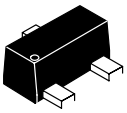
General Purpose Transistors
NPN Silicon

LBC847ATT1G
S-LBC847ATT1G
Series

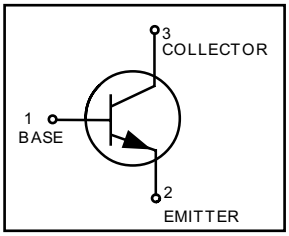
These transistors are designed for general purpose amplifier applications. They are housed in the SC−89 package which is designed for low power surface mount applications.

Features

- Pb−Free Packages are Available
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.



SC-89



MAXIMUM RATINGS (T_A = 25°C)

Rating	Symbol	Max	Unit
Collector−Emitter Voltage	V_{CEO}	45	V
Collector−Base Voltage	V_{CBO}	50	V
Emitter−Base Voltage	V_{EBO}	6.0	V
Collector Current − Continuous	I_C	100	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation, FR−4 Board (Note 1) T_A = 25°C Derated above 25°C	P_D	200 1.6	mW mW/°C
Thermal Resistance, Junction−to−Ambient (Note 1)	$R_{\theta JA}$	600	°C/W
Total Device Dissipation, FR−4 Board (Note 2) T_A = 25°C Derated above 25°C	P_D	300 2.4	mW mW/°C
Thermal Resistance, Junction−to−Ambient (Note 2)	$R_{\theta JA}$	400	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C

1. FR−4 @ min pad.
2. FR−4 @ 1.0 × 1.0 in pad.

ORDERING INFORMATION

Device	Marking	Package	Shipping†
LBC847ATT1G S-LBC847ATT1G	1E	SC−89	3,000 / Tape & Reel
LBC847BTT1G S-LBC847BTT1G	1F	SC−89	3,000 / Tape & Reel
LBC847CTT1G S-LBC847CTT1G	1G	SC−89	3,000 / Tape & Reel

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector−Emitter Breakdown Voltage (I_C = 10 mA)	LBC847 Series	$V_{(BR)CEO}$	45	–	–	V
Collector−Emitter Breakdown Voltage (I_C = 10 μA, V_{EB} = 0)	LBC847 Series	$V_{(BR)CES}$	50	–	–	V
Collector−Base Breakdown Voltage (I_C = 10 μA)	LBC847 Series	$V_{(BR)CBO}$	50	–	–	V
Emitter−Base Breakdown Voltage (I_E = 1.0 μA)	LBC847 Series	$V_{(BR)EBO}$	6.0	–	–	V
Collector Cutoff Current (V_{CB} = 30 V) (V_{CB} = 30 V, T_A = 150°C)		I_{CBO}	– –	– –	15 5.0	nA μA
ON CHARACTERISTICS						
DC Current Gain (I_C = 10 μA, V_{CE} = 5.0 V)	LBC847A LBC847B LBC847C	h_{FE}	– – –	90 150 270	– – –	–
(I_C = 2.0 mA, V_{CE} = 5.0 V)	LBC847A LBC847B LBC847C		110 200 420	180 290 520	220 450 800	
Collector−Emitter Saturation Voltage (I_C = 10 mA, I_B = 0.5 mA) (I_C = 100 mA, I_B = 5.0 mA)		$V_{CE(sat)}$	– –	– –	0.25 0.6	V
Base−Emitter Saturation Voltage (I_C = 10 mA, I_B = 0.5 mA) (I_C = 100 mA, I_B = 5.0 mA)		$V_{BE(sat)}$	– –	0.7 0.9	– –	V
Base−Emitter Voltage (I_C = 2.0 mA, V_{CE} = 5.0 V) (I_C = 10 mA, V_{CE} = 5.0 V)		$V_{BE(on)}$	580 –	660 –	700 770	mV
SMALL−SIGNAL CHARACTERISTICS						
Current−Gain − Bandwidth Product (I_C = 10 mA, V_{CE} = 5.0 Vdc, f = 100 MHz)		f_T	100	–	–	MHz
Output Capacitance (V_{CB} = 10 V, f = 1.0 MHz)		C_{obo}	–	–	4.5	pF
Noise Figure (I_C = 0.2 mA, V_{CE} = 5.0 Vdc, R_S = 2.0 kΩ, f = 1.0 kHz, BW = 200 Hz)		NF	–	–	10	dB

