



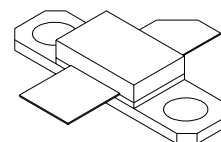
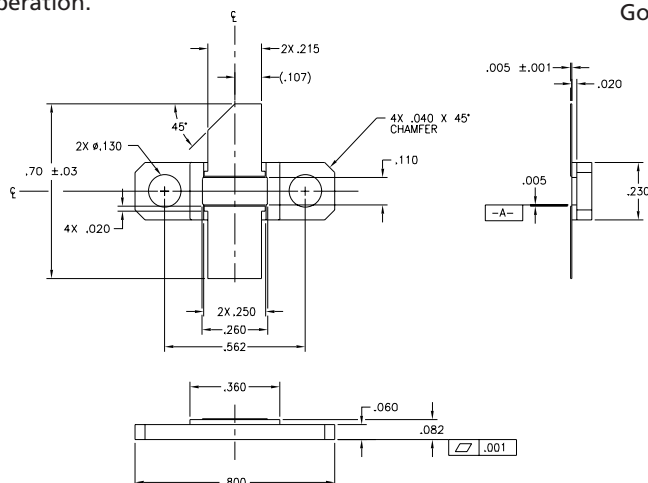
UPF1030

30W, 1GHz, 26V Broadband RF Power N-Channel Enhancement-Mode Lateral DMOS

Description

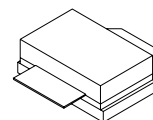
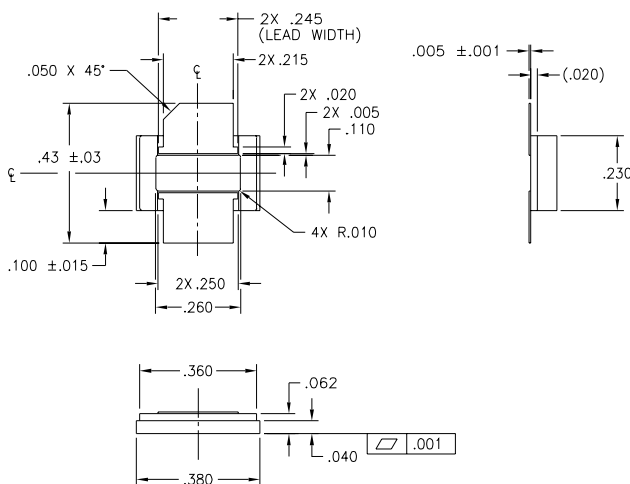
This device is designed for base station applications up to frequencies of 1GHz. Rated with a minimum output power of 30W, it is ideal for CDMA, TDMA, GSM, FM, Single or Multi-Carrier Power Amplifiers in Class A or AB operation.

- Industry standard package.
- Low intermodulation distortion of -30dBc at 30W (PEP).
- Gold Metalization, Gold Bond Wires, Gold-Plated Packages.



Package Type 440095

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Package Type 440134

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Maximum Ratings

Rating	Symbol	Value	Unit
Drain to Source Voltage, gate connected to source	V_{DSS}	65	Volts
Gate to Source Voltage	V_{GS}	± 20	Volts
Total Device Dissipation @ $T_{case} = 70^{\circ}C$ Derate above $70^{\circ}C$	P_D	65 0.5	Watts $W/^{\circ}C$
Storage Temperature Range	T_{STG}	-65 to +150	$^{\circ}C$
Operating Junction Temperature	T_J	200	$^{\circ}C$

Thermal Characteristics

Characteristics	Symbol	Maximum	Unit
Thermal Resistance, Junction to Case	Θ_{JC}	2.0	$^{\circ}C/W$

Electrical DC Characteristics ($T_C=25^{\circ}C$ unless otherwise specified)

Rating	Symbol	Min	Typ	Max	Unit
Drain to Source Voltage, gate connected to source ($V_{GS}=0$, $I_{DS}=1mA$)	BV_{DSS}	65	-	-	Volts
Drain to Source Leakage current ($V_{DS}=28V$, $V_{GS}=0$)	I_{DSS}	-	-	1.0	mA
Gate to Source Leakage current ($V_{GS}=20V$, $V_{DS}=0$)	I_{GSS}	-	-	1.0	μA
Threshold Voltage ($V_{DS}=10V$, $I_{DS}=1mA$)	V_{TH}	2.0	3.5	5.0	Volts
Gate Quiescent Voltage ($V_{DS}=26V$, $I_{DS}=200mA$)	$V_{GS(on)}$	3.0	4.0	6.0	Volts
Drain to Source On Voltage ($V_{GS}=10V$, $I_{DS}=1A$)	$V_{DS(on)}$	-	0.28	-	Volts
Forward Transconductance ($V_{DS}=10V$, $I_D=5A$)	G_M	1.4	1.8	-	S

