

Amplifier Transistors

NPN Silicon

- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

ORDERING INFORMATION

Device	Marking	Shipping
(S-)LMBT6428LT1G	1KM	3000/Tape & Reel
(S-)LMBT6428LT3G	1KM	10000/Tape & Reel
(S-)LMBT6429LT1G	M1L	3000/Tape & Reel
(S-)LMBT6429LT3G	M1L	10000/Tape & Reel

MAXIMUM RATINGS

Rating	Symbol	Value		Unit
		6428LT1	6429LT1	
Collector–Emitter Voltage	V_{CE0}	50	45	Vdc
Collector–Base Voltage	V_{CBO}	60	55	Vdc
Emitter–Base Voltage	V_{EBO}	6.0		Vdc
Collector Current — Continuous	I_C	200		mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR– 5 Board, (1) $T_A = 25^\circ\text{C}$	P_D	225	mW
Derate above 25°C		1.8	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate, (2) $T_A = 25^\circ\text{C}$	P_D	300	mW
Derate above 25°C		2.4	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

DEVICE MARKING

(S-)LMBT6428LT1G = 1KM, (S-)LMBT6429LT1G = M1L

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

Characteristic	Symbol	Min	Max	Unit
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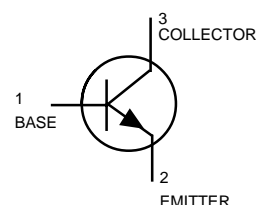
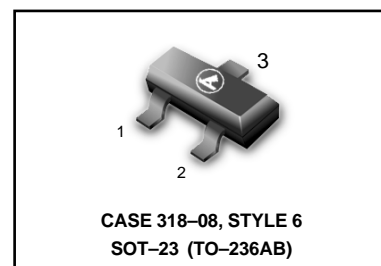
OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage(3) ($I_C = 1.0 \text{ mAdc}, I_B = 0$)	$V_{(BR)CEO}$			Vdc
LMBT6428LT1G		50	—	
LMBT6429LT1G		45	—	
Collector–Base Breakdown Voltage ($I_C = 0.1 \text{ mAdc}, I_E = 0$)	$V_{(BR)CBO}$			Vdc
LMBT6428LT1G		60	—	
LMBT6429LT1G		55	—	
Collector Cutoff Current ($V_{CE} = 30 \text{ Vdc}, I_B = 0$)	I_{CES}			μAdc
		—	0.1	
Collector Cutoff Current ($V_{CB} = 30 \text{ Vdc}, I_E = 0$)	I_{CBO}			μAdc
		—	0.01	
Emitter Cutoff Current ($V_{EB} = 5.0 \text{ Vdc}, I_C = 0$)	I_{EBO}			μAdc
		—	0.01	

1. FR–5 = 1.0 x 0.75 x 0.062 in.

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

LMBT6428LT1G
LMBT6429LT1G
S-LMBT6428LT1G
S-LMBT6429LT1G



LMBT6428LT1G LMBT6429LT1G
S-LMBT6428LT1G S-LMBT6429LT1G

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

Characteristic	Symbol	Min	Max	Unit
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DC CHARACTERISTICS

DC Current Gain ($I_C = 0.01 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$)	h_{FE}	250	—	—
	LMBT6428LT1G	250	—	—
	LMBT6429LT1G	500	—	—
($I_C = 0.1 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$)	LMBT6428LT1G	250	650	
	LMBT6429LT1G	500	1250	
($I_C = 1.0 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$)	LMBT6428LT1G	250	—	
	LMBT6429LT1G	500	—	
($I_C = 10 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$)	LMBT6428LT1G	250	—	
	LMBT6429LT1G	500	—	
Collector–Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}, I_B = 0.5 \text{ mAdc}$)	$V_{CE(sat)}$	—	0.2	Vdc
($I_C = 100 \text{ mAdc}, I_B = 5.0 \text{ mAdc}$)		—	0.6	
Base–Emitter On Voltage ($I_C = 1.0 \text{ mAdc}, V_{CE} = 5.0 \text{ mAdc}$)	$V_{BE(on)}$	0.56	0.66	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current Gain–Bandwidth Product ($V_{CE} = 5.0 \text{ Vdc}, I_C = 1.0 \text{ mAdc}, f = 100 \text{ MHz}$)	f_T	100	700	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}, I_E = 0, f = 1.0 \text{ MHz}$)	C_{obo}	—	3.0	pF
Input Capacitance ($V_{EB} = 0.5 \text{ Vdc}, I_C = 0, f = 1.0 \text{ MHz}$)	C_{ibo}	—	8.0	pF

