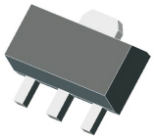
General Purpose Transistor

ABCX54/55/56-HF Series (NPN)

RoHS Device
Halogen Free



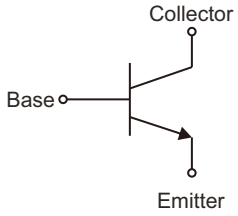
Features

- High collector current.
- Low collector-emitter saturation voltage.
- AEC-Q101 Qualified.

Mechanical data

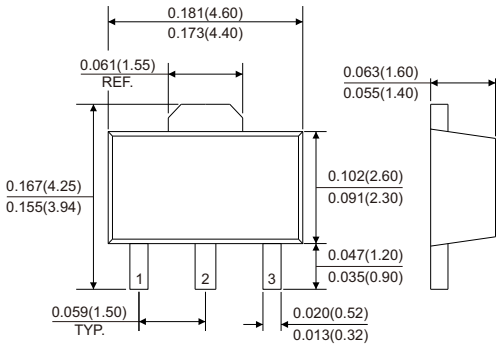
- Case: SOT-89-3L, molded plastic.
- Mounting position: Any.

Circuit Diagram



SOT-89-3L

1 : Base
2 : Collector
3 : Emitter



Dimensions in inches and (millimeter)

Maximum Ratings (at TJ=25°C unless otherwise noted)

Parameter	Symbol	ABCX54-HF	ABCX55-HF	ABCX56-HF	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 continuous current	I_C	1			A
Peak pulsed collector current	I_{CM}	2			A
Base continuous current	I_B	100			mA
Peak pulsed base current (tp < 1ms)	I_{BM}	200			mA
Collector power dissipation (Note 1)	P_C	0.5			W
Thermal resistance from junction to ambient (Note 1)	$R_{\theta JA}$	250			°C/W
Collector power dissipation (Note 2)	P_C	2			W
Thermal resistance from junction to ambient (Note 2)	$R_{\theta JA}$	61.5			°C/W
Operation junction and storage temperature range	T_J, T_{STG}	-55 to +150			°C

Electrical Characteristics (at T_J=25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Collector-base breakdown voltage ABCX54	I_C = 0.1mA, I_E = 0A	$V_{(BR)CBO}$	45			V
Collector-base breakdown voltage ABCX55			60			
Collector-base breakdown voltage ABCX56			100			
Collector-emitter breakdown voltage (Note 3) ABCX54	I_C = 10mA, I_B = 0A	$V_{(BR)CEO}$	45			V
Collector-emitter breakdown voltage (Note 3) ABCX55			60			
Collector-emitter breakdown voltage (Note 3) ABCX56			80			
Emitter-base breakdown voltage	I_E = 10μA, I_C = 0A	$V_{(BR)EBO}$	5			V
Collector cut-off current	V_{CB} = 30V, I_E = 0A	I_{CBO}			100	nA
Emitter cut-off current	V_{EB} = 5V, I_C = 0A	I_{EBO}			100	nA
DC current gain (Note 3)	V_{CE} = 2V, I_C = 5mA	$h_{FE(1)}$	40			
	V_{CE} = 2V, I_C = 150mA	$h_{FE(2)}$	63		250	
	V_{CE} = 2V, I_C = 500mA	$h_{FE(3)}$	25			
Collector-emitter saturation voltage (Note 3)	I_C = 500mA, I_B = 50mA	$V_{CE(sat)}$			0.5	V
Base-emitter voltage (Note 3)	I_C = 500mA, V_{CE} = 2V	V_{BE}			1	V
Transition frequency	V_{CE} = 5V, I_C = 10mA, f = 100MHz	f_T		130		MHz

Classification Of $h_{FE(2)}$

Part No.	ABCX55-10-HF	ABCX54-10-HF	ABCX56-10-HF	ABCX54-16-HF	ABCX55-16-HF	ABCX56-16-HF
Range	63~160			100~250		

Notes: 1. Measured with the device mounted on 1cm x 1cm x 0.8mm FR-4 board with no copper, in a still air environment with Ta=25°C.
2. Measured with the device mounted on 2.54cm x 2.54cm x 1.6mm FR-4 board with double sided 1oz copper, in a still air environment with Ta=25°C.
3. Pulse test.