LBC847ATT1G,LBC847BTT1G,LBC847CTT1G

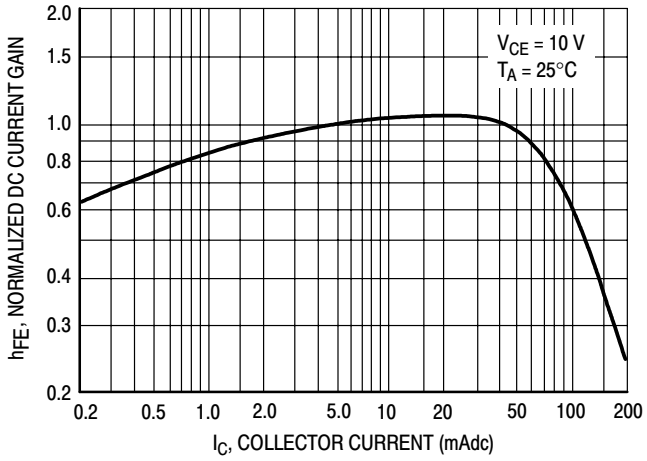


Figure 1. Normalized DC Current Gain

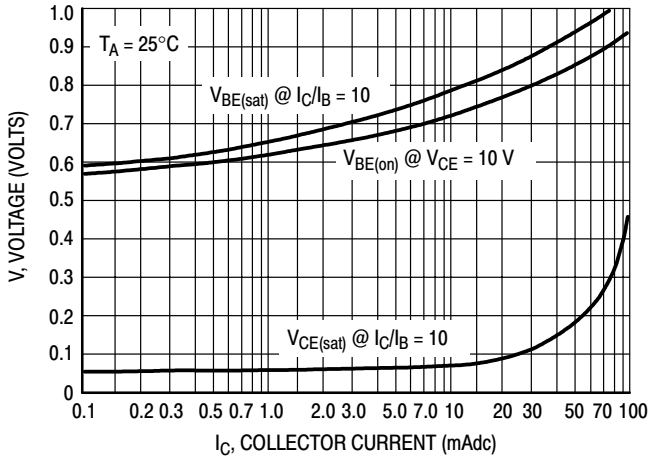


Figure 2. "Saturation" and "On" Voltages

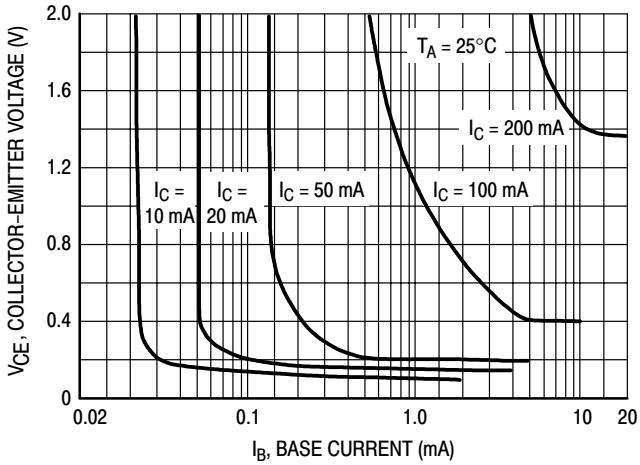


Figure 3. Collector Saturation Region

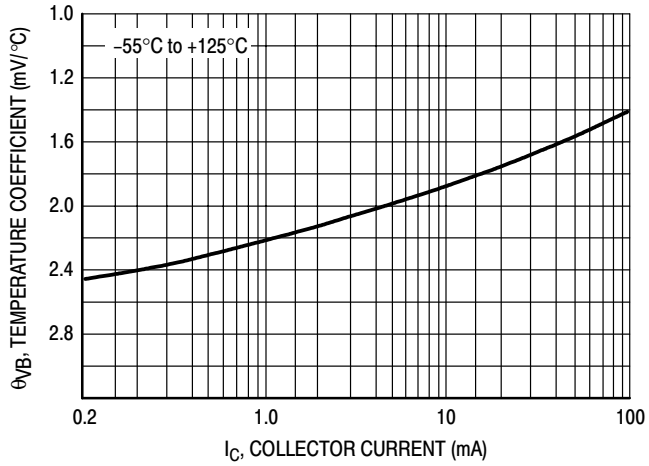


Figure 4. Base−Emitter Temperature Coefficient

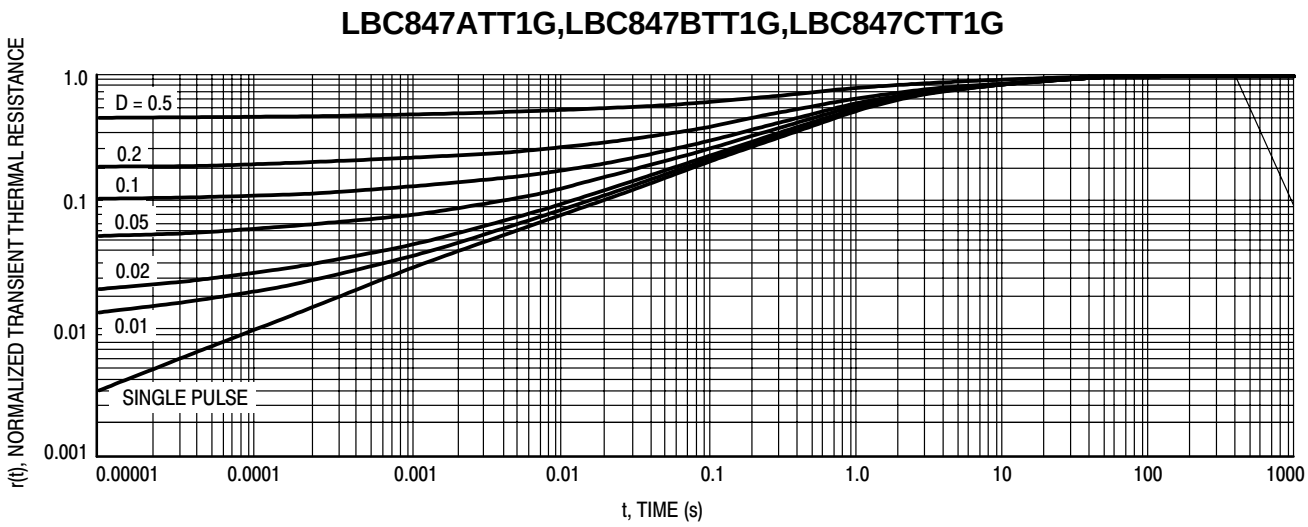


Figure 5. Normalized Thermal Response

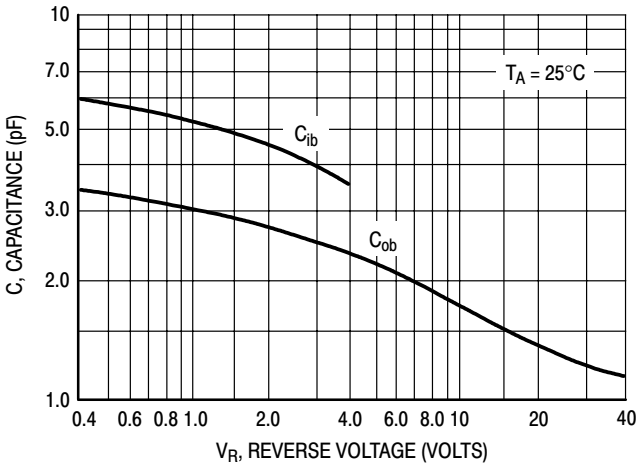


Figure 6. Capacitances

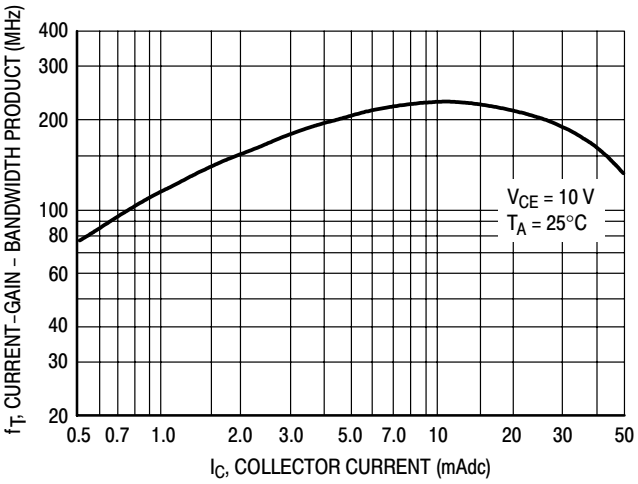
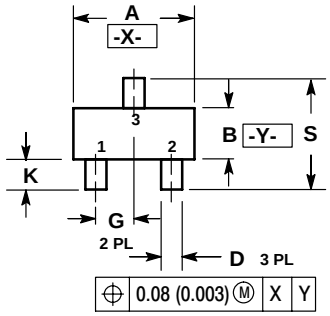
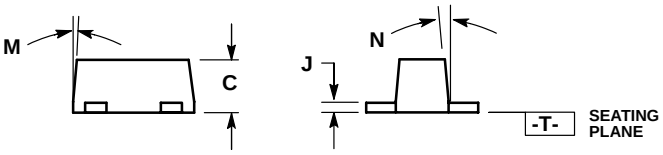


Figure 7. Current−Gain − Bandwidth Product

LBC847ATT1G Series
S-LBC847ATT1G Series

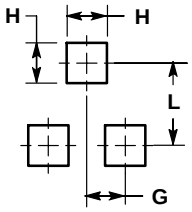
SC–89





NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 463C-01 OBSOLETE, NEW STANDARD 463C-02.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	1.50	1.60	1.70	0.059	0.063	0.067
B	0.75	0.85	0.95	0.030	0.034	0.040
C	0.60	0.70	0.80	0.024	0.028	0.031
D	0.23	0.28	0.33	0.009	0.011	0.013
G	0.50 BSC			0.020 BSC		
H	0.53 REF			0.021 REF		
J	0.10	0.15	0.20	0.004	0.006	0.008
K	0.30	0.40	0.50	0.012	0.016	0.020
L	1.10 REF			0.043 REF		
M	---	---	10 °	---	---	10 °
N	---	---	10 °	---	---	10 °
S	1.50	1.60	1.70	0.059	0.063	0.067



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