

## 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 —  $G_{pe} = 15$  dB Typ @  $f = 500$  MHz
- Low Noise —  $NF = 2.4$  dB Typ @  $f = 500$  MHz
- Available in tape and reel packaging options by adding suffix:  
T1 suffix = 3,000 units per reel  
T3 suffix = 10,000 units per reel

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	15	Vdc
Collector-Base Voltage	$V_{CBO}$	20	Vdc
Emitter-Base Voltage	$V_{EBO}$	3.0	Vdc
Collector Current — Continuous	$I_C$	35	mAdc
Maximum Junction Temperature	$T_{Jmax}$	150	°C
Power Dissipation, $T_A = 75^\circ\text{C}^*$ Derate linearly above $75^\circ\text{C}$ @	$P_{D(max)}$	0.268 3.57	W mW/°C

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Storage Temperature	$T_{stg}$	-55 to +150	°C
Thermal Resistance Junction to Case*	$R_{\theta JC}$	280	°C/W

\* Package mounted on 99.5% alumina  $10 \times 8 \times 0.6$  mm.

### DEVICE MARKING

MMBR920LT1, T3 = 7B

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

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ( $I_C = 1.0$ mAdc, $I_B = 0$ )	$V_{(BR)CEO}$	15	—	—	Vdc
Collector-Base Breakdown Voltage ( $I_C = 0.1$ mAdc, $I_E = 0$ )	$V_{(BR)CBO}$	20	—	—	Vdc
Emitter-Base Breakdown Voltage ( $I_E = 0.1$ mAdc, $I_C = 0$ )	$V_{(BR)EBO}$	2.0	—	—	Vdc
Collector Cutoff Current ( $V_{CB} = 10$ Vdc, $I_E = 0$ )	$I_{CBO}$	—	—	50	nAdc

### ON CHARACTERISTICS

DC Current Gain ( $I_C = 14$ mAdc, $V_{CE} = 10$ Vdc)	$h_{FE}$	25	—	250	—
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### SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product ( $I_C = 14$ mAdc, $V_{CE} = 10$ Vdc, $f = 0.5$ GHz)	$f_T$	—	4.5	—	GHz
Collector-Base Capacitance ( $V_{CB} = 10$ Vdc, $I_E = 0$ , $f = 1.0$ MHz)	$C_{cb}$	—	—	1.0	pF
Noise Figure ( $I_C = 2.0$ mAdc, $V_{CE} = 10$ Vdc, $f = 0.5$ GHz) ( $I_C = 2.0$ mAdc, $V_{CE} = 10$ Vdc, $f = 1.0$ GHz)	NF	—	2.4 3.0	—	dB
Common-Emitter Amplifier Power Gain ( $I_C = 2.0$ mAdc, $V_{CE} = 10$ Vdc, $f = 0.5$ GHz) ( $I_C = 2.0$ mAdc, $V_{CE} = 10$ Vdc, $f = 1.0$ GHz)	$G_{pe}$	—	15 10	—	dB

REV 6

**MMBR920LT1, T3**

RF AMPLIFIER  
TRANSISTOR  
NPN SILICON



CASE 318-07, STYLE 6  
SOT-23  
LOW PROFILE