



UPF2010

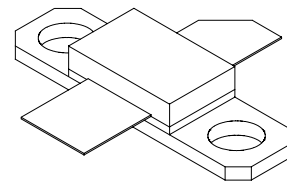
10W, 2.0 GHz, 26V Broadband RF Power N-Channel Enhancement-Mode Lateral MOSFET

This device is designed for base station applications up to frequencies of 2.0 GHz. Rater with a minimum output power of 10W, 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 10W (PEP).

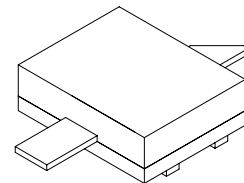
- **Application Specific Performance, 1.84 GHz**

GSM:	10 Watts	15 dB
EDGE:	5 Watts	15 dB
IS95 CDMA:	2.5 Watts	15 dB
W-CDMA:	1.5 Watts	15 dB



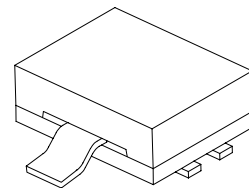
Package Type 440095

PN: UPF2010F



Package Type 440109

PN: UPF2010P



Package Type 440178

PN: UPF2010-178

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 @ $T_{case} = 70^{\circ}C$ Derate above $70^{\circ}C$	P_D	20.0 0.2	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	Typical	Unit
Thermal Resistance, Junction to Case	θ_{jc}	4.2 / 4.0*	$^{\circ}C/W$

*The first value applies to the 440095 package. The second value applies to the 440109 and 440178 packages.

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 ($V_{DS} = 26V$, $V_{GS} = 0$)	I_{DSS}	-	-	100	μA
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	3.0	5.0	Volts
Gate Quiescent Voltage ($V_{DS} = 26V$, $I_{DS} = 95mA$)	$V_{GS(on)}$	3.0	4.0	6.0	Volts
Drain to Source On Voltage ($V_{GS} = 10V$, $I_{DS} = 1A$)	$V_{DS(on)}$	-	0.9	-	Volts
Forward Transconductance ($V_{DS} = 10V$, $I_D = 0.5A$)	G_M	-	0.5	-	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}	-	12.4	-	pF
Output capacitance (V _{DS} = 26V, V _{GS} =0V, freq= 1MHz)	C _{OSS}	-	8.5	-	pF
Feedback capacitance (V _{DS} =26V, V _{GS} =0V, freq= 1MHz)	C _{RSS}	-	0.6	-	pF

