

RF Power Field Effect Transistor

LDMOS, 865 — 960 MHz, 90W, 26V

5/14/04

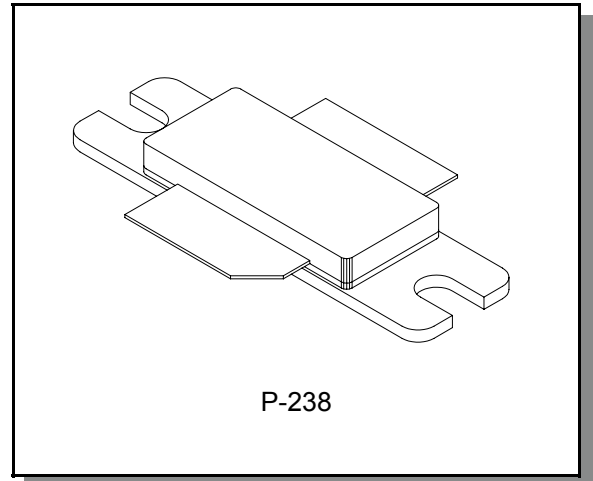
Preliminary

MAPLST0810-090CF

Features

- Designed for 865 to 960 MHz Broadband Commercial and Base Station Applications.
- Typical CW RF Performance at 960MHz, 26V_{DC}:
 - P_{OUT}: 90W (P_{1dB})
 - Gain: 18dB
 - Efficiency: 50%
- Ruggedness: 10:1 VSWR @ 90W CW, 26V, 900MHz
- High Gain, High Efficiency and High Linearity
- Internal Input Match
- Excellent Thermal Stability

Package Style



Maximum Ratings

Parameter	Symbol	Rating	Units
Drain—Source Voltage	V _{DSS}	65	V _{dc}
Gate—Source Voltage	V _{GS}	20	V _{dc}
Total Power Dissipation @ T _c = 25 °C	P _D	206	W
Storage Temperature	T _{STG}	-40 to +150	°C
Junction Temperature	T _J	+200	°C

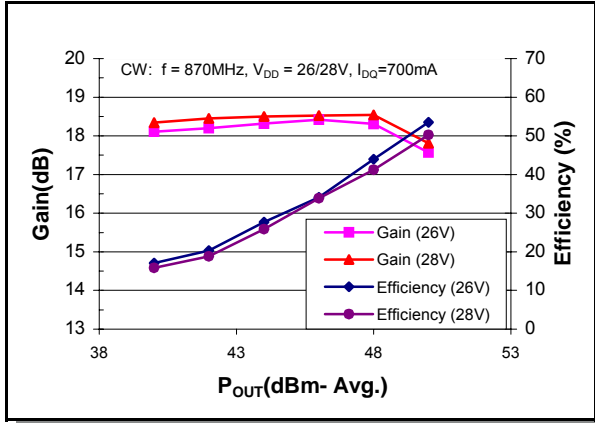
Thermal Characteristics

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}	0.85	°C/W

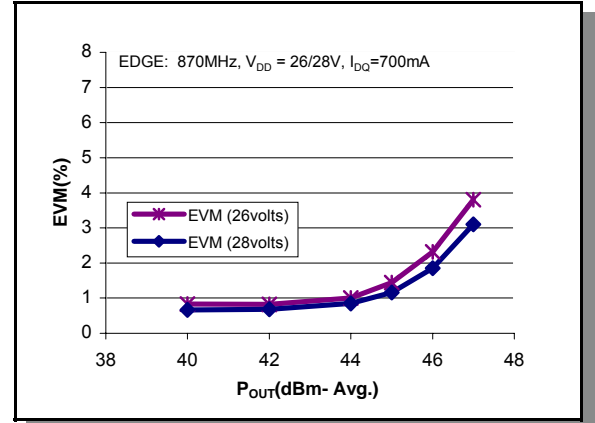
NOTE—**CAUTION**—MOS devices are susceptible to damage from electrostatic charge. Precautions in handling and packaging MOS devices should be observed.

