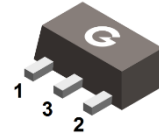
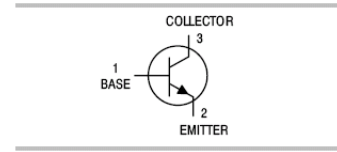


Features

- High collector current
- Low collector-emitter saturation voltage
- Complementary types: TBCX51/TBCX52/TBCX53
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 Standards

HF



SOT-89

Mechanical Data

- Case: SOT-89
- 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
TBCX54	SOT-89	1000 pcs / Tape & Reel	BA
TBCX54-10	SOT-89	1000 pcs / Tape & Reel	BC
TBCX54-16	SOT-89	1000 pcs / Tape & Reel	BD
TBCX55	SOT-89	1000 pcs / Tape & Reel	BE
TBCX55-10	SOT-89	1000 pcs / Tape & Reel	BG
TBCX55-16	SOT-89	1000 pcs / Tape & Reel	BM
TBCX56	SOT-89	1000 pcs / Tape & Reel	BH
TBCX56-10	SOT-89	1000 pcs / Tape & Reel	BK
TBCX56-16	SOT-89	1000 pcs / Tape & Reel	BL

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

Parameter	Symbol	TBCX54	TBCX55	TBCX56	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
Continuous Base Current	I _B	0.1			A
Peak Base Current (t _p ≤ 1ms)	I _{BM}	0.2			A
Power Dissipation (T _A = 25°C)	P _D	0.5			W
Ambient Temperature	T _A	-55 ~ +150			°C
Operating junction Temperature	T _J	-65 ~ +150			°C
Storage Temperature Range	T _{STG}	-65 ~ +150			°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-to-Air ^{*1}	R _{θJA}	168	°C/W
Thermal Resistance Junction-to-Case ^{*1}	R _{θJC}	72	°C/W
Thermal Resistance Junction-to-Lead ^{*1}	R _{θJL}	30	°C/W

Note 1: The data tested by surface mounted on a 15mm * 15mm * 1mm FR4-epoxy P.C.B

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _C = 100μA, I _E = 0				
		TBCX54	45	-	-	V
		TBCX55	60	-	-	
		TBCX56	100	-	-	
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C = 10mA, I _B = 0				
		TBCX54	45	-	-	V
		TBCX55	60	-	-	
		TBCX56	80	-	-	
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	I _E = 10μA, I _C = 0	5	-	-	V
Collector Cut-off Current	I _{CBO}	V _{CB} = 30V, I _E = 0, T _J = 25°C	-	-	100	nA
		V _{CB} = 30V, I _E = 0, T _J = 150°C	-	-	20	μA
Emitter Cut-off Current	I _{EBO}	V _{EB} = 5V, I _C = 0	-	-	100	nA
DC Current Gain	h _{FE}	V _{CE} = 2V, I _C = 5mA	25	-	-	-
		V _{CE} = 2V, I _C = 150 mA				
		TBCX54/55/56	40	-	250	-
		TBCX54/55/56-10	63	-	160	-
		TBCX54/55/56-16	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 Saturation Voltage	V _{BE(sat)}	I _C = 500mA, I _B = 50mA	-	-	1.2	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	100	-	-	MHz