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

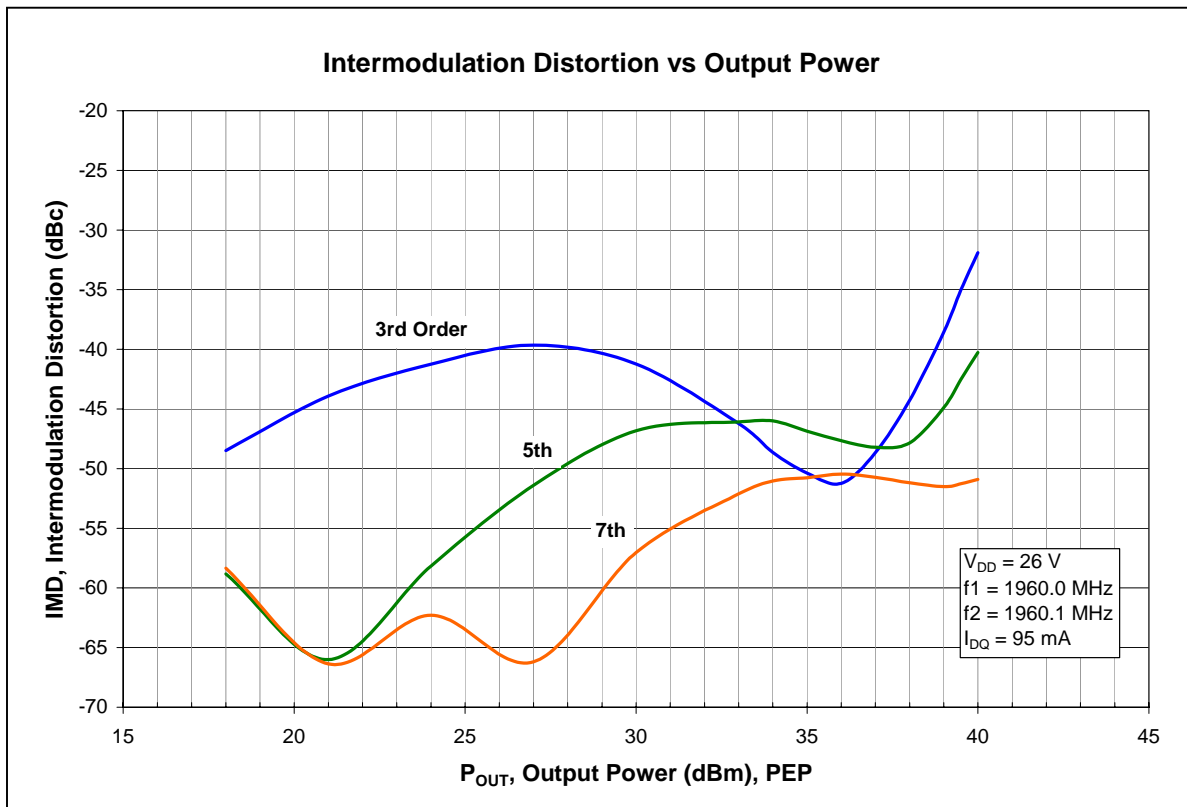
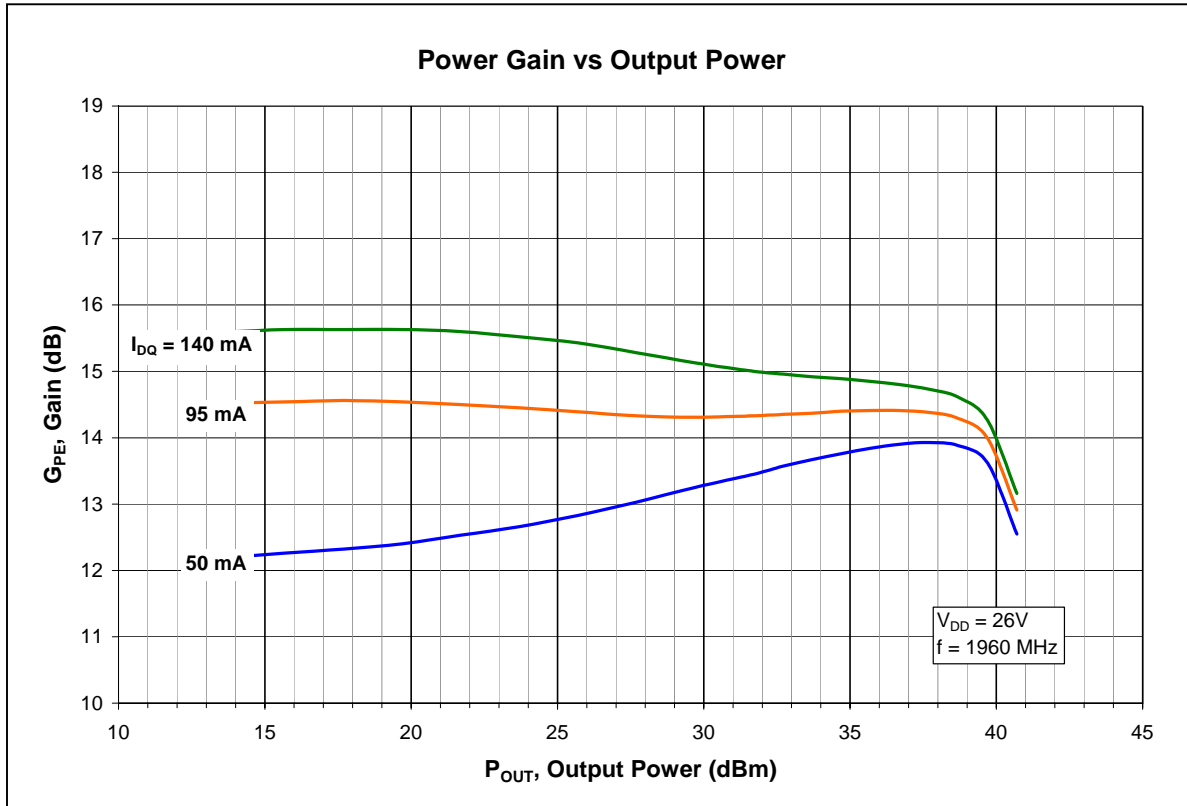
Rating	Symbol	Min	Typ	Max	Unit
Linear Power Gain, Single Tone (V _{DS} =26V, I _{DQ} =95mA, P _{OUT} =3W, f=1840 MHz)	G _L	13.5	15	-	dB
Compressed Power Gain, Single Tone (V _{DS} =26V, I _{DQ} =95mA, P _{OUT} =10W, f=1840 MHz)	G _P	13	14.5	-	dB
Drain Efficiency, Single Tone (V _{DS} =26V, I _{DQ} =95mA, P _{OUT} =10W, f=1840 MHz)	η _D	42	48	-	%
Intermodulation Distortion, Two Tone (V _{DS} =26V, I _{DQ} =95mA, P _{OUT} =10W PEP f1=1840 MHz, f2=1840.1MHz)	IMD	-	-32	-30	dBc
Load Mismatch Tolerance (V _{DS} =26V, I _{DQ} =95mA, P _{OUT} =10W, f=1840 MHz)	VSWR*	10:1	-	-	Ψ

