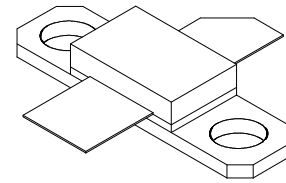


**25W, 2.7 GHz, 28V Broadband RF Power N-Channel Enhancement-Mode Lateral MOSFET**

Designed for base station applications in the frequency band 2.5 to 2.7 GHz. Rated with a minimum output power of 25W, it is ideal for CW and Multi-Tone Amplifiers in Class AB operation.

- ALL GOLD metal system for highest reliability
- Industry standard package
- Internally matched for repeatable manufacturing
- High gain, high efficiency and high linearity
- Integrated ESD Protection.
- Maximum gain and insertion phase flatness.
- Output load VSWR tolerance 10:1 all phase angles at 28V<sub>DC</sub>, 2500MHz, 25W (CW) output power.
- Common source.



**Package Type 440159**

**PN: UGF27025F**

- **Application Specific Performance, 2.7 GHz**

- **Typical 2-Tone Performance**

Average Load Power – 12.5 W

$\eta_D$  – 30%

Power Gain – 11.5 dB

IMD3: -30dBc @ -100kHz/ +100kHz

VDD – 28V

IDQ – 330mA

- **Typical CW Performance**

Average Load Power – 25 W

$\eta_D$  – 38%

Power Gain – 11.0 dB

VDD – 28V

IDQ – 330mA

**Maximum Ratings**

Rating	Symbol	Value	Unit
Drain to Source Voltage, Gate connected to Source	$V_{DSS}$	65	Volts
Gate to Source Voltage	$V_{GSS}$	+15 to -0.5	Volts
Total Device Dissipation @ Tcase = 70°C Derate above 70°C	$P_D$	83.5 0.48	Watts W/°C
Storage Temperature Range	$T_{stg}$	-65 to +150	°C
Maximum Operating Junction Temperature	$T_J$	200	°C

**Thermal Characteristics**

Characteristic	Symbol	Typical	Unit
Thermal Resistance, Junction to Case	$\Theta_{JC}$	2.1	°C/W

**Electrical DC Characteristics** (Tc=25°C unless otherwise specified)

Rating	Symbol	Min	Typ	Max	Unit
Drain to Source Breakdown Voltage ( $V_{GS}=0$ , $I_D=1mA$ )	$BV_{DSS}$	65	-	-	Volts
Drain to Source Leakage current ( $V_{DS}=28V$ , $V_{GS}=0$ )	$I_{DSS}$	-	-	1.0	mA
Gate to Source Leakage current ( $V_{GS}=15V$ , $V_{DS}=0$ )	$I_{GSS}$	-	-	1.0	μA
Threshold Voltage ( $V_{DS}=10V$ , $I_D=1mA$ )	$V_{GS(th)}$	-	3.5	-	Volts
Gate Quiescent Voltage ( $V_{DS}=28V$ , $I_D=330mA$ )	$V_{GS(Q)}$	3.0	4.0	5.0	Volts
Drain to Source On Voltage ( $V_{GS}=10V$ , $I_D=1A$ )	$V_{DS(on)}$	-	-	0.33	Volts
Forward Transconductance ( $V_{DS}=10V$ , $I_D=1A$ )	Gm	1.0	-	-	S

