

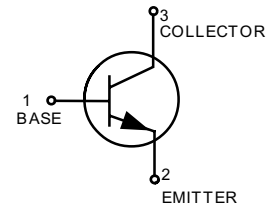
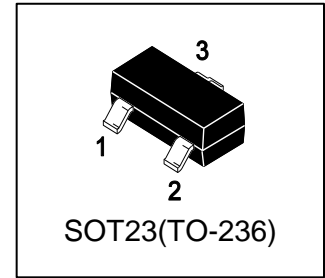
# LBC847BLT1G

## S-LBC847BLT1G

General Purpose Transistors NPN Silicon

### 1. FEATURES

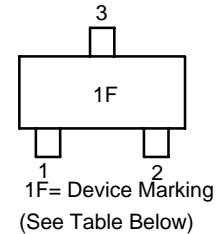
- Moisture Sensitivity Level: 1
- ESD Rating – Human Body Model: >4000 V  
– Machine Model: >400 V
- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.



### 2. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LBC847BLT1G	1F	3000/Tape&Reel
LBC847BLT3G	1F	10000/Tape&Reel

#### MARKING DIAGRAM



### 3. MAXIMUM RATINGS(Ta = 25°C)

Parameter	Symbol	Limits	Unit
Collector–Emitter Voltage	VCEO	45	V
Collector–Base Voltage	VCBO	50	V
Emitter–Base Voltage	VEBO	6	V
Collector Current — Continuous	IC	100	mA

### 4. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Total Device Dissipation, FR-5 Board (Note 1) @ TA = 25°C Derate above 25°C	PD	225 1.8	mW mW/°C
Thermal Resistance, Junction–to–Ambient	RθJA	556	°C/W
Total Device Dissipation, Alumina Substrate (Note 2) @ TA = 25°C Derate above 25°C	PD	300 2.4	mW mW/°C
Thermal Resistance, Junction–to–Ambient	RθJA	417	°C/W
Junction and Storage temperature range	TJ,Tstg	-55~+150	°C

1. FR-5 = 1.0×0.75×0.062 in.

2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

## 5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

### OFF CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Collector–Emitter Breakdown Voltage (IC = 10 mA)	VBR(CEO)	45	-	-	V
Collector–Emitter Breakdown Voltage (IC = 10 μA, VEB = 0)	VBR(CES)	50	-	-	V
Collector–Base Breakdown Voltage (IC = 10 μA)	VBR(CBO)	50	-	-	V
Emitter–Base Breakdown Voltage (IE = 1.0 μA)	VBR(EBO)	6	-	-	V
Collector Cutoff Current (VCB = 30 V)	ICBO	-	-	15	nA
(VCB = 30 V, TA = 150°C)		-	-	5	μA
Collector-Emitter cutoff Current (VCE= 45V, IB=0)	ICEO	-	-	2	mA
Emitter-Base cut-off current (VEB=5V, IC =0)	IEBO	-	-	100	nA

### ON CHARACTERISTICS

DC Current Gain (IC = 2.0 mA, VCE = 5.0 V)	HFE	200	290	450	
Collector–Emitter Saturation Voltage (IC = 10 mA, IB = 0.5 mA)	VCE(sat)	-	-	0.25	V
(IC = 100 mA, IB = 5.0 mA)		-	-	0.6	
Base–Emitter Saturation Voltage (IC = 10 mA, IB = 0.5 mA)	VBE(sat)	-	0.7	-	V
(IC = 100 mA, IB = 5.0 mA)		-	0.9	-	
Base–Emitter Voltage (IC = 2.0 mA, VCE = 5.0 V)	VBE(on)	580	660	700	mV
(IC = 10 mA, VCE = 5.0 V)		-	-	770	

### SMALL–SIGNAL CHARACTERISTICS

Current–Gain — Bandwidth Product (IC = 10 mA, VCE = 5.0 V, f = 100 MHz)	fT	100	-	-	MHz
Output Capacitance (VCB = 10 V, f = 1.0 MHz)	Cobo	-	-	4.5	pF
Noise Figure (IC = 0.2 mA, VCE = 5.0 V, RS = 2.0 kΩ f = 1.0 kHz, BW = 200 Hz)	NF	-	-	10	dB

