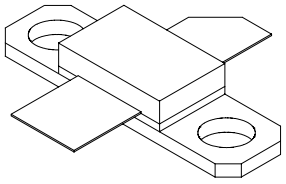
UPF1030

30W, 1.0 GHz, 26V Broadband RF Power N-Channel Enhancement-Mode Lateral MOSFET

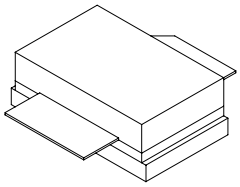
This device is designed for base station applications up to frequencies of 1.0 GHz. Rater with a minimum output power of 30W, it is ideal for CDMA, TDMA, GSM, FM, Single or Multi-Carrier Power Amplifiers in Class A or AB operation.

- ALL GOLD metal system for highest reliability.
- Industry standard package.
- Low intermodulation distortion of –30dBc at 30W (PEP).



Package Type 440095

PN: UPF1030F



Package Type 440134

PN: UPF1030P

Maximum Ratings

Rating	Symbol	Value	Unit
Drain to Source Voltage, gate connected to source	BV_{DSS}	65	Volts
Gate to Source Voltage	BV_{GSS}	+/- 20	Volts
Total Device Dissipation @ Tcase = 70°C Derate above 70°C	P_D	65.0 0.5	Watts W/°C
Storage Temperature Range	T_{STG}	-65 to +150	°C
Operating Junction Temperature	T_J	200	°C

Thermal Characteristics

Characteristics	Symbol	Typical	Unit
Thermal Resistance, Junction to Case	Θjc	1.6	°C/W

Electrical DC Characteristics (T_C =25°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} = 26 V, 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°C unless otherwise specified)

Rating	Symbol	Min	Typ	Max	Unit
Input Capacitance (V_{DS}=26V, V_{GS}=0V, freq= 1MHz)	C_{ISS}	-	44	-	pF
Output capacitance (V_{DS}= 26V, V_{GS}=0V, freq= 1MHz)	C_{OSS}	-	28	-	pF
Feedback capacitance (V_{DS}=26V, V_{GS}=0V, freq= 1MHz	C_{RSS}	-	1.2	-	pF

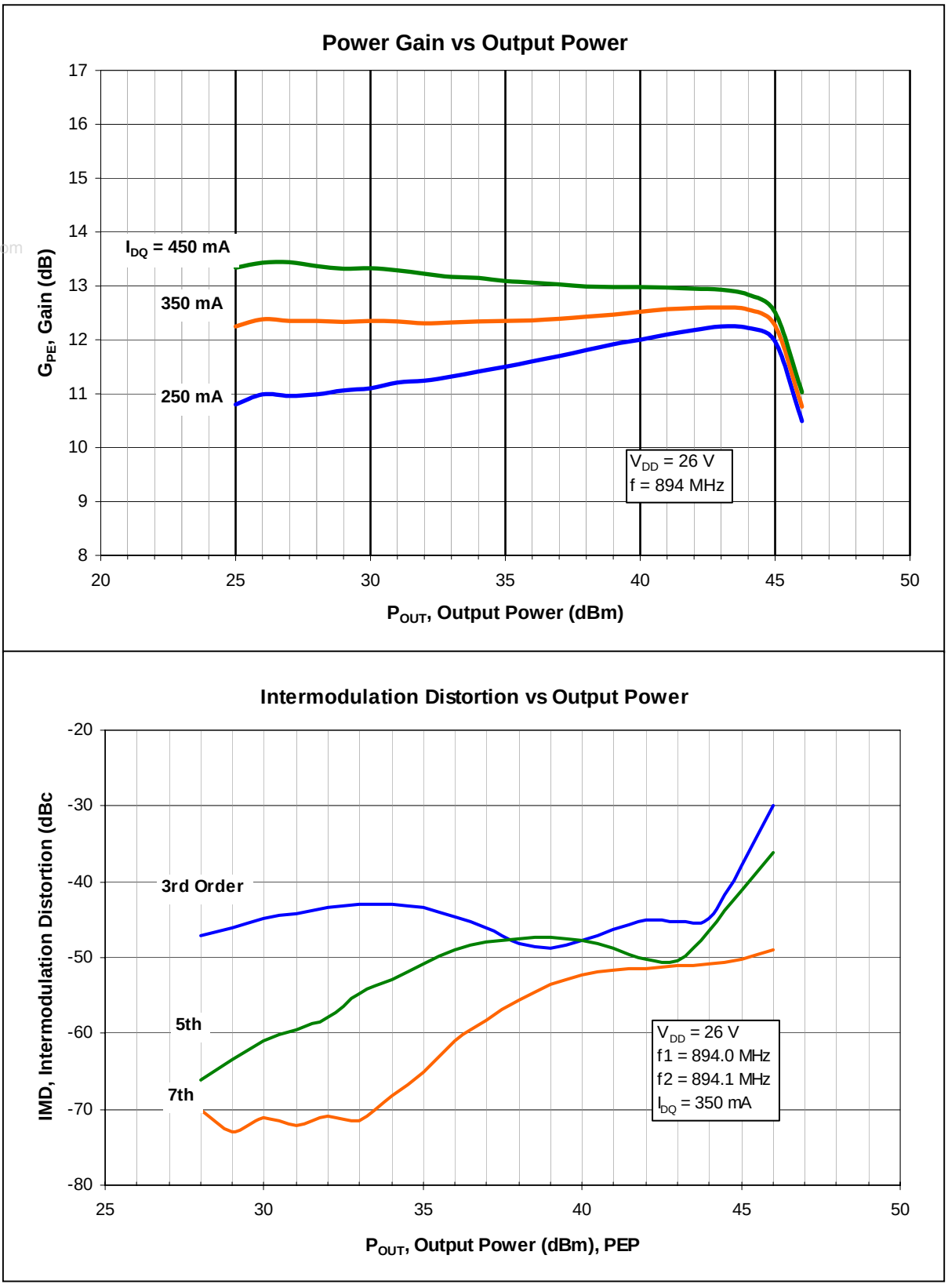
RF and Functional Tests (Tc=25°C unless otherwise specified, Cree Microwave Broadband Fixture)

