Advance Information

The RF Small Signal Line

Silicon Lateral FET

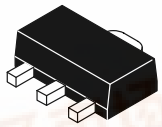
N–Channel Enhancement–Mode MOSFET

MXR9745T1
MXR9745RT1

31.5 dBm, 850 MHz
HIGH FREQUENCY
POWER TRANSISTOR
LDMOS FET

Designed for use in low voltage, moderate power amplifiers such as portable analog and digital cellular radios and PC RF modems.

- Performance Specifications at 6 Volt, 850 MHz:
  Output Power = 31.5 dBm Min
  Power Gain = 8.5 dB Typ
  Efficiency = 60% Min
- Guaranteed Ruggedness at Load VSWR = 20:1
- Available in Tape and Reel Packaging Options:
  T1 Suffix = 1,000 Units per Reel
- MXR9745RT1 is Gate–Drain Pin Out Reversed.
  All Electricals Same as MXR9745T1



CASE 345–03
(MXR9745RT1, STYLE 8)
(MXR9745T1, STYLE 9)
(SOT–89)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain–Source Voltage	V_{DSS}	35	Vdc
Drain–Gate Voltage (R_{GS} = 1 MΩ)	V_{DGO}	25	Vdc
Gate–Source Voltage	V_{GS}	±10	Vdc
Drain Current – Continuous	I_D	2	Adc
Total Device Dissipation @ T_C = 50°C Derate above 50°C	P_D	10 100	W mW/°C
Storage Temperature Range	T_{stg}	– 65 to +150	°C
Operating Junction Temperature	T_J	150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	10	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Drain–Source Leakage Current (V_{DS} = 35 V, V_{GS} = 0)	I_{DSS}	–	–	10	μAdc
Gate–Source Leakage Current (V_{GS} = 5 V, V_{DS} = 0)	I_{GSS}	–	–	1	μAdc

NOTE – **CAUTION** – MOS devices are susceptible to damage from electrostatic charge. Reasonable precautions in handling and packaging MOS devices should be observed.

ELECTRICAL CHARACTERISTICS – continued (T_C = 25°C unless otherwise noted)

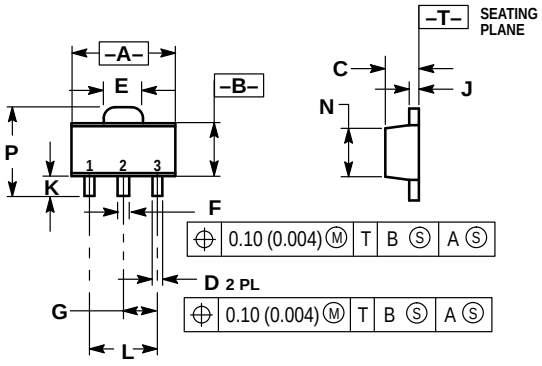
Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS					
Gate Threshold Voltage (V_{DS} = 6 V, I_D = 500 μA)	$V_{GS(th)}$	1	1.3	2	Vdc
Forward Transconductance (V_{DS} = 6 V, I_D = 400 mA)	g_{fs}	–	550	–	mmhos
Resistance Drain–Source (V_{GS} = 4 V, I_D = 100 mA)	$R_{DS(on)}$	–	1	2.5	Ω
DYNAMIC CHARACTERISTICS					
Input Capacitance (V_{DS} = 6 V, V_{GS} = 0, f = 1 MHz)	C_{iss}	–	14	–	pF
Output Capacitance (V_{DS} = 6 V, V_{GS} = 0, f = 1 MHz)	C_{oss}	–	11	–	pF
Feedback Capacitance (V_{DS} = 6 V, V_{GS} = 0, f = 1 MHz)	C_{rss}	–	1.8	–	pF
FUNCTIONAL CHARACTERISTICS					
Power Gain (V_{DD} = 6 Vdc, P_{in} = 23 dBm, I_{DQ} = 250 mA, f = 850 MHz)	G_{ps}	8	8.5	–	dB
Drain Efficiency (V_{DD} = 6 Vdc, P_{in} = 23 dBm, I_{DQ} = 250 mA, f = 850 MHz)	η_D	55	60	–	%
Ruggedness Test (V_{DD} = 6 Vdc, P_{in} = 23 dBm, I_{DQ} = 250 mA, f = 850 MHz, Load VSWR = 20:1, All Phase Angles at Frequency Test)	Ψ	No Degradation in Output Power after Test			

Table 1. Large Signal Impedance
V_{DD} = 6 V, P_{in} = 23 dBm, I_{DQ} = 250 mA

f MHz	Z_{in} Ohms	Z_{OL}* Ohms
850	4.8 – j6.4	6 – j7.5

Z_{OL}* is the conjugate of the optimum load impedance into which the device output operates at a given output power, voltage and frequency.

PACKAGE DIMENSIONS



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	4.40	4.60	0.174	0.181
B	2.29	2.60	0.091	0.102
C	1.40	1.60	0.056	0.062
D	0.36	0.48	0.015	0.018
E	1.62	1.80	0.064	0.070
F	0.44	0.55	0.018	0.021
G	1.50 BSC		0.059 BSC	
J	0.35	0.44	0.014	0.017
K	0.89	1.20	0.035	0.047
L	3.00 BSC		0.118 BSC	
N	2.14	2.28	0.084	0.089
P	3.94	4.25	0.156	0.167

STYLE 8:
PIN 1. GATE
2. SOURCE
3. DRAIN
(MXR9745RT1)

STYLE 9:
PIN 1. DRAIN
2. SOURCE
3. GATE
(MXR9745T1)

CASE 345–03
ISSUE H
(SOT–89)

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