## 6.ELECTRICAL CHARACTERISTICS CURVES

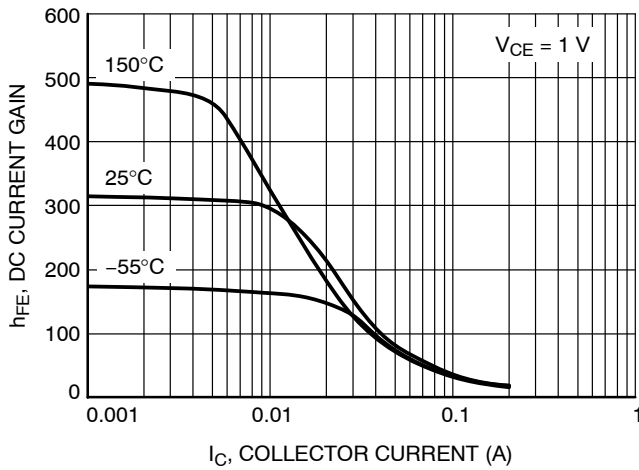


Figure 1. DC Current Gain vs. Collector Current

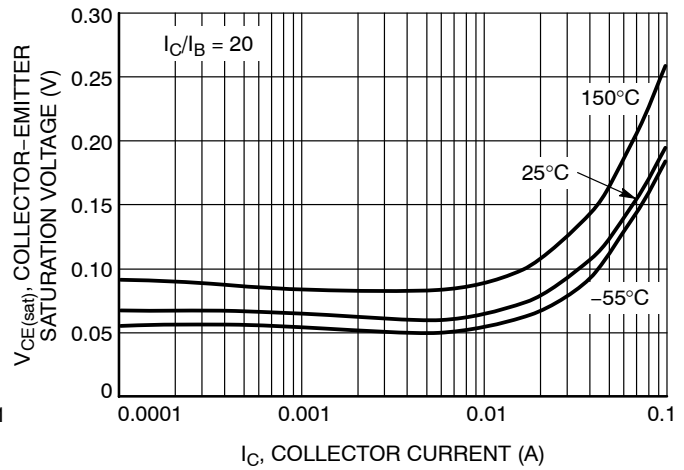


Figure 2. Collector Emitter Saturation Voltage vs. Collector Current

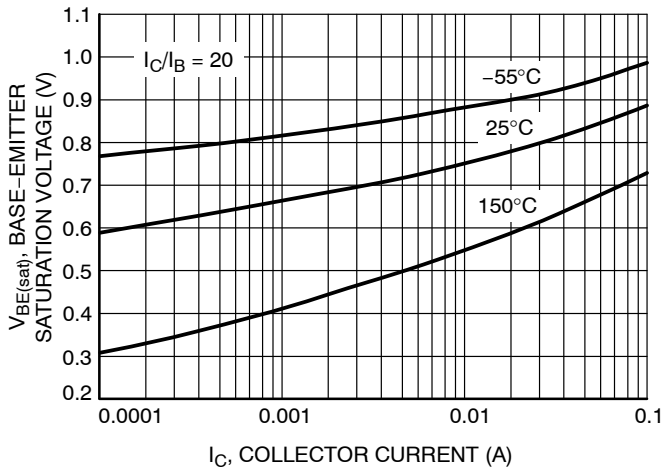


Figure 3. Base Emitter Saturation Voltage vs. Collector Current