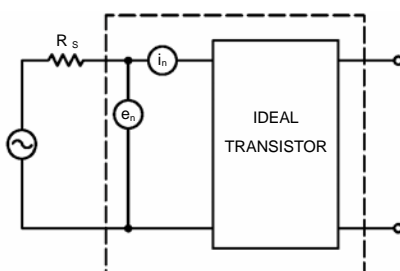


Figure 1. Transistor Noise Model

LMBT6428LT1G LMBT6429LT1G
S-LMBT6428LT1G S-LMBT6429LT1G

NOISE CHARACTERISTICS

($V_{CE} = 5.0 \text{ Vdc}$, $T_A = 25^\circ\text{C}$)

NOISE VOLTAGE

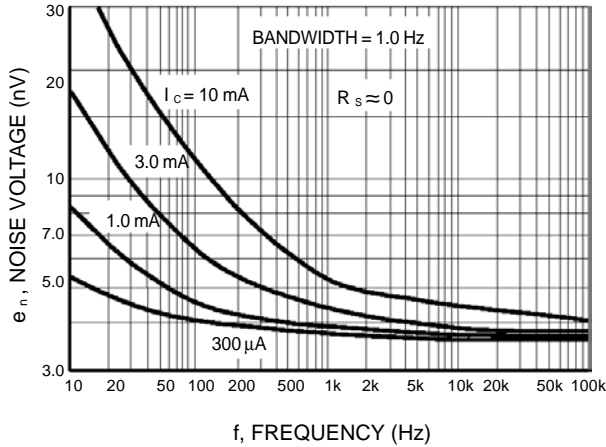


Figure 2. Effects of Frequency

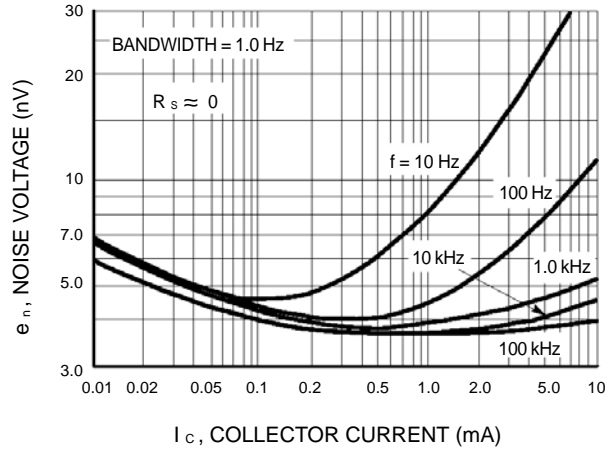


Figure 3. Effects of Collector Current

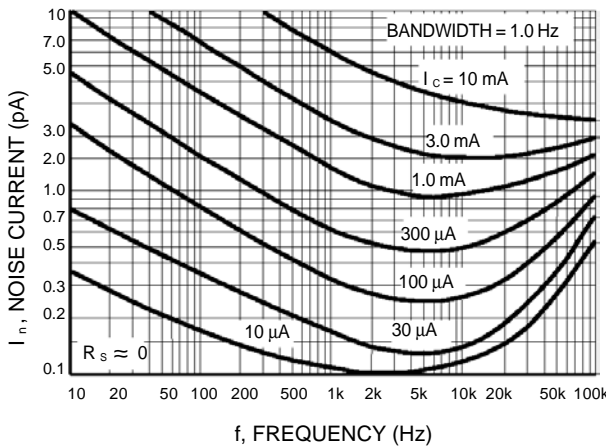


Figure 4. Noise Current

