCP53-10 / 16**Electrical characteristics** (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Off characteristics						
Collector-emitter breakdown voltage	BCP51	$-I_C = 10\text{mA}, I_B = 0$	$-V_{(BR)CEO}$	45		V
	BCP52			60		
	BCP53			80		
Collector-base breakdown voltage	BCP51	$-I_C = 0.1\text{mA}, I_E = 0$	$-V_{(BR)CBO}$	45		V
	BCP52			60		
	BCP53			100		
Base-emitter breakdown voltage	$-I_E = 10\mu\text{A}, I_C = 0$	$-V_{(BR)EBO}$	5			V
Collector-base cutoff current	$-V_{CB} = 30\text{V}, I_E = 0$	$-I_{CBO}$			100	nA

On characteristics

DC current gain	$-I_C = 5\text{mA}, -V_{CE} = 2.0\text{V}$	h_{FE1}	25			
	$-I_C = 150\text{mA}, -V_{CE} = 2.0\text{V}$	h_{FE2}	63		250	
	$-I_C = 500\text{mA}, -V_{CE} = 2.0\text{V}$	h_{FE3}	25			
Collector-emitter saturation voltage	$-I_C = 500\text{mA}, -I_B = 50\text{mA}$	$-V_{CE(sat)}$			0.5	V
Base-emitter voltage	$-I_C = 500\text{mA}, -V_{CE} = 2.0\text{V}$	$-V_{BE}$			1.0	V

Small-signal characteristics

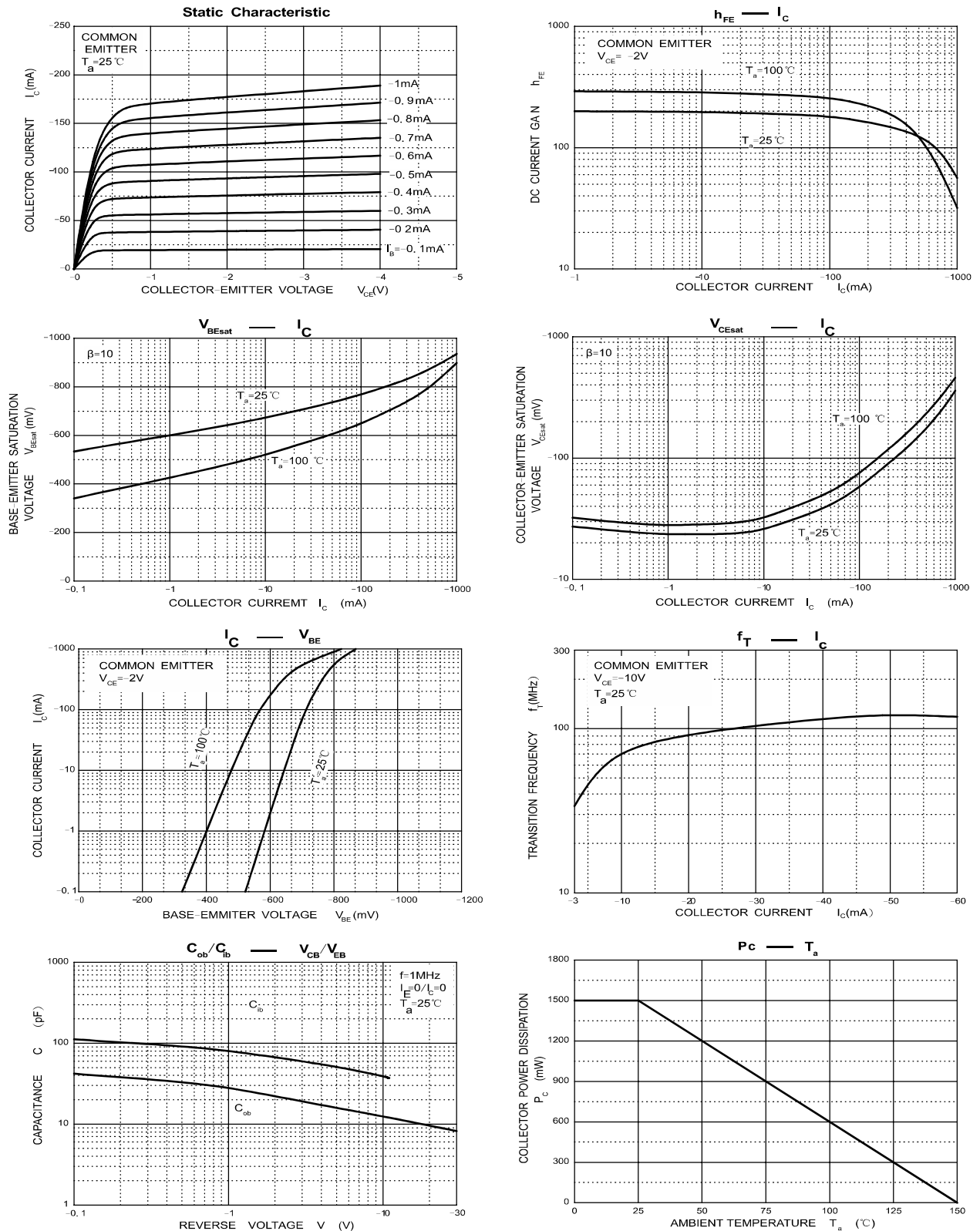
Transition frequency	$-I_C = 50\text{mA}, -V_{CE} = 10\text{V}, f = 100\text{MHz}$	f_T	100			MHZ
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Classification of $h_{FE(2)}$