Typical Rating and Characteristic Curves (ABCX54/55/56-HF Series)

Fig.1 - Static Characteristic

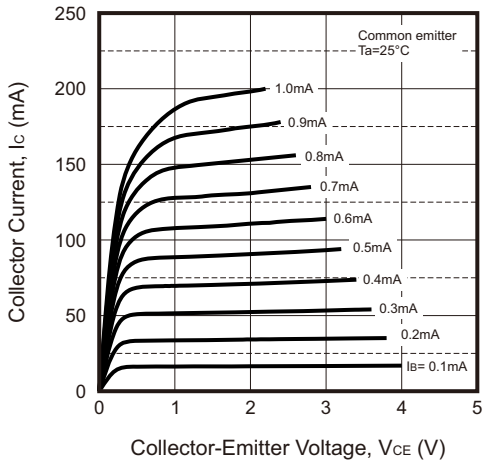
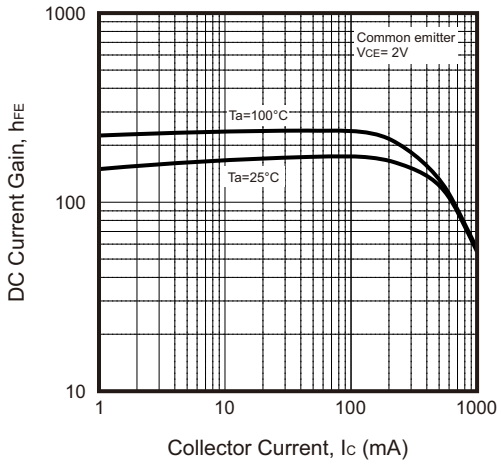


Fig.2 - h_{FE} — I_C



Typical Rating and Characteristic Curves (ABCX54/55/56-HF Series)

