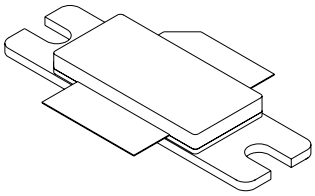
UltraRF
A CREE Company

UPF18060

60W, 1.88GHz, 26V Broadband RF Power N-Channel Enhancement-Mode Lateral DMOS

Designed for DCS base station applications in the frequency band 1805 to 1880 GHz. Rated with a minimum output power of 60W, it is ideal for CDMA, TDMA, GSM, and Multi-Carrier Power Amplifiers in Class A or AB operation.

- ALL GOLD metal system for highest reliability
- Industry standard package
- Suggested alternative to the MRF18060
- Internally matched for repeatable manufacturing
- High gain, high efficiency and high linearity

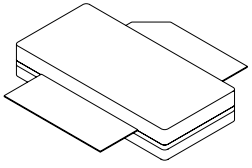


Package Type 440117

Application Specific Performance, 1.88 GHz

GSM:	**60 Watts**	**13 dB**
EDGE:	**25 Watts**	**12.5 dB**
IS95 CDMA:	**7.5 Watts**	**12.5 dB**
W-CDMA:	**5 Watts**	**12.5 dB**

- **Typical EDGE Performance** (ETSI 300-910 GSM 05.05 v. 5.5.1)
  Average Load Power – 20 W
  PAE – 30 %
  Power Gain – 12.5 dB
  ACPR1 (30 kHz BW offset ± 400 kHz normalized to total power in a 30 kHz BW): -57 dBc
  ACPR2 (30 kHz BW offset ± 600 kHz normalized to total power in a 30 kHz BW): -66 dBc



Package Type 440133

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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	100 0.8	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}	1.2	°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}	-	-	2.0	mA
Gate to Source Leakage current (V_{GS}=15V, V_{DS}=0)	I_{GSS}	-	-	2.0	µA
Threshold Voltage (V_{DS}=10V, I_{DS}=1mA)	V_{TH}	-	3.5	-	Volts
Gate Quiescent Voltage (V_{DS}=26 V, I_{DS}=540mA)	V_{GS}(on)	3.0	4.0	5.0	Volts
Drain to Source On Voltage (V_{GS}=10V, I_{DS}=1A)	V_{DS}(on)	-	0.14		Volts
Forward Transconductance (V_{DS}=10V, I_D=5A)	G_m	-	3.0	-	S

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

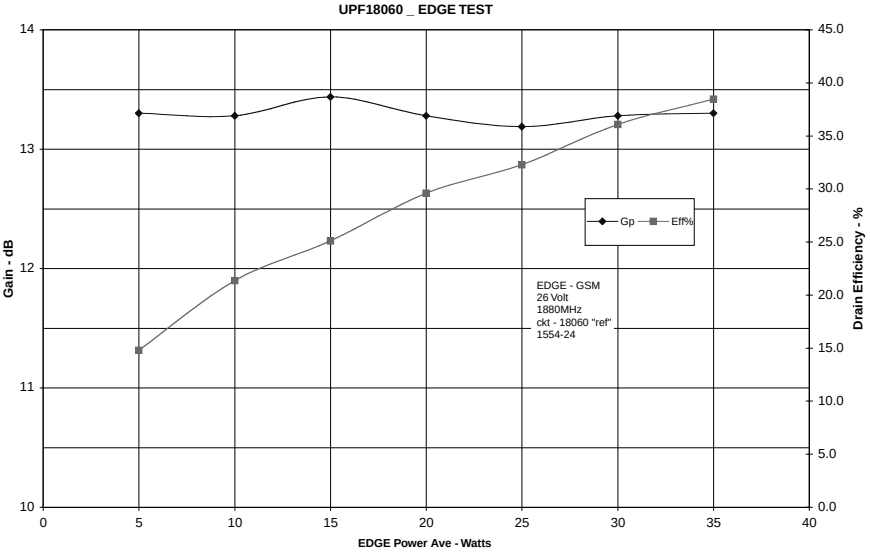
Rating	Symbol	Min	Typ	Max	Unit
Output Capacitance* (V_{DS}=26V, V_{GS}=0V, freq= 1MHz)	C_{OSS}	-	52	-	pF
Feedback Capacitance (V_{DS}=26V, V_{GS}=0V, freq= 1MHz)	C_{RSS}	-	3.0	-	pF

