

General Purpose Transistors

NPN Silicon

- Moisture Sensitivity Level: 1
- ESD Rating – Human Body Model: >4000 V
– Machine Model: >400 V
- We declare that the material of product compliance with RoHS requirements.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage LBC846 LBC847, LBC850 LBC848, LBC849	V_{CEO}	65 45 30	Vdc
Collector–Base Voltage LBC846 LBC847, LBC850 LBC848, LBC849	V_{CBO}	80 50 30	Vdc
Emitter–Base Voltage LBC846 LBC847, LBC850 LBC848, LBC849	V_{EBO}	6.0 6.0 5.0	Vdc
Collector Current – Continuous	I_C	100	mAdc

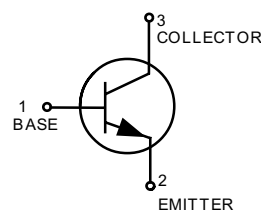
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR–5 Board (Note 1.) $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	150 2.4	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient (Note 1.)	$R_{\theta JA}$	833	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	T_J, T_{stg}	–55 to +150	$^\circ\text{C}$

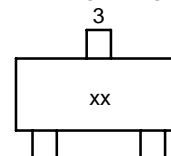
LBC846AWT1G Series



SOT–323 /SC–70



MARKING DIAGRAM



xx= Device Marking
(See Table Below)

LBC846AWT1G Series**DEVICE MARKING AND ORDERING INFORMATION**

Device	Marking	Package	Shipping
LBC846AWT1G	1A	SC-70	3000/Tape&Reel
LBC846AWT3G	1A	SC-70	10000/Tape&Reel
LBC846BWT1G	1B	SC-70	3000/Tape&Reel
LBC846BWT3G	1B	SC-70	10000/Tape&Reel
LBC847AWT1G	1E	SC-70	3000/Tape&Reel
LBC847AWT3G	1E	SC-70	10000/Tape&Reel
LBC847BWT1G	1F	SC-70	3000/Tape&Reel
LBC847BWT3G	1F	SC-70	10000/Tape&Reel
LBC847CWT1G	1G	SC-70	3000/Tape&Reel
LBC847CWT3G	1G	SC-70	10000/Tape&Reel
LBC848AWT1G	1J	SC-70	3000/Tape&Reel
LBC848AWT3G	1J	SC-70	10000/Tape&Reel
LBC848BWT1G	1K	SC-70	3000/Tape&Reel
LBC848BWT3G	1K	SC-70	10000/Tape&Reel
LBC848CWT1G	1L	SC-70	3000/Tape&Reel
LBC848CWT3G	1L	SC-70	10000/Tape&Reel
LBC849BWT1G	2B	SC-70	3000/Tape&Reel
LBC849BWT3G	2B	SC-70	10000/Tape&Reel
LBC849CWT1G	2C	SC-70	3000/Tape&Reel
LBC849CWT3G	2C	SC-70	10000/Tape&Reel
LBC850BWT1G	2F	SC-70	3000/Tape&Reel
LBC850BWT3G	2F	SC-70	10000/Tape&Reel
LBC850CWT1G	2G	SC-70	3000/Tape&Reel
LBC850CWT3G	2G	SC-70	10000/Tape&Reel

