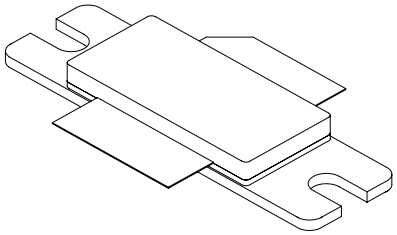
PRELIMINARY DATA SHEET

UGF1011-200S

200W PULSE, AVIONICS 1.030-1.090GHz Broadband RF Power N-Channel Enhancement-Mode Lateral DMOS

Avionics LDMOS Transistor. Rated with a minimum output power of 200W, it is ideal for Mode S and TCAS applications in the 1030-1090 MHz frequency band.

- All GOLD metal system for highest reliability
- Industry standard package
- Suggested replacement for L1011-200
- Internally matched (input and output) for repeatable manufacturing
- Class AB Linear Operation
- High gain, high efficiency and high linearity

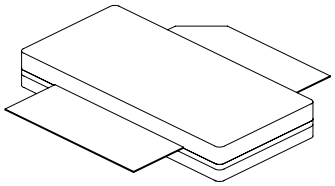


Package Type 440171

PN: UGF1011-200

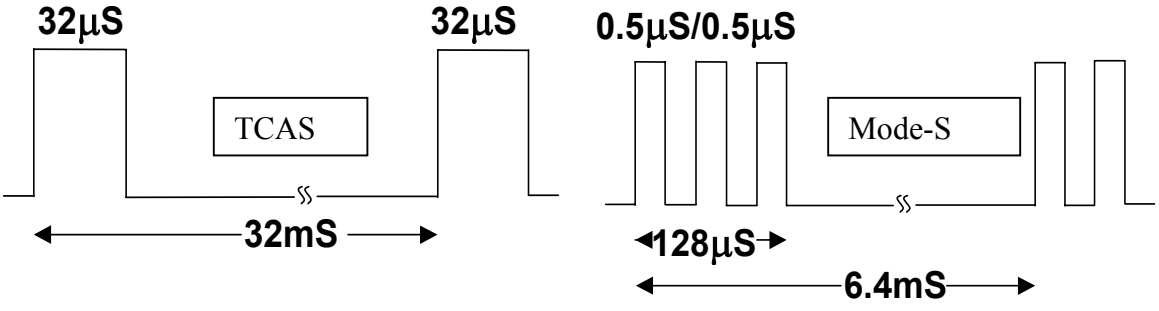
Typical Mode S Performance:

- 200 Watts Peak Power
- PW = 32μs, DF = 5%
- V_{DD} = 36V
- PAE = 54 %
- Power Gain – 17dB @ 1090MHz



Package Type 440133

PN: UGF1011-200



UGF1011-200S

Maximum Ratings

Rating	Symbol	Value	Unit
Drain to Source Voltage, gate connected to source	V_{DSS}	70	Volts
Gate to Source Voltage	V_{GSS}	+/- 20	Volts
Total Device Dissipation @ Tcase = 70°C Derate above 70°C (CW)	P_D	250 1.43	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 (note 1)	Θ_{JC}	0.7	°C/W
Thermal Resistance, Junction to Case (note 2)	Θ_{JC}	0.15	°C/W

Note
1. Thermal resistance is determined under RF operating conditions CW; 100%
2. Thermal resistance is determined under RF operating conditions; tp = 32 μs, DF = 5%

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}	70	-	-	Volts
Drain to Source Leakage current (V_{DS} =36V, V_{GS} =0)	I_{DSS}	-	-	1.0	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)	$V_{GS(th)}$	-	3.0	-	Volts
Gate Quiescent Voltage (V_{DS} =36 V, I_{DS}=700mA)	$V_{GS(Q)}$	3.0	4.0	5.0	Volts
Drain to Source On Voltage (V_{GS} =10V, I_{DS}=1A	$V_{DS(on)}$	-	0.075	0.1	Volts
Forward Transconductance (V_{DS} =10V, I_{DS}=5A)	Gm	-	5.0	-	S