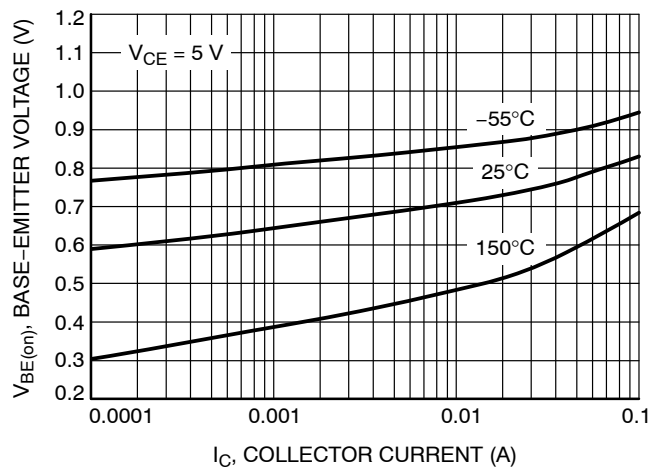


Figure 4. Base Emitter Voltage vs. Collector Current

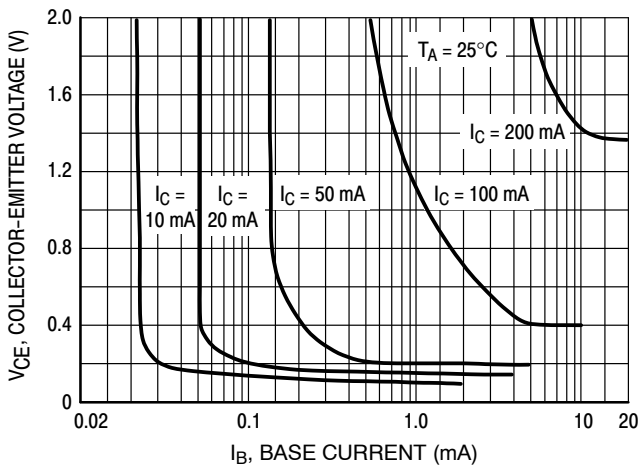


Figure 5. Collector Saturation Region

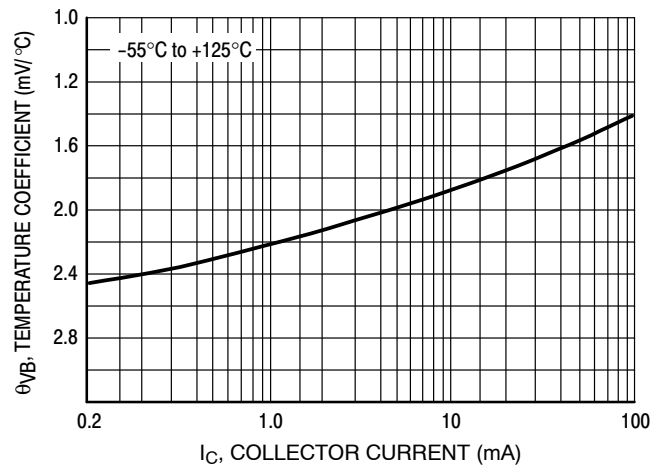
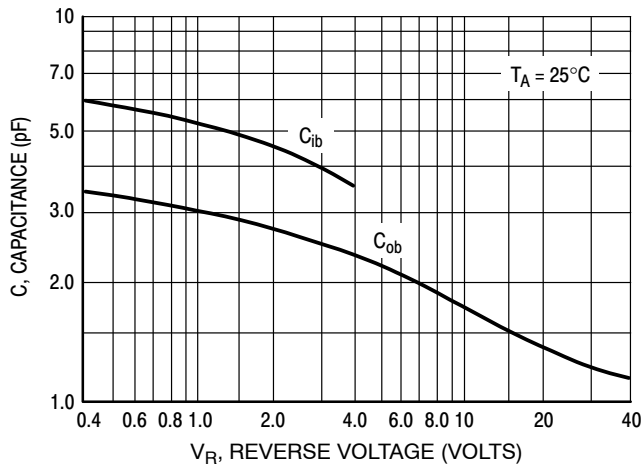
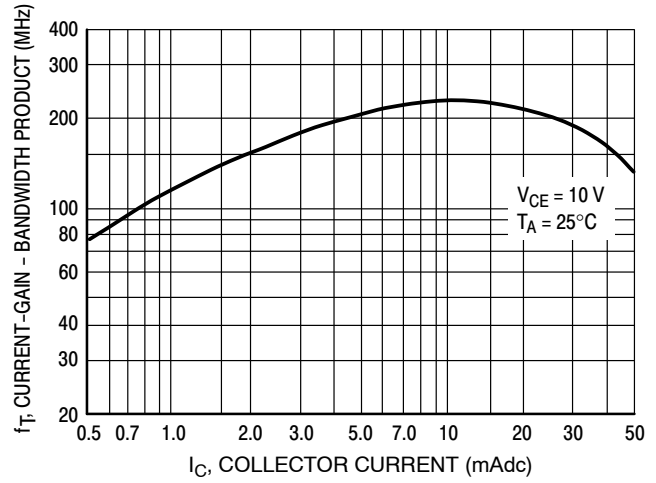