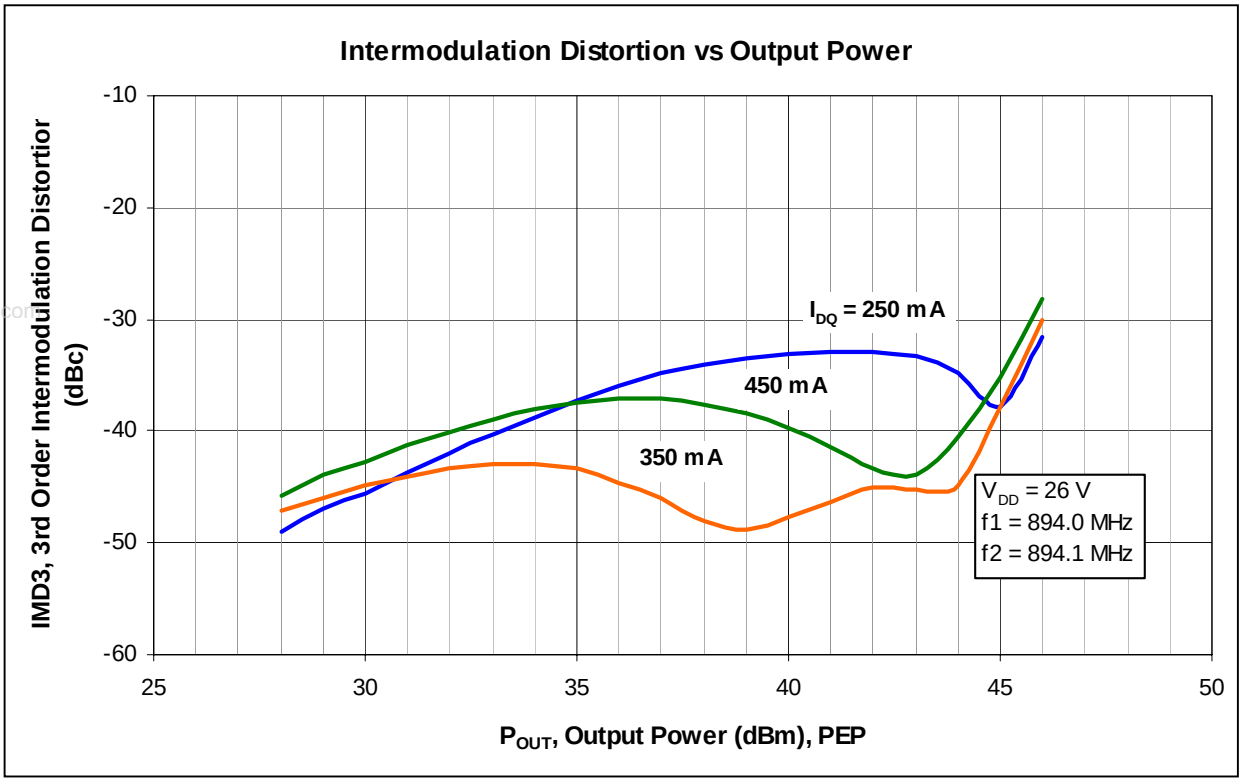
Rating	Symbol	Min	Typ	Max	Unit
Linear Power Gain, Single Tone (V_{DS}=26V, I_{DQ}=350mA, P_{OUT}=5W, f=894 MHz)	G_L	13.0	14.5	-	dB
Compressed Power Gain, Single Tone (V_{DS}=26V, I_{DQ}=350mA, P_{OUT} =30W, f=894 MHz)	G_P	12.0	14.0	-	dB
Drain Efficiency, Single Tone (V_{DS}=26V, I_{DQ}=350mA, P_{OUT} =30W, f=894 MHz)	η_D	45	52	-	%
Intermodulation Distortion, Two Tone (V_{DS}=26V, I_{DQ}=350mA, P_{OUT} =30W PEP f1=894 MHz, f2=894.1MHz)	IMD	-	-35	-30	dBc
Load Mismatch Tolerance (V_{DS}=26V, I_{DQ}=350mA, P_{OUT} =30W, f=894 MHz)	VSWR*	10:1	-	-	Ψ

