

The RF Line NPN Silicon High-Frequency Transistor

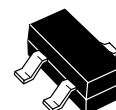
Designed primarily for use in high-gain, low-noise small-signal amplifiers for operation up to 2.5 GHz. Also usable in applications requiring fast switching times.

- High Current-Gain — Bandwidth Product
- Low Noise Figure @ $f = 1.0$ GHz —
NF(matched) = 1.9 dB (Typ)
- High Power Gain —
G_{pe}(matched) = 12.0 dB (Typ) @ $f = 1.0$ GHz
- Surface Mounted SOT-23 Offers Improved RF Performance,
Lower Package Parasitics and High Gain
- Available in tape and reel packaging options:
T1 suffix = 3,000 units per reel
T3 suffix = 10,000 units per reel

**NOT RECOMMENDED FOR NEW DESIGNS;
PRODUCT TO BE PHASED OUT.**

MMBR901LT1, T3

**I_C = 30 mA
SURFACE MOUNTED
HIGH-FREQUENCY
TRANSISTOR
NPN SILICON**



**CASE 318-08, STYLE 6
SOT-23**

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	15	Vdc
Collector-Base Voltage	V _{CB0}	25	Vdc
Emitter-Base Voltage	V _{EBO}	2.0	Vdc
Collector Current — Continuous	I _C	30	mA _{dc}
Power Dissipation @ T _C = 75°C (1) Derate above 75°C	P _D (max)	0.300 4.0	Watt mW/°C
Storage Temperature Range	T _{stg}	-55 to +150	°C
Maximum Junction Temperature	T _J (max)	150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Storage Temperature	T _{stg}	150	°C
Thermal Resistance, Junction to Case	R _{θJC}	250	°C/W

DEVICE MARKING

MMBR901LT1, T3 = 7A

NOTE:

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



Freescale Semiconductor, Inc.

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage (I _C = 1.0 mA, I _B = 0)	V _{(BR)CEO}	15	—	—	Vdc
Collector–Base Breakdown Voltage (I _C = 0.1 mA, I _E = 0)	V _{(BR)CBO}	25	—	—	Vdc
Emitter–Base Breakdown Voltage (I _E = 0.1 mA, I _C = 0)	V _{(BR)EBO}	2.0	—	—	Vdc
Collector Cutoff Current (V _{CB} = 15 Vdc, I _E = 0)	I _{CBO}	—	—	50	nAdc

ON CHARACTERISTICS

DC Current Gain (I _C = 5.0 mA, V _{CE} = 5.0 Vdc)	h _{FE}	50	—	200	—
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FUNCTIONAL TESTS

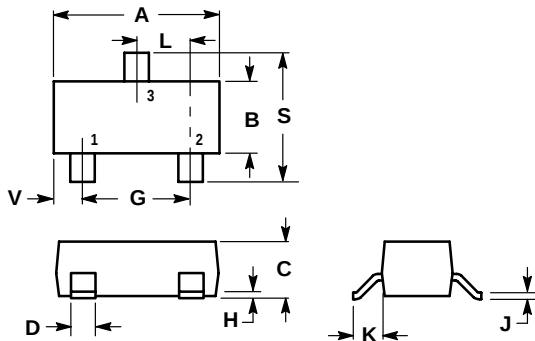
Minimum Noise Figure (V _{CE} = 6.0 Vdc, I _C = 5.0 mA, f = 1.0 GHz) (V _{CE} = 10 Vdc, I _C = 5.0 mA, f = 1.0 GHz)	NF _{min}	—	1.9	—	dB
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SMALL-SIGNAL CHARACTERISTICS

Output Capacitance (V _{CB} = 10 Vdc, I _C = 5.0 mA, f = 1.0 GHz)	C _{obo}	—	—	1.0	pF
Common–Emitter Amplifier Gain (V _{CC} = 6.0 Vdc, I _C = 5.0 mA, f = 1.0 GHz)	G _{pe}	—	12	—	dB

Freescale Semiconductor, Inc.

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.

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

STYLE 6:

1. BASE
2. EMITTER
3. COLLECTOR

**CASE 318-08
ISSUE AF**

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MMBR901LT1/D