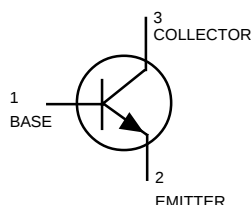


VHF / UHF Transistor

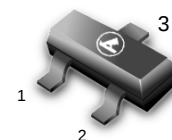
NPN Silicon

MMBT918LT1



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	15	Vdc
Collector–Base Voltage	V_{CBO}	30	Vdc
Emitter–Base Voltage	V_{EBO}	3.0	Vdc
Collector Current — Continuous	I_C	50	mAdc



CASE 318–08, STYLE 6
SOT–23 (TO–236AB)

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR– 5 Board, (1) $T_A = 25^\circ\text{C}$	P_D	225	mW
Derate above 25°C		1.8	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Total Device Dissipation Alumina Substrate, (2) $T_A = 25^\circ\text{C}$	P_D	300	mW
Derate above 25°C		2.4	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Junction and Storage Temperature	T_J, T_{stg}	–55 to +150	$^\circ\text{C}$

DEVICE MARKING

MMBT9181LT1 = M3B

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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ($I_C = 3.0 \text{ mAdc}, I_E = 0$)	$V_{(BR)CEO}$	15	—	Vdc
Collector–Base Breakdown Voltage ($I_C = 1.0 \mu\text{Adc}, I_E = 0$)	$V_{(BR)CBO}$	30	—	Vdc
Emitter–Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}, I_C = 0$)	$V_{(BR)EBO}$	3.0	—	Vdc
Collector Cutoff Current ($V_{CB} = 15 \text{ Vdc}, I_E = 0$)	I_{CBO}	—	50	nAdc

1. FR–5 = 1.0 x 0.75 x 0.062 in.

2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

MMBT918LT1

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

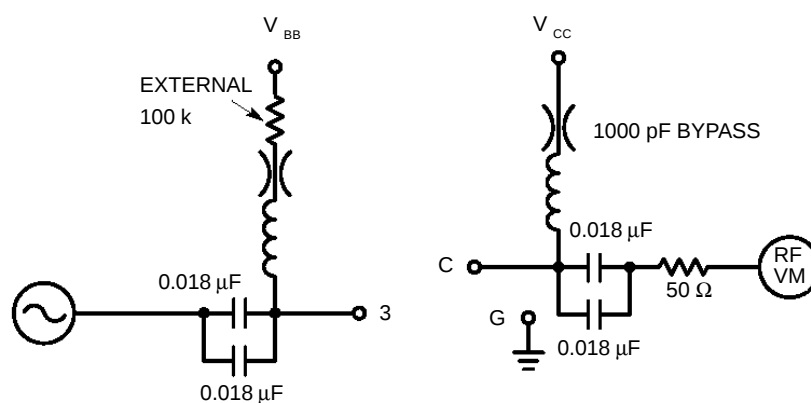
Characteristic	Symbol	Min	Max	Unit
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ON CHARACTERISTICS

DC Current Gain ($I_C = 3.0\text{ mA}$, $V_{CE} = 1.0\text{ Vdc}$)	h_{FE}	20	—	—
Collector-Emitter Saturation Voltage ($I_C = 10\text{ mA}$, $I_B = 1.0\text{ mA}$)	$V_{CE(sat)}$	—	0.4	Vdc
Base-Emitter Saturation Voltage ($I_C = 10\text{ mA}$, $I_B = 1.0\text{ mA}$)	$V_{BE(sat)}$	—	1.0	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product ($I_C = 4.0\text{ mA}$, $V_{CE} = 10\text{ Vdc}$, $f = 100\text{ MHz}$)	f_T	600	—	MHz
Output Capacitance ($V_{CB} = 0\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$) ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{obo}	—	3.0 1.7	pF
Input Capacitance ($V_{EB} = 0.5\text{ Vdc}$, $I_C = 0$, $f = 1.0\text{ MHz}$)	C_{ibo}	—	2.0	pF
Noise Figure ($I_C = 1.0\text{ mA}$, $V_{CE} = 6.0\text{ Vdc}$, $R_S = 50\ \Omega$, $f = 60\text{ MHz}$) (Figure 1)	NF	—	6.0	dB
Power Output ($I_C = 8.0\text{ mA}$, $V_{CB} = 15\text{ Vdc}$, $f = 500\text{ MHz}$)	P_{out}	30	—	mW
Common-Emitter Amplifier Power Gain ($I_C = 6.0\text{ mA}$, $V_{CB} = 12\text{ Vdc}$, $f = 200\text{ MHz}$)	G_{pe}	11	—	dB



NF TEST CONDITIONS

$I_C = 1.0\text{ mA}$
 $V_{CE} = 6.0\text{ VOLTS}$
 $R_S = 50\ \Omega$
 $f = 60\text{ MHz}$

G_{pe} TEST CONDITIONS

$I_C = 6.0\text{ mA}$
 $V_{CE} = 12\text{ VOLTS}$
 $f = 200\text{ MHz}$

Figure 1. NF, G_{pe} Measurement Circuit 20-200

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Datasheets for electronics components.