

**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 GHz.

- High Gain —  $G_{pe} = 11$  dB Typ @  $f = 500$  MHz
- Low Noise —  $NF = 1.9$  dB Typ @  $f = 500$  MHz

**MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	12	Vdc
Collector-Base Voltage	$V_{CBO}$	15	Vdc
Emitter-Base Voltage	$V_{EBO}$	3.0	Vdc
Collector Current — Continuous	$I_C$	35	mAdc
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +150	°C

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max	Unit
*Total Device Dissipation, $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	350 2.8	mW mW/°C
Storage Temperature	$T_{stg}$	150	°C
*Thermal Resistance Junction to Ambient	$R_{\theta JA}$	357	°C/W

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

**DEVICE MARKING**

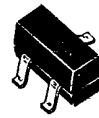
MMBR930 = 7C

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

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector-Emitter Breakdown Voltage ( $I_C = 1.0$ mAdc, $I_E = 0$ )	$V_{(BR)CEO}$	12	—	—	Vdc
Collector-Base Breakdown Voltage ( $I_C = 0.1$ mAdc, $I_E = 0$ )	$V_{(BR)CBO}$	15	—	—	Vdc
Emitter-Base Breakdown Voltage ( $I_E = 0.1$ mAdc, $I_C = 0$ )	$V_{(BR)EBO}$	3.0	—	—	Vdc
Collector Cutoff Current ( $V_{CB} = 5.0$ Vdc, $I_E = 0$ )	$I_{CBO}$	—	—	50	nAdc
<b>ON CHARACTERISTICS</b>					
DC Current Gain ( $I_C = 30$ mAdc, $V_{CE} = 5.0$ Vdc)	$h_{FE}$	25	—	250	—
<b>SMALL-SIGNAL CHARACTERISTICS</b>					
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, $V_{CE} = 5.0$ Vdc, $f = 0.5$ GHz) ( $I_C = 2.0$ mAdc, $V_{CE} = 5.0$ Vdc, $f = 1.0$ GHz)	NF	—	1.9 2.5	—	dB
Common-Emitter Amplifier Power Gain ( $I_C = 2.0$ mAdc, $V_{CE} = 5.0$ Vdc, $f = 0.5$ GHz) ( $I_C = 2.0$ mAdc, $V_{CE} = 5.0$ Vdc, $f = 0.5$ GHz)	$G_{pe}$	—	11 8.0	—	dB

**MMBR930**

**AMPLIFIER TRANSISTOR  
NPN SILICON**



**CASE 318-05, STYLE 6  
SOT-23  
(TO-236AA/AB)**