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

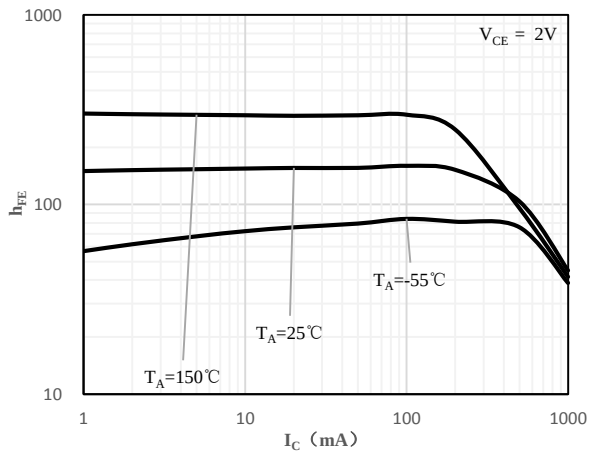


Fig 1 h_{FE} vs. I_C

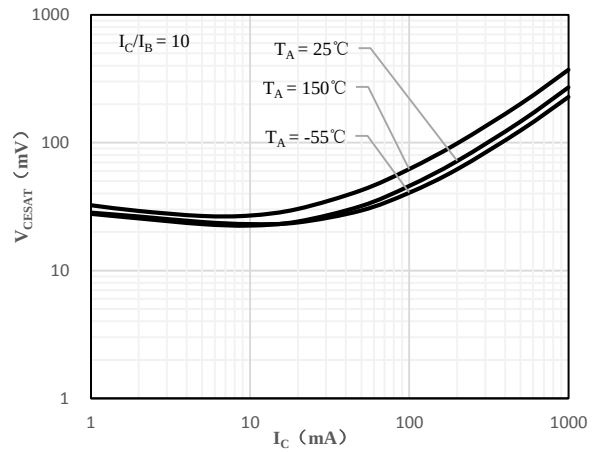


Fig 2 $V_{CE(sat)}$ vs. I_C

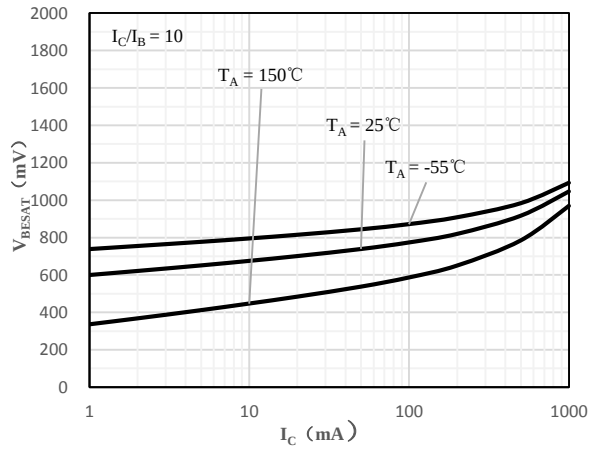


Fig 3 $V_{BE(sat)}$ vs. I_C

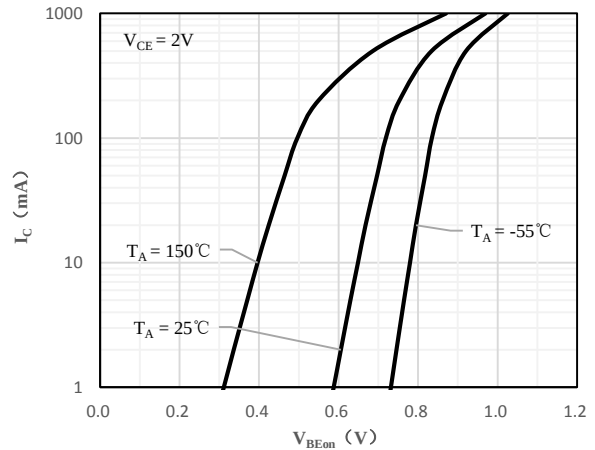


Fig 4 $V_{BE(on)}$ vs. I_C

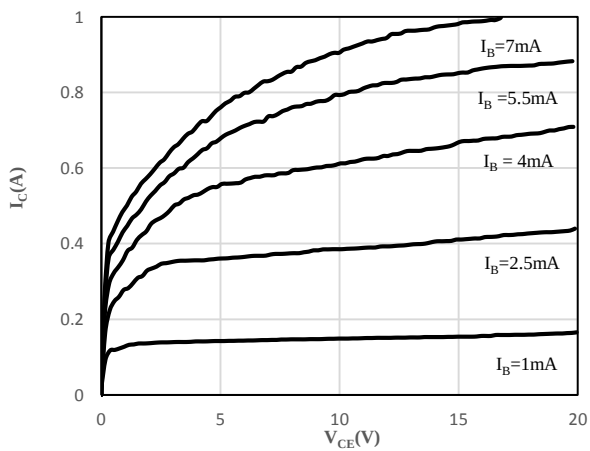


Fig 5 I_C vs. V_{CE}

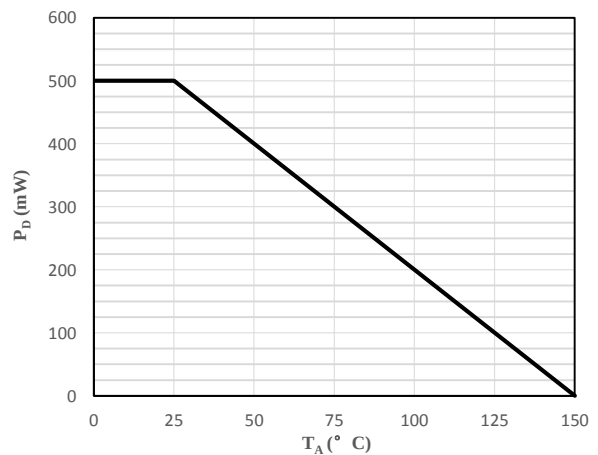


Fig 6 P_D vs. T_A

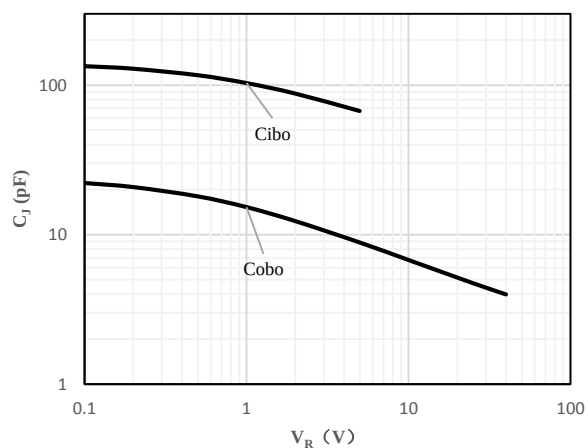
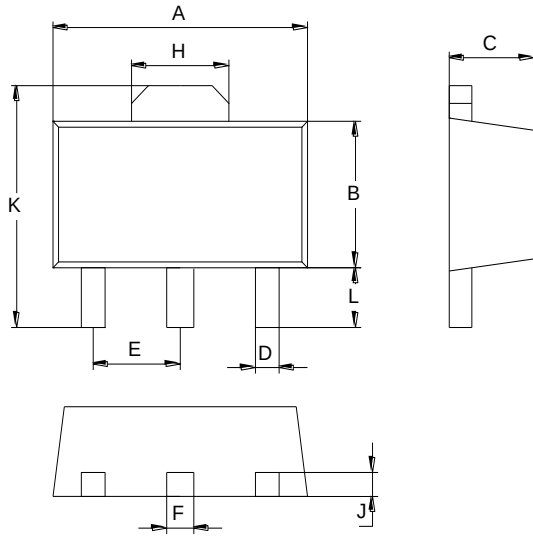


Fig 7 C_j vs. V_R

Package Outline Dimensions (Unit: mm)



SOT-89		
Dimension	Min.	Max.
A	4.30	4.70
B	2.25	2.65
C	1.30	1.70
D	0.30	0.50
E	1.40	1.60
F	0.38	0.58
H	1.60	1.80
J	0.30	0.50
L	0.90	1.10
K	3.95	4.35

Mounting Pad Layout (Unit: mm)

SOT-89

