

MOTOROLA
SEMICONDUCTOR TECHNICAL DATA

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 — $G_{pe} = 15 \text{ dB Typ @ } f = 500 \text{ MHz}$
- Low Noise — $NF = 2.4 \text{ dB Typ @ } f = 500 \text{ MHz}$
- 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 $75^\circ\text{C} \oplus$	$P_{D(max)}$	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 x 8 x 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 ($I_C = 1.0 \text{ mAdc}, I_E = 0$)	$V_{(BR)CEO}$	15	—	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 0.1 \text{ mAdc}, I_E = 0$)	$V_{(BR)CBO}$	20	—	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 0.1 \text{ mAdc}, I_C = 0$)	$V_{(BR)EBO}$	2.0	—	—	Vdc
Collector Cutoff Current ($V_{CB} = 10 \text{ Vdc}, I_E = 0$)	I_{CBO}	—	—	50	nA dc

ON CHARACTERISTICS

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

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

MMBR920LT1, T3

RF AMPLIFIER
TRANSISTOR
NPN SILICON



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

