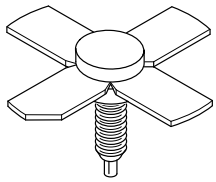
The RF Line
UHF Power Transistor

. . . designed primarily for wideband, large–signal output and driver amplifier stages to 1.0 GHz.

- Designed for Class A Linear Power Amplifiers
- Specified 25 Volt, 900 MHz Characteristics:
  Output Power — 4.5 Watts
  Power Gain — 7.0 dB Min, Class AB
- Gold Metallization for Improved Reliability

MRF1031

4.5 W, TO 1.0 GHz
LINEAR
UHF POWER TRANSISTOR
NPN SILICON



CASE 244–04, STYLE 1
(.280 SOE)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	30	Vdc
Collector–Base Voltage	V_{CBO}	60	Vdc
Emitter–Base Voltage	V_{EBO}	4.0	Vdc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	50 0.286	Watts W/°C
Operating Junction Temperature	T_J	200	°C
Storage Temperature Range	T_{stg}	–65 to +150	°C

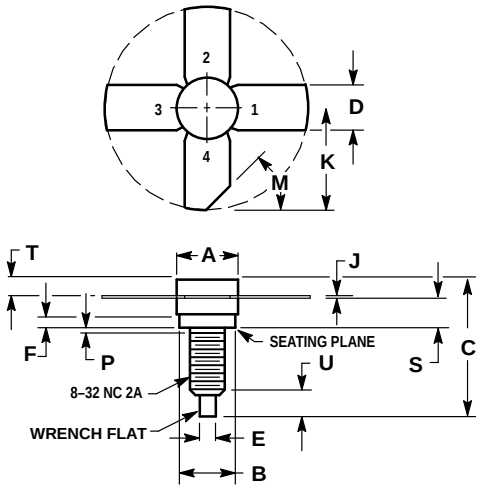
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case (T_C = 70°C)	$R_{\theta JC}$	3.5	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage (I_C = 20 mA, I_B = 0)	$V_{(BR)CEO}$	30	—	—	Vdc
Collector–Emitter Breakdown Voltage (I_C = 20 mA, V_{BE} = 0)	$V_{(BR)CES}$	60	—	—	Vdc
Collector–Base Breakdown Voltage (I_C = 20 mA, I_E = 0)	$V_{(BR)CBO}$	60	—	—	Vdc
Emitter–Base Breakdown Voltage (I_E = 5.0 mA, I_C = 0)	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 25 V, I_E = 0)	I_{CBO}	—	—	2.5	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 1.0 mA, V_{CE} = 5.0 V)	h_{FE}	20	—	80	—
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 28 V, I_E = 0, f = 1.0 MHz)	C_{ob}	—	—	14	pF
FUNCTIONAL TESTS					
Common–Emitter Amplifier Power Gain (V_{CE} = 25 V, P_{out} = 4.5 W, f = 900 MHz, I_C = 0.6 A)	G_{PE}	7.0	8.0	—	dB
Load Mismatch (V_{CE} = 25 V, I_C = 0.6 A, P_{out} = 4.5 W, f = 900 MHz, Load VSWR = ∞:1, All Phase Angles)	ψ	No Degradation in Output Power			

PACKAGE DIMENSIONS



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	7.06	7.26	0.278	0.286
B	6.20	6.50	0.244	0.256
C	14.99	16.51	0.590	0.650
D	5.46	5.96	0.215	0.235
E	1.40	1.65	0.055	0.065
G	1.52	—	0.060	—
J	0.08	0.17	0.003	0.007
K	11.05	—	0.435	—
M	45° NOM		45° NOM	
P	—	1.27	—	0.050
S	3.00	3.25	0.118	0.128
T	1.40	1.77	0.055	0.070
U	2.92	3.68	0.115	0.145

STYLE 1:
PIN 1. EMITTER
2. BASE
3. EMITTER
4. COLLECTOR

CASE 244–04
ISSUE J

Literature Distribution Centers:
USA: Motorola Literature Distribution; P.O. Box 20912; Phoenix, Arizona 85036.
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