Characteristic	Symbol	Min	Typ	Max	Unit
DC CHARACTERISTICS @ 25°C					
Drain-Source Breakdown Voltage ($V_{GS} = 0$ Vdc, $I_D = 100$ μ Adc)	$V_{(BR)DSS}$	65	—	—	Vdc
Zero Gate Voltage Drain Leakage Current ($V_{DS} = 26$ Vdc, $V_{GS} = 0$)	I_{DSS}	—	—	1	μ Adc
Gate—Source Leakage Current ($V_{GS} = 5$ Vdc, $V_{DS} = 0$)	I_{GSS}	—	—	3	μ Adc
Gate Threshold Voltage ($V_{DS} = 10$ Vdc, $I_D = 100$ μ A)	$V_{GS(th)}$	2	—	4	Vdc
Gate Quiescent Voltage ($V_{DS} = 26$ Vdc, $I_D = 700$ mA)	$V_{DS(Q)}$	—	4.0	—	Vdc
Drain-Source On-Voltage ($V_{GS} = 10$ Vdc, $I_D = 1$ A)	$V_{DS(on)}$	—	0.20	—	Vdc
Forward Transconductance ($V_{GS} = 10$ Vdc, $I_D = 1$ A)	Gm	—	7	—	S
DYNAMIC CHARACTERISTICS @ 25°C					
Output Capacitance ($V_{DS} = 26$ Vdc, $V_{GS} = 0$, $f = 1$ MHz)	C_{oss}	—	98	—	pF
Reverse Transfer Capacitance ($V_{DS} = 26$ Vdc, $V_{GS} = 0$, $f = 1$ MHz)	C_{rss}	—	4.5	—	pF
RF FUNCTIONAL TESTS @ 25°C (In M/A-COM Test Fixture)					
Common Source Amplifier Gain ($V_{DD} = 26$ Vdc, $I_{DQ} = 700$ mA, $f = 870$ MHz, $P_{OUT} = 90$ W)	G_P	—	18	—	dB
Drain Efficiency ($V_{DD} = 26$ Vdc, $I_{DQ} = 700$ mA, $f = 870$ MHz, $P_{OUT} = 90$ W)	EFF (η)	—	50	—	%
Input Return Loss ($V_{DD} = 26$ Vdc, $I_{DQ} = 700$ mA, $f = 870$ MHz, $P_{OUT} = 90$ W)	IRL	—	12	—	dB
Two-Tone Common Source Amplifier Gain ($V_{DD} = 26$ Vdc, $I_{DQ} = 700$ mA, $f_1 = 870.0$ MHz, $f_2 = 870.1$ MHz, $P_{OUT} = 90$ PEP)	G_P	—	18	—	dB
Two-Tone Drain Efficiency ($V_{DD} = 26$ Vdc, $I_{DQ} = 700$ mA, $f_1 = 870.0$ MHz, $f_2 = 870.1$ MHz, $P_{OUT} = 90$ PEP)	EFF (η)	—	38	—	%
Two-Tone Intermodulation Distortion ($V_{DD} = 26$ Vdc, $I_{DQ} = 700$ mA, $f_1 = 870.0$ MHz, $f_2 = 870.1$ MHz, $P_{OUT} = 90$ PEP)	IMD	—	-30	—	dBc
Output VSWR Tolerance ($V_{DD} = 26$ Vdc, $I_{DQ} = 700$ mA, $f = 900$ MHz, $P_{OUT} = 90$ W, VSWR = 10:1, All Phase Angles at Frequency of Tests)	Ψ	No Degradation In Output Power Before and After Test			