Fig.3 - V_{CEsat} — I_C

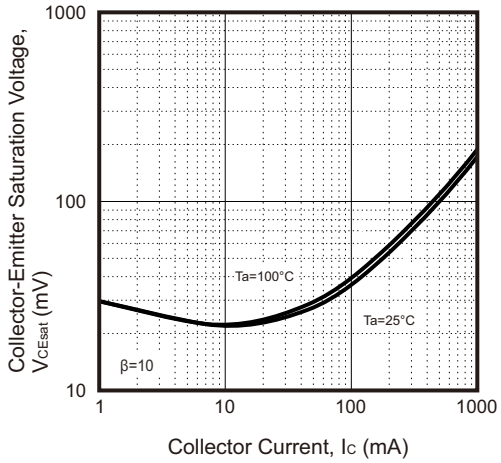


Fig.4 - V_{BEsat} — I_C

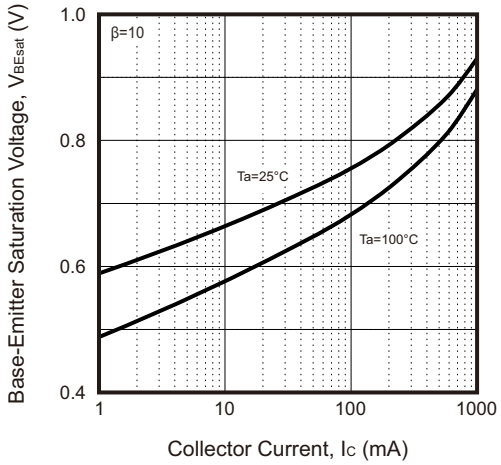


Fig.5 - I_C — V_{BE}

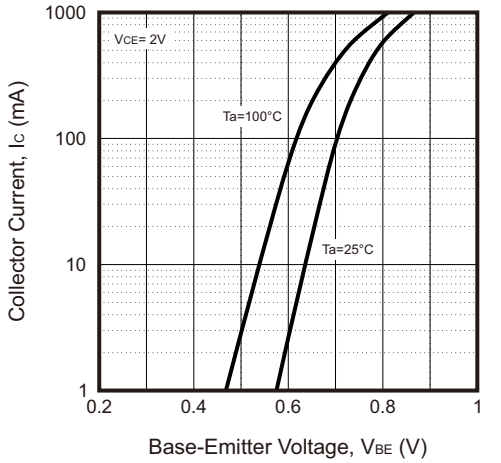


Fig.6 - C_{ob}/C_{ib} — V_{CB}/V_{EB}

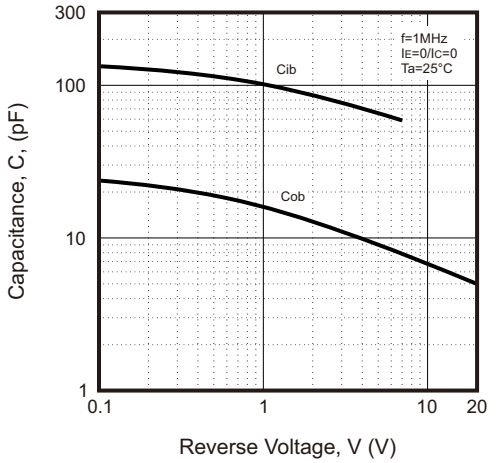


Fig.7 - f_T — I_C

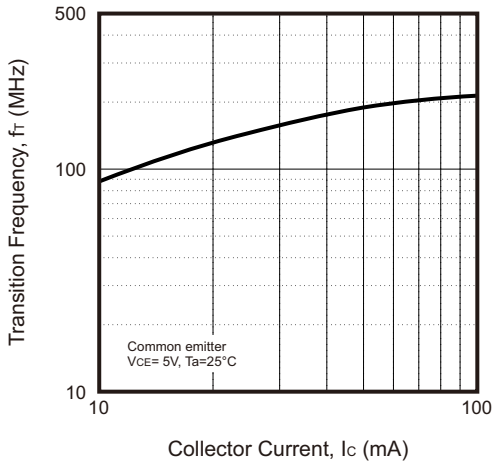
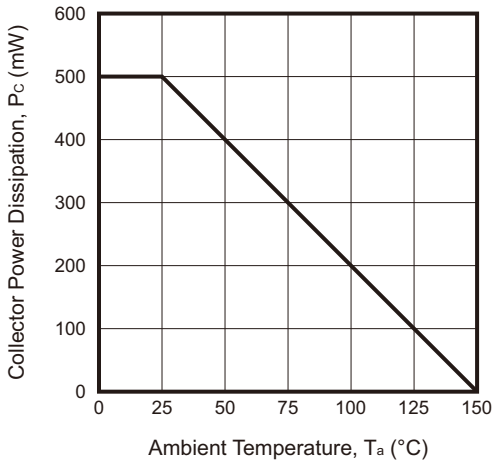
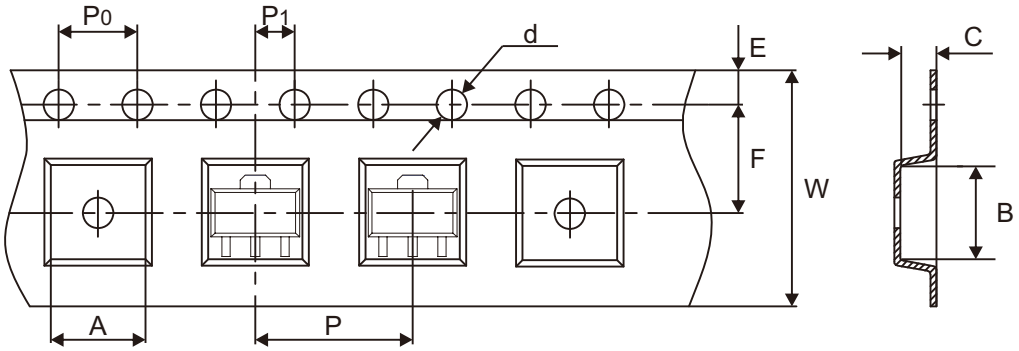
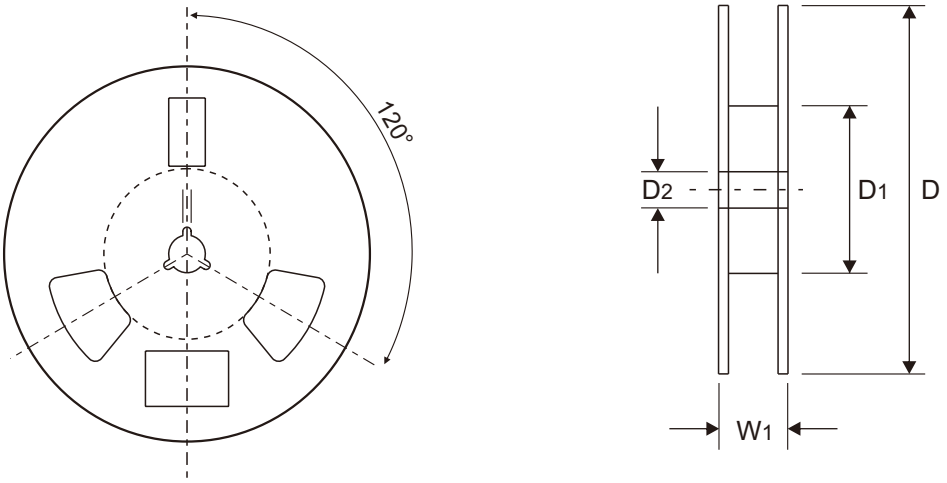