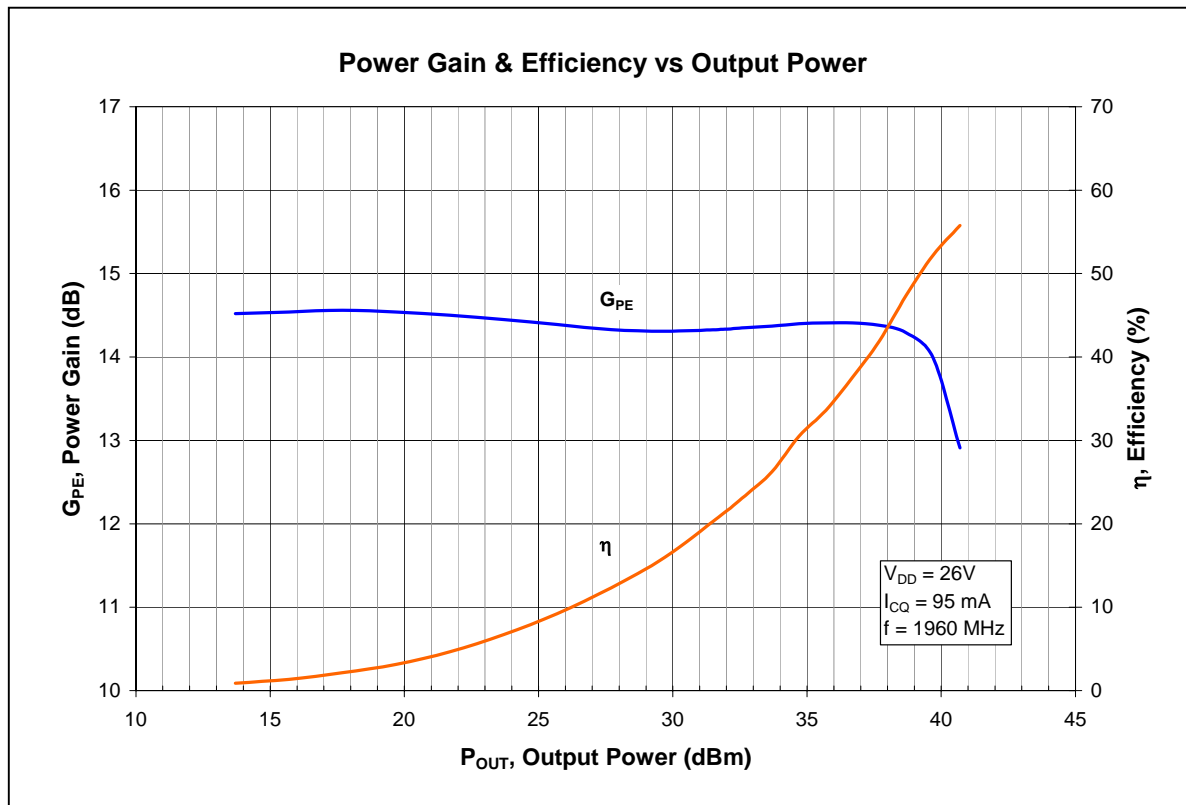
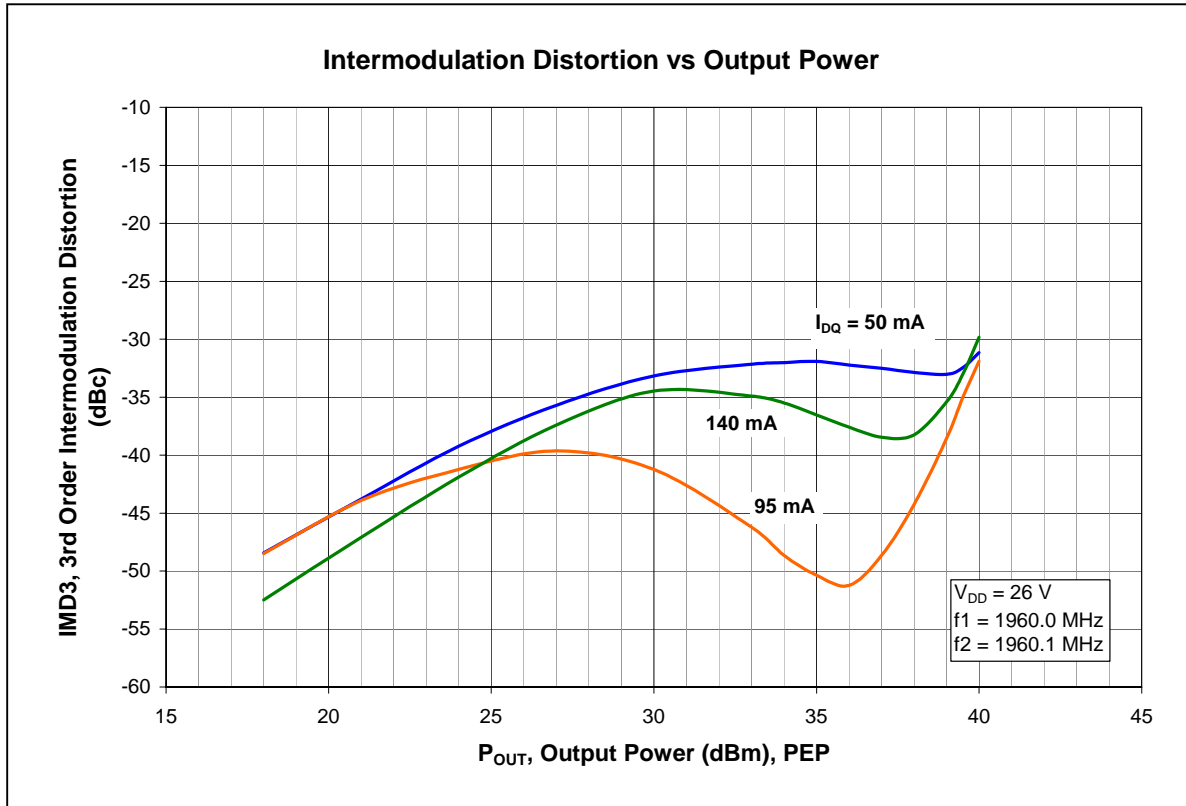
Note (unless otherwise specified):