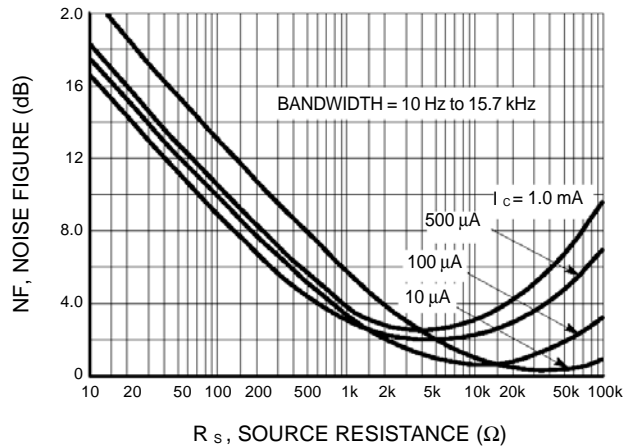


Figure 5. Wideband Noise Figure

100 Hz NOISE DATA

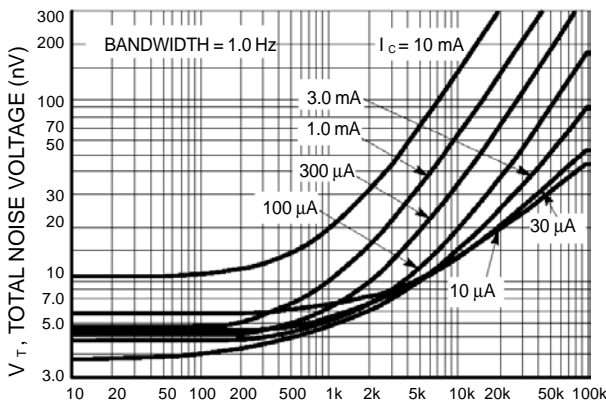


Figure 6. Total Noise Voltage

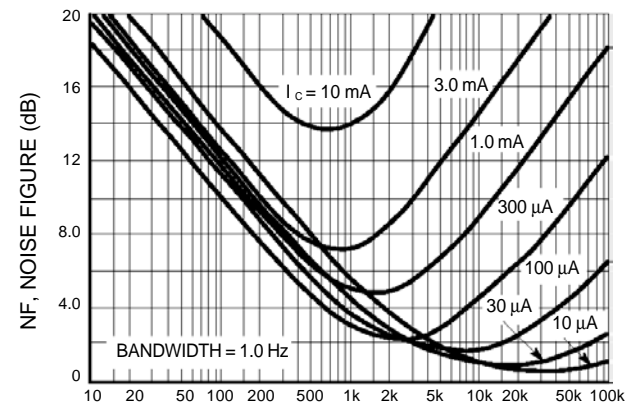


Figure 7. Noise Figure

LMBT6428LT1G LMBT6429LT1G
S-LMBT6428LT1G S-LMBT6429LT1G

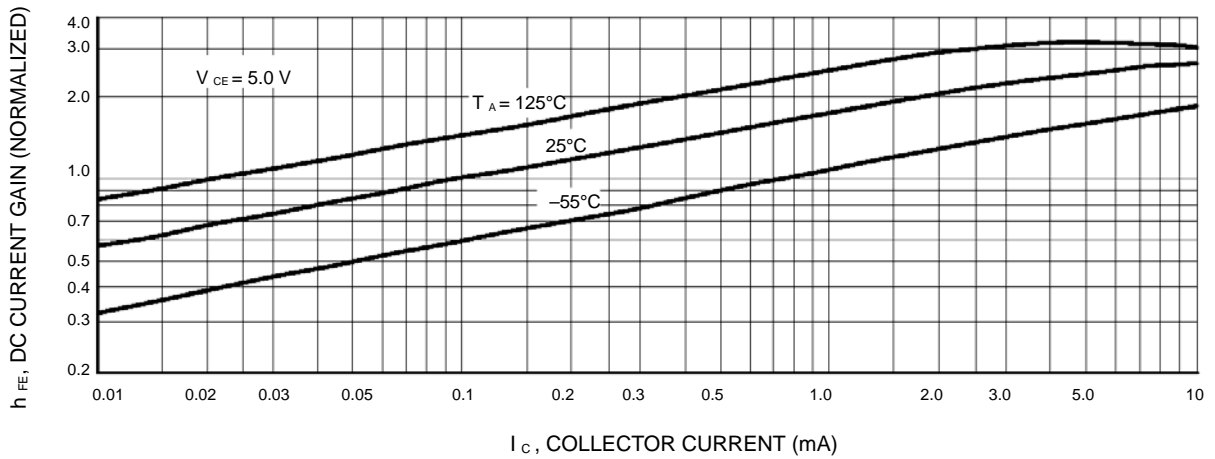


Figure 8. DC Current Gain

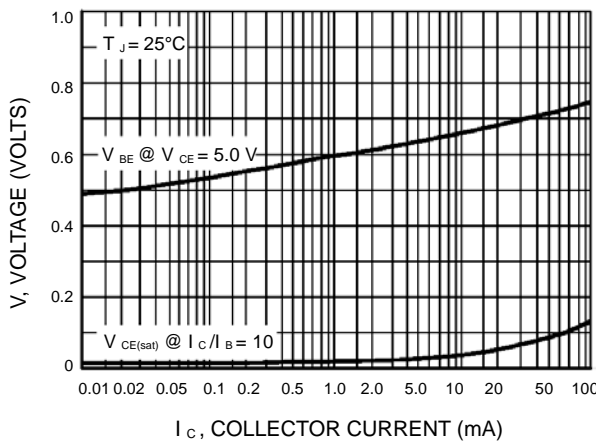


Figure 9. "On" Voltages

