General Purpose Transistors

NPN Silicon

We declare that the material of product compliance with RoHS requirements.

LBC846AWT1G,BWT1G
LBC847AWT1G,BWT1G
CWT1G
LBC848AWT1G,BWT1G
CWT1G

ORDERING INFORMATION (Pb–Free)

Device	Package	Shipping
LBC846AWT1G_S	SC-70	3000/Tape&Reel
LBC846AWT3G_S	SC-70	10000/Tape&Reel

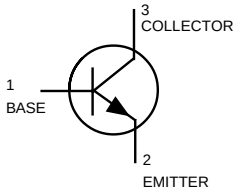
SOT–323 /SC–70

MAXIMUM RATINGS

Rating	Symbol	BC846	BC847	BC848	Unit
Collector–Emitter Voltage	V_{CEO}	65	45	30	V
Collector–Base Voltage	V_{CBO}	80	50	30	V
Emitter–Base Voltage	V_{EBO}	6.0	6.0	5.0	V
Collector Current — Continuous	I_C	100	100	100	mAdc

THERMAL CHARACTERISTICS

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



DEVICE MARKING

LBC846AWT1G = 1A; LBC846BWT1G = 1B; LBC847AWT1G = 1E; LBC847BWT1G = 1F;
LBC847CWT1G = 1G; LBC848AWT1G = 1J; LBC848BWT1G = 1K; LBC848CWT1G = 1L;

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)	LBC846 Series	$V_{(BR)CEO}$	65	—	—	v
	LBC847 Series		45	—	—	
	LBC848 Series		30	—	—	
Collector–Emitter Breakdown Voltage (I_C = 10 µA, V_{EB} = 0)	LBC846 Series	$V_{(BR)CES}$	80	—	—	v
	LBC847 Series		50	—	—	
	LBC848 Series		30	—	—	
Collector–Base Breakdown Voltage (I_C = 10 µA)	LBC846 Series	$V_{(BR)CBO}$	80	—	—	v
	LBC847 Series		50	—	—	
	LBC848 Series		30	—	—	
Emitter–Base Breakdown Voltage (I_E = 1.0 µA)	LBC846 Series	$V_{(BR)EBO}$	6.0	—	—	v
	LBC847 Series		6.0	—	—	
	LBC848 Series		5.0	—	—	
Collector Cutoff Current (V_{CB} = 30 V)		I_{CBO}	—	—	15	nA
(V_{CB} = 30 V, T_A = 150°C)			—	—	5.0	µA

1.FR–5=1.0 x 0.75 x 0.062in

LBC846AWT1G,BWT1G, LBC847AWT1G,BWT1G, CWT1G, LBC848AWT1G,BWT1G,CWT1G

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

Characteristic		Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS						
DC Current Gain	LBC846A, LBC847A, LBC848A	h_{FE}	—	90	—	—
(I_C = 10 µA, V_{CE} = 5.0 V)	LBC846B, LBC847B, LBC848B		—	150	—	
	LBC847C, LBC848C		—	270	—	
(I_C = 2.0 mA, V_{CE} = 5.0 V)	LBC846A, LBC847A, LBC848A		110	180	220	
	LBC846B, LBC847B, LBC848B		200	290	450	
	LBC847C, LBC848C		420	520	800	
Collector–Emitter Saturation Voltage (I_C = 10 mA, I_B = 0.5 mA)		$V_{CE(sat)}$	—	—	0.25	V
(I_C = 100 mA, I_B = 5.0 mA)			—	—	0.6	
Base–Emitter Saturation Voltage (I_C = 10 mA, I_B = 0.5 mA)		$V_{BE(sat)}$	—	0.7	—	V
(I_C = 100 mA, I_B = 5.0 mA)			—	0.9	—	
Base–Emitter Voltage (I_C = 2.0 mA, V_{CE} = 5.0 V)		$V_{BE(on)}$	580	660	700	mV
(I_C = 10 mA, V_{CE} = 5.0 V)			—	—	770	
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,	LBC846A, LBC847A,L BC848A	NF				dB
V_{CE} = 5.0 V_{dc}, R_S = 2.0 kΩ,	LBC846B, LBC847B,L BC848B		—	—	10	
f = 1.0 kHz, BW = 200 Hz)	LBC847C, LBC848C		—	—	4.0	

