

Advance Information

The RF Small Signal Line

Silicon Lateral FET

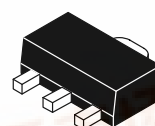
N-Channel Enhancement-Mode MOSFET

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

MXR9745T1
MXR9745RT1

31.5 dBm, 850 MHz
HIGH FREQUENCY
POWER TRANSISTOR
LDMOS FET



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

MAXIMUM RATINGS

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

THERMAL CHARACTERISTICS

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

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Drain-Source Leakage Current ($V_{DS} = 35 \text{ V}$, $V_{GS} = 0$)	I_{DSS}	–	–	10	μAdc
Gate-Source Leakage Current ($V_{GS} = 5 \text{ V}$, $V_{DS} = 0$)	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 ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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ON CHARACTERISTICS

Gate Threshold Voltage ($V_{DS} = 6\text{ V}$, $I_D = 500\text{ }\mu\text{A}$)	$V_{GS(th)}$	1	1.3	2	Vdc
Forward Transconductance ($V_{DS} = 6\text{ V}$, $I_D = 400\text{ mA}$)	g_{fs}	–	550	–	mmhos
Resistance Drain–Source ($V_{GS} = 4\text{ V}$, $I_D = 100\text{ mA}$)	$R_{DS(on)}$	–	1	2.5	Ω

DYNAMIC CHARACTERISTICS

Input Capacitance ($V_{DS} = 6\text{ V}$, $V_{GS} = 0$, $f = 1\text{ MHz}$)	C_{iss}	–	14	–	pF
Output Capacitance ($V_{DS} = 6\text{ V}$, $V_{GS} = 0$, $f = 1\text{ MHz}$)	C_{oss}	–	11	–	pF
Feedback Capacitance ($V_{DS} = 6\text{ V}$, $V_{GS} = 0$, $f = 1\text{ MHz}$)	C_{rss}	–	1.8	–	pF

FUNCTIONAL CHARACTERISTICS

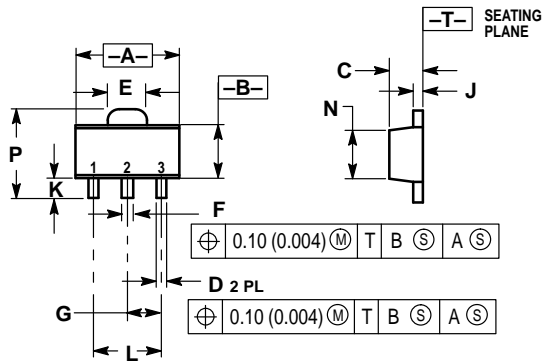
Power Gain ($V_{DD} = 6\text{ Vdc}$, $P_{in} = 23\text{ dBm}$, $I_{DQ} = 250\text{ mA}$, $f = 850\text{ MHz}$)	G_{ps}	8	8.5	–	dB
Drain Efficiency ($V_{DD} = 6\text{ Vdc}$, $P_{in} = 23\text{ dBm}$, $I_{DQ} = 250\text{ mA}$, $f = 850\text{ MHz}$)	η_D	55	60	–	%
Ruggedness Test ($V_{DD} = 6\text{ Vdc}$, $P_{in} = 23\text{ dBm}$, $I_{DQ} = 250\text{ mA}$, $f = 850\text{ MHz}$, Load VSWR = 20:1, All Phase Angles at Frequency Test)	Ψ	No Degradation in Output Power after Test			

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

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.

DIM	MILLIMETERS		INCHES	
	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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