Rank	BCP51-10, BCP52-10, BCP53-10	BCP51-16, BCP52-16, BCP53-16
Range	63~160	100~250

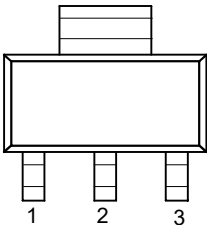
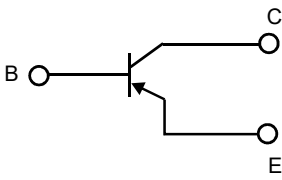
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Rating and characteristic curves



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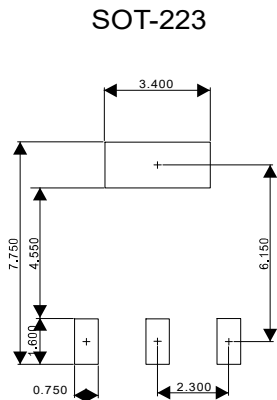
Pinning information

Pin	Simplified outline	Symbol
Pin 1 Base Pin 2 Collector Pin 3 Emitter		

Marking

Type number	Marking code
BCP51-10	BCP51-10
BCP52-10	BCP52-10
BCP53-10	BCP53-10
BCP51-16	BCP51-16
BCP52-16	BCP52-16
BCP53-16	BCP53-16

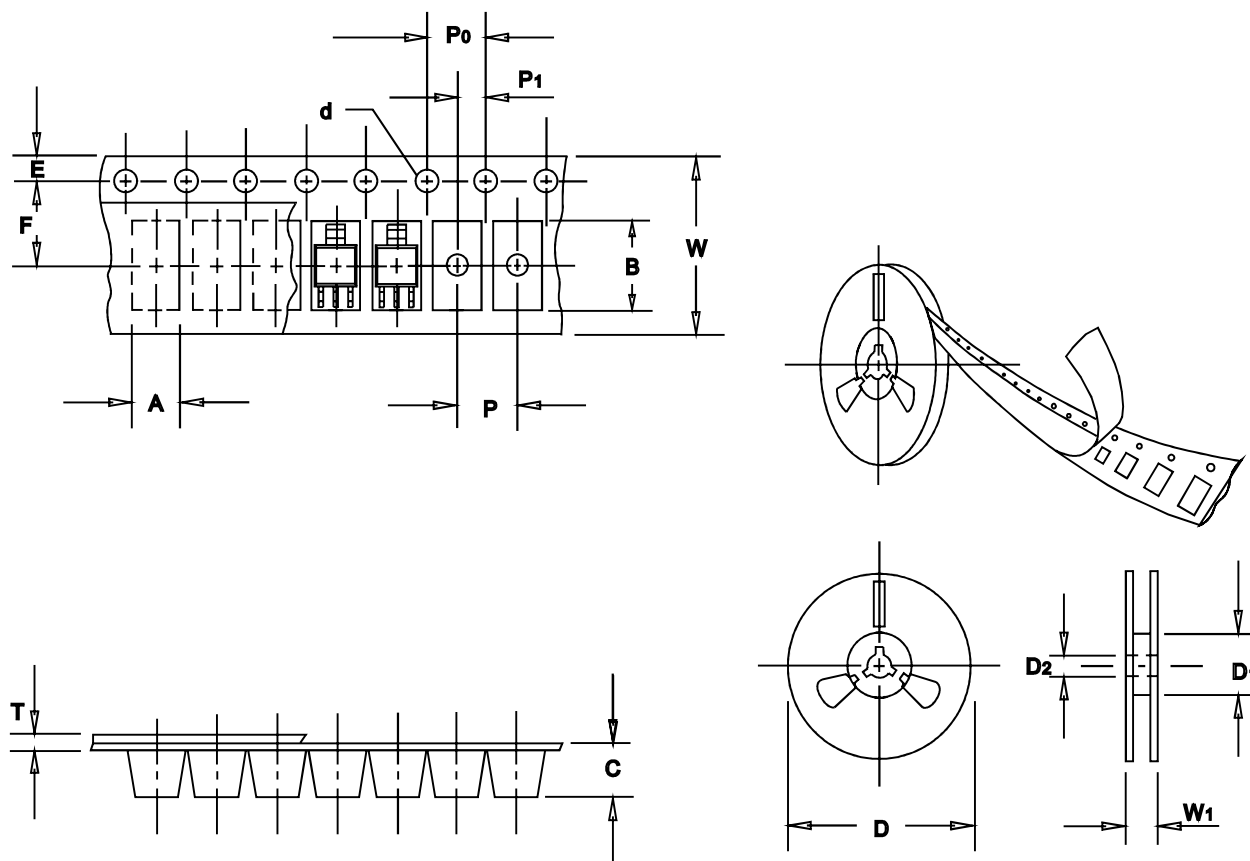
Suggested solder pad layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.050mm.
3.The pad layout is for reference purposes only