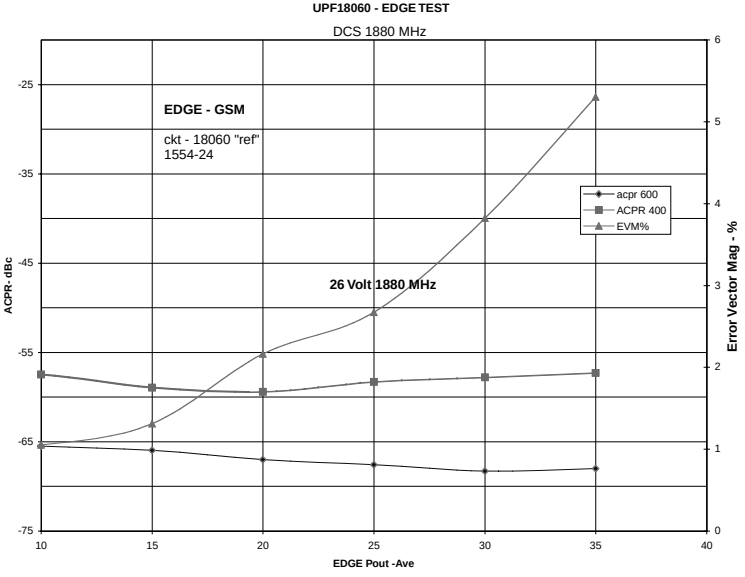
* For reference only.

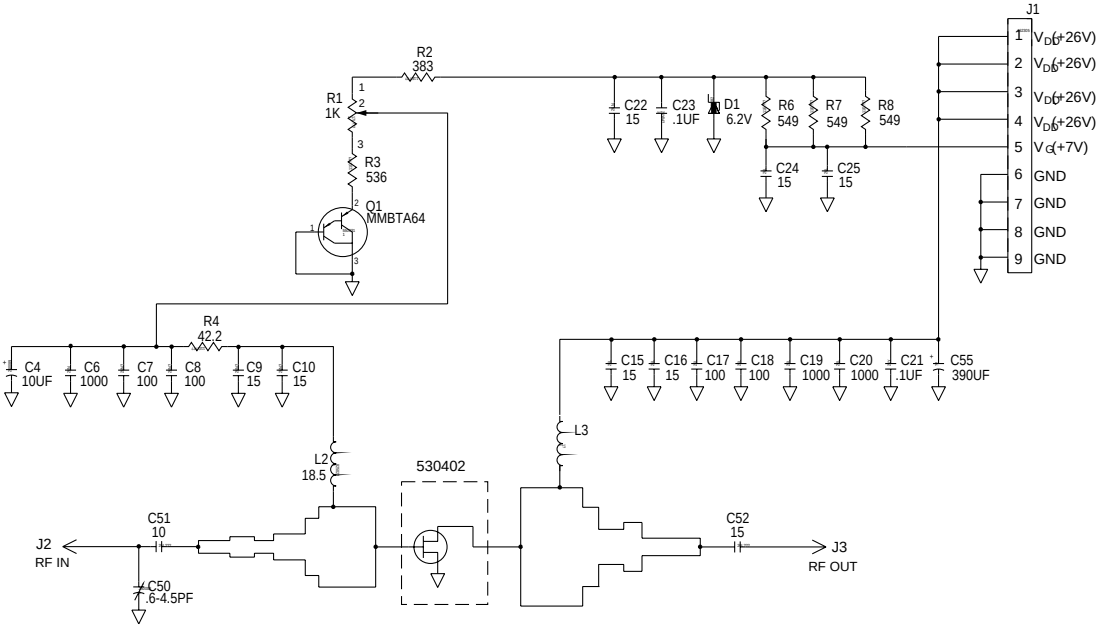
RF and Functional Tests *(T_C=25°C unless otherwise specified, UltraRF Test Fixture)*

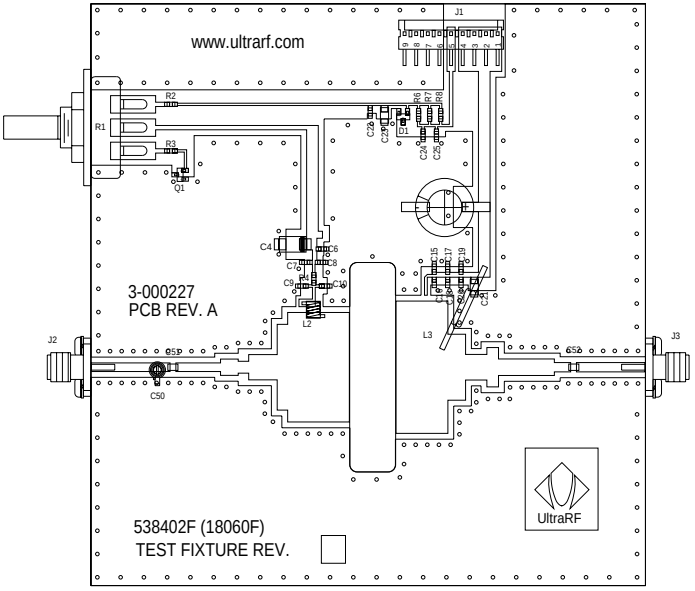
Rating	Symbol	Min	Typ	Max	Unit
Two-Tone Common-Source Amplifier Power Gain V_{DD}=26V, I_{DQ}=540mA, P_{OUT}=60W PEP f_1=1805 MHz, and 1880 MHz, Tone Spacing = 100kHz	G_{PS}	12.0	12.5	-	dB
Two-Tone Drain Efficiency V_{DD}=26V, P_{OUT}=60W PEP, I_{DQ}=540mA f =1805 MHz and 1880 MHz, Tone Spacing = 100kHz	η	30	33	-	%
P_{OUT}, 1dB Compression Point V_{DD}=26V, P_{OUT}=60W CW, f =1880 MHz	P1dB		60		W
Input Return Loss V_{DD}=26V, P_{OUT}=60W PEP, I_{DQ}=540mA f =1805 MHz and 1880MHz, Tone Spacing = 100kHz	IRL	-	-10	-	dB
Load Mismatch Tolerance (V_{DD}=26V, I_{DQ}=540mA, P_{OUT}=60W f=1880 MHz)	VSWR	10:1	-	-	