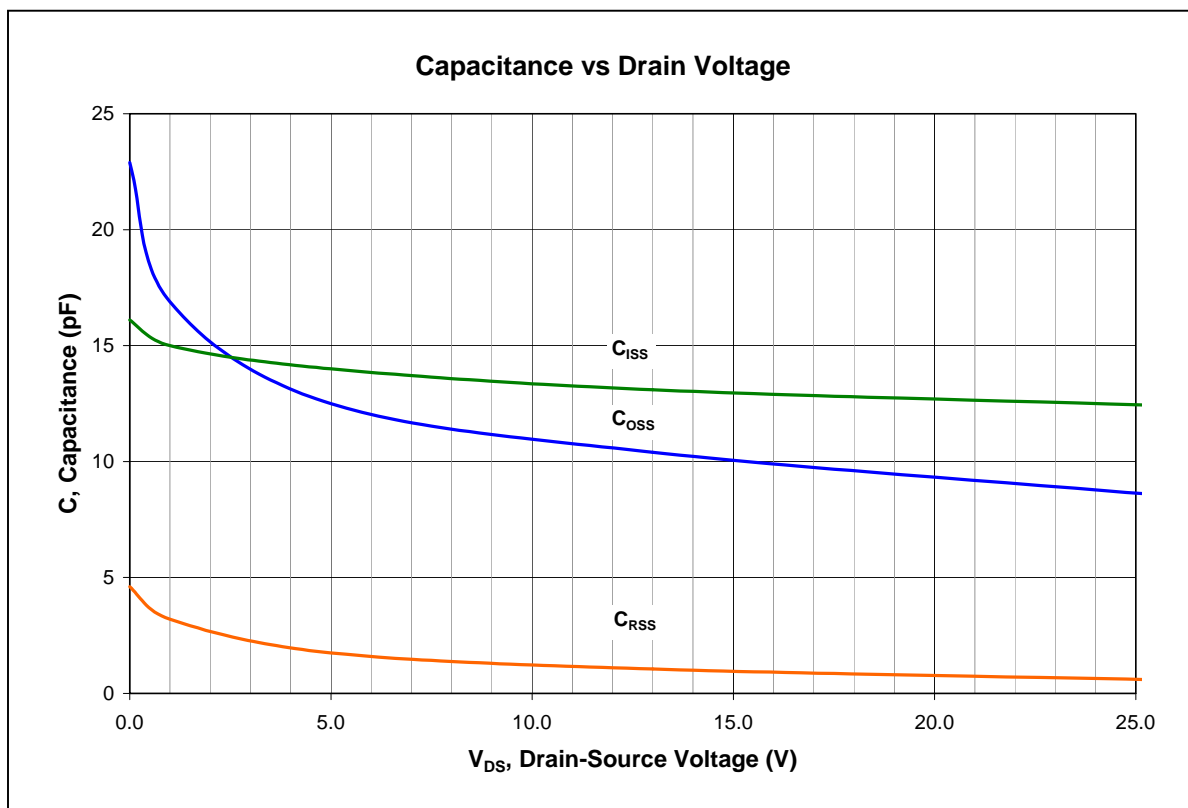
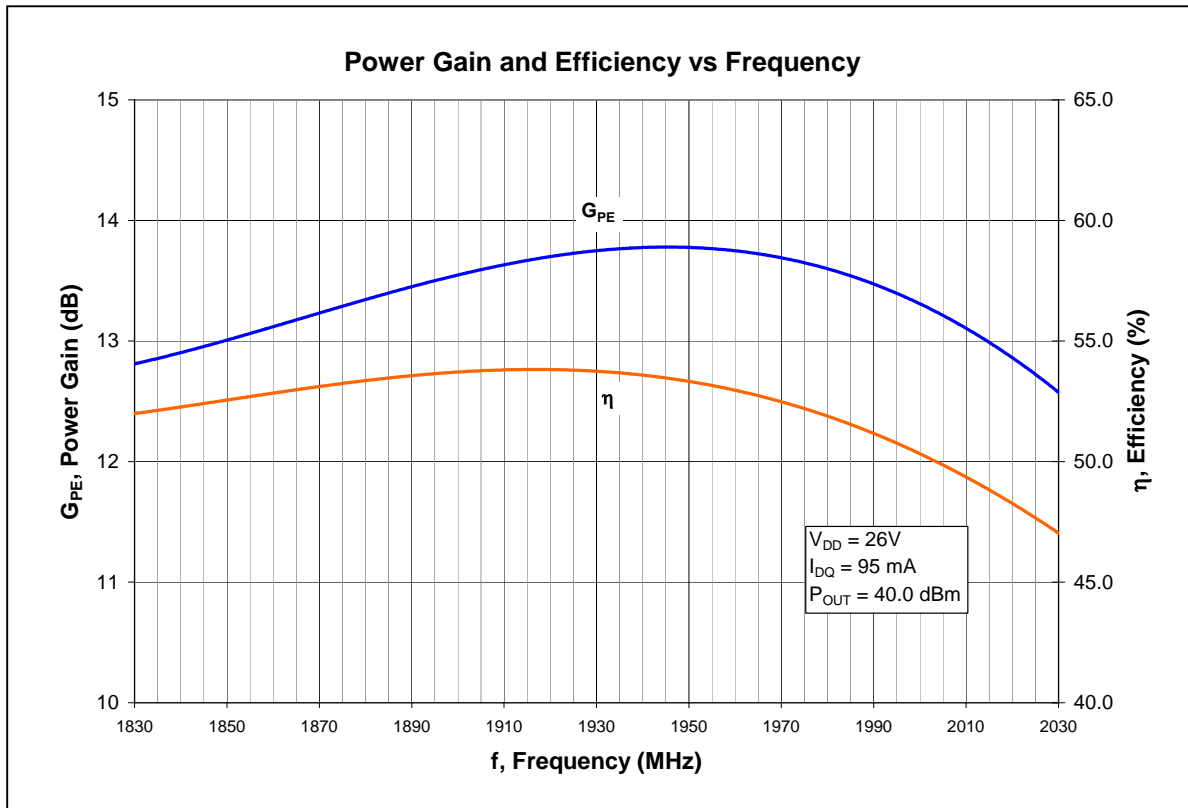
1. Source and load impedance shall be 50 ohms.