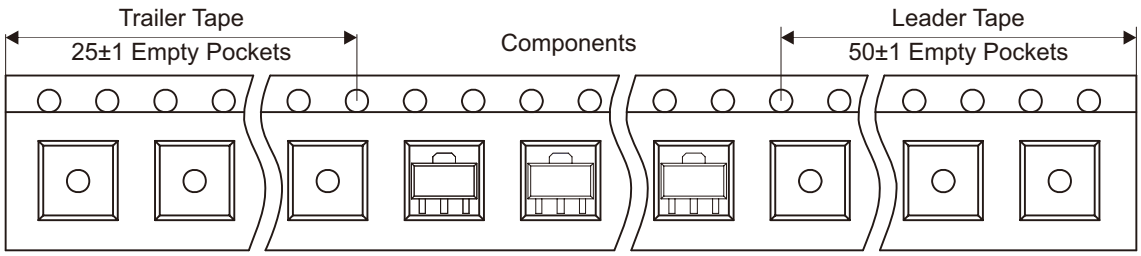
Fig.8 - P_C — T_a



Reel Taping Specification





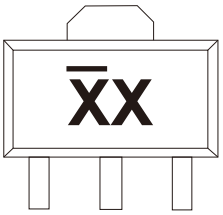


	SYMBOL	A	B	C	d	D	D_1	D_2
SOT-89-3L	(mm)	4.85 ± 0.10	4.45 ± 0.10	1.85 ± 0.10	1.50 + 0.10	180.00 ± 1.00	60.00 ± 1.50	13.20 ± 0.20
	(inch)	0.191 ± 0.004	0.175 ± 0.004	0.073 ± 0.004	0.059 + 0.004	7.087 ± 0.039	2.362 ± 0.059	0.520 ± 0.008

	SYMBOL	E	F	P	P_0	P_1	W	W_1
SOT-89-3L	(mm)	1.75 ± 0.10	5.50 ± 0.05	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	12.00 + 0.30 − 0.10	16.50 + 2.00 − 1.00
	(inch)	0.069 ± 0.004	0.217 ± 0.002	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.472 + 0.012 − 0.004	0.650 + 0.079 − 0.039

Marking Code

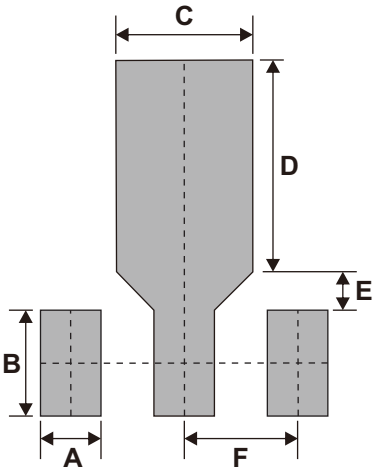
Part Number	Marking Code
ABCX54-10-HF	BC
ABCX55-10-HF	BG
ABCX56-10-HF	BK
ABCX54-16-HF	BD
ABCX55-16-HF	BM
ABCX56-16-HF	BL



xx = Product type marking code

Suggested P.C.B. PAD Layout

SIZE	SOT-89-3L	
	(mm)	(inch)
A	0.80	0.031
B	1.40	0.055
C	1.80	0.071
D	2.80	0.110
E	0.50	0.020
F	1.50	0.059



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-89-3L	1,000	7