AC Characteristics ($T_C=25^\circ\text{C}$ unless otherwise specified)

Rating	Symbol	Min	Typ	Max	Unit
Input Capacitance ($V_{DS}=26\text{V}$, $V_{GS}=0$, freq= 1MHz)	C_{ISS}	-	44	-	pF
Output capacitance ($V_{DS}= 26\text{V}$, $V_{GS}=0\text{V}$, freq= 1MHz)	C_{OSS}	-	26	-	pF
Feedback capacitance ($V_{DS}=26\text{V}$, $V_{GS}=0\text{V}$, freq= 1MHz)	C_{RSS}	-	1.2	-	pF

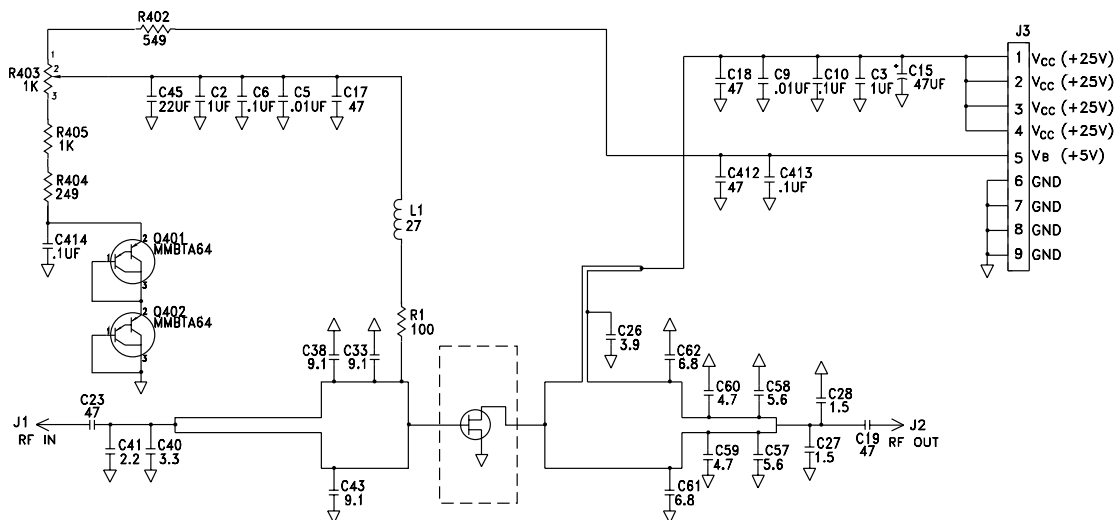
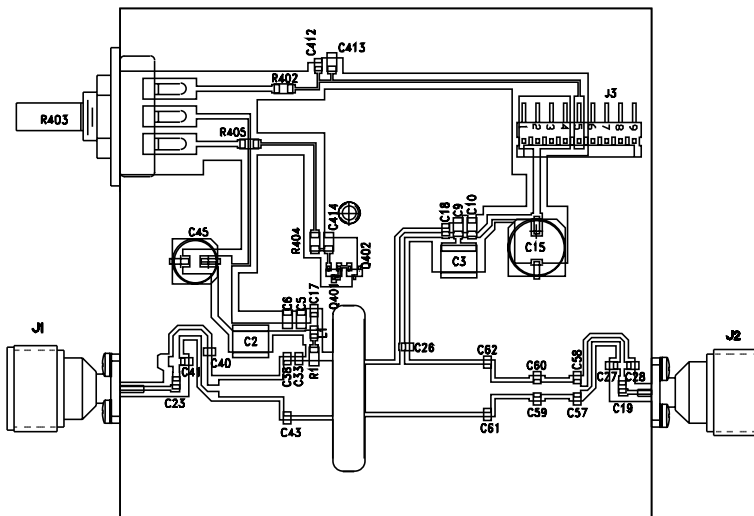
RF and Functional Tests ($T_C=25^\circ\text{C}$ unless otherwise specified, UltraRF Broadband Fixture)

