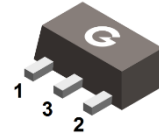
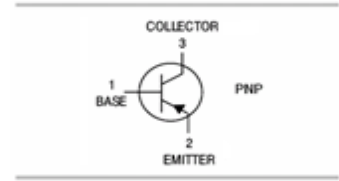


Features

- High collector current
- Low collector-emitter saturation voltage
- Complementary types: TBCX54/TBCX55/TBCX56
- 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
TBCX51	SOT-89	1000 pcs / Tape & Reel	AA
TBCX51-10	SOT-89	1000 pcs / Tape & Reel	AC
TBCX51-16	SOT-89	1000 pcs / Tape & Reel	AD
TBCX52	SOT-89	1000 pcs / Tape & Reel	AE
TBCX52-10	SOT-89	1000 pcs / Tape & Reel	AG
TBCX52-16	SOT-89	1000 pcs / Tape & Reel	AM
TBCX53	SOT-89	1000 pcs / Tape & Reel	AH
TBCX53-10	SOT-89	1000 pcs / Tape & Reel	AK
TBCX53-16	SOT-89	1000 pcs / Tape & Reel	AL

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

Parameter	Symbol	TBCX51	TBCX52	TBCX53	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
Collector Current (Peak)	I _{CM}	-1.5			A
Base Current (Continuous)	I _B	-0.1			A
Base Current (Peak)	I _{BM}	-0.3			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				
		TBCX51	-45	-	-	V
		TBCX52	-60	-	-	
		TBCX53	-100	-	-	
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C = -10mA, I _B = 0				
		TBCX51	-45	-	-	V
		TBCX52	-60	-	-	
		TBCX53	-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	-	-	-100	nA
Collector-emitter Cut-off Current	I _{CEO}	V _{CE} = -20V, I _B = 0	-	-	-100	nA
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				
		TBCX51/52/53	40	-	250	-
		TBCX51/52/53-10	63	-	160	-
		TBCX51/52/53-16	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 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	-	125	-	MHz
Output Capacitance	C _{ob}	V _{CB} = -10V, I _E = I _e = 0A f = 1MHz	-	11	-	pF