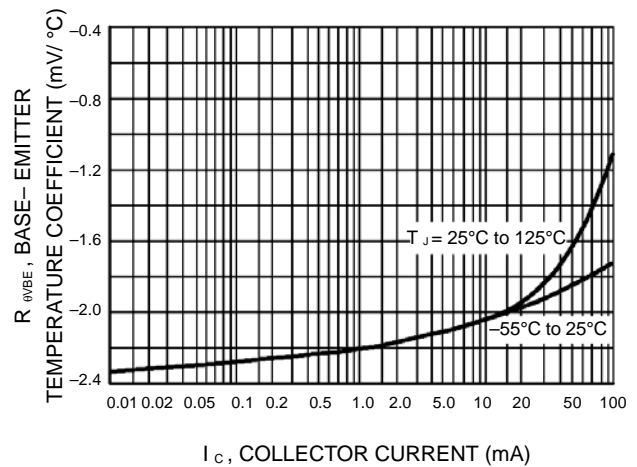


Figure 10. Temperature Coefficients

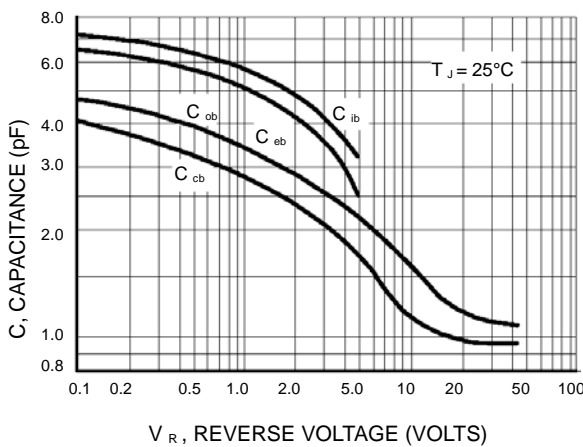


Figure 11. Capacitance

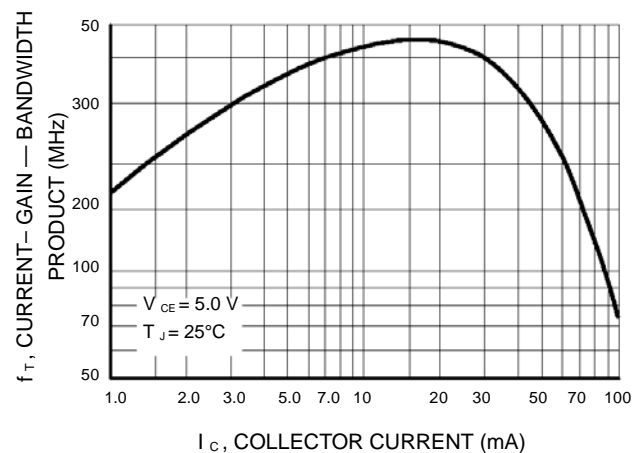
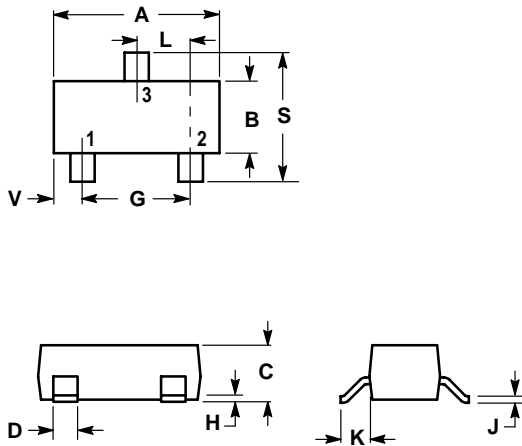


Figure 12. Current-Gain — Bandwidth Product

**LMBT6428LT1G LMBT6429LT1G
S-LMBT6428LT1G S-LMBT6429LT1G**
SOT-23
NOTES:

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



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