LBC846AWT1G Series
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit	
OFF CHARACTERISTICS						
Collector–Emitter Breakdown Voltage ($I_C = 10\text{ mA}$)	LBC846A,B LBC847A,B,C, LBC850B,C LBC848A,B,C, LBC849B,C	$V_{(BR)CEO}$	65 45 30	– – –	– – –	V
Collector–Emitter Breakdown Voltage ($I_C = 10\text{ }\mu\text{A}$, $V_{EB} = 0$)	LBC846A,B LBC847A,B,C, LBC850B,C LBC848A,B,C, LBC849B,C	$V_{(BR)CES}$	80 50 30	– – –	– – –	V
Collector–Base Breakdown Voltage ($I_C = 10\text{ }\mu\text{A}$)	LBC846A,B LBC847A,B,C, LBC850B,C LBC848A,B,C, LBC849B,C	$V_{(BR)CBO}$	80 50 30	– – –	– – –	V
Emitter–Base Breakdown Voltage ($I_E = 1.0\text{ }\mu\text{A}$)	LBC846A,B LBC847A,B,C, LBC850B,C LBC848A,B,C, LBC849B,C	$V_{(BR)EBO}$	6.0 6.0 5.0	– – –	– – –	V
Collector Cutoff Current ($V_{CB} = 30\text{ V}$) ($V_{CB} = 30\text{ V}$, $T_A = 150^\circ\text{C}$)		I_{CBO}	– –	– –	15 5.0	nA μA
ON CHARACTERISTICS						
DC Current Gain ($I_C = 10\text{ }\mu\text{A}$, $V_{CE} = 5.0\text{ V}$)	LBC846A, LBC847A, LBC848A LBC846B, LBC847B, LBC848B LBC847C, LBC848C	h_{FE}	– – –	90 150 270	– – –	–
($I_C = 2.0\text{ mA}$, $V_{CE} = 5.0\text{ V}$)	LBC846A, LBC847A, LBC848A LBC846B, LBC847B, LBC848B, LBC849B, LBC850B LBC847C, LBC848C, LBC849C, LBC850C		110 200 420	180 290 520	220 450 800	
Collector–Emitter Saturation Voltage ($I_C = 10\text{ mA}$, $I_B = 0.5\text{ mA}$) ($I_C = 100\text{ mA}$, $I_B = 5.0\text{ mA}$)		$V_{CE(sat)}$	– –	– –	0.25 0.6	V
Base–Emitter Saturation Voltage ($I_C = 10\text{ mA}$, $I_B = 0.5\text{ mA}$) ($I_C = 100\text{ mA}$, $I_B = 5.0\text{ mA}$)		$V_{BE(sat)}$	– –	0.7 0.9	– –	V
Base–Emitter Voltage ($I_C = 2.0\text{ mA}$, $V_{CE} = 5.0\text{ V}$) ($I_C = 10\text{ mA}$, $V_{CE} = 5.0\text{ V}$)		$V_{BE(on)}$	580 –	660 –	700 770	mV
SMALL–SIGNAL CHARACTERISTICS						
Current–Gain – Bandwidth Product ($I_C = 10\text{ mA}$, $V_{CE} = 5.0\text{ Vdc}$, $f = 100\text{ MHz}$)		f_T	100	–	–	MHz
Output Capacitance ($V_{CB} = 10\text{ V}$, $f = 1.0\text{ MHz}$)		C_{obo}	–	–	4.5	pF
Noise Figure ($I_C = 0.2\text{ mA}$, $V_{CE} = 5.0\text{ Vdc}$, $R_S = 2.0\text{ k}\Omega$, $f = 1.0\text{ kHz}$, $BW = 200\text{ Hz}$)	LBC846A,B, LBC847A,B,C, LBC848A,B,C LBC849B,C, LBC850B,C	NF	– –	– –	10 4.0	dB