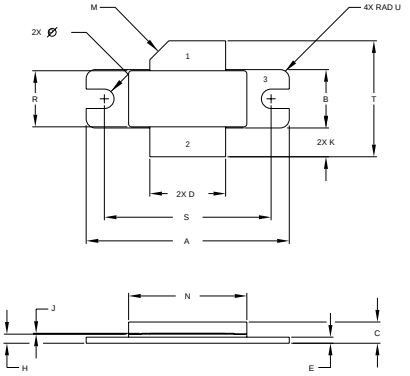
CAUTION - MOS Devices are susceptible to damage from ElectroStatic Discharge (ESD). Appropriate precautions in handling, packaging and testing MOS devices must be observed.


UPF18060 _ EDGE TEST
Gain - dB
Drain Efficiency - %
EDGE Power Ave - Watts
Gp
Eff%
EDGE - GSM
26 Volt
1880MHz
ckt - 18060 "ref"
1554-24


UPF18060 - EDGE TEST
DCS 1880 MHz
ACPR- dBc
Error Vector Mag - %
EDGE Pout -Ave
EDGE - GSM
ckt - 18060 "ref"
1554-24
acpr 600
ACPR 400
EVM%
26 Volt 1880 MHz


J1
1 VDD (+26V)
2 VDD (+26V)
3 VDD (+26V)
4 VDD (+26V)
5 VG (+7V)
6 GND
7 GND
8 GND
9 GND
R2 383
R1 1K
R3 536
Q1 MMBTA64
R4 42.2
C22 15
C23 .1UF
D1 6.2V
R6 549
R7 549
R8 549
C24 15
C25 15
C4 10UF
C6 1000
C7 100
C8 100
C9 15
C10 15
C15 15
C16 15
C17 100
C18 100
C19 1000
C20 1000
C21 .1UF
C55 390UF
L2 18.5
L3
530402
C51 10
C50 .6-4.5PF
C52 15
J2 RF IN
J3 RF OUT


www.ultrarf.com
3-000227
PCB REV. A
538402F (18060F)
TEST FIXTURE REV.
UltraRF
J1
J2
J3
C50
L2
L3

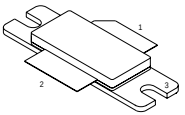


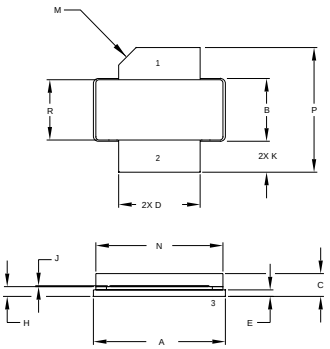
NOTES:

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

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	1.335	1.345	33.91	34.16
B	0.380	0.390	9.65	9.91
C	0.135	0.149	3.43	3.78
D	0.495	0.505	12.57	12.83
E	0.035	0.045	.89	1.14
H	0.057	0.067	1.45	1.70
J	0.003	0.006	.08	.15
K	0.170	0.210	4.32	5.33
M	45fl REF		45fl REF	
N	0.773	0.787	19.63	19.99
P	0.123	0.133	3.12	3.38
R	0.364	0.374	9.25	9.50
S	1.095	1.105	27.81	28.07
T	0.745	0.785	18.92	19.94
U	0.060 REF		1.52 REF	

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





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2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.805	0.815	20.45	20.70
B	0.380	0.390	9.65	9.91
C	0.135	0.149	3.43	3.78
D	0.495	0.505	12.57	12.83
E	0.035	0.045	.89	1.14
H	0.057	0.067	1.45	1.70
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