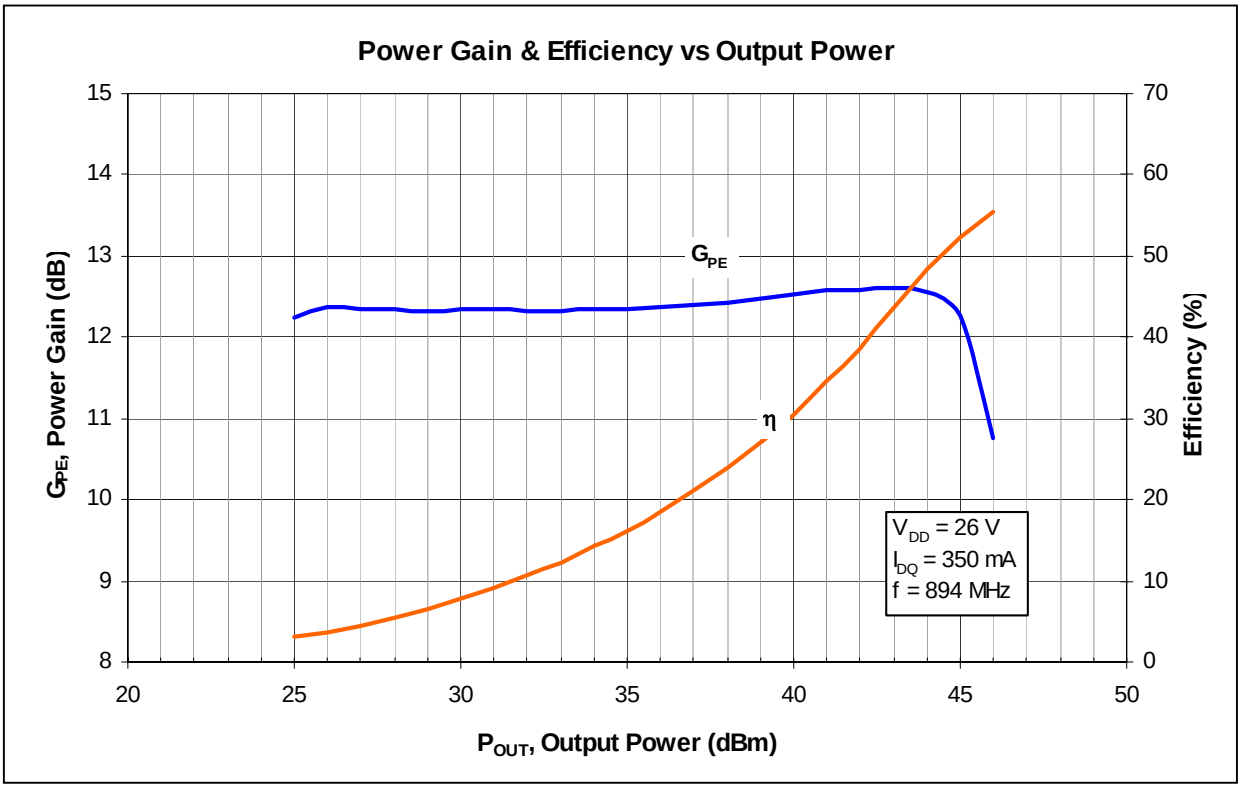
Note (unless otherwise specified):
1. Source and load impedance shall be 50 ohms.