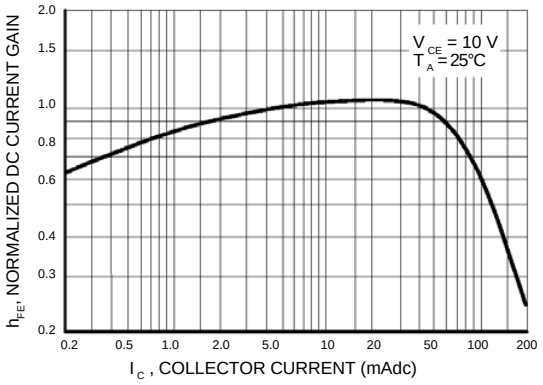


Figure 1. Normalized DC Current Gain

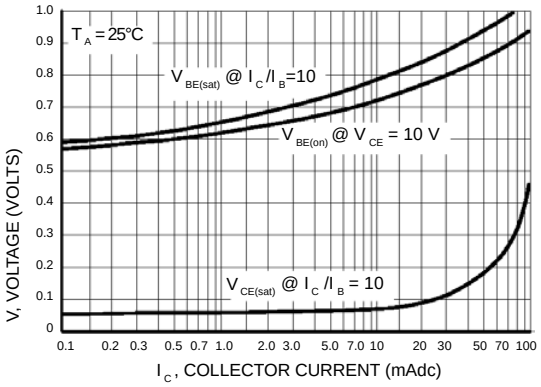


Figure 2. "Saturation" and "On" Voltages

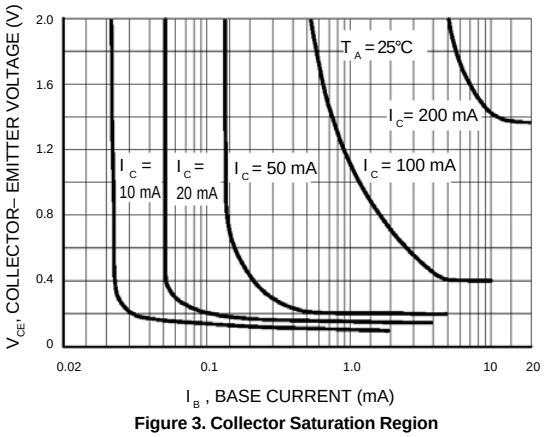


Figure 3. Collector Saturation Region

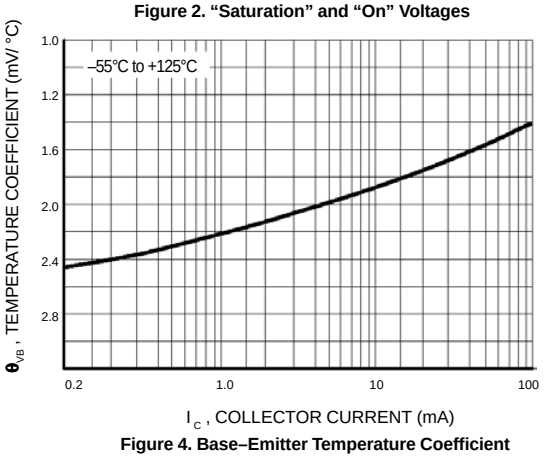


Figure 4. Base–Emitter Temperature Coefficient

LBC846AWT1G,BWT1G, LBC847AWT1G,BWT1G, CWT1G, LBC848AWT1G,BWT1G,CWT1G

LBC847/LBC848

