CREE MICROWAVE, INC.

PRELIMINARY DATA SHEET

UGF09030

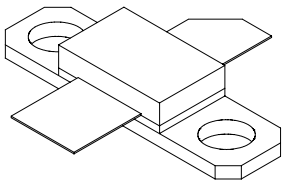
30W, 1 GHz, 26V Broadband RF Power N-Channel Enhancement-Mode Lateral MOSFET

Designed for base station applications in the frequency band 800MHz to 1000MHz. Rated with a minimum output power of 30W, it is ideal for CDMA, TDMA, WCDMA, GSM, and Multi-Carrier Power Amplifiers in Class AB operation.

- ALL GOLD metal system for highest reliability
- Industry standard package
- Suggested alternative to the MRF9030
- Internally matched for repeatable manufacturing
- High gain, high efficiency and high linearity

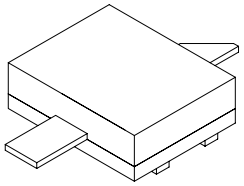
- **Application Specific Performance, 870MHz**

GSM:	**30 Watts**	**17.50dB**
EDGE:	**13 Watts**	**17.50dB**
IS95 CDMA:	**3.5 Watts**	**17.50 dB**
CDMA2000:	**TBD Watts**	**17.50dB**



Package Type 440095

PN: UGF9030F



Package Type 440109

PN: UGF9030P

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 –.5	Volts
Total Device Dissipation @ Tcase = 70°C Derate above 70°C	P_D	-	Watts W/°C
Storage Temperature Range	T_{stg}	-65 to +150	°C
Operating Junction Temperature	T_J	200	°C

Thermal Characteristics

Characteristic	Symbol	Typical	Unit
Thermal Resistance, Junction to Case	Θ_{JC}	-	°C/W

Electrical DC Characteristics (T_C =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}=26V, 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}=26 V, I_D=350mA)	$V_{GS(Q)}$	3.0	4.0	6.0	Volts
Drain to Source On Voltage (V_{GS}=10V, I_D=1A)	$V_{DS(on)}$	-	0.3	-	Volts
Forward Transconductance (V_{DS}=10V, I_D=5A)	Gm	-	-	-	S

AC Characteristics (T_C =25°C unless otherwise specified)

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

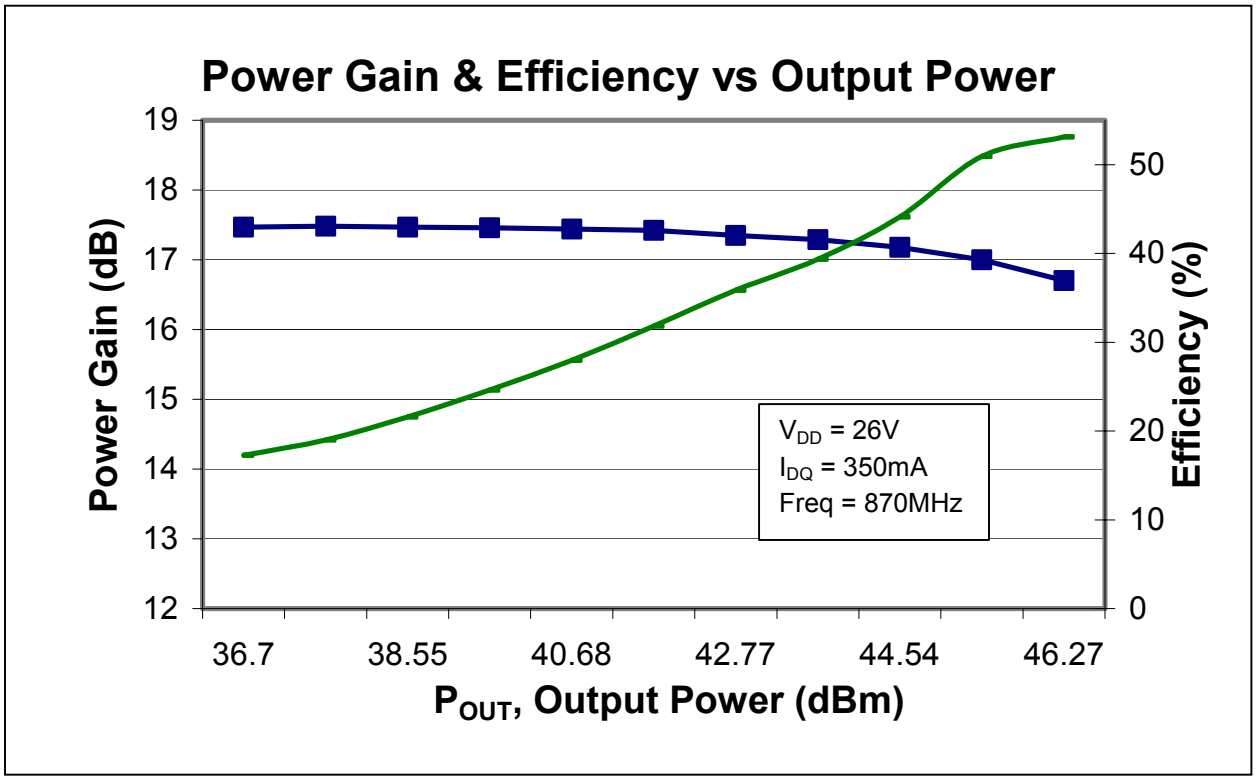
RF and Functional Tests (Tc=25°C unless otherwise specified, Cree Microwave Broadband Fixture)

