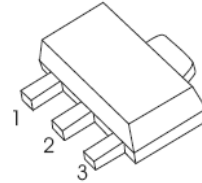
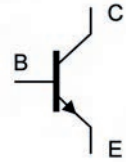


Features

- PNP complements to GSBCX51, GSBCX52, GSBCX53
- Low voltage
- High current



SOT-89-3L



Schematic Diagram

Applications

Driver Stages of Audio Amplifiers

1. BASE
2. COLLECTOR
3. EMITTER

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Collector-Base Voltage	GSBCX54	V_{CBO}	45	V
	GSBCX55		60	
	GSBCX56		100	
Collector-Emitter Voltage	GSBCX54	V_{CEO}	45	V
	GSBCX55		60	
	GSBCX56		80	
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current		I_C	1	A
Peak Collector Current ¹		I_{CM}	2	A
Base Current		I_B	0.1	A
Peak Base Current ($t_p < 1\text{ms}$)		I_{BM}	0.2	A
Collector Power Dissipation		P_C	500	mW
Thermal Resistance from Junction to Ambient		$R_{\theta JA}$	250	$^{\circ}\text{C}/\text{W}$
Operation Junction and Storage Temperature Range		T_J, T_{stg}	-55 to +150	$^{\circ}\text{C}$
Operation Temperature Range		T_{opr}	-25 to +125	$^{\circ}\text{C}$

Note:

1. Single pulse: $t_p \leq 1 \text{ ms}$.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	GSBCX54	45	-	-	V
			GSBCX55	60	-	-	
			GSBCX56	100	-	-	
Collector-Emitter Breakdown Voltage ²	$V_{(BR)CEO}$	$I_C=10\text{mA}, I_B=0$	GSBCX54	45	-	-	V
			GSBCX55	60	-	-	
			GSBCX56	80	-	-	
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	5	-	-	V	
Collector Cut-Off Current	I_{CBO}	$V_{CB}=30\text{V}, I_E=0$	-	-	0.1	μA	
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=5\text{V}, I_C=0$	-	-	0.1	μA	
DC Current Gain ²	$h_{FE(1)}$	$V_{CE}=2\text{V}, I_C=5\text{mA}$	40	-	-	-	
	$h_{FE(2)}$	$V_{CE}=2\text{V}, I_C=150\text{mA}$	63	-	250	-	
	$h_{FE(3)}$	$V_{CE}=2\text{V}, I_C=0.5\text{A}$	25	-	-	-	
Collector-Emitter Saturation Voltage ²	$V_{CE(sat)}$	$I_C=0.5\text{A}, I_B=50\text{mA}$	-	-	0.5	V	
Base-Emitter Voltage ²	V_{BE}	$V_{CE}=2\text{V}, I_C=0.5\text{A}$	-	-	1	V	
Transition Frequency	f_T	$V_{CE}=5\text{V}, I_C=10\text{mA}, f=100\text{MHz}$	-	130	-	MHz	

Note:
2. Pulse Test

Classification of $h_{FE(2)}$

Rank	GSBCX54	GSBCX54-10	GSBCX54-16
	GSBCX55	GSBCX55-10	GSBCX55-16
	GSBCX56	GSBCX56-10	GSBCX56-16
Range	63–250	63–160	100–250