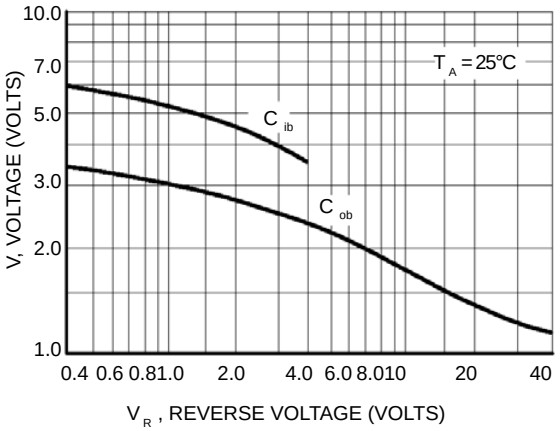


Figure 5. Capacitances

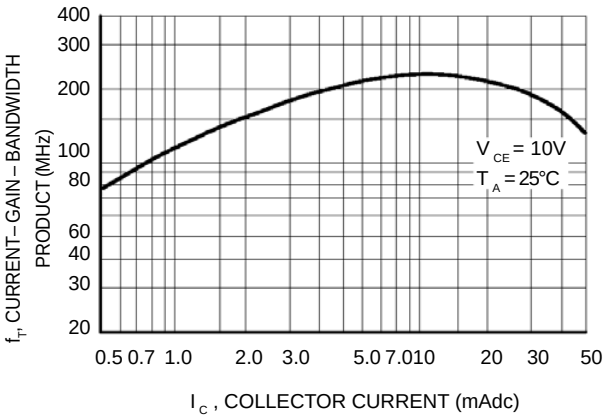


Figure 6. Current–Gain – Bandwidth Product

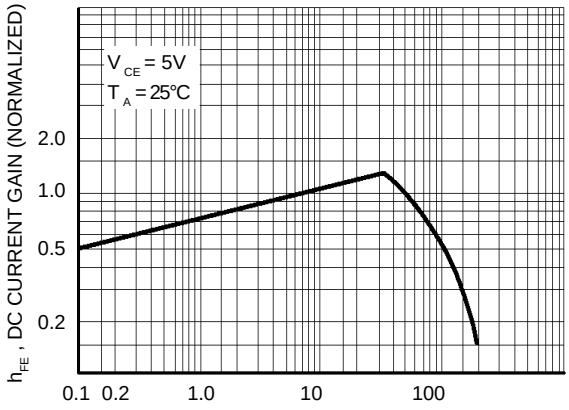


Figure 7. DC Current Gain

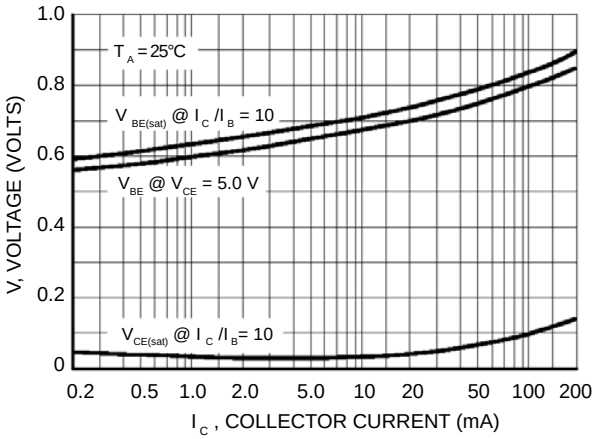


Figure 8. “On” Voltage

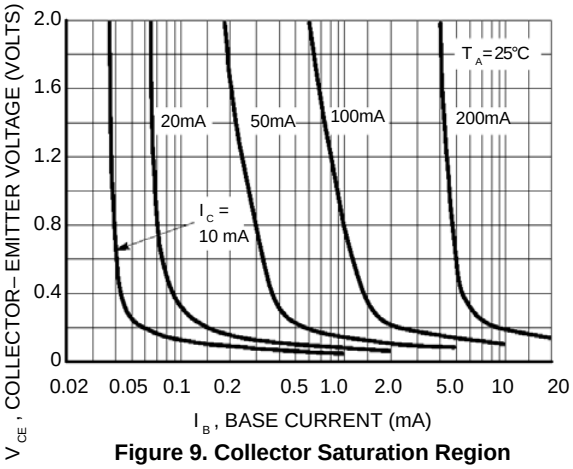


Figure 9. Collector Saturation Region

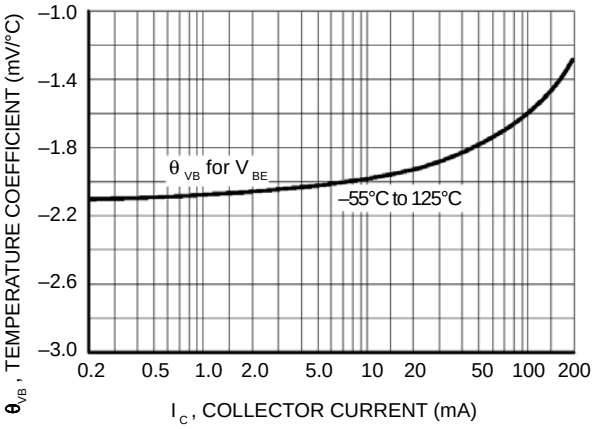