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

Rating	Symbol	Min	Typ	Max	Unit
Output capacitance * (V_{DS} = 36V, V_{GS} =0V, freq= 1MHz)	C_{OSS}	-	100	-	pF
Feedback capacitance * (V_{DS} =36V, V_{GS} =0V, freq= 1MHz	C_{RSS}	-	6.0	-	pF

* for reference only, device is input and output matched

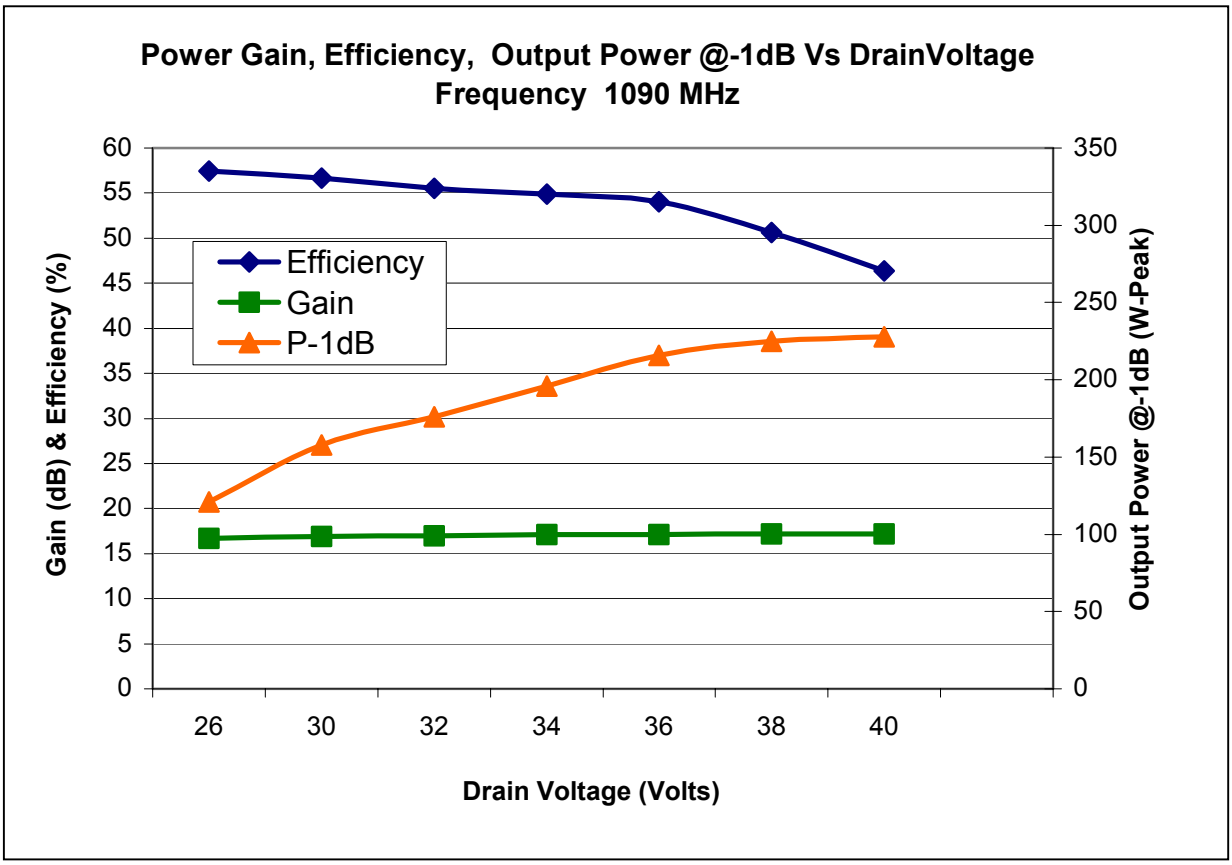
RF and