Typical Electrical Characteristic Curves

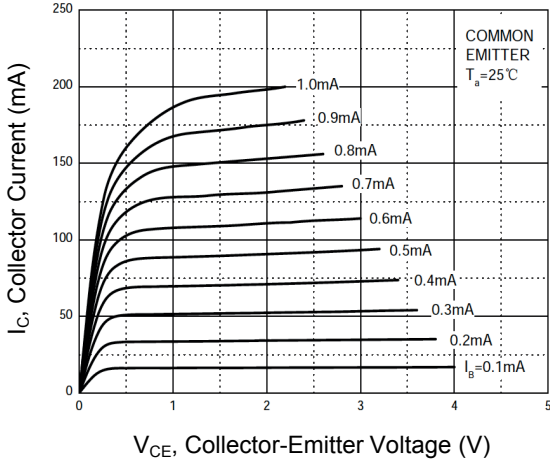


Figure 1. Static Characteristics

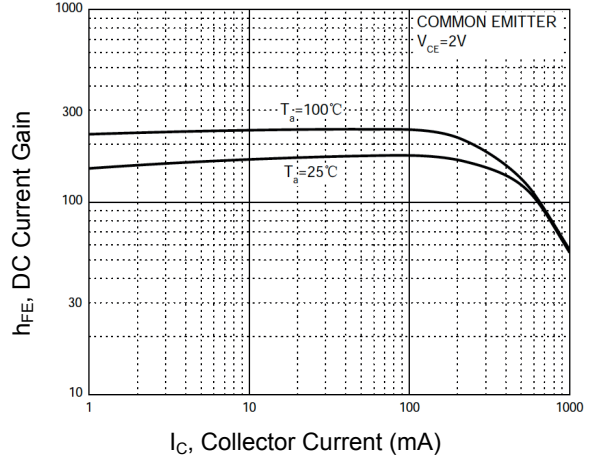


Figure 2. DC Current Gain vs. Collector Current

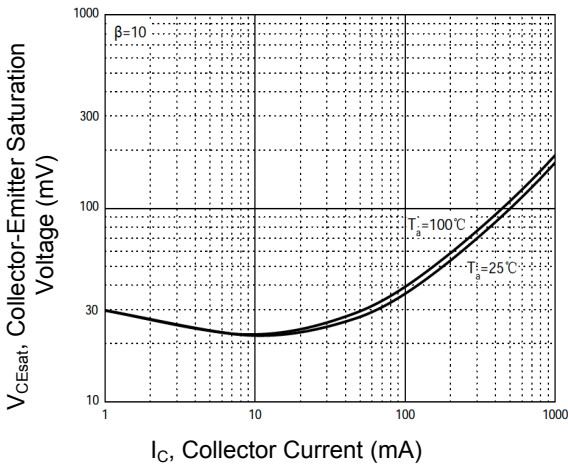


Figure 3. Collector-Emitter Saturation Voltage vs. Collector Current

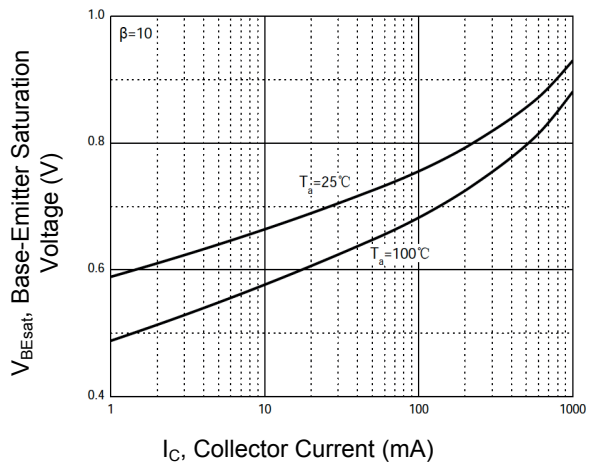


Figure 4. Base-Emitter Saturation Voltage vs. Collector Current

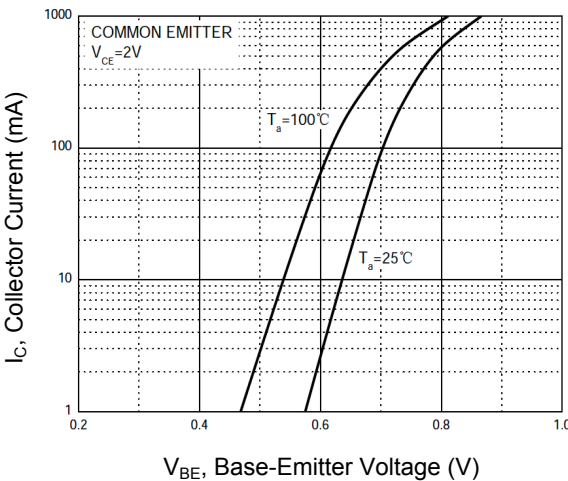


Figure 5. Collector Current vs. Base-Emitter Voltage

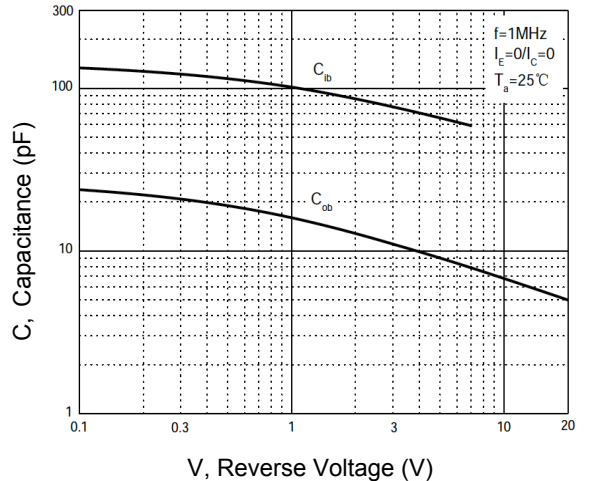


Figure 6. Capacitance Characteristics

Typical Electrical Characteristic Curves

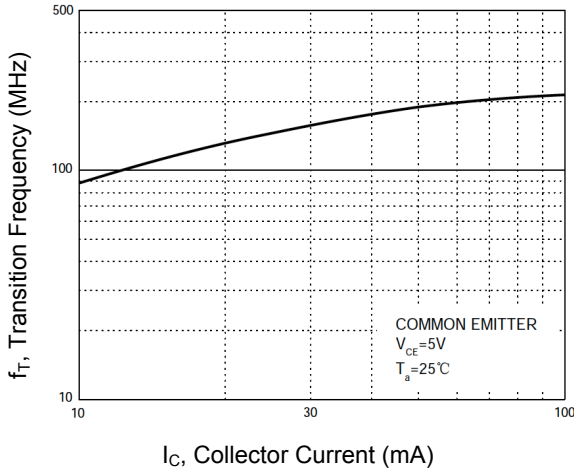


Figure 7. Transition Frequency vs. Collector Current

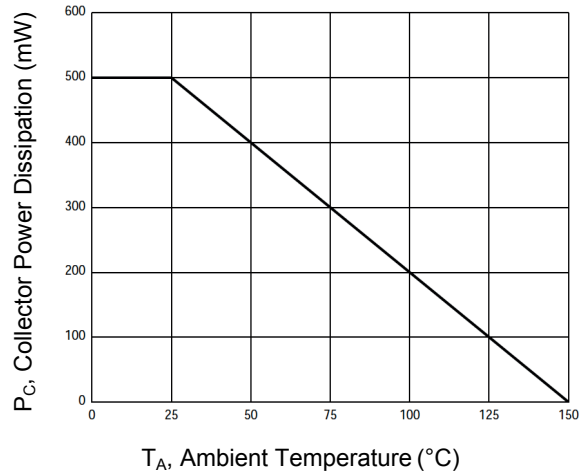
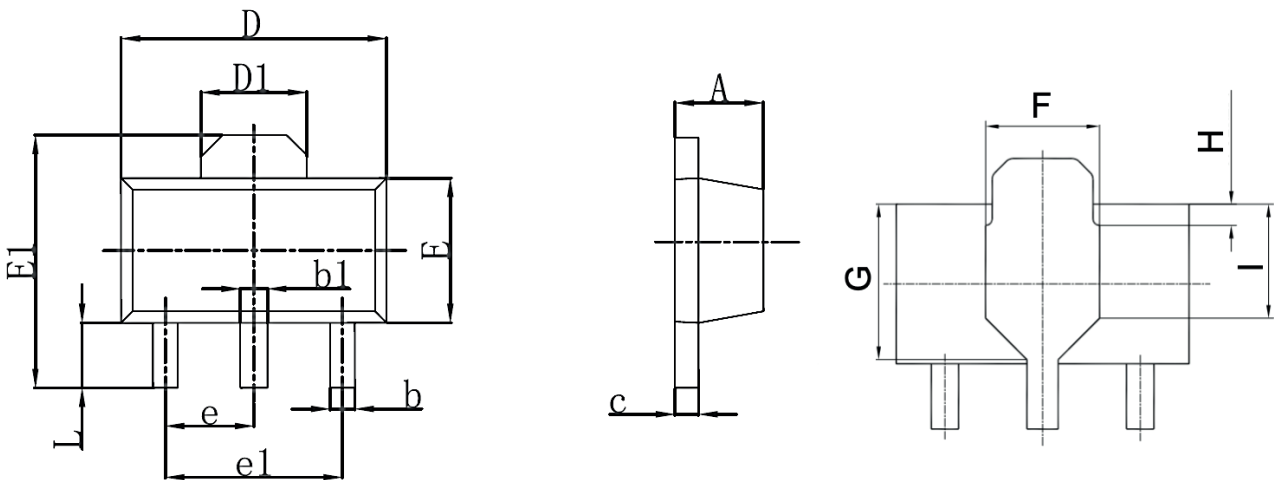


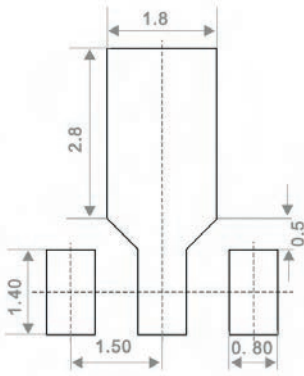
Figure 8. Power Dissipation vs. Ambient Temperature

