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The RF Line

NPN Silicon High-Frequency Transistor

MMBR5031LT1

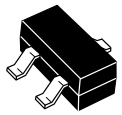
Designed for thick and thin–film circuits using surface mount components and requiring low–noise, high–gain signal amplification at frequencies to 1.0 GHz.

- High Gain — G_{pe} = 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

**RF AMPLIFIER
TRANSISTOR
NPN SILICON**

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	10	Vdc
Collector–Base Voltage	V_{CBO}	15	Vdc
Emitter–Base Voltage	V_{EBO}	3.0	Vdc
Collector Current — Continuous	I_C	20	mAdc
Maximum Junction Temperature	T_{Jmax}	150	°C
Power Dissipation, T_{case} = 75°C (1) Derate linearly above T_{case} = 75°C @	$P_{D(max)}$	0.300 4.00	W mW/°C



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

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Storage Temperature	T_{stg}	–55 to +150	°C
Thermal Resistance Junction to Case	$R_{\theta JC}$	250	°C/W

DEVICE MARKING

MMBR5031LT1 = 7G

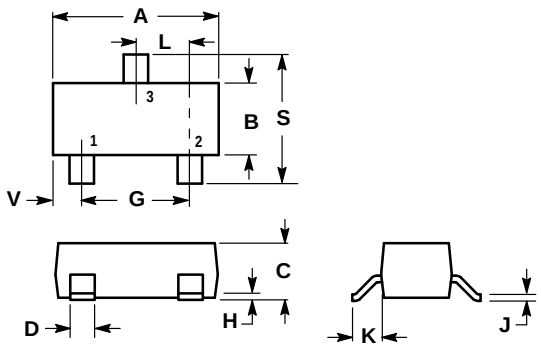
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage (I_C = 1.0 mAdc, I_B = 0)	$V_{(BR)CEO}$	10	—	—	Vdc
Collector–Base Breakdown Voltage (I_C = 0.01 mAdc, I_E = 0)	$V_{(BR)CBO}$	15	—	—	Vdc
Emitter–Base Breakdown Voltage (I_E = 0.01 mAdc, I_C = 0)	$V_{(BR)EBO}$	3.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 6.0 Vdc, I_E = 0)	I_{CBO}	—	—	10	nAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 1.0 mAdc, V_{CE} = 6.0 Vdc)	h_{FE}	25	—	300	—
SMALL–SIGNAL CHARACTERISTICS					
Current–Gain — Bandwidth Product (I_C = 5.0 mAdc, V_{CE} = 6.0 Vdc, f = 100 MHz)	f_T	—	1,000	—	MHz
Collector–Base Capacitance (V_{CE} = 6.0 Vdc, I_E = 0, f = 0.1 MHz)	C_{cb}	—	—	1.5	pF
Minimum Noise Figure (I_C = 1.0 mAdc, V_{CE} = 6.0 Vdc, f = 450 MHz)	NF_{min}	—	2.5	—	dB
Common–Emitter Amplifier Power Gain (I_C = 1.0 mAdc, V_{CE} = 6.0 Vdc, f = 450 MHz)	G_{pe}	—	17	25	dB

NOTE:
1.Case temperature measured on collector lead immediately adjacent to body of package.

ARCHIVE INFORMATION

PACKAGE DIMENSIONS



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

	INCHES		MILLIMETERS	
DIM	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

STYLE 6:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

CASE 318–08
ISSUE AF

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