LBC846AWT1G Series

LBC847, LBC848, LBC849, LBC850

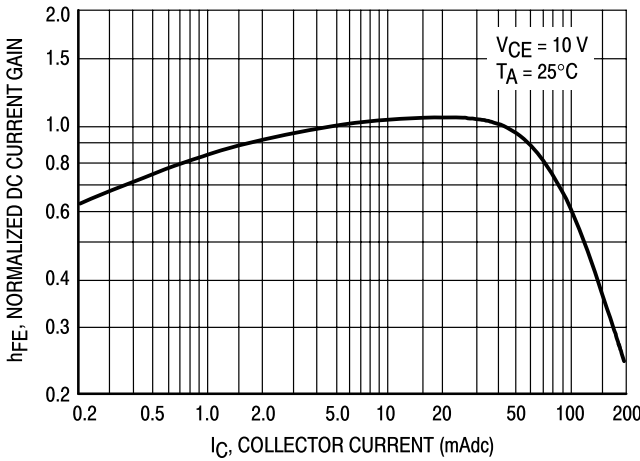


Figure 1. Normalized DC Current Gain

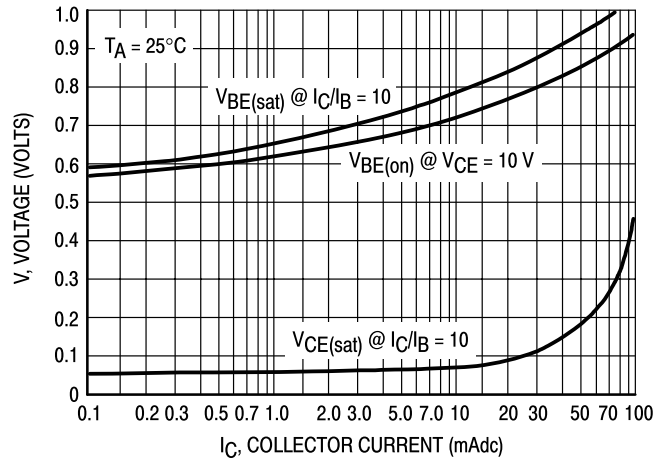


Figure 2. "Saturation" and "On" Voltages

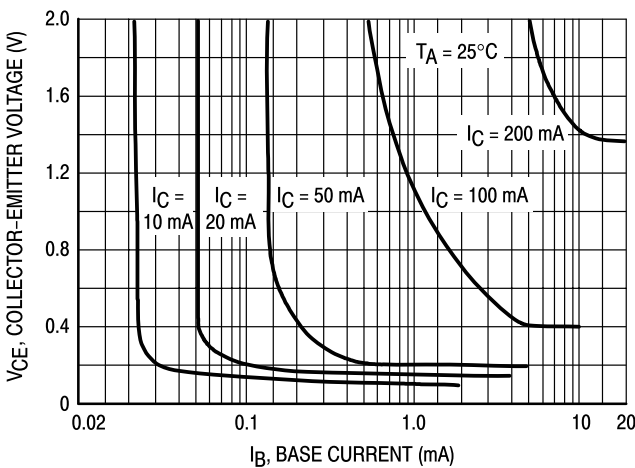


Figure 3. Collector Saturation Region

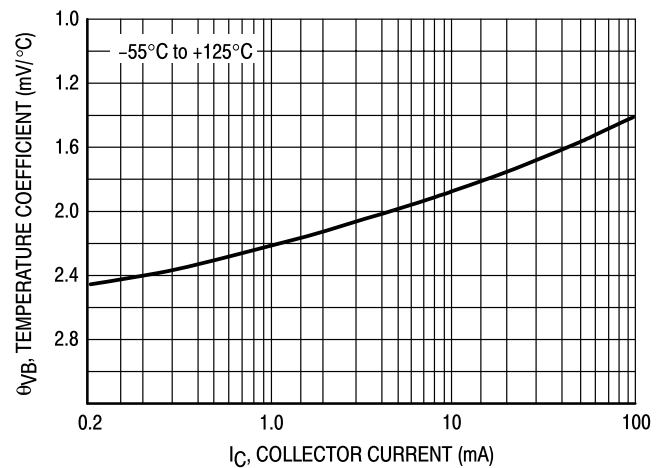


Figure 4. Base-Emitter Temperature Coefficient

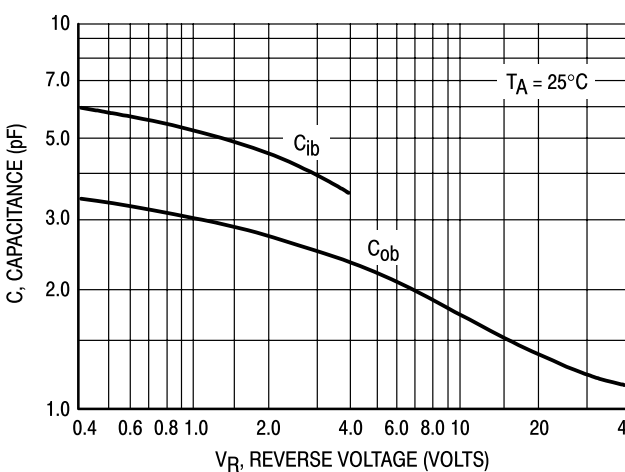


Figure 5. Capacitances