Package Outline Dimensions (SOT-89-3L)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047
F	1.750 REF.		0.069 REF.	
G	2.380 REF.		0.094 REF.	
H	0.320 REF.		0.013 REF.	
I	1.750 REF.		0.069 REF.	

Recommended Pad Layout



- Note:
1. Controlling dimension: in millimeters
 2. General tolerance: $\pm 0.05\text{mm}$
 3. The pad layout is for reference purposes only

Order Information

Device	Package	Marking	Packaging	SPQ
GSBCX54	SOT-89-3L	BA	Tape & Reel	1,000pcs / Reel
GSBCX54-10	SOT-89-3L	BC	Tape & Reel	1,000pcs / Reel
GSBCX54-16	SOT-89-3L	BD	Tape & Reel	1,000pcs / Reel
GSBCX55	SOT-89-3L	BE	Tape & Reel	1,000pcs / Reel
GSBCX55-10	SOT-89-3L	BG	Tape & Reel	1,000pcs / Reel
GSBCX55-16	SOT-89-3L	BM	Tape & Reel	1,000pcs / Reel
GSBCX56	SOT-89-3L	BH	Tape & Reel	1,000pcs / Reel
GSBCX56-10	SOT-89-3L	BK	Tape & Reel	1,000pcs / Reel
GSBCX56-16	SOT-89-3L	BL	Tape & Reel	1,000pcs / Reel