

90W, 1.88GHz, 26V Broadband RF Power N-Channel Enhancement-Mode Lateral DMOS

Designed for DCS base station applications in the frequency band 1.805 to 1.880 GHz. Rated with a minimum output power of 90W, it is ideal for CDMA, TDMA, GSM, EDGE and Multi-Carrier Power Amplifiers in Class A or AB operation.

- ALL GOLD metal system for highest reliability
- Industry standard package
- Suggested replacement for MRF18090
- Internally matched for repeatable manufacturing
- High gain, high efficiency and high linearity
- Typical EDGE Performance: 1880 MHz, 26 Volts
EDGE Performance (ETSI 300-910 GSM 05.05 v. 5.5.1)

Average Load Power – 30 W

Associated PAE – 34 %

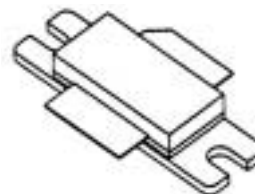
Power Gain – 12 dB

ACPR1 (30 kHz BW offset $\pm$ 400 kHz normalized to total power in a 30 kHz BW): -57 dBc

ACPR2 (30 kHz BW offset $\pm$ 600 kHz normalized to total power in a 30 kHz BW): -66 dBc



Package Type 440158



Package Type 440164

UPF18090

Maximum Ratings

Rating	Symbol	Value	Unit
Drain to Source Voltage, Gate connected to Source	BV_{DSS}	65	Volts
Gate to Source Voltage	BV_{GSS}	+15 to -0.5	Volts
Total Device Dissipation @ TC = 70°C Derate above 70°C	P_D	130 1.0	Watts W/°C
Storage Temperature Range	T_{STG}	-65 to +150	°C
Operating Junction Temperature	T_J	200	°C

Thermal Characteristics

Characteristics	Symbol	Maximum	Unit
Thermal Resistance, Junction to Case	Θ_{JC}	0.85	°C/W

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

Rating	Symbol	Min	Typ	Max	Unit
Drain to Source Voltage, gate connected to source ($V_{GS}=0$, $I_{DS}=1\text{mA}$)	BV_{DSS}	65	-	-	Volts
Drain to Source Leakage current ($V_{DS}=28\text{V}$, $V_{GS}=0$)	I_{DSS}	-	-	3.0	mA
Gate to Source Leakage current ($V_{GS}=15\text{V}$, $V_{DS}=0$)	I_{GSS}	-	-	3.0	μA
Threshold Voltage ($V_{DS}=10\text{V}$, $I_{DS}=1\text{mA}$)	V_{TH}	-	3.5	-	Volts
Gate Quiescent Voltage ($V_{DS}=26\text{V}$, $I_{DS}=800\text{mA}$)	$V_{GS(on)}$	3.0	4.0	5.0	Volts
Drain to Source On Voltage ($V_{GS}=10\text{V}$, $I_{DS}=1\text{A}$)	$V_{DS(on)}$	-	0.1		Volts
Forward Transconductance ($V_{DS}=10\text{V}$, $I_D=5\text{A}$)	G_m		4.5	-	S

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

Rating	Symbol	Min	Typ	Max	Unit
Output Capacitance* ($V_{DS}=26\text{V}$, $V_{GS}=0\text{V}$, freq= 1MHz)	C_{OSS}	-	80	-	pF
Feedback Capacitance ($V_{DS}=26\text{V}$, $V_{GS}=0\text{V}$, freq= 1MHz)	C_{RSS}	-	4.0	-	pF

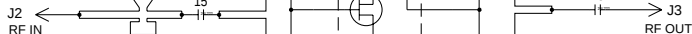
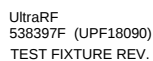
* For reference only.

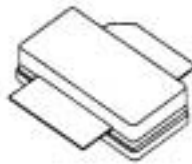
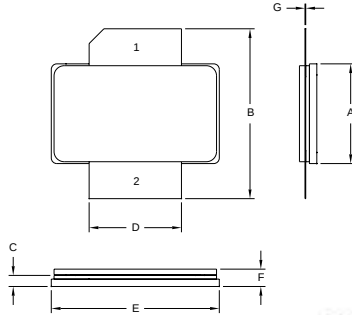
RF and Functional Tests ($T_C=25^\circ\text{C}$ unless otherwise specified, UltraRF Test Fixture)

Rating	Symbol	Min	Typ	Max	Unit
Two-Tone Common-Source Amplifier Power Gain $V_{DD}=26\text{V}$, $I_{DQ}=800\text{mA}$, $P_{OUT}=90\text{W}$ PEP $f_1=1805\text{ MHz}$, and 1880 MHz , Tone Spacing = 100kHz	G_{PS}	11.0	12	-	dB
Two-Tone Drain Efficiency $V_{DD}=26\text{V}$, $P_{OUT}=90\text{W}$ PEP, $I_{DQ}=800\text{mA}$ $f=1805\text{ MHz}$ and 1880 MHz , Tone Spacing = 100kHz	η	33	36	-	%
P_{OUT} , 1dB Compression Point $V_{DD}=26\text{V}$, $P_{OUT}=90\text{W}$ CW, $f=1880\text{ MHz}$	P1dB		80		W
Input Return Loss $V_{DD}=26\text{V}$, $P_{OUT}=90\text{W}$ PEP, $I_{DQ}=800\text{mA}$ $f=1805\text{ MHz}$ and 1880MHz , Tone Spacing = 100kHz	IRL	-	-10	-	dB
Load Mismatch Tolerance ($V_{DD}=26\text{V}$, $I_{DQ}=800\text{mA}$, $P_{OUT}=90\text{W}$ $f=1880\text{ MHz}$)	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.

UltraRF
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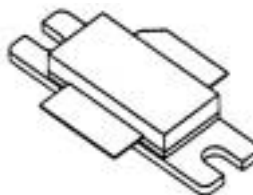
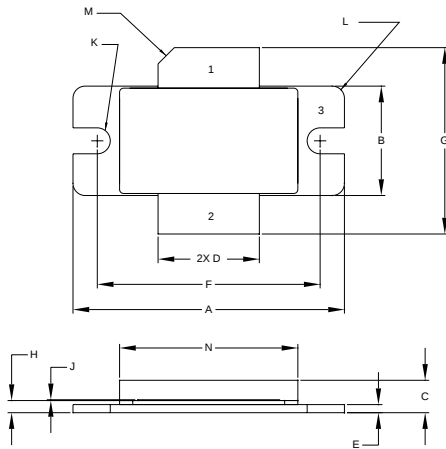




- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.535	.545	13.59	13.84
B	.900	.940	22.86	23.88
C	.057	.067	1.45	1.71
D	.495	.505	12.57	12.83
E	.905	.915	22.99	23.24
F	.154	.174	3.91	4.42
G	.003	.006	0.08	0.15

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



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DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.335	1.345	33.91	34.16
B	0.535	0.545	13.59	13.84
C	0.154	0.174	3.91	4.42
D	0.495	0.505	12.57	12.83
E	0.035	0.045	.89	1.14
F	1.095	1.105	27.81	28.07
G	0.900	0.940	22.86	23.88
H	0.057	0.067	1.45	1.70
J	0.003	0.006	.08	.15
K	R0.59	R0.69	R14.99	R17.53
L	R0.060 REF		R1.52 REF	
M	45° REF		45° REF	
N	0.871	0.889	22.12	22.58

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



UPF18090