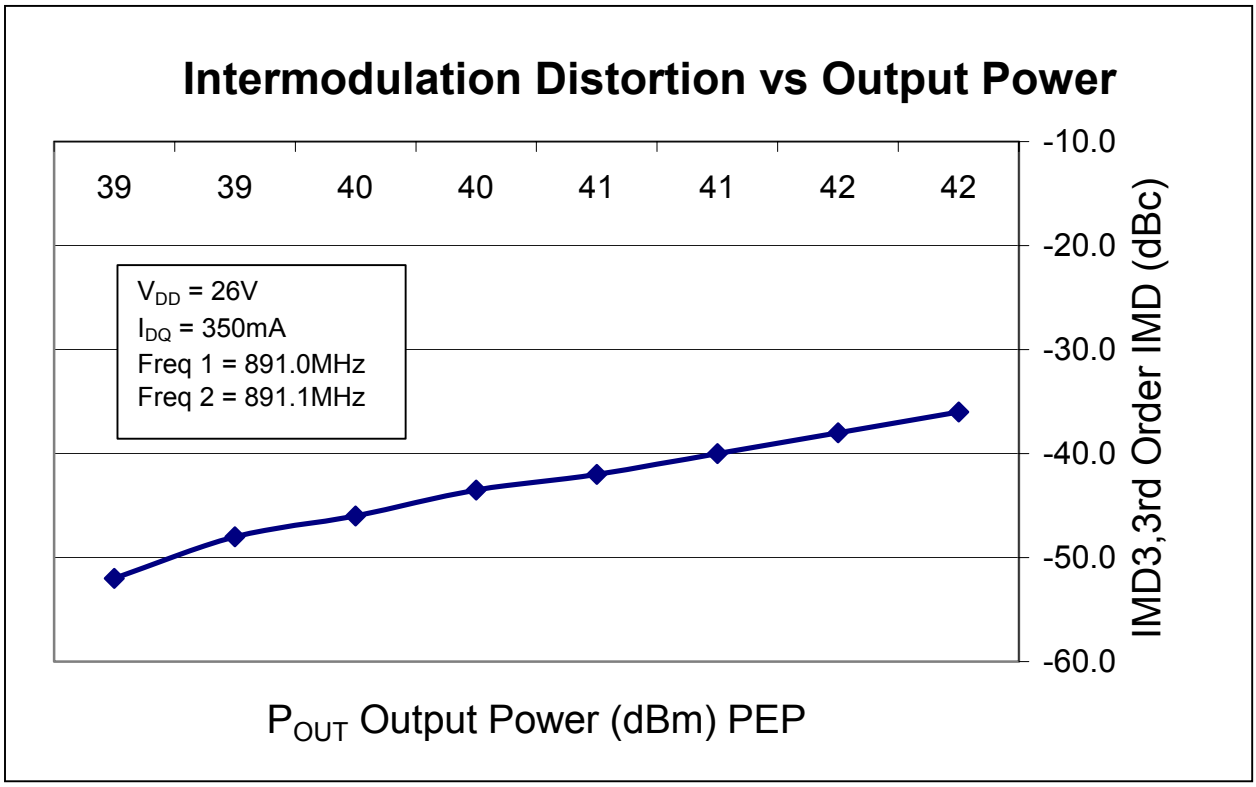
Rating	Symbol	Min	Typ	Max	Unit
CW Small Signal Gain, Pout=0.1W V_{DD}=26V, I_{DQ}=350mA	G_L	-	17.5	-	dB
CW Power Gain, P_{out} = 30 W V_{DD}=26V, I_{DQ}=350mA	G_P	-	17	-	dB
CW Drain Efficiency, P_{out} = 30 W, f=870 MHz, V_{DD}=26V, I_{DQ}=350mA,	η_D	-	45	-	%
Two-Tone Common-Source Amplifier Power Gain V_{DD}=26V, I_{DQ}=350mA, P_{out} = 30 W PEP f_1 =870 MHz and f_2=870.1 MHz	G_{TT}	-	17.5	-	dB
Two-Tone Inter-modulation Distortion V_{DD}=26V, I_{DQ}=350mA, P_{out} = 30 W PEP f_1 =870 MHz and f_2=870.1 MHz	I_{MD}	-	-36	-	dBc
Two-Tone Drain Efficiency V_{DD}=26V, I_{DQ}=350mA, P_{out} = 30 W PEP f_1 =870 MHz and f_2=870.1 MHz	η_{D2T}	-	36	-	%
Input Return Loss V_{DD} =26V, P_{out} = 30 W PEP, I_{DQ}=350mA f_1 =850 MHz and 900 MHz, Tone Spacing = 100kHz	IRL	-	10	-	dB
Load Mismatch Tolerance V_{DS}=26V, I_{DQ}= 350 mA, Pout=30W, f=900 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.