Figure 6. Base-Emitter Temperature Coefficient

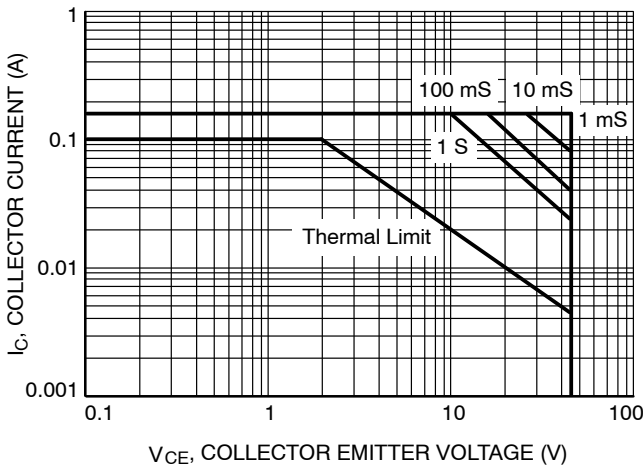
**6.ELECTRICAL CHARACTERISTICS CURVES(Con.)**



**Figure 7. Capacitances**



**Figure 8. Current – Gain – Bandwidth Product**

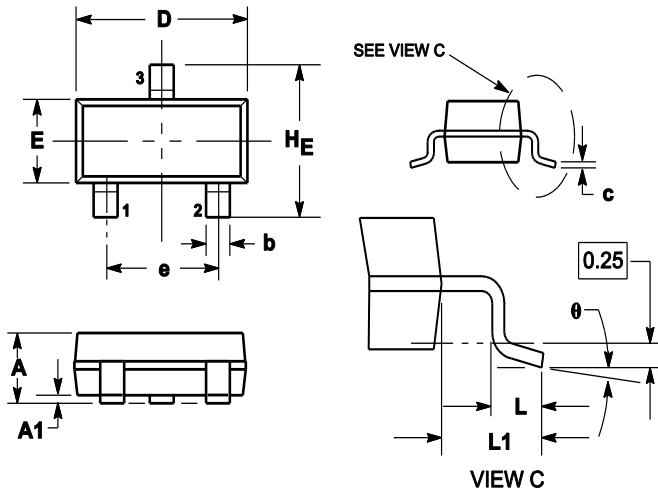


**Figure 9. Safe Operating Area for**

### 7. OUTLINE AND DIMENSIONS

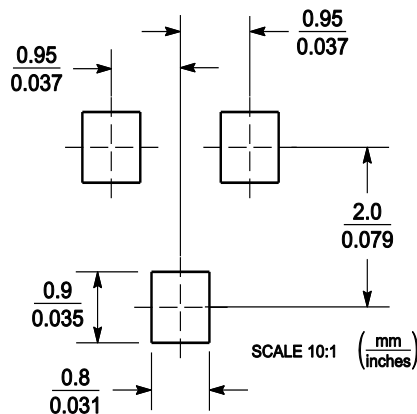
Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1	1.11	0.035	0.04	0.044
A1	0.01	0.06	0.1	0.001	0.002	0.004
b	0.37	0.44	0.5	0.015	0.018	0.02
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.9	3.04	0.11	0.114	0.12
E	1.20	1.3	1.4	0.047	0.051	0.055
e	1.78	1.9	2.04	0.07	0.075	0.081
L	0.10	0.2	0.3	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
HE	2.10	2.4	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

### 8. SOLDERING FOOTPRINT



## **DISCLAIMER**

- Curve guarantee in the specification. The curve of test items with electric parameter is used as quality guarantee. The curve of test items without electric parameter is used as reference only.
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