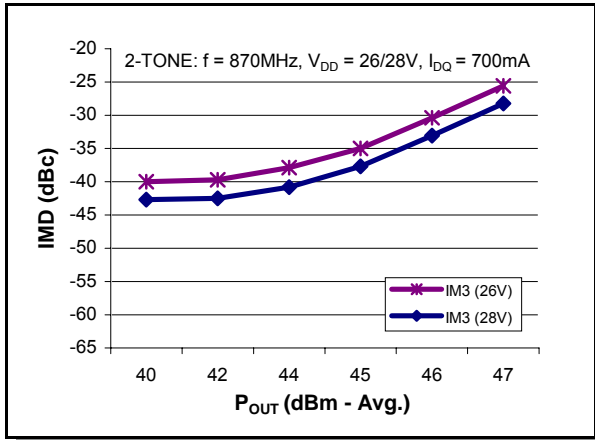
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Graph 1. CW Power Gain and Efficiency vs. Output Power

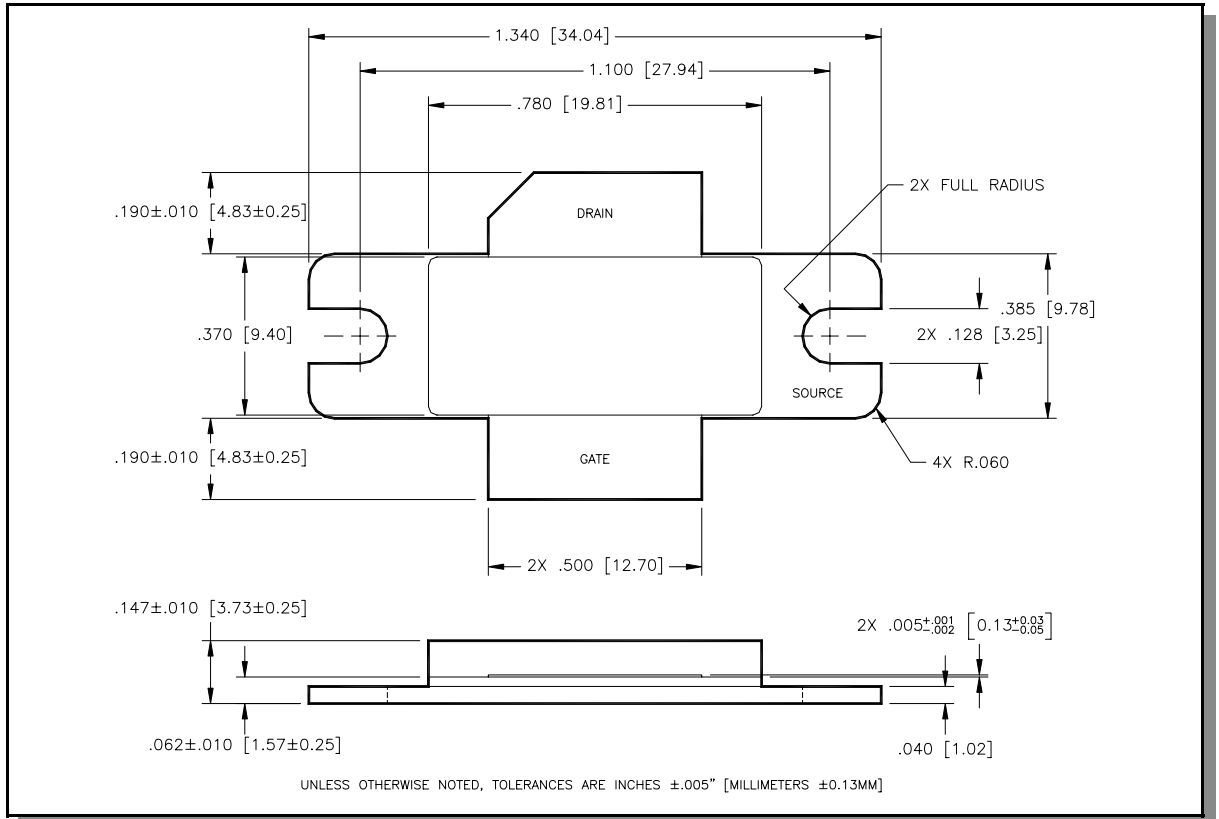


Graph 2. EDGE RMS EVM vs. Output Power



Graph 3. Two-Tone Intermodulation vs. Output Power

Package Dimensions



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