MOTOROLA
SEMICONDUCTOR TECHNICAL DATA

The RF Line
NPN Silicon High-Frequency Transistor

MMBR931LT1, T3

. . . designed primarily for use in low-power amplifiers to 1.0 GHz. Ideal for pagers and other battery operated systems where power consumption is critical.

- Available in tape and reel packaging options by adding suffix:
  T1 suffix = 3,000 units per reel
  T3 suffix = 10,000 units per reel

RF AMPLIFIER TRANSISTOR NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	5.0	Vdc
Collector-Base Voltage	V_{CBO}	10	Vdc
Emitter-Base Voltage	V_{EBO}	2.0	Vdc
Collector Current — Continuous	I_C	5.0	mAdc
Maximum Junction Temperature	T_{Jmax}	150	°C
Power Dissipation, T_{case} = 75°C* Derate linearly above 75°C @	$P_{D(max)}$	0.150 2.00	W mW/°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Storage Temperature	T_{stg}	−55 to +150	°C
Thermal Resistance Junction to Case*	$R_{\theta JC}$	500	°C/W

* Package mounted on 99.5% alumina 10 x 8 x 0.6 mm.

CASE 318-07, STYLE 6
SOT-23
LOW PROFILE
(TO-236AA/AB)

DEVICE MARKING

MMBR931LT1, T3 = 7D

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 0.1 mAdc, I_B = 0)	$V_{(BR)CEO}$	15	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 0.01 mAdc, I_E = 0)	$V_{(BR)CBO}$	20	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 0.1 mAdc, I_C = 0)	$V_{(BR)EBO}$	3.5	—	—	Vdc
Collector Cutoff Current (V_{CB} = 5.0 Vdc, I_E = 0)	I_{CBO}	—	—	50	nAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 0.25 mAdc, V_{CE} = 1.0 Vdc)	h_{FE}	50	—	150	—
SMALL-SIGNAL CHARACTERISTICS					
Collector-Base Capacitance (V_{CB} = 1.0 Vdc, I_E = 0, f = 1.0 MHz)	C_{cb}	—	—	0.5	pF
Noise Figure (I_E = 0.25 mAdc, V_{CE} = 1.0 Vdc, f = 1.0 GHz)	NF	—	4.3	—	dB
Power Gain at Optimum Noise Figure (I_E = 0.25 mAdc, V_{CE} = 1.0 Vdc, f = 1.0 GHz)	G_{NF}	—	10	—	—

REV 6