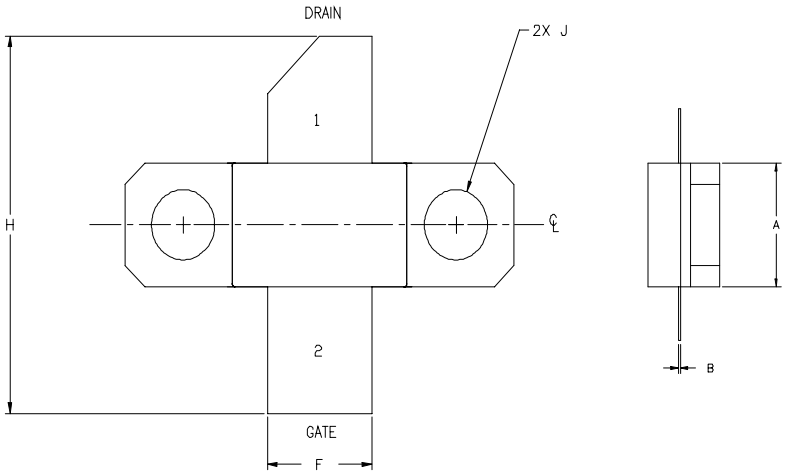
CAUTION - MOS Devices are susceptible to damage from Electrostatic Discharge (ESD). Appropriate precautions in handling, packaging and testing MOS devices must be observed.





Product Dimensions

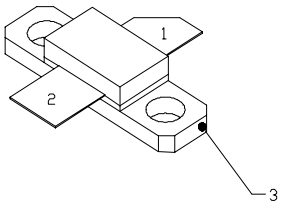
UPF0930F – Package Number 440095



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. ADHESIVE FROM LID MAY EXTEND A MAXIMUM OF 0.020" BEYOND EDGE OF LID.
4. LID MAY BE MISALIGNED TO THE BODY OF THE PACKAGE BY A MAXIMUM OF 0.008" IN ANY DIRECTION.

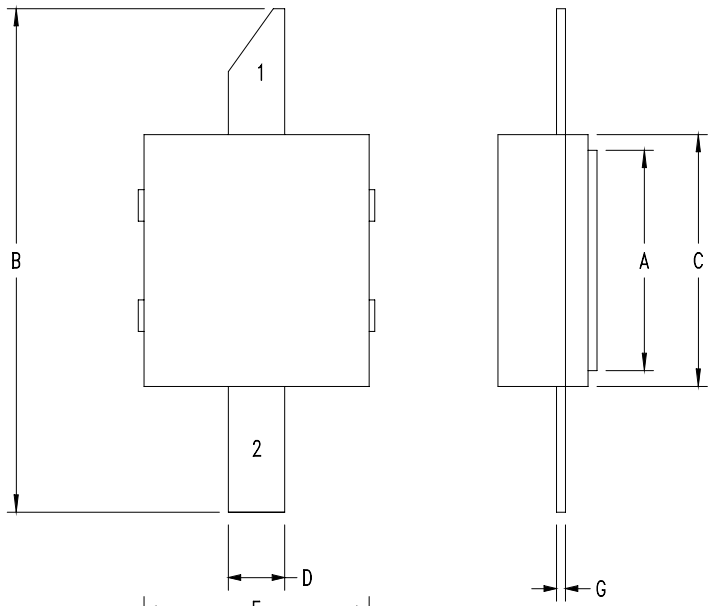
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.225	0.235	5.72	5.97
B	0.004	0.006	0.102	0.152
C	0.149	0.178	3.78	4.52
D	0.077	0.087	1.96	2.21
E	0.355	0.365	9.02	9.27
F	0.210	0.220	5.33	5.59
G	0.795	0.805	20.19	20.45
H	0.697	0.703	17.70	17.86
J	ø .130		3.30	



PIN 1. DRAIN
PIN 2. GATE
PIN 3. SOURCE

Package Dimensions

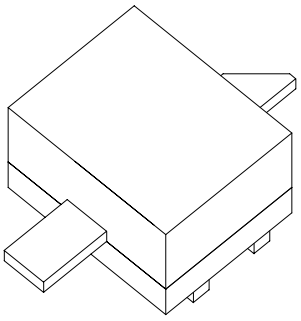
UGF09030P – Package Number 440109



NOTES: (UNLESS OTHERWISE SPECIFIED)

1. INTERPRET DRAWING IN ACCORDANCE WITH ANSI Y14.5M–1982 DIMENSIONING AND TOLERANCING.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.135	.145	3.43	3.68
B	.315	.325	8.00	8.26
C	.155	.165	3.94	4.19
D	.045	.055	1.14	1.40
E	.195	.205	4.95	5.21
F	.090	.110	2.29	2.79
G	.007	.009	.178	0.23
H	.026	.030	.660	.762
I	.175	.185	4.45	4.70



PIN 1. DRAIN
PIN 2. GATE
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