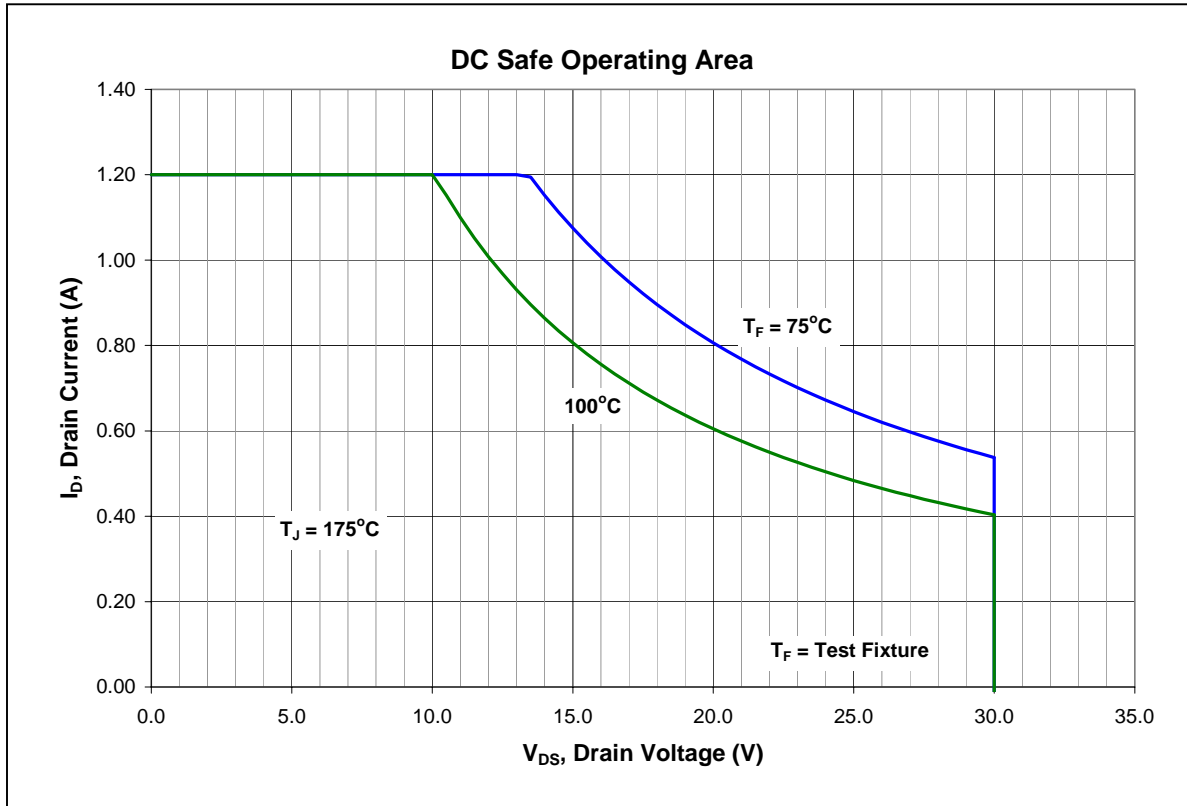
*No degradation in device performance after test.