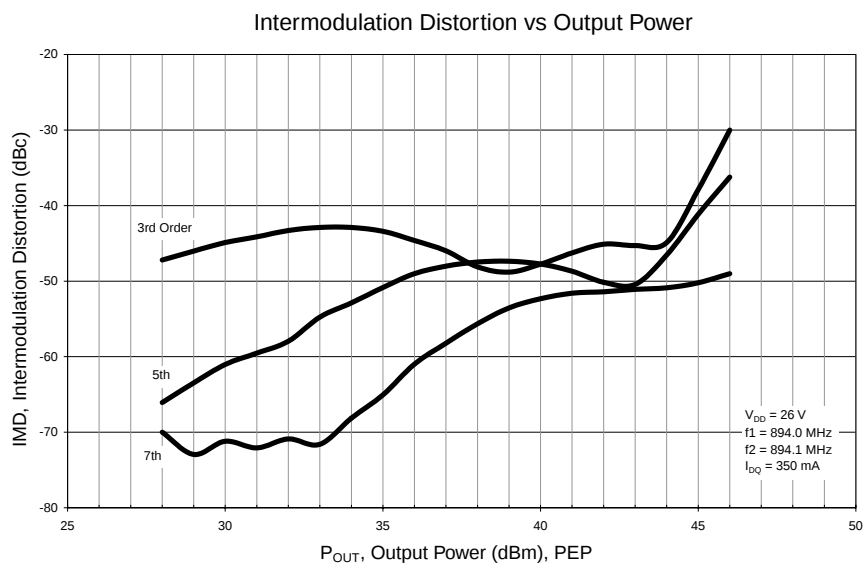
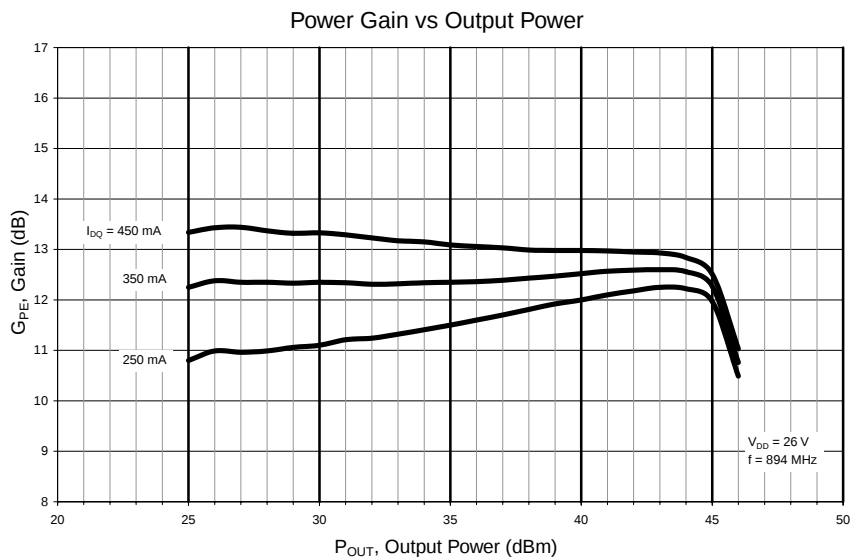
Rating	Symbol	Min	Typ	Max	Unit
Linear Power Gain, Single Tone ($V_{DS}=26\text{V}$, $I_{DQ}=350\text{mA}$, $P_{OUT}=5\text{W}$, $f=894\text{ MHz}$)	G_{plin}	11.0	12.5	-	dB
Compressed Power Gain, Single tone ($V_{DS}=26\text{V}$, $I_{DQ}=350\text{mA}$, $P_{OUT}=30\text{W}$, $f=894\text{ MHz}$)	G_{PS}	10.5	11.5	-	dB
Drain Efficiency, Single Tone ($V_{DS}=26\text{V}$, $I_{DQ}=350\text{mA}$, $P_{OUT}=30\text{W}$, $f=894\text{ MHz}$)	η	45	52	-	%
Intermodulation Distortion, Two Tone ($V_{DS}=26\text{V}$, $I_{DQ}=350\text{mA}$, $P_{OUT}=30\text{W PEP}$ $f_1=894\text{ MHz}$, $f_2=894.1\text{MHz}$)	IMD	-	-35	-30	dBc
Load Mismatch Tolerance ($V_{DS}=26\text{V}$, $I_{DQ}=350\text{mA}$, $P_{OUT}=30\text{W}$, $f=894\text{ MHz}$)	VSWR	10:1	-	-	

CAUTION - MOS Devices are susceptible to damage from ElectroStatic Discharge (ESD). Appropriate precautions in handling, packaging and testing MOS devices must be observed.