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

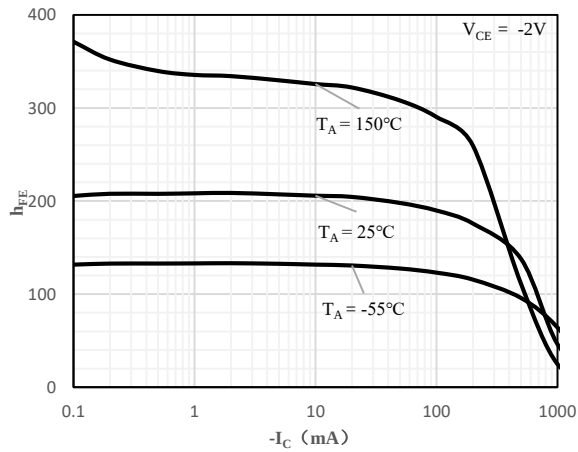


Fig 1 h_{FE} vs. I_C

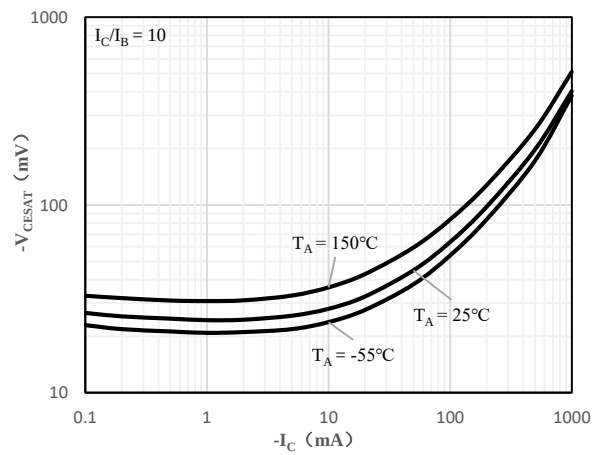


Fig 2 $V_{CE(sat)}$ vs. I_C

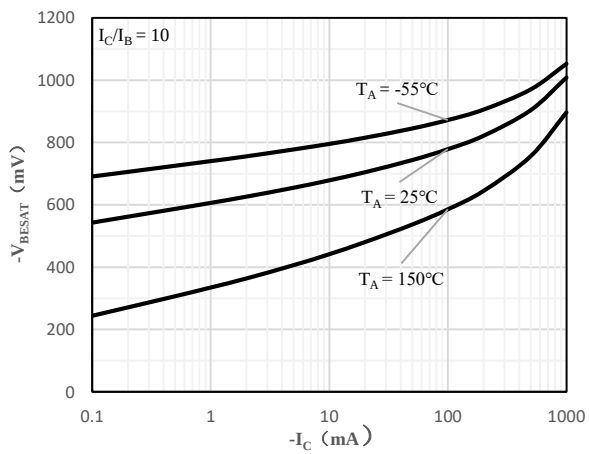


Fig 3 $V_{BE(sat)}$ vs. I_C

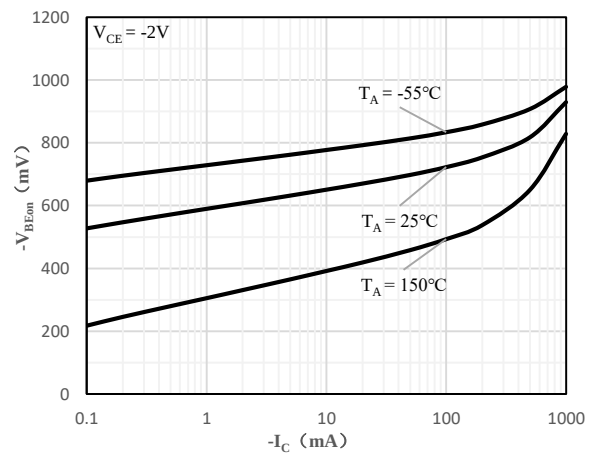


Fig 4 $V_{BE(on)}$ vs. I_C

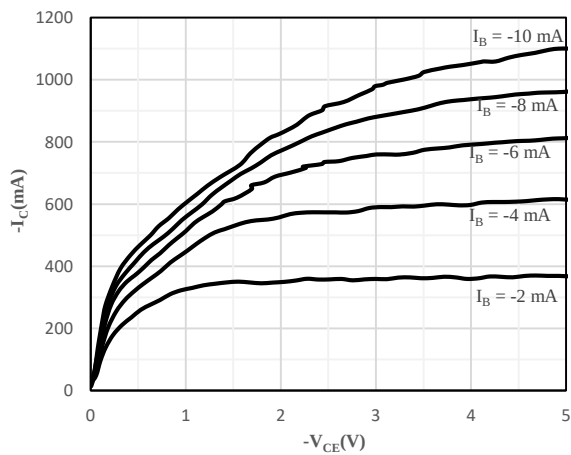


Fig 5 I_C vs. V_{CE}

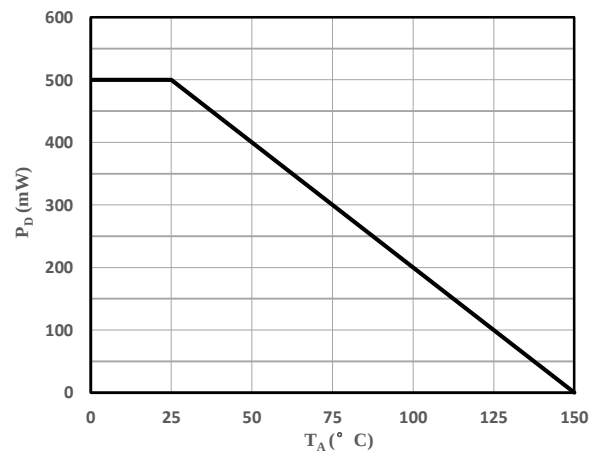


Fig 6 P_D vs. T_A

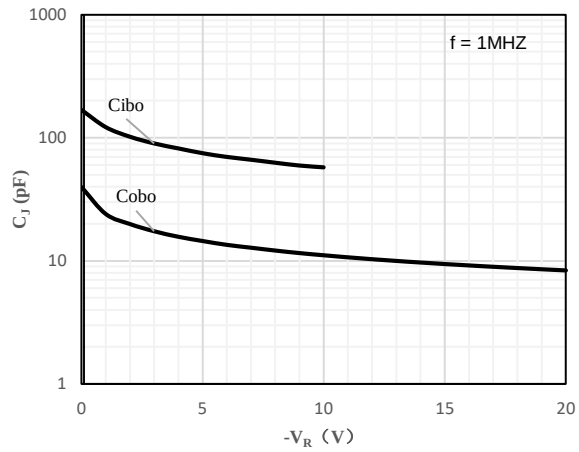
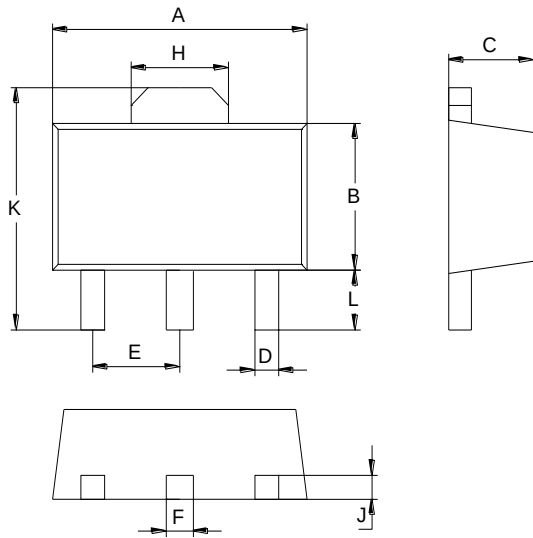


Fig 7 C_J vs. V_R

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