Figure 10. Base–Emitter Temperature Coefficient

LBC846AWT1G,BWT1G, LBC847AWT1G,BWT1G, CWT1G, LBC848AWT1G,BWT1G,CWT1G

LBC846

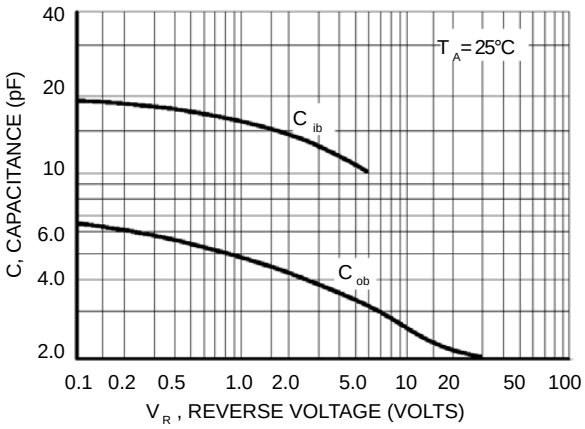


Figure 11. Capacitance

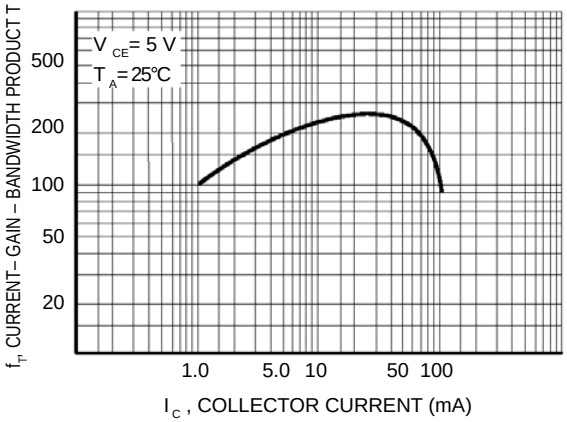
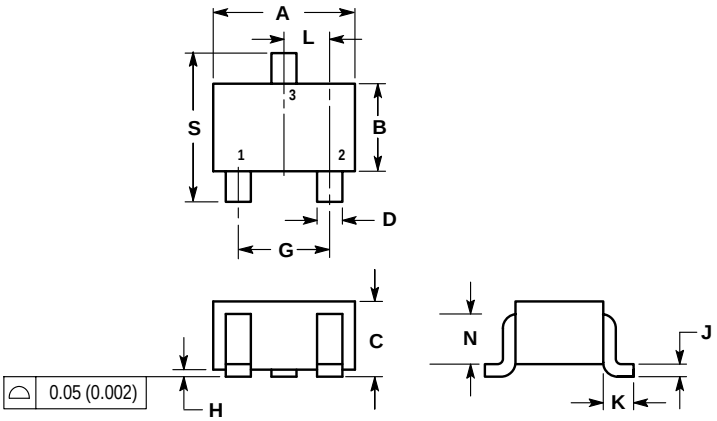


Figure 12. Current–Gain – Bandwidth Product

LBC846AWT1G,BWT1G, LBC847AWT1G,BWT1G, CWT1G, LBC848AWT1G,BWT1G,CWT1G

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