

# VHF / UHF Transistor

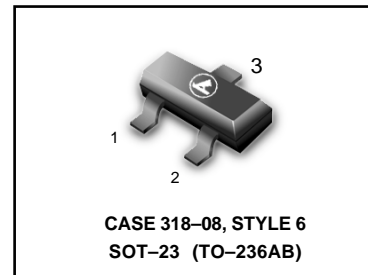
## NPN Silicon

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

### LMBT918LT1G

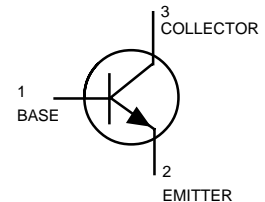
#### Ordering Information

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 $25^\circ\text{C}$	$P_D$	225	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Total Device Dissipation Alumina Substrate, (2) $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	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

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

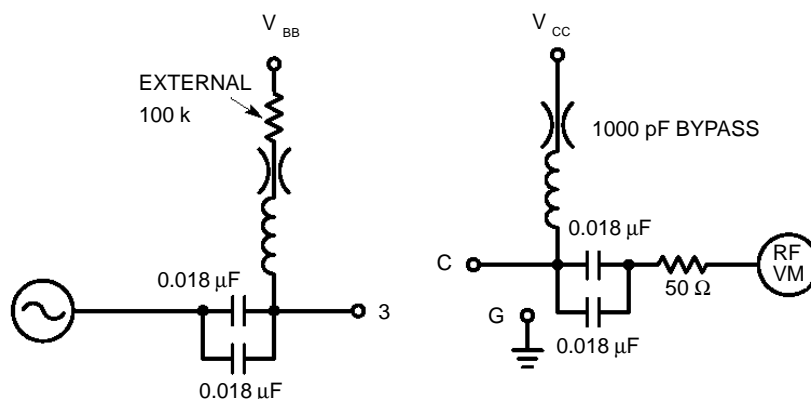
Characteristic	Symbol	Min	Max	Unit
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**ON CHARACTERISTICS**

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**

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

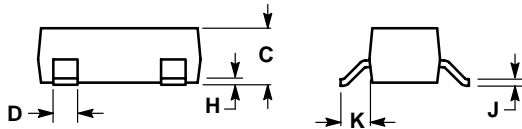
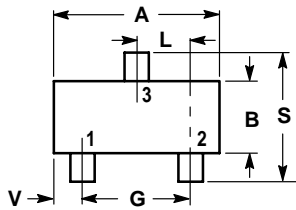
**Figure 1. NF,  $G_{pe}$  Measurement Circuit 20–200**

**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