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

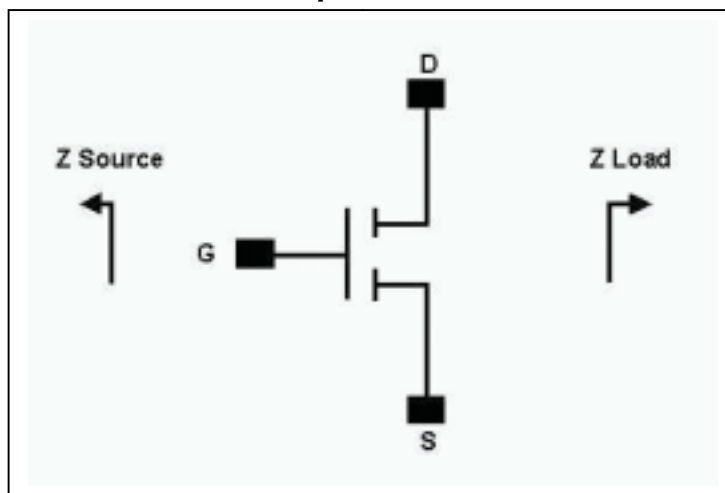








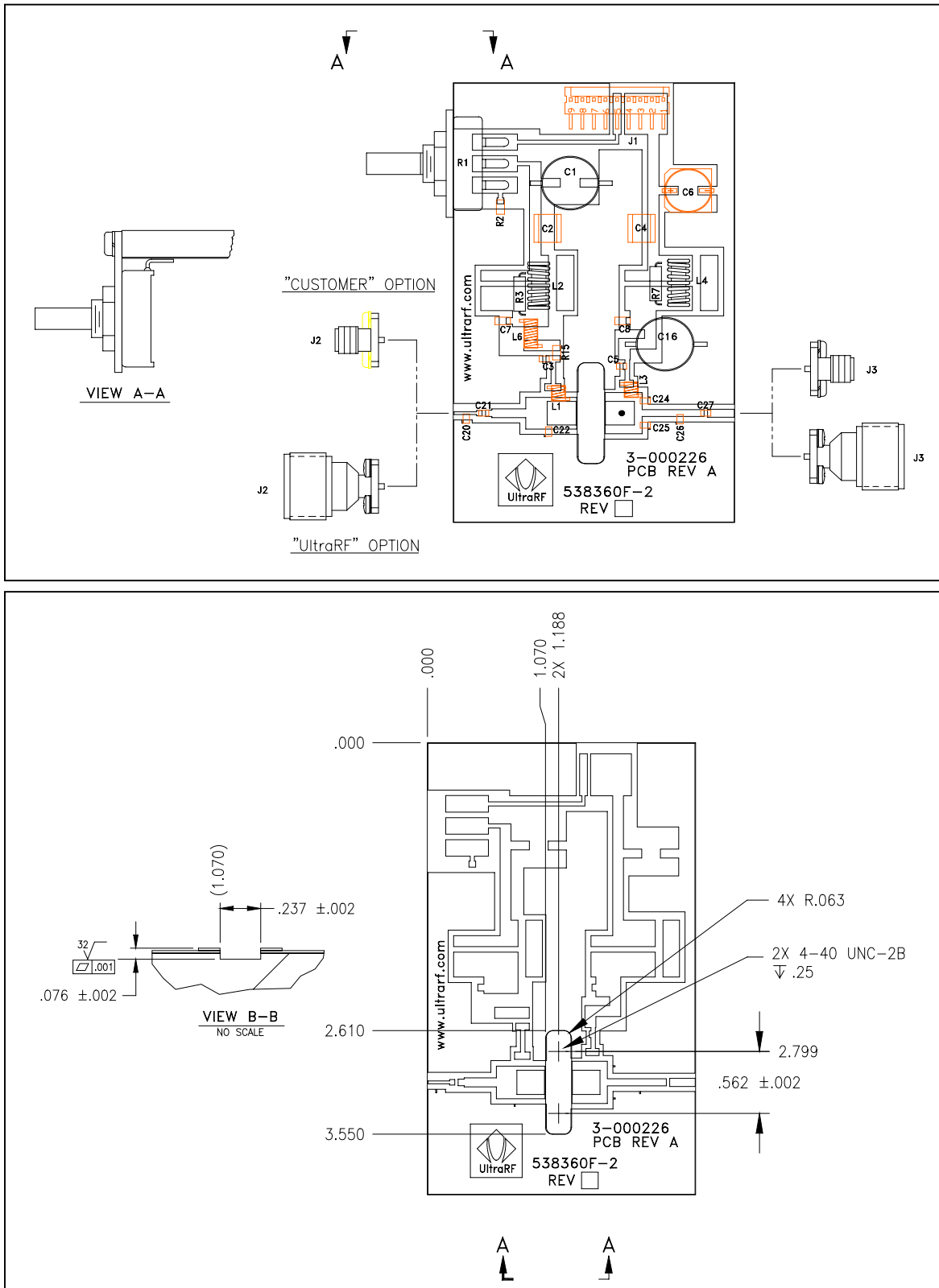
Impedance



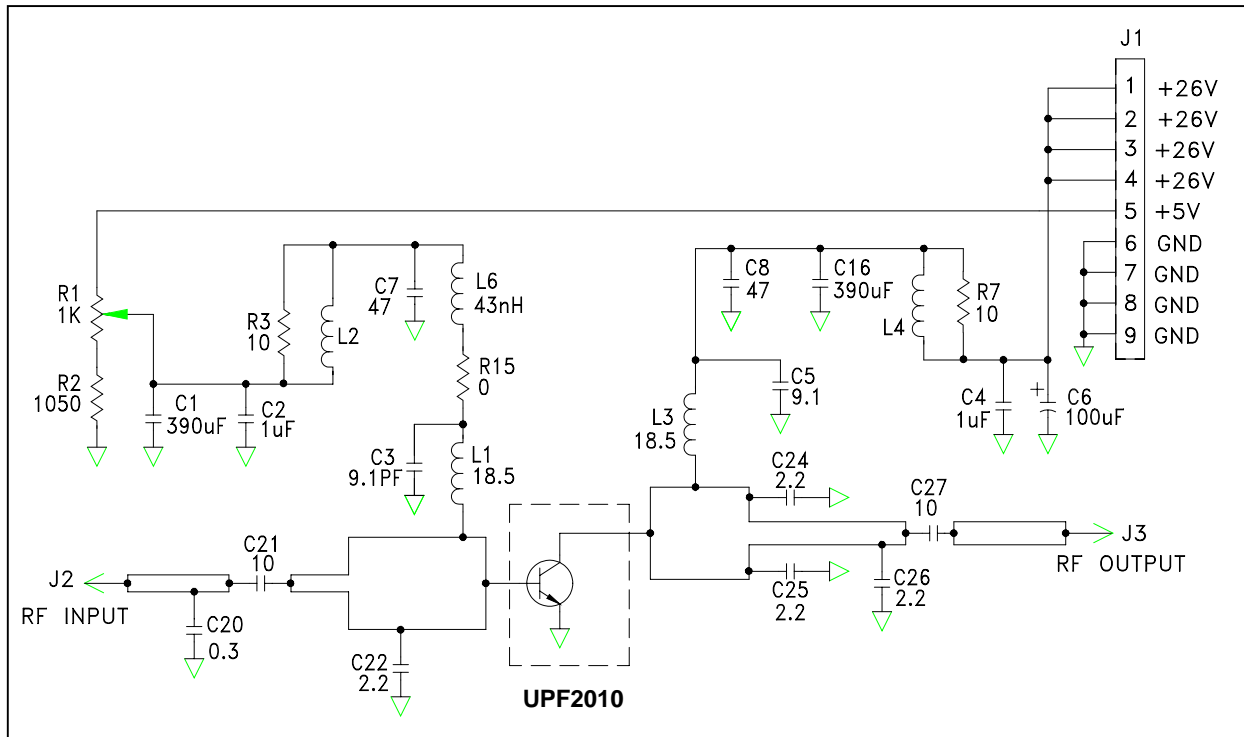
Frequency (MHz)	Z Source	Z Load
1800	$2.41 - j4.97$	$3.04 + j0.33$
1960	$2.23 - j4.47$	$2.59 + j0.88$
2000	$2.18 - j4.36$	$2.49 + j1.09$

Note: $V_{DD} = 26V$, $I_{DQ} = 95Ma$
Measured in the 440109 package.