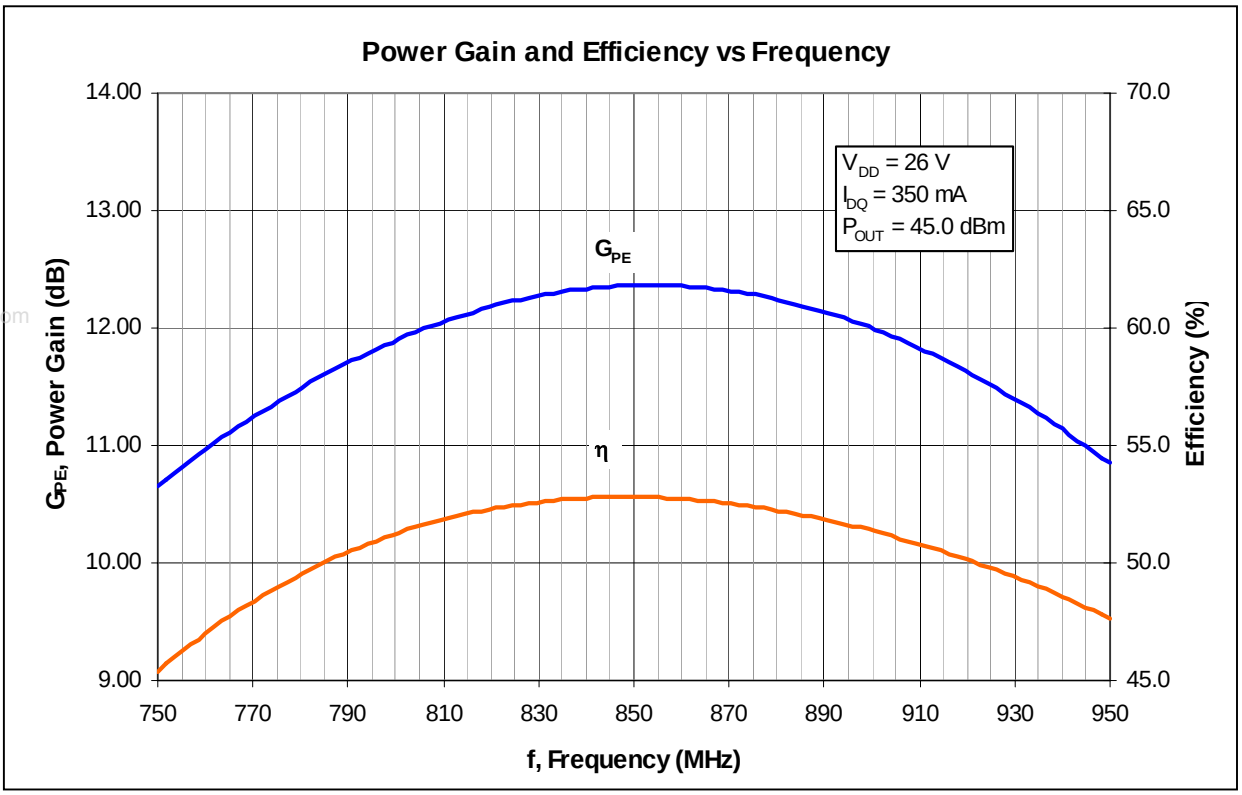
*No degradation in device performance after test.

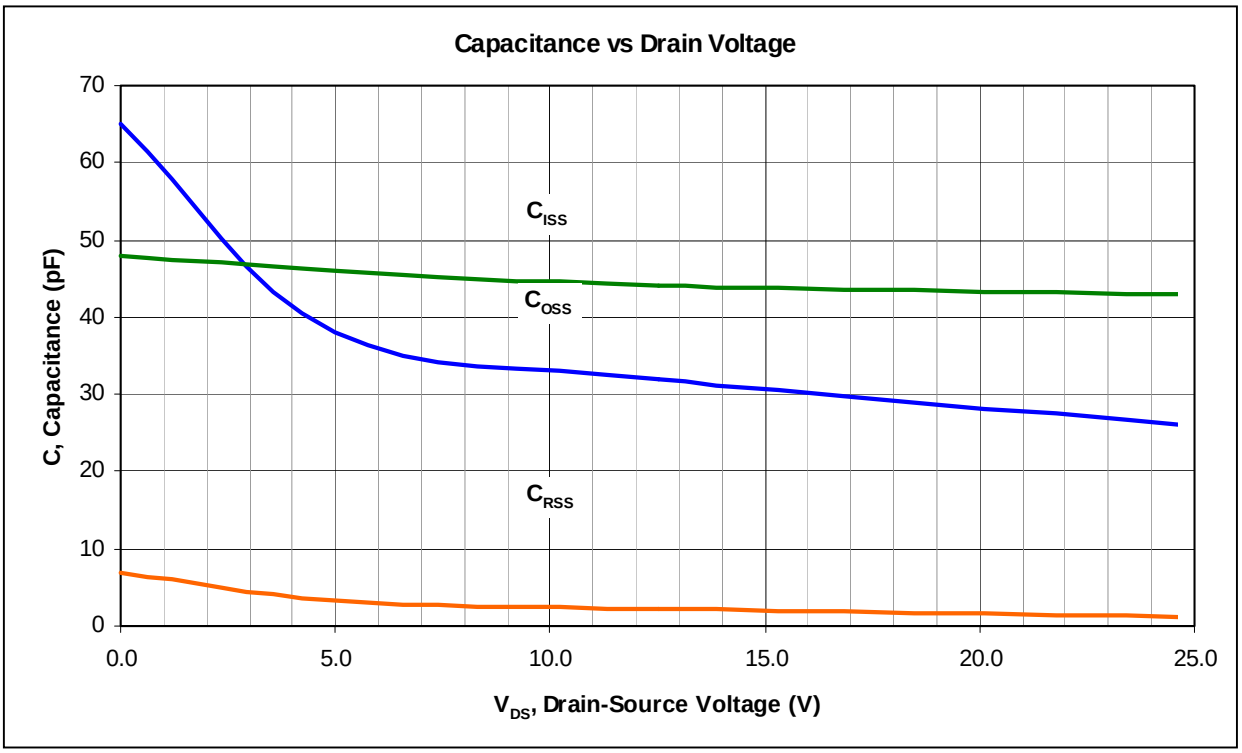
CAUTION - MOS Devices are susceptible to damage from Electrostatic Discharge (ESD). Appropriate precautions in handling, packaging and testing MOS devices must be observed.

