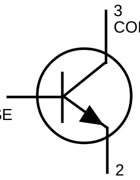
SEMICONDUCTOR

VHF / UFH Transistor

NPN Silicon

MMBT918LT1



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

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

THERMAL CHARACTERISTICS

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

DEVICE MARKING

MMBT9181LT1 = M3B

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

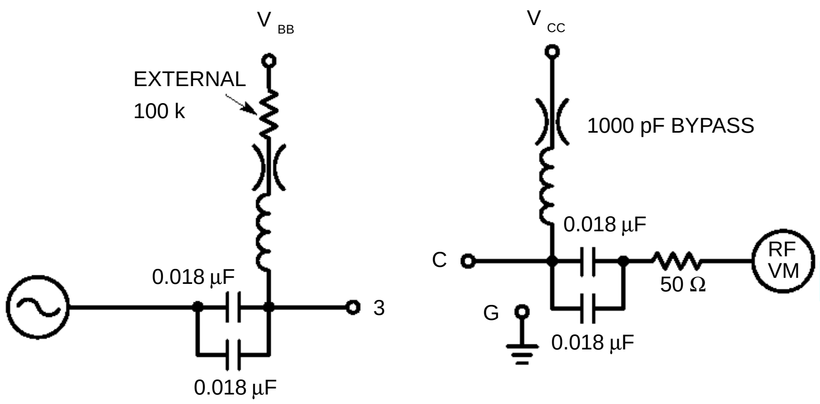
Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Breakdown Voltage (I_C = 3.0 mAdc, I_B = 0)	$V_{(BR)CEO}$	15	—	Vdc
Collector–Base Breakdown Voltage (I_C = 1.0 µAdc, I_E = 0)	$V_{(BR)CBO}$	30	—	Vdc
Emitter–Base Breakdown Voltage (I_E = 10 µAdc, I_C = 0)	$V_{(BR)EBO}$	3.0	—	Vdc
Collector Cutoff Current (V_{CB} = 15 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°C unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Max	Unit
ON CHARACTERISTICS				
DC Current Gain (I_C = 3.0 mAdc, V_{CE} = 1.0 Vdc)	h_{FE}	20	—	—
Collector–Emitter Saturation Voltage (I_C = 10 mAdc, I_B = 1.0 mAdc)	$V_{CE(sat)}$	—	0.4	Vdc
Base–Emitter Saturation Voltage (I_C = 10 mAdc, I_B = 1.0 mAdc)	$V_{BE(sat)}$	—	1.0	Vdc
SMALL–SIGNAL CHARACTERISTICS				
Current–Gain — Bandwidth Product (I_C = 4.0 mAdc, V_{CE} = 10 Vdc, f = 100 MHz)	f_T	600	—	MHz
Output Capacitance	C_{obo}			pF
(V_{CB} = 0 Vdc, I_E = 0, f = 1.0 MHz)		—	3.0	
(V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)		—	1.7	
Input Capacitance (V_{EB} = 0.5 Vdc, I_C = 0, f = 1.0 MHz)	C_{ibo}	—	2.0	pF
Noise Figure (I_C = 1.0 mAdc, V_{CE} = 6.0 Vdc, R_S = 50 Ω, f = 60 MHz) (Figure 1)	NF	—	6.0	dB
Power Output (I_C = 8.0 mAdc, V_{CB} = 15 Vdc, f = 500 MHz)	P_{out}	30	—	mW
Common–Emitter Amplifier Power Gain (I_C = 6.0 mAdc, V_{CB} = 12 Vdc, f = 200 MHz)	G_{pe}	11	—	dB



NF TEST CONDITIONS
I_C = 1.0 mA
V_{CE} = 6.0 VOLTS
R_S = 50 Ω
f = 60 MHz

G_{pe} TEST CONDITIONS
I_C = 6.0 mA
V_{CE} = 12 VOLTS
f = 200 MHz

Figure 1. NF, G pe Measurement Circuit 20–200