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-223
Carrier width	A	0.1	6.765
Carrier length	B	0.1	7.335
Carrier depth	C	0.1	1.88
Sprocket hole	d	0.1	1.50
13° Reel outside diameter	D	2.0	330.00
13° Reel inner diameter	D1	min	100.00
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.50
Punch hole pitch	P	0.1	8.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.29
Tape width	W	0.3	12.00
Reel width	W1	0.3	17.60

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

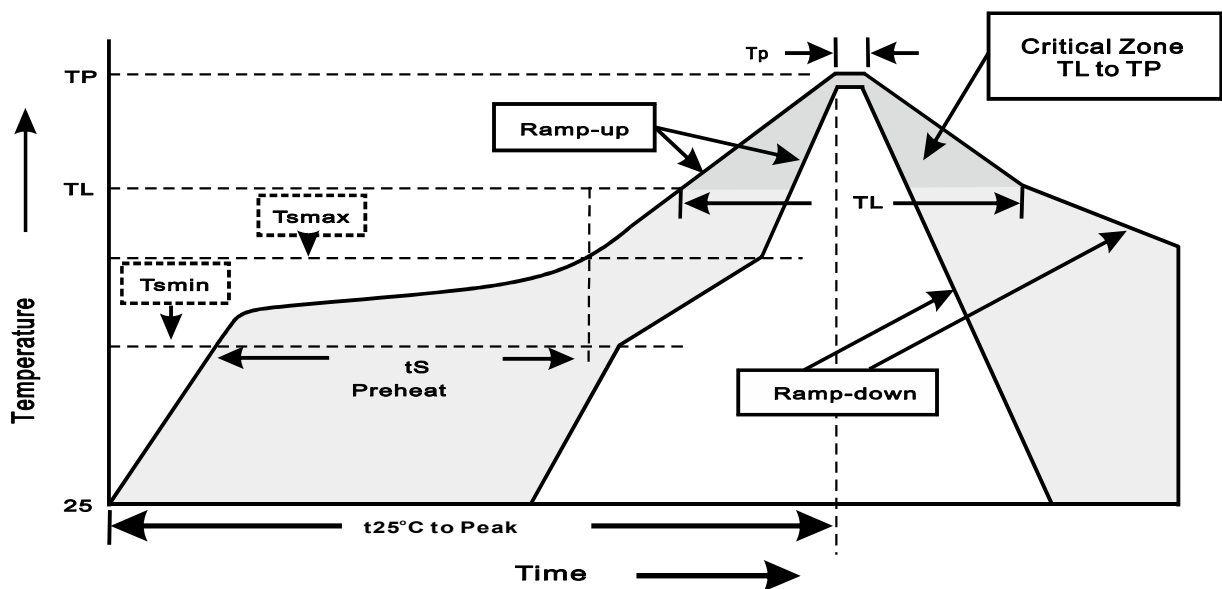
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Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)
SOT-223	13"	2,500	8.0	5,000	335*335*38	330	350*330*360	40,000

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{smín}) -Temperature Max(T _{smáx}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smáx} to T _L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217°C 60~260sec
Peak Temperature(T _P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t _P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes