

VHF / UHF Transistor

NPN Silicon

- Pb-Free Package is Available.

Ordering Information

Device	Marking	Shipping
LMBT918LT1G	M3B	3000/Tape&Reel
LMBT918LT3G	M3B	10000/Tape&Reel

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	15	Vdc
Collector–Base Voltage	V_{CBO}	30	Vdc
Emitter–Base Voltage	V_{EBO}	3.0	Vdc
Collector Current — Continuous	I_C	50	mAdc

THERMAL CHARACTERISTICS

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

DEVICE MARKING

LMBT918LT1G = M3B

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

Characteristic	Symbol	Min	Max	Unit
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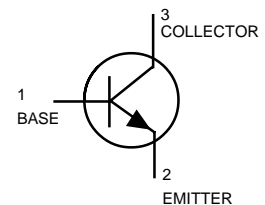
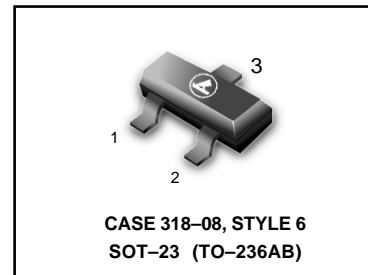
OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ($I_C = 3.0 \text{ mAdc}, I_E = 0$)	$V_{(BR)CEO}$	15	—	Vdc
Collector–Base Breakdown Voltage ($I_C = 1.0 \mu\text{Adc}, I_E = 0$)	$V_{(BR)CBO}$	30	—	Vdc
Emitter–Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}, I_C = 0$)	$V_{(BR)EBO}$	3.0	—	Vdc
Collector Cutoff Current ($V_{CB} = 15 \text{ Vdc}, I_E = 0$)	I_{CBO}	—	50	nAdc

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.

LMBT918LT1G



LMBT918LT1G

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

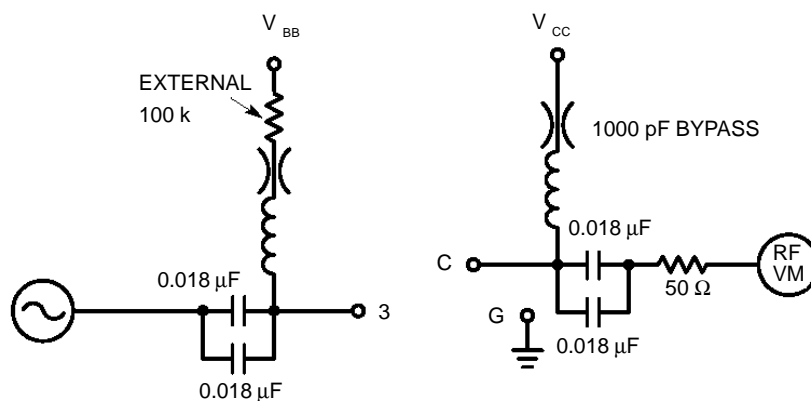
Characteristic	Symbol	Min	Max	Unit
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ON CHARACTERISTICS

DC Current Gain ($I_C = 3.0\text{ mAdc}$, $V_{CE} = 1.0\text{ Vdc}$)	h_{FE}	20	—	—
Collector–Emitter Saturation Voltage ($I_C = 10\text{ mAdc}$, $I_B = 1.0\text{ mAdc}$)	$V_{CE(sat)}$	—	0.4	Vdc
Base–Emitter Saturation Voltage ($I_C = 10\text{ mAdc}$, $I_B = 1.0\text{ mAdc}$)	$V_{BE(sat)}$	—	1.0	Vdc

SMALL–SIGNAL CHARACTERISTICS

Current–Gain — Bandwidth Product ($I_C = 4.0\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$, $f = 100\text{ MHz}$)	f_T	600	—	MHz
Output Capacitance ($V_{CB} = 0\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$) ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{obo}	—	3.0 1.7	pF
Input Capacitance ($V_{EB} = 0.5\text{ Vdc}$, $I_C = 0$, $f = 1.0\text{ MHz}$)	C_{ibo}	—	2.0	pF
Noise Figure ($I_C = 1.0\text{ mAdc}$, $V_{CE} = 6.0\text{ Vdc}$, $R_S = 50\ \Omega$, $f = 60\text{ MHz}$) (Figure 1)	NF	—	6.0	dB
Power Output ($I_C = 8.0\text{ mAdc}$, $V_{CB} = 15\text{ Vdc}$, $f = 500\text{ MHz}$)	P_{out}	30	—	mW
Common–Emitter Amplifier Power Gain ($I_C = 6.0\text{ mAdc}$, $V_{CB} = 12\text{ Vdc}$, $f = 200\text{ MHz}$)	G_{pe}	11	—	dB



NF TEST CONDITIONS

$I_C = 1.0\text{ mA}$
 $V_{CE} = 6.0\text{ VOLTS}$
 $R_S = 50\ \Omega$
 $f = 60\text{ MHz}$

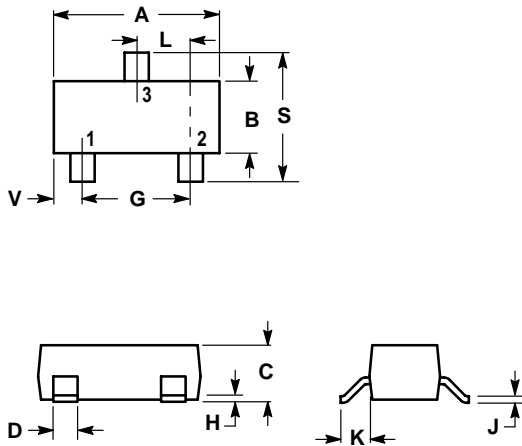
G_{pe} TEST CONDITIONS

$I_C = 6.0\text{ mA}$
 $V_{CE} = 12\text{ VOLTS}$
 $f = 200\text{ MHz}$

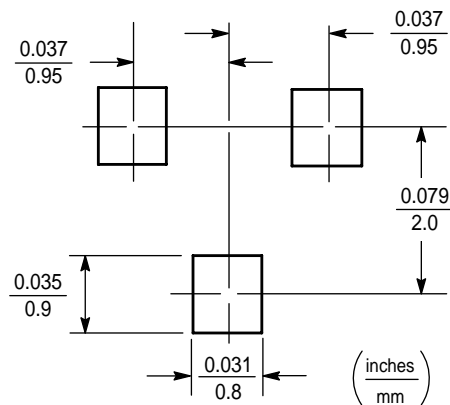
Figure 1. NF, G_{pe} Measurement Circuit 20–200

LMBT918LT1G
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

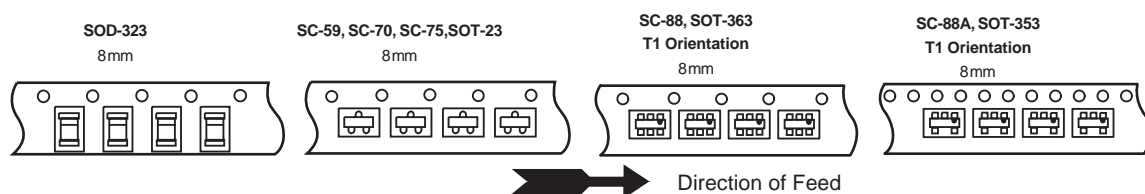


Tape & Reel and Packaging Specifications for Small-Signal Transistors, FETs and Diodes

Embossed Tape and Reel is used to facilitate automatic pick and place equipment feed requirements. The tape is used as the shipping container for various products and requires a minimum of handling. The antistatic/conductive tape provides a secure cavity for the product when sealed with the “peel-back” cover tape.

- Two Reel Sizes Available (7"and 13",)
- Used for Automatic Pick and Place Feed Systems
- Minimizes Product Handling
- EIA 481, -1, -2
- SOT-23, SC-70/SOT-323, SC-89, SC-88/SOT-363, SC-88A/SOT-353, SOD-323, SOD-523 in 8 mm Tape

Use the standard device title and add the required suffix as listed in the option table below (Table 1). Note that the individual reels have a finite number of devices depending on the type of product contained in the tape. Also note the minimum lot size is one full reel for each line item, and orders are required to be in increments of the single reel quantity.

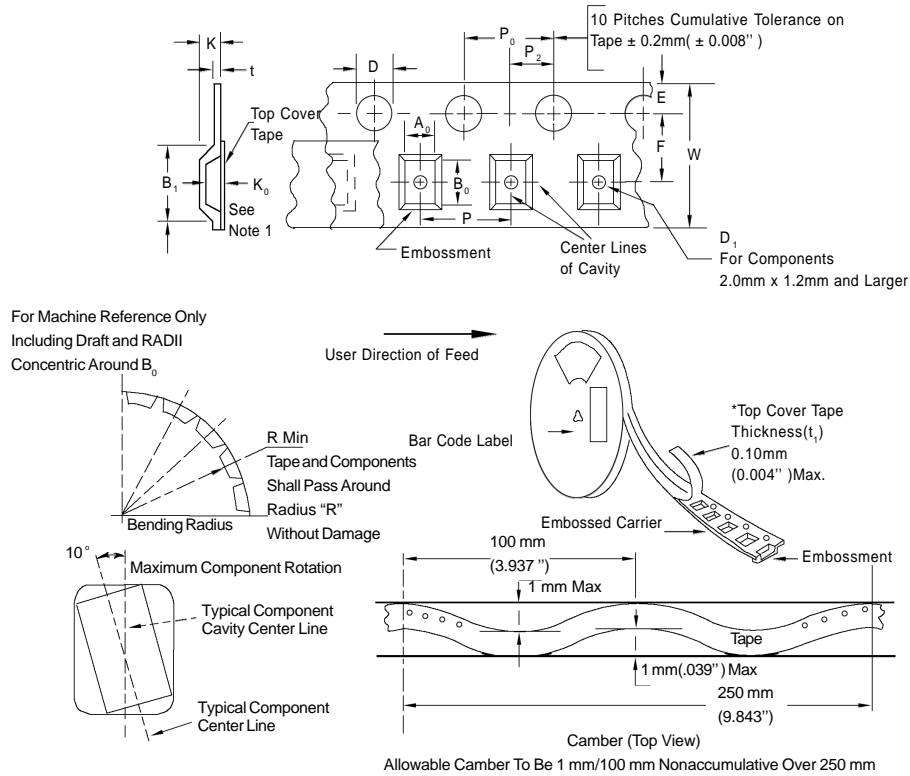


Typical Reel Orientations

Table 1. EMBOSSED TAPE AND REEL ORDERING INFORMATION

Package	Tape Width (mm)	Pitch mm	Reel Size mm(inch)	Devices Per Reel and Minimum Order Quantity	Device Suffix
SOT-23	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SC-70/SOT-323	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SC-89	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SC-88/SOT-363	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SC-88A/SOT-353	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SOD-323	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SOD-523	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3

EMBOSSED TAPE AND REEL DATA FOR DISCRETES CARRIER TAPE SPECIFICATIONS



DIMENSIONS

Tape Size	B ₁ Max	D	D ₁	E	F	K	P ₀	P ₂	RMin	TMax	WMax
8mm	4.55mm (.179")	1.5+0.1mm - 0.0	1.0Min (.039")	1.75±0.1mm (.069±.004)	3.5±0.05mm (.138±.002")	2.4mmMax (.094")	4.0 ± 0.1mm (.157 ± .004")	2.0 ± 0.1mm (.079 ± .002")	25mm (.98")	0.6mm (.024")	8.3mm (.327")
12mm	8.2mm (.323")	(.059+.004" -0.0)	1.5mmMin (.060")		5.5±0.05mm (.217±.002")	6.4mmMax (.252")			30mm (1.18")		12 ± .30mm (.470±.012")
16mm	12.1mm (.476")				7.5±0.10mm (.295±.004")	7.9mmMax (.311")					16.3mm (.642")
24mm	20.1mm (.791")				11.5±0.1mm (.453±.004")	11.9mmMax (.468")					24.3mm (.957")

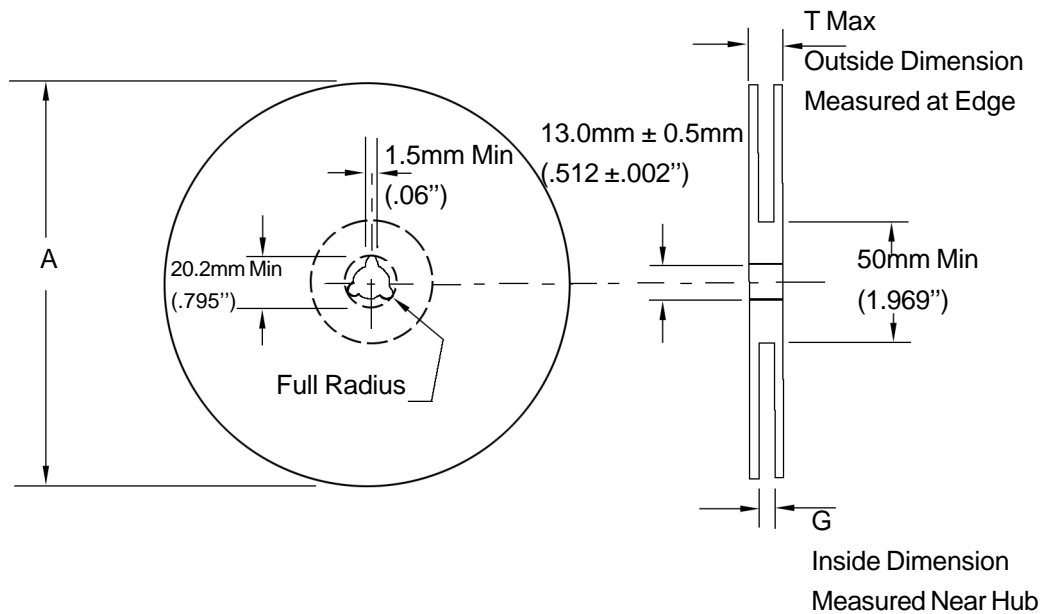
Metric dimensions govern - English are in parentheses for reference only.

NOTE 1: A₀, B₀, and K₀ are determined by component size. The clearance between the components and the cavity must be within .05 mm min. to .50 mm max.,

NOTE 2: the component cannot rotate more than 10° within the determined cavity.

NOTE 3: If B₁ exceeds 4.2 mm (.165") for 8 mm embossed tape, the tape may not feed through all tape feeders.

EMBOSSED TAPE AND REEL DATA FOR DISCRETES



Size	A Max	G	T Max
8 mm	330mm (12.992")	8.4mm+1.5mm, -0.0 (.33"+.059", -0.00)	14.4mm (.56")
12mm	330mm (12.992")	12.4mm+2.0mm, -0.0 (.49 "+ .079", -0.00)	18.4mm (.72")
16mm	360mm (14.173")	16.4mm+2.0mm, -0.0 (.646"+.078", -0.00)	22.4mm (.882")
24 mm	360mm (14.173")	24.4mm+2.0mm, -0.0 (.961"+.070", -0.00)	30.4mm (1.197")

Reel Dimensions

Metric Dimensions Govern — English are in parentheses for reference only

Storage Conditions

Temperature: 5 to 40 Deg.C (20 to 30 Deg. C is preferred)

Humidity: 30 to 80 RH (40 to 60 is preferred)

Recommended Period: One year after manufacturing

(This recommended period is for the soldering condition only. The characteristics and reliabilities of the products are not restricted to this limitation)