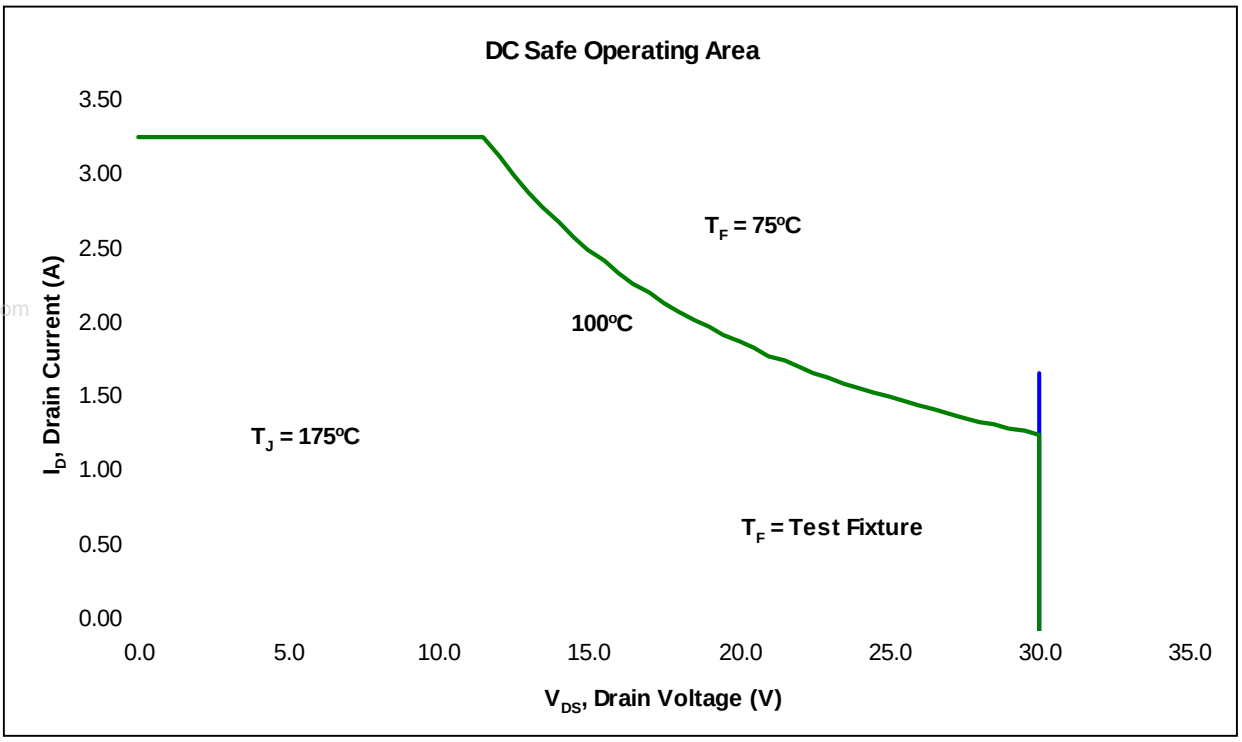




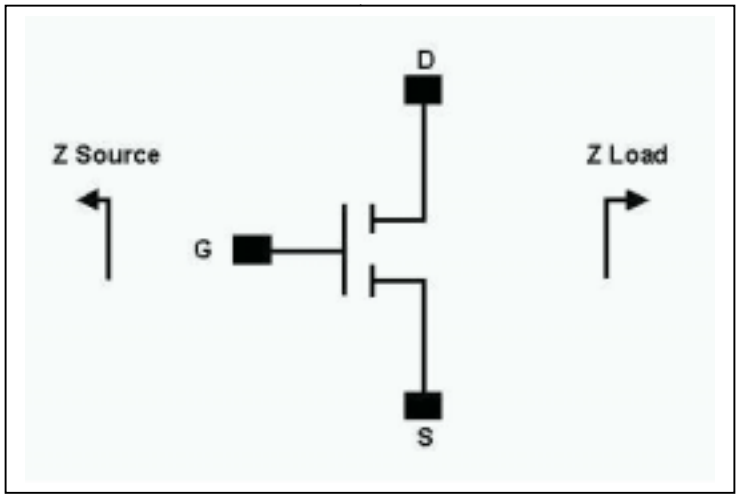








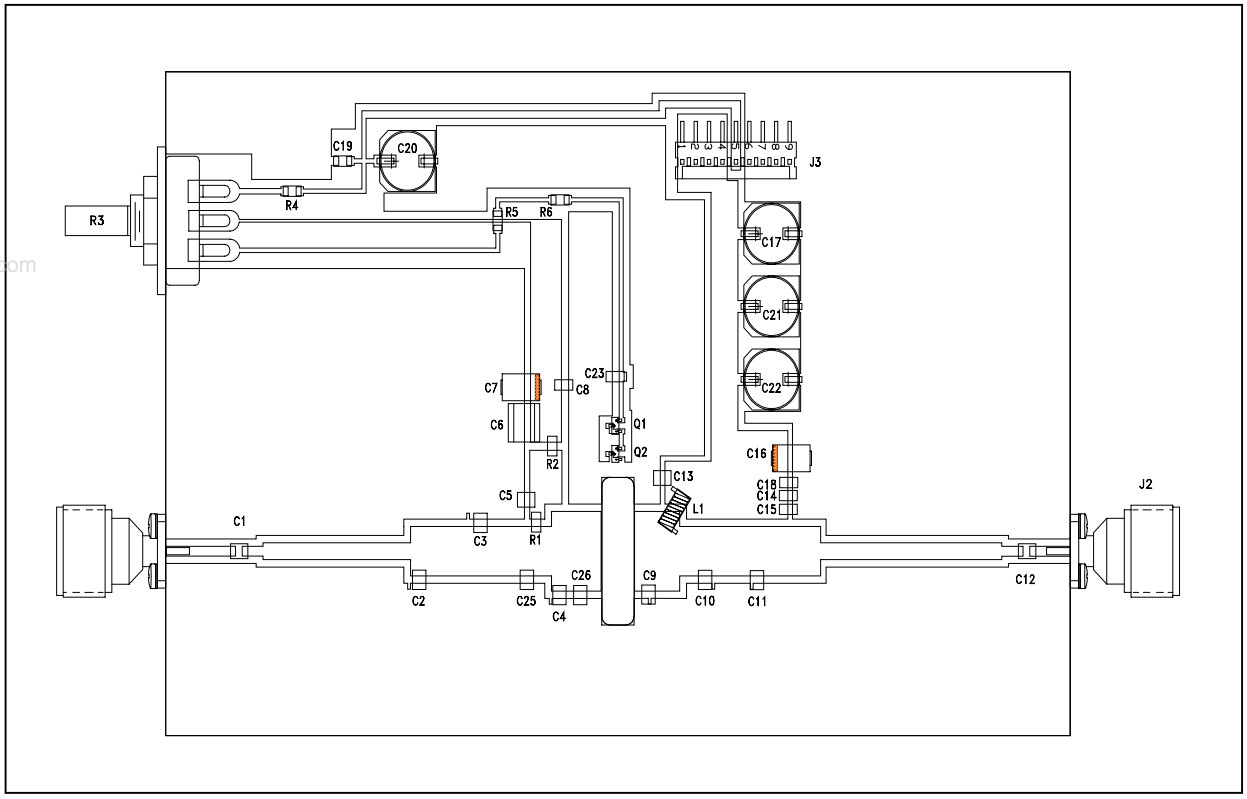
Impedance



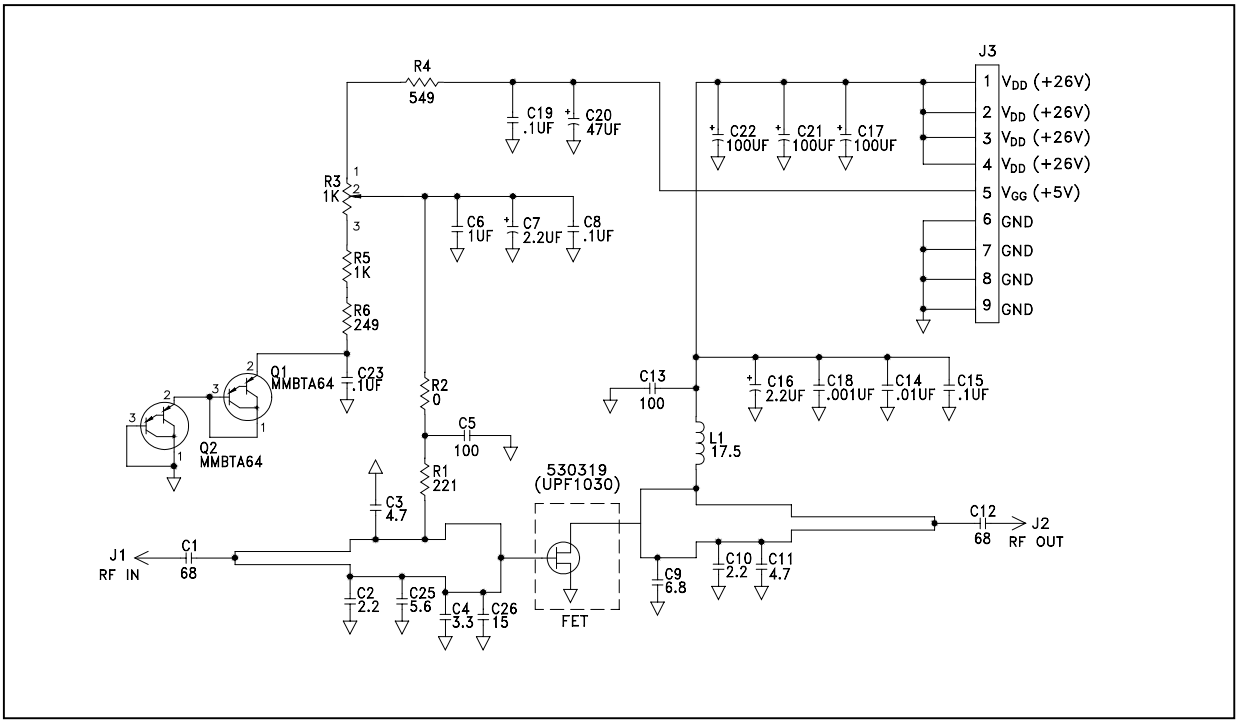
Frequency (MHz)	Z Source	Z Load
800	1.58 – j1.84	3.36 + j2.03
810	1.57 – j1.83	3.44 + j2.03
820	1.56 – j1.77	3.50 + j2.09
830	1.56 – j1.70	3.60 + j2.11
840	1.56 – j1.63	3.67 + j2.12
850	1.54 – j1.58	3.73 + j2.13
860	1.53 – j1.56	3.80 + j2.15
870	1.50 – j1.52	3.85 + j2.16
880	1.50 – j1.51	3.92 + j2.16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