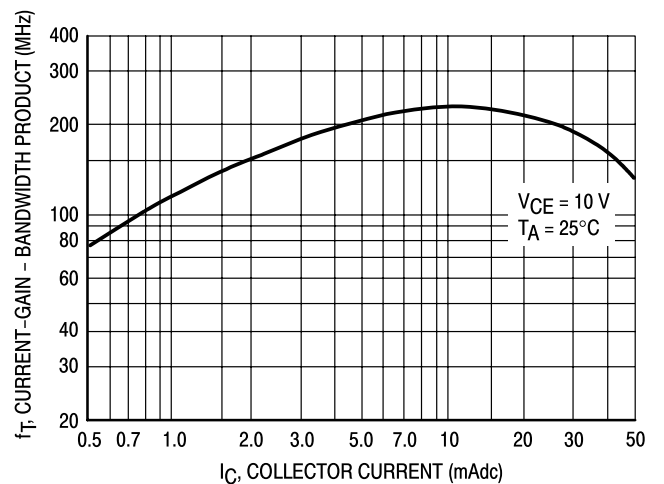


Figure 6. Current-Gain - Bandwidth Product

LBC846AWT1G Series

LBC846

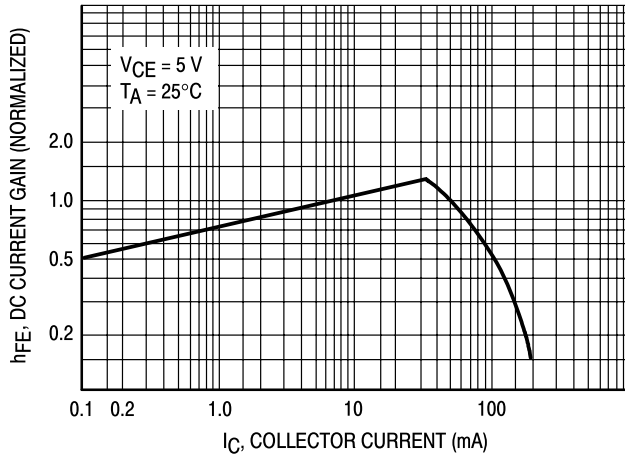


Figure 7. DC Current Gain

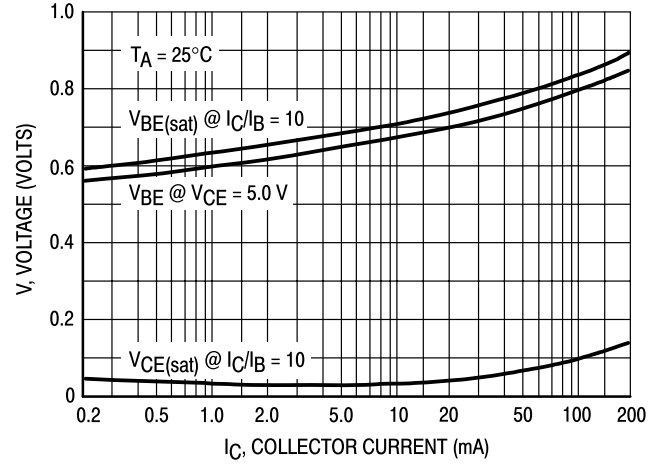


Figure 8. "On" Voltage

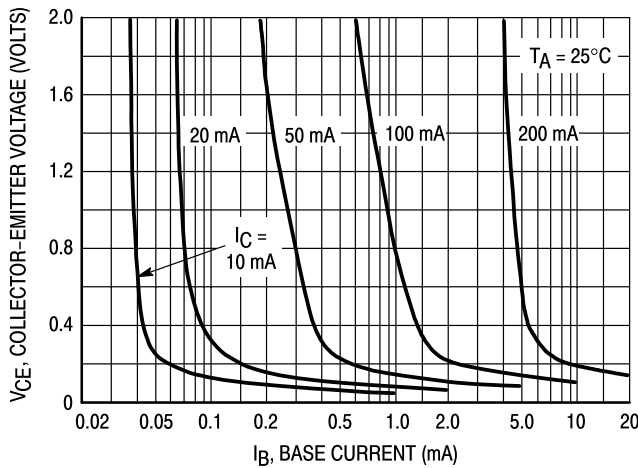


Figure 9. Collector Saturation Region

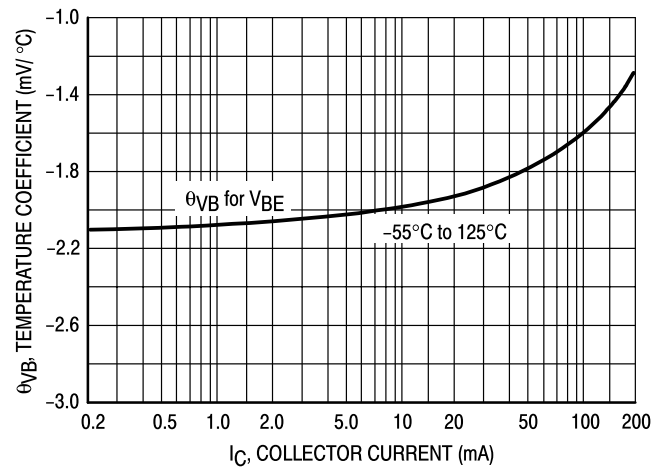


Figure 10. Base-Emitter Temperature Coefficient

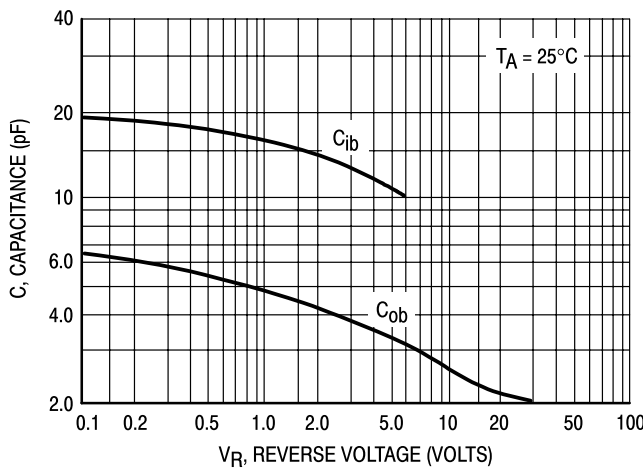


Figure 11. Capacitance

