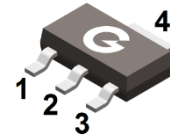
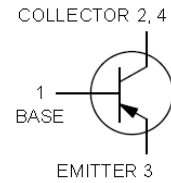


Features

- High collector current
- Low collector-emitter saturation voltage
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 Standards

HF



SOT-223

Mechanical Data

- Case: SOT-223
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
TBCP51	SOT-223	4000 pcs / Tape & Reel	AA
TBCP51-10	SOT-223	4000 pcs / Tape & Reel	AC
TBCP51-16	SOT-223	4000 pcs / Tape & Reel	AD
TBCP52	SOT-223	4000 pcs / Tape & Reel	AE
TBCP52-10	SOT-223	4000 pcs / Tape & Reel	AG
TBCP52-16	SOT-223	4000 pcs / Tape & Reel	AM
TBCP53	SOT-223	4000 pcs / Tape & Reel	AH
TBCP53-10	SOT-223	4000 pcs / Tape & Reel	AK
TBCP53-16	SOT-223	4000 pcs / Tape & Reel	AL

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	TBCP51	TBCP52	TBCP53	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
Continuous Collector Current	I _C	-1			A
Peak Collector Current (t _p ≤ 1ms)	I _{CM}	-2			A
Power Dissipation (T _A = 25°C) *1	P _D	2			W
Operating junction Temperature	T _J	-55 ~ +150			°C
Storage Temperature Range	T _{STG}	-55 ~ +150			°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	60	$^{\circ}C/W$
Thermal Resistance Junction-to-Case *1	$R_{\theta JC}$	25	$^{\circ}C/W$
Thermal Resistance Junction-to-Lead *1	$R_{\theta JL}$	20	$^{\circ}C/W$

Note 1: The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper

Electrical Characteristics (@ $T_A = 25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -100\mu A, I_E = 0$ TBCP51 TBCP52 TBCP53	-45 -60 -100	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -10mA, I_B = 0$ TBCP51 TBCP52 TBCP53	-45 -60 -80	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -10\mu A, I_C = 0$	-5	-	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = -30V, I_E = 0$	-	-	-100	nA
DC Current Gain	h_{FE}	$V_{CE} = -2V, I_C = -5mA$	25	-	-	-
		$V_{CE} = -2V, I_C = -150mA$ TBCP51/52/53	40	-	250	-
		TBCP51/52/53-10	63	-	160	-
		TBCP51/52/53-16	100	-	250	-
		$V_{CE} = -2V, I_C = -500mA$	25	-	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -500mA, I_B = -50mA$	-	-	-0.5	V
Base-Emitter Voltage	$V_{BE(on)}$	$I_C = -500mA, V_{CE} = -2V$	-	-	-1	V
Transition Frequency	f_T	$V_{CE} = -10V, I_C = -50mA$ $f = 20MHz$	-	125	-	MHz

Ratings and Characteristic Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

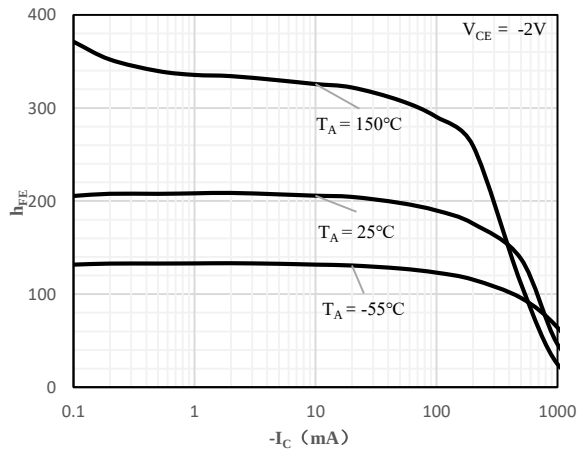


Fig 1 h_{FE} vs. I_C (TBCP51/52/53-16)