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Fixture Drawings

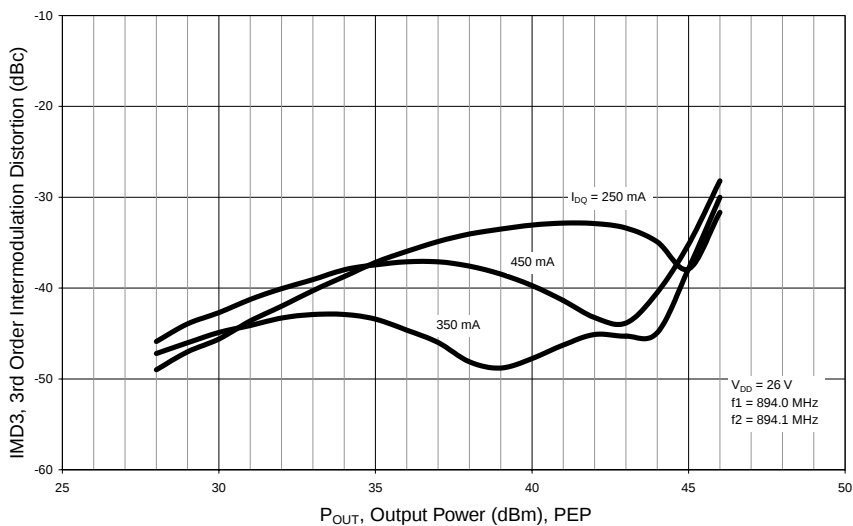




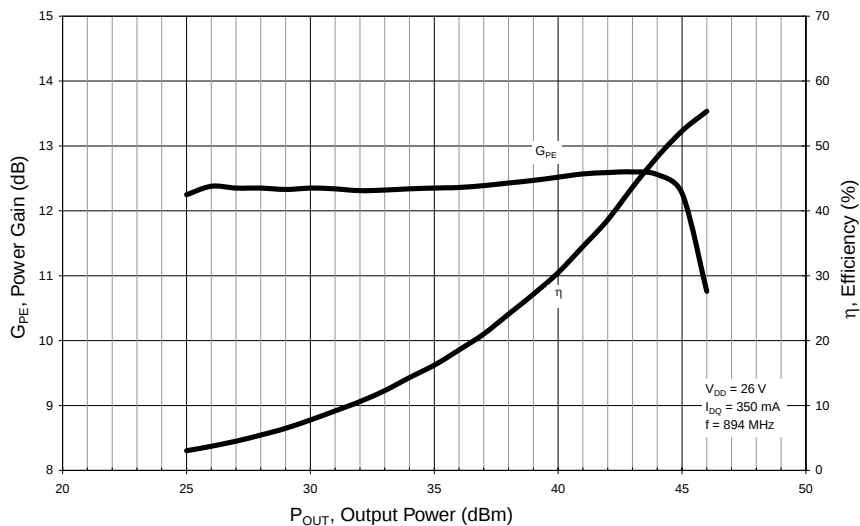
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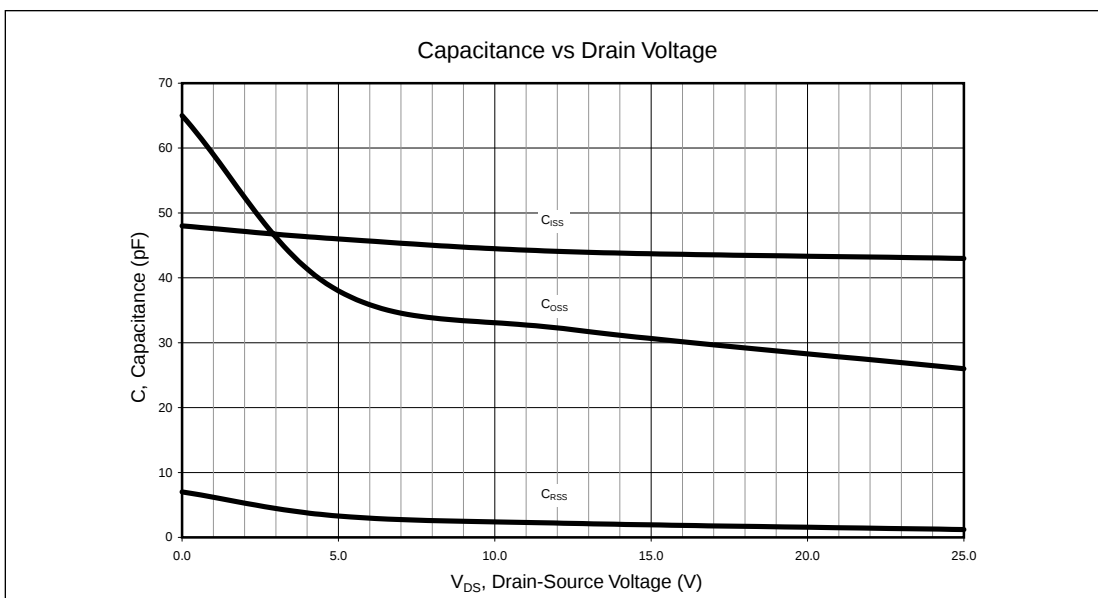
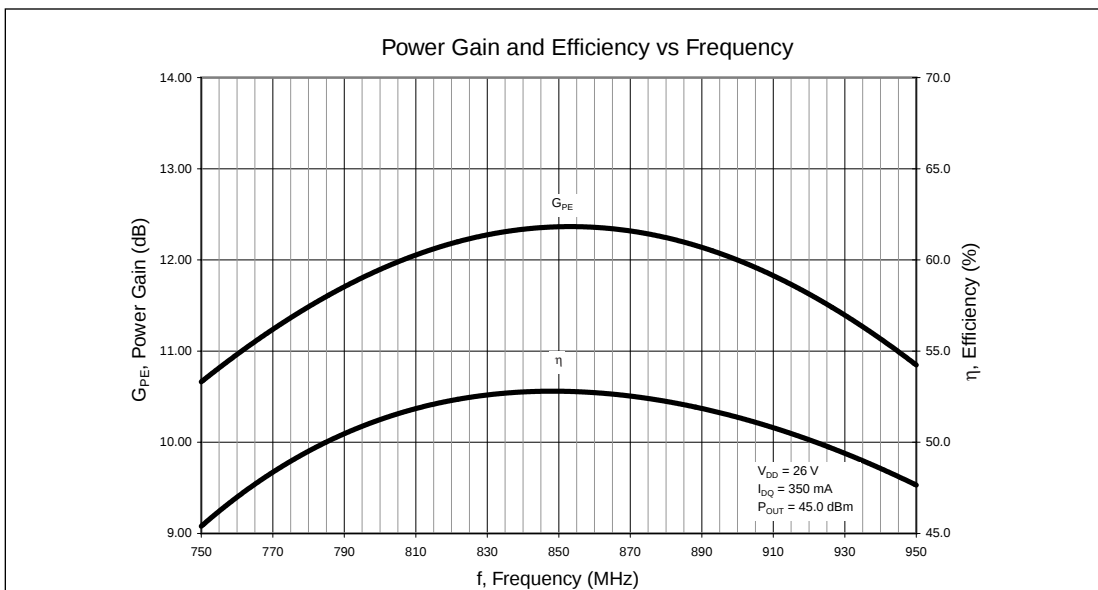
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Intermodulation Distortion vs Output Power

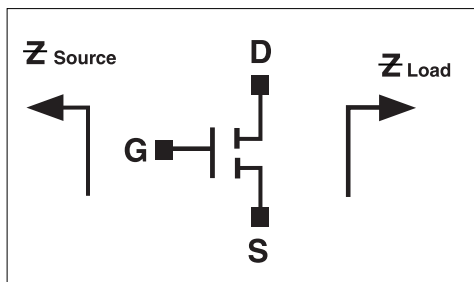


Power Gain & Efficiency vs Output Power





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$V_{DD} = 26V$
 $I_{DQ} = 350mA$

Frequency (MHz)	Z Source	Z Load
800	1.58- j1.84	3.36 + j2.03
810	1.57- j1.83	3.44 + j2.03
820	1.56- j1.77	3.50 + j2.09
830	1.56- j1.70	3.60 + j2.11
840	1.56- j1.63	3.67 + j2.12
850	1.54- j1.58	3.73 + j2.13
860	1.53- j1.56	3.80 + j2.15
870	1.50- j1.52	3.85 + j2.16
880	1.50- j1.51	3.92 + j2.16
890	1.49- j1.48	3.99 + j2.18
900	1.49- j1.46	4.06 + j2.16