Note: V_{DD} = 26V, I_{DQ} = 350mA

Test Fixture Layout

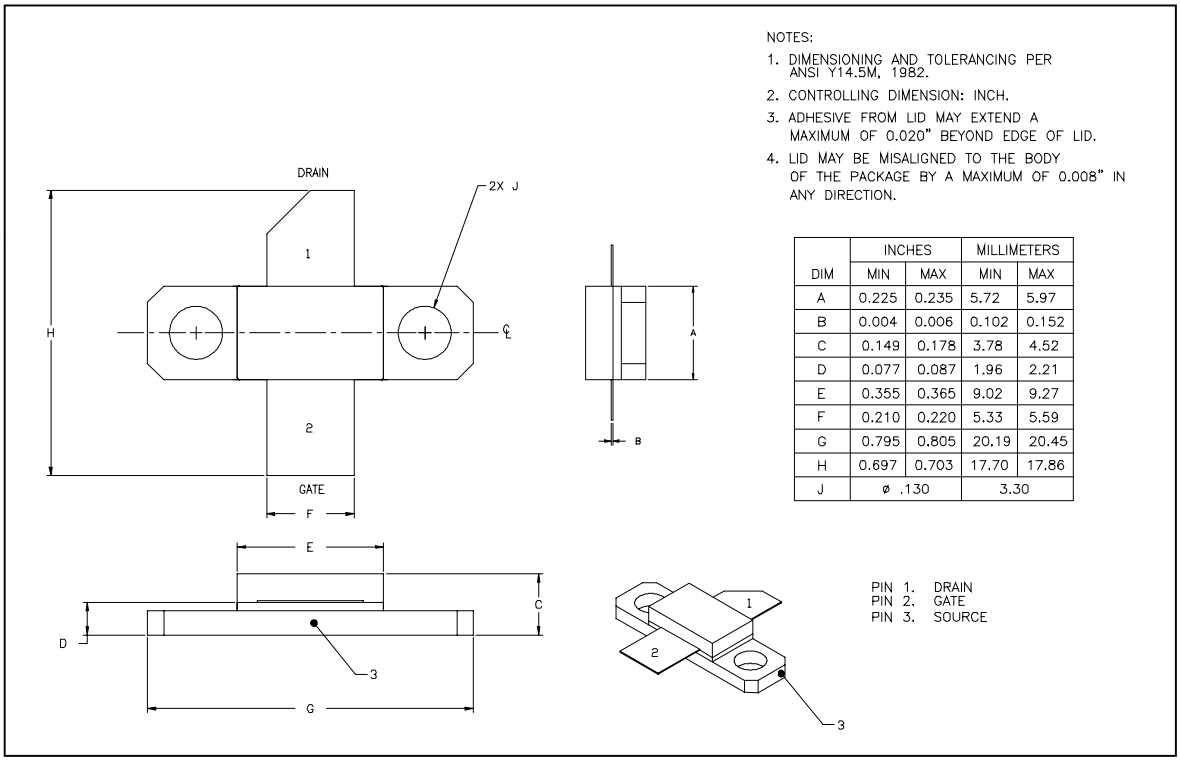


Test Fixture Schematic



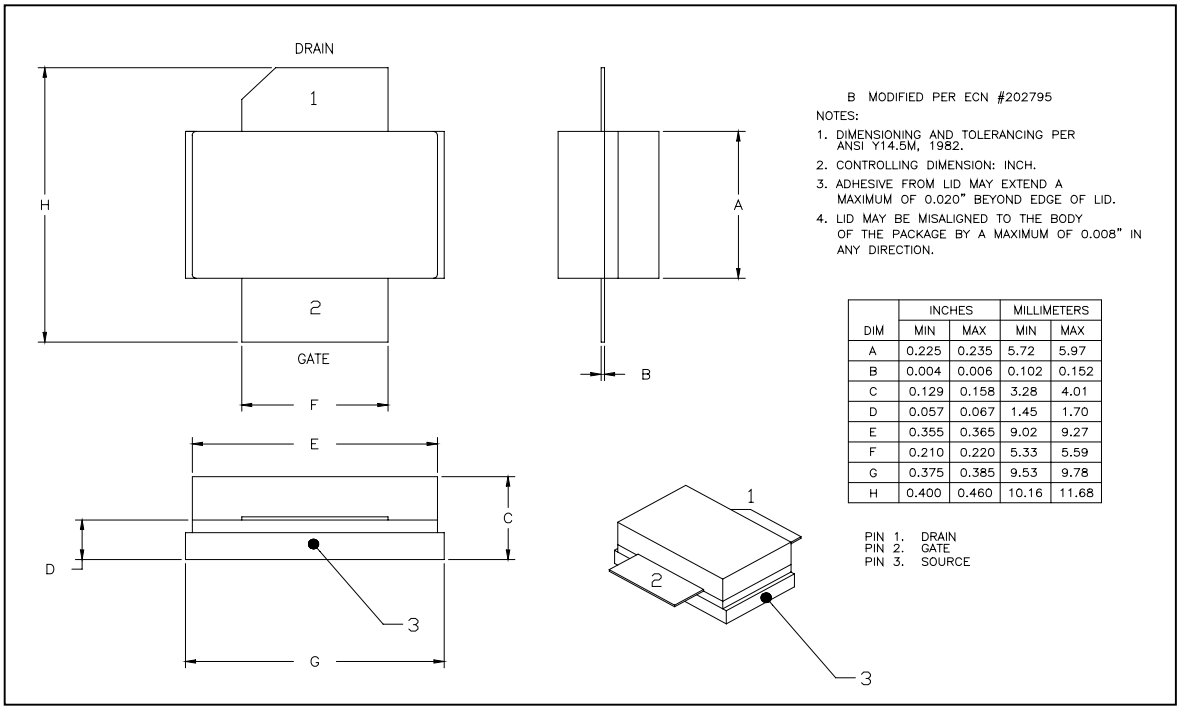
Product Dimensions

UPF1030F -Package Number 440095



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.225	0.235	5.72	5.97
B	0.004	0.006	0.102	0.152
C	0.149	0.178	3.78	4.52
D	0.077	0.087	1.96	2.21
E	0.355	0.365	9.02	9.27
F	0.210	0.220	5.33	5.59
G	0.795	0.805	20.19	20.45
H	0.697	0.703	17.70	17.86
J	ø .130		3.30	

UPF1030P -Package Number 440134



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.225	0.235	5.72	5.97
B	0.004	0.006	0.102	0.152
C	0.129	0.158	3.28	4.01
D	0.057	0.067	1.45	1.70
E	0.355	0.365	9.02	9.27
F	0.210	0.220	5.33	5.59
G	0.375	0.385	9.53	9.78
H	0.400	0.460	10.16	11.68