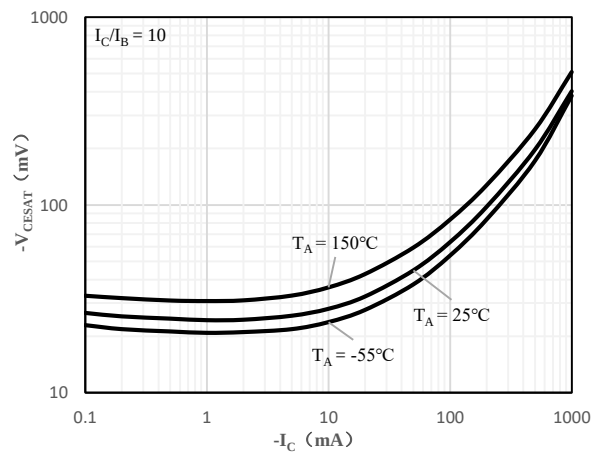


Fig 2 $V_{CE(sat)}$ vs. I_C

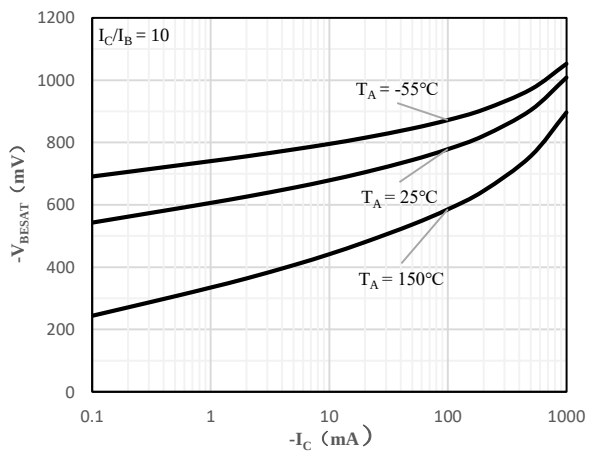


Fig 3 $V_{BE(sat)}$ vs. I_C

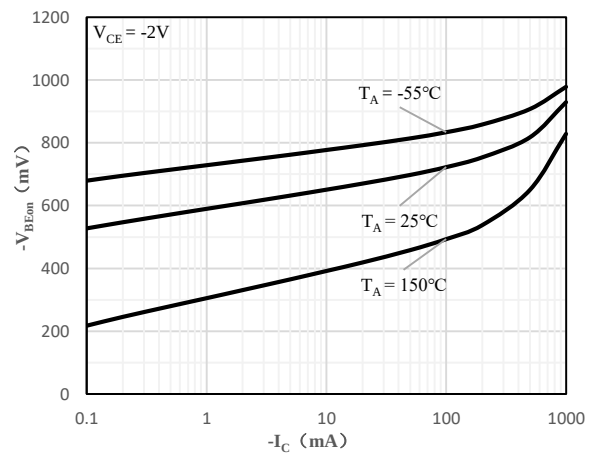


Fig 4 $V_{BE(on)}$ vs. I_C

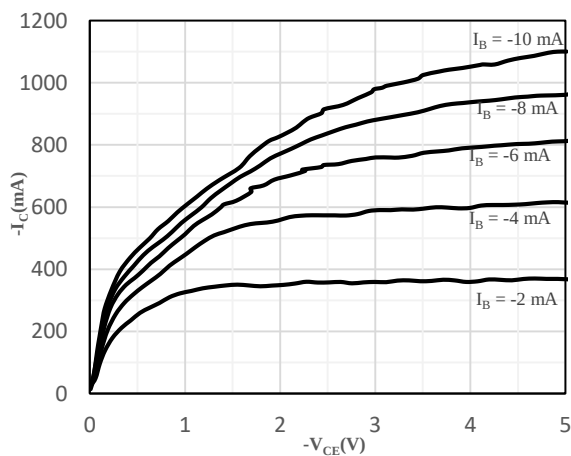


Fig 5 I_C vs. V_{CE}

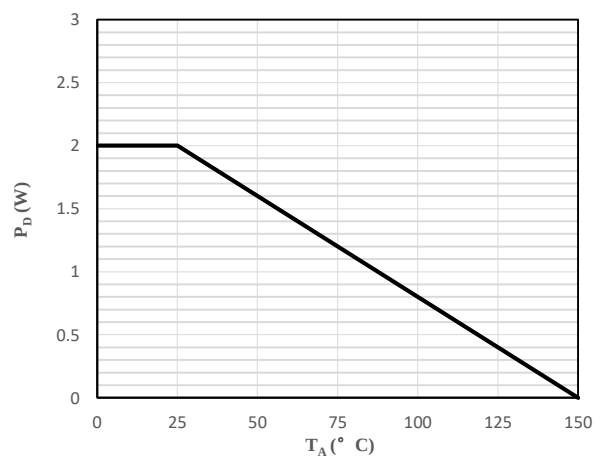
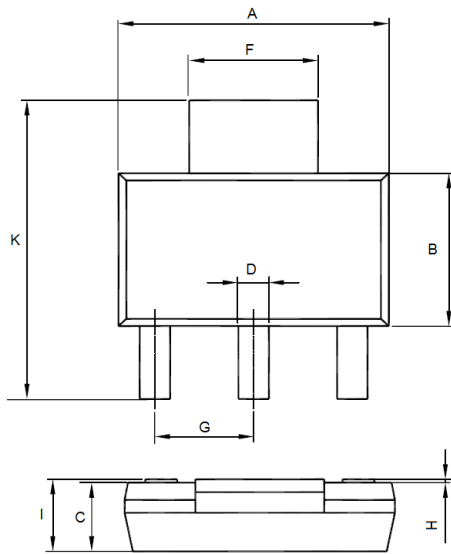


Fig 6 P_D vs. T_A

Package Outline Dimensions (Unit: mm)



SOT-223		
Dimension	Min.	Max.
A	6.10	6.50
B	3.30	3.70
C	1.50	1.70
D	0.66	0.82
E	0.90	1.15
F	2.90	3.10
G	2.20	2.40
H	0.02	0.10
I	1.52	1.80
J	0.20	0.40
K	6.70	7.30

Mounting Pad Layout (Unit: mm)

SOT-223

