# The RF Line NPN Silicon High-Frequency Transistor

Designed for thick and thin-film circuits using surface mount components and requiring low-noise, high-gain signal amplification at frequencies to 1.0 GHz.

- High Gain Gpe = 17 dB Typ @ f = 450 MHz
- Low Noise NF = 2.5 dB Typ @ f = 450 MHz
- Available in tape and reel packaging options:
   T1 suffix = 3,000 units per reel

#### **MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	VCEO	10	Vdc
Collector-Base Voltage	VCBO	15	Vdc
Emitter-Base Voltage	V <sub>EBO</sub>	3.0	Vdc
Collector Current — Continuous	IC	20	mAdc
Maximum Junction Temperature	T <sub>Jmax</sub>	150	°C
Power Dissipation, T <sub>Case</sub> = 75°C (1) Derate linearly above T <sub>Case</sub> = 75°C @	P <sub>D(max)</sub>	0.300 4.00	W mW/°C

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Storage Temperature	T <sub>stg</sub>	-55 to +150	°C
Thermal Resistance Junction to Case	$R_{\theta JC}$	250	°C/W

#### **DEVICE MARKING**

MMBR5031LT1 = 7G

### **ELECTRICAL CHARACTERISTICS** (T<sub>A</sub> = 25°C unless otherwise noted)

Symbol	Min	Тур	Max	Unit		
OFF CHARACTERISTICS						
V(BR)CEO	10	_	_	Vdc		
V(BR)CBO	15	_	_	Vdc		
V(BR)EBO	3.0	_	_	Vdc		
ICBO	_	_	10	nAdc		
ON CHARACTERISTICS						
hFE	25	_	300	_		
SMALL-SIGNAL CHARACTERISTICS						
fT	_	1,000	_	MHz		
C <sub>cb</sub>	_	_	1.5	pF		
NF <sub>min</sub>	_	2.5	_	dB		
G <sub>pe</sub>	_	17	25	dB		
	V(BR)CEO V(BR)CBO V(BR)EBO ICBO  hFE  fT  Ccb  NFmin	V(BR)CEO 10 V(BR)CBO 15 V(BR)EBO 3.0 ICBO —  hFE 25  fT —  Ccb —  NFmin —	V(BR)CEO         10         —           V(BR)CBO         15         —           V(BR)EBO         3.0         —           ICBO         —         —           hFE         25         —           fT         —         1,000           Ccb         —         —           NFmin         —         2.5	V(BR)CEO         10         —         —           V(BR)CBO         15         —         —           V(BR)EBO         3.0         —         —           ICBO         —         —         10           hFE         25         —         300           fT         —         1,000         —           Ccb         —         —         1.5           NFmin         —         2.5         —		

NOTE:

#### REV 7



## **MMBR5031LT1**

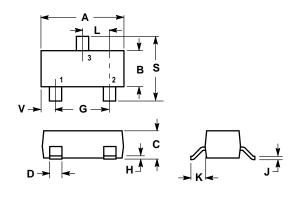
RF AMPLIFIER TRANSISTOR NPN SILICON



CASE 318-08, STYLE 6 SOT-23 LOW PROFILE (TO-236AA/AB)

<sup>1.</sup> Case temperature measured on collector lead immediately adjacent to body of package.

#### PACKAGE DIMENSIONS



#### NOTES:

- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- CONTROLLING DIMENSION: INCH.
  MAXIUMUM LEAD THICKNESS INCLUDES

LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL

	INCHES		MILLIMETERS		
DIM	MIN	MAX	MIN	MAX	
Α	0.1102	0.1197	2.80	3.04	
В	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	
Н	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	
٧	0.0177	0.0236	0.45	0.60	

#### STYLE 6:

- PIN 1. BASE
  - EMITTER 2.
  - COLLECTOR

**CASE 318-08 ISSUE AE** 

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