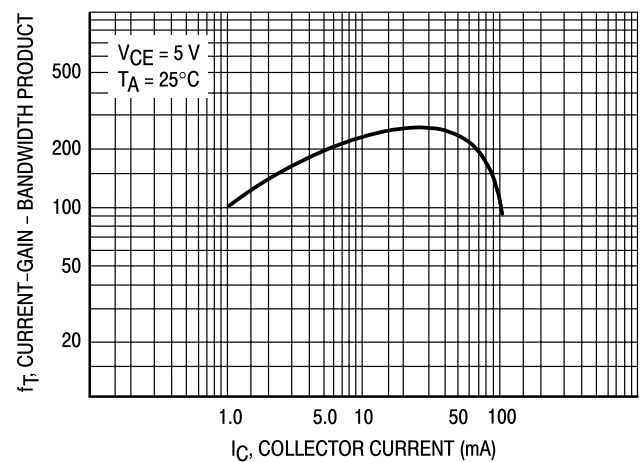


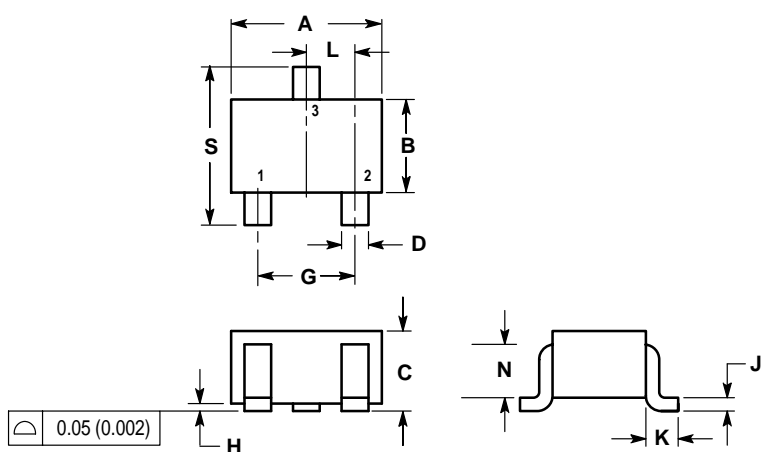
Figure 12. Current-Gain - Bandwidth Product

LBC846AWT1G Series

SC-70 / SOT-323

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.032	0.040	0.80	1.00
D	0.012	0.016	0.30	0.40
G	0.047	0.055	1.20	1.40
H	0.000	0.004	0.00	0.10
J	0.004	0.010	0.10	0.25
K	0.017 REF		0.425 REF	
L	0.026 BSC		0.650 BSC	
N	0.028 REF		0.700 REF	
S	0.079	0.095	2.00	2.40

- PIN 1. BASE
 2. EMITTER
 3. COLLECTOR