Test Fixture Layout



Test Fixture Schematic

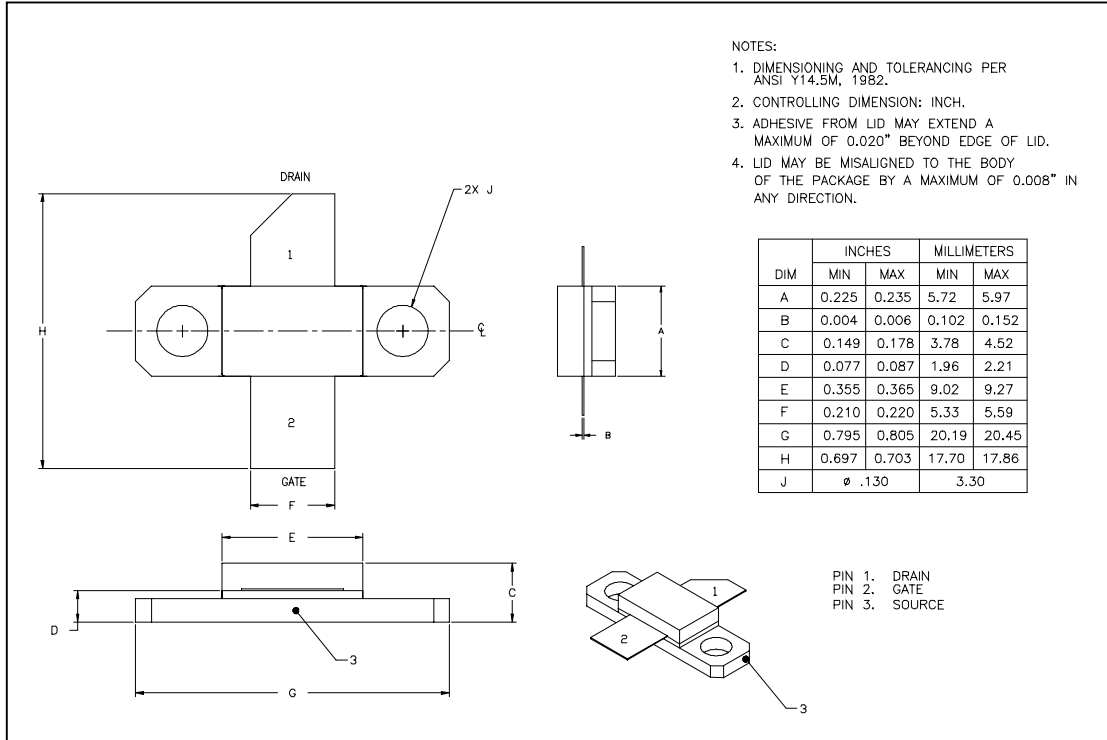


Test Fixture Bill of Materials

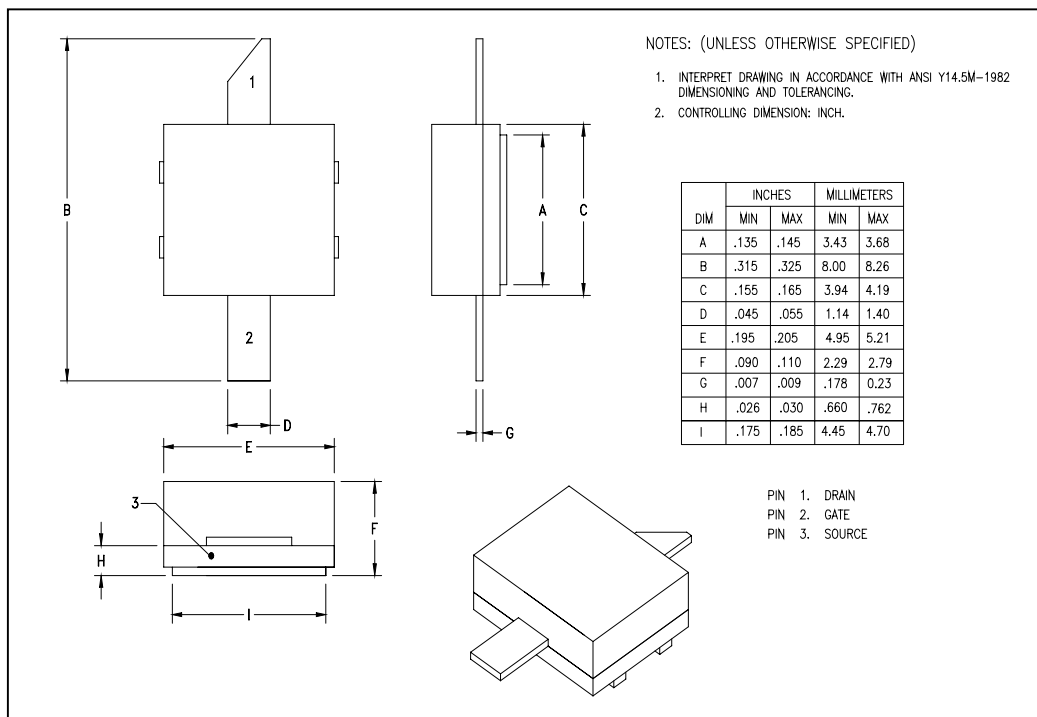
Designator	Description	Qty
C1, C16	CAP LOW ESR 390UF 35V	2
C2, C4	CAP 1UF 220X250 SMT 50V X7R	2
C3, C5	CAP,9.1PF,0805,100V HI CURRENT	2
C6	CAP,100UF,35V,ELECTROLYTIC SMT	1
C7, C8	CAP,47PF 1206 PKG. 100V	2
C20	CAP,0.3PF,0805,100V HI CURRENT	1
C21, C27	CAP,10PF,0805,100V HI CURRENT	2
C22, C24, C25, C26	CAP,2.2PF,0805,100V HI CURRENT	4
R15	RES 0 OHM, SMT, 1206,125MW, 5%	1
R2	RES, 1/4W, 1206 1% 1050 OHM	1
L6	IND, 43NH, SPRING,AIR CORE SMT	1
L1, L3	IND 18.5NH SPG,AIR CORE SMT A	2

Product Dimensions

UPF2010F -Package Number 440095



UPF2010P -Package Number 440109



Product Dimensions Continued...

UPF2010-178 -Package Number 440178