**AC Characteristics** (Tc=25°C unless otherwise specified)

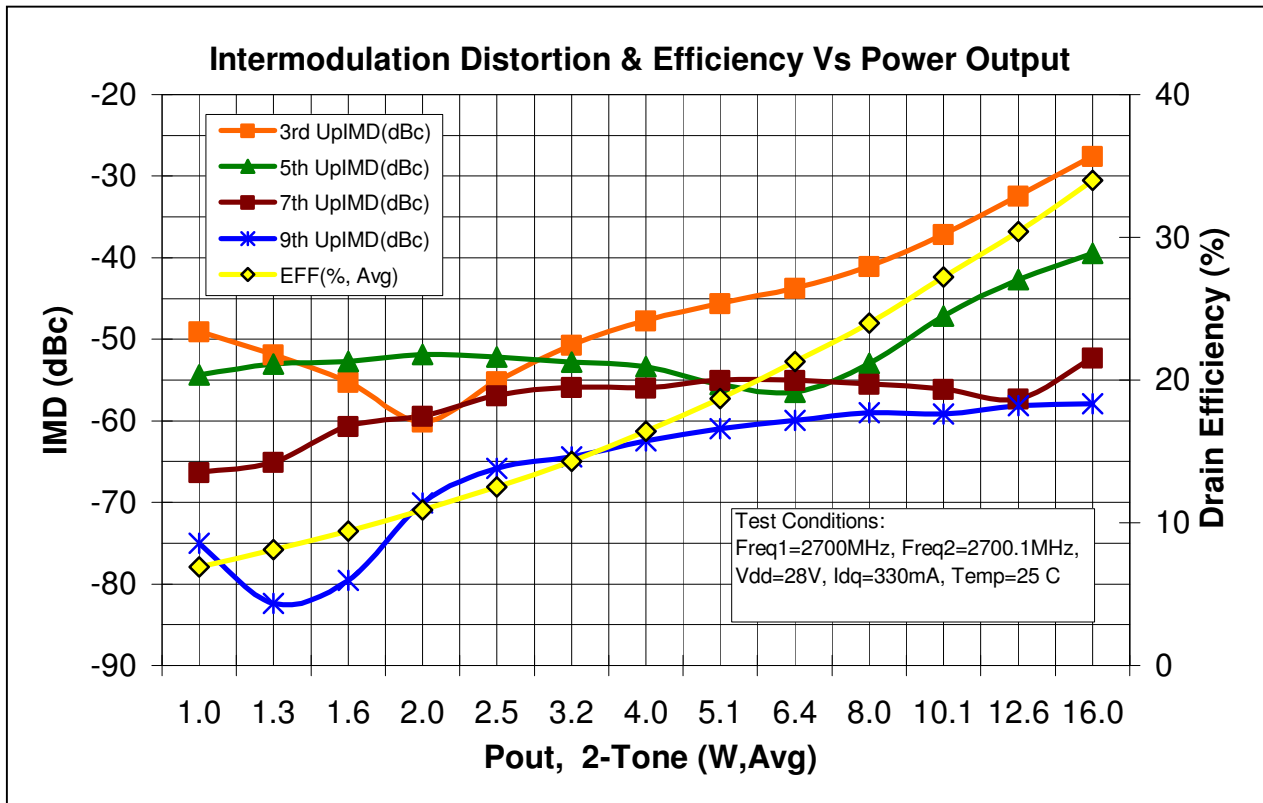
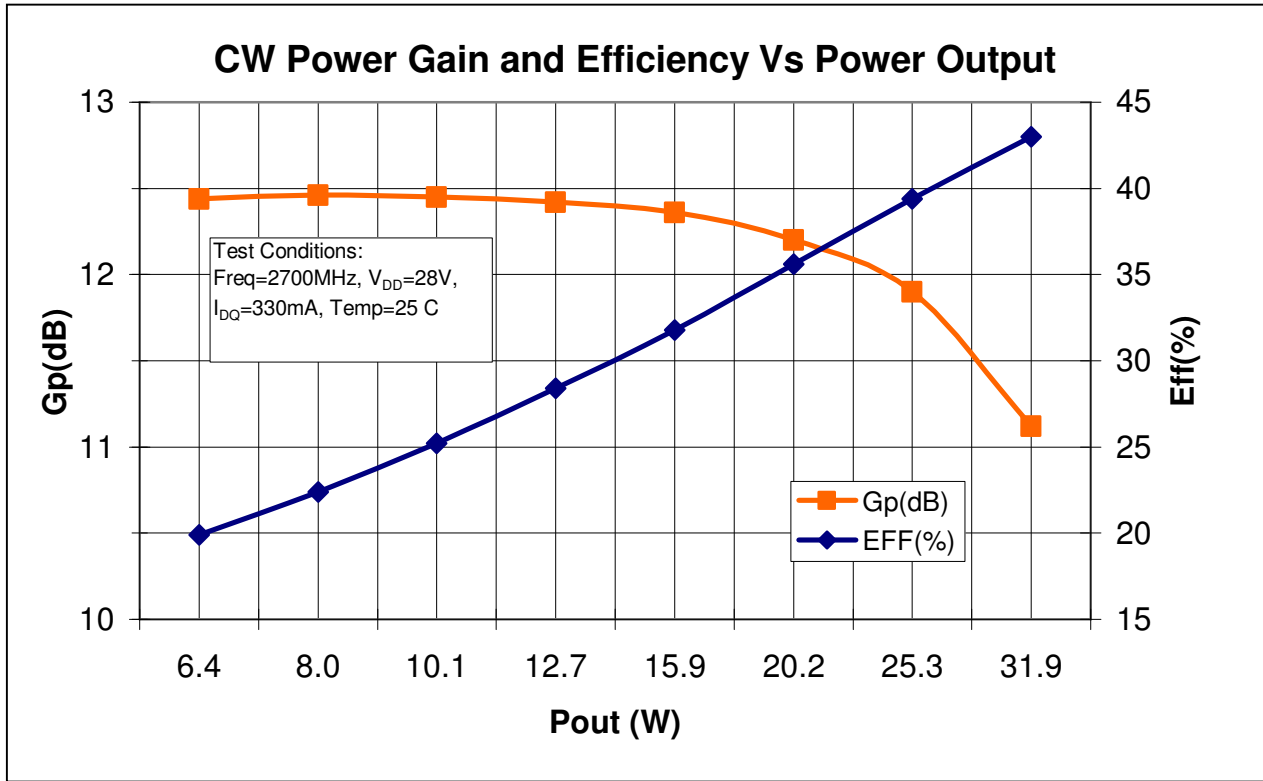
Rating	Symbol	Min	Typ	Max	Unit
Input capacitance * (including matching capacitor) (V <sub>DS</sub> =28V, V <sub>GS</sub> =0V, f = 1MHz)	C <sub>ISS</sub>	-	74	-	pF
Output capacitance * (including matching capacitor) (V <sub>DS</sub> = 28V, V <sub>GS</sub> =0V, f = 1MHz)	C <sub>OSS</sub>	-	352	-	pF
Feedback capacitance * (V <sub>DS</sub> =28V, V <sub>GS</sub> =0V, f = 1MHz)	C <sub>RSS</sub>	-	1.6	-	pF

\* Part is internally matched on input and output.

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

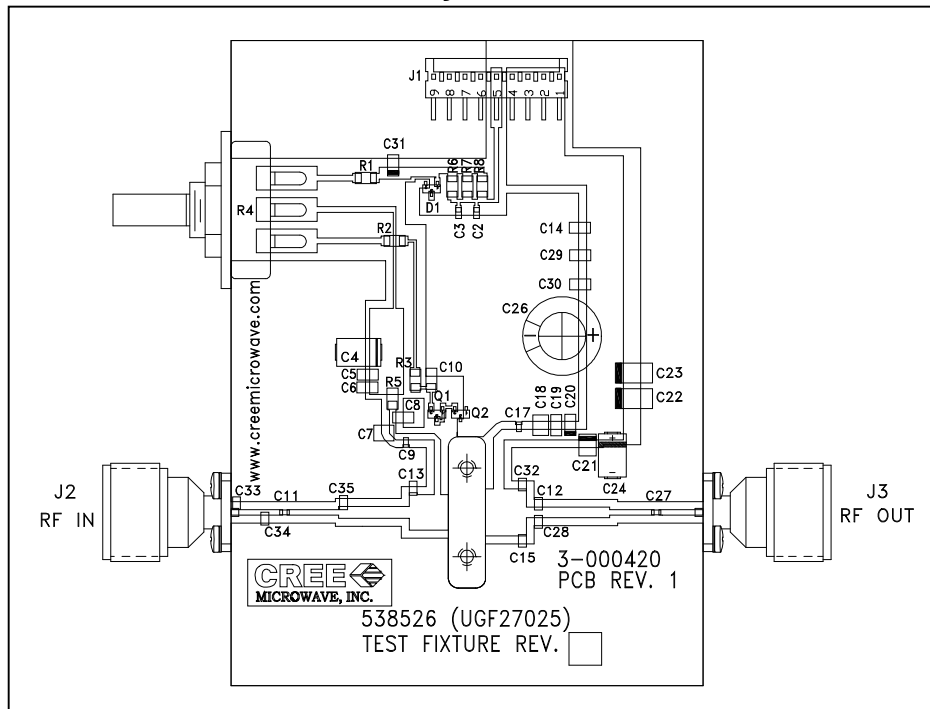
Rating	Symbol	Min	Typ	Max	Unit
CW Low Power Gain, P <sub>out</sub> =8W V <sub>DD</sub> =28V, I <sub>DQ</sub> =330mA, f=2700 MHz	G <sub>L</sub>	11	12	-	dB
CW Power Gain, P <sub>out</sub> = 25 W V <sub>DD</sub> =28V, I <sub>DQ</sub> =330mA, f=2700 MHz	G <sub>P</sub>	10	11	-	dB
CW Drain Efficiency, P <sub>out</sub> = 25 W, f=2700 MHz, V <sub>DD</sub> =28V, I <sub>DQ</sub> =330mA	η <sub>D</sub>	34	38	-	%
Two-Tone Common-Source Amplifier Power Gain V <sub>DD</sub> =28V, I <sub>DQ</sub> =330mA, P <sub>out</sub> = 25 W PEP f <sub>1</sub> =2700 MHz and f <sub>2</sub> =2700.1 MHz	G <sub>TT</sub>	10.5	11.5	-	dB
Two-Tone Intermodulation Distortion V <sub>DD</sub> =28V, I <sub>DQ</sub> =330mA, P <sub>out</sub> = 25 W PEP f <sub>1</sub> =2700 MHz and f <sub>2</sub> =2700.1 MHz	I <sub>MD</sub>	-	-30	-28	dBc
Two-Tone Drain Efficiency V <sub>DD</sub> =28V, I <sub>DQ</sub> =330mA, P <sub>out</sub> = 25 W PEP f <sub>1</sub> =2700 MHz and f <sub>2</sub> =2700.1 MHz	η <sub>D2T</sub>	26	30	-	%
Input Return Loss V <sub>DD</sub> =28V, P <sub>out</sub> = 25 W PEP, I <sub>DQ</sub> =330mA f <sub>1</sub> =2500 MHz and 2700 MHz, Tone Spacing = 100kHz	IRL	-	-	-9	dB
Load Mismatch Tolerance V <sub>DS</sub> =28V, I <sub>DQ</sub> = 330 mA, P <sub>out</sub> =25W, f=2500 MHz	VSWR	10:1	-	-	Ψ

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

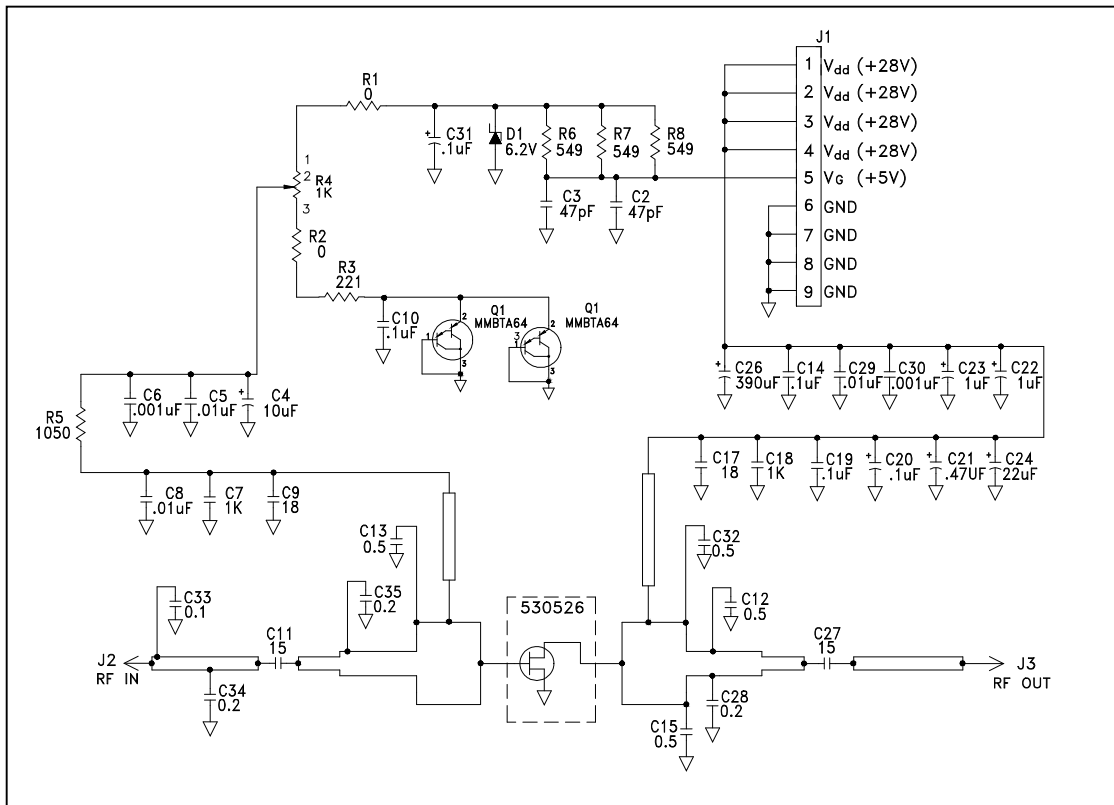


**Test Fixture**

**Test Fixture Layout for 2.5-2.7GHz**

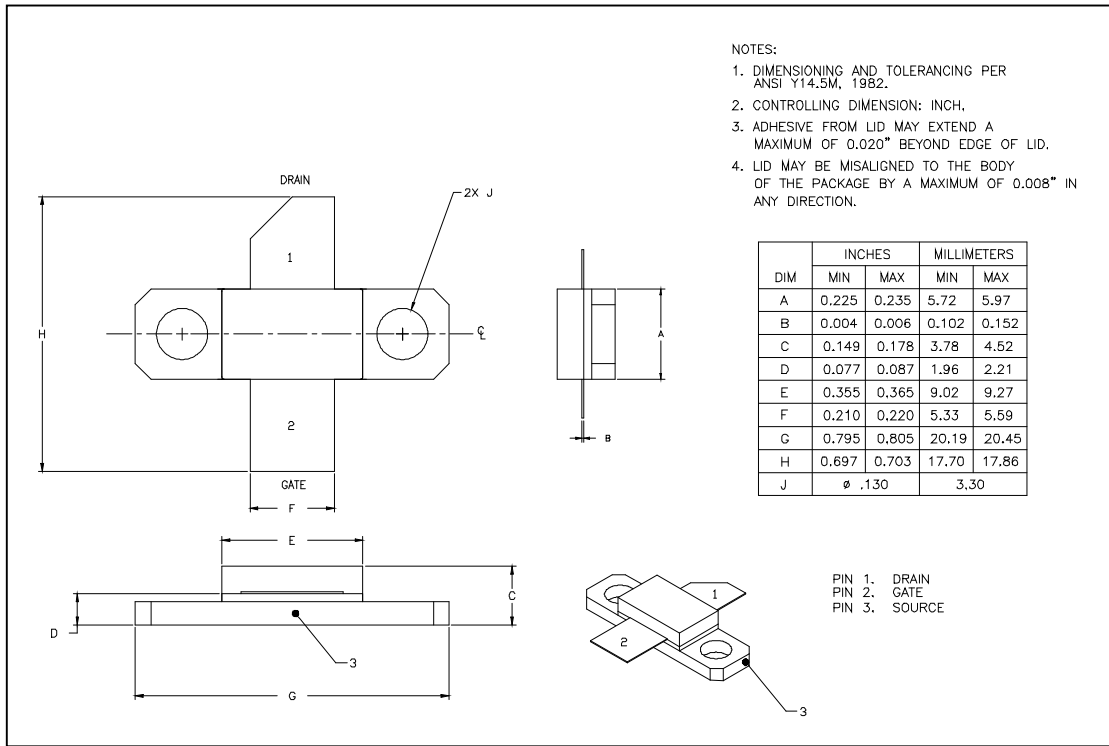


**Test Fixture Schematic**



**Product Dimensions**

**UGF27025F -Package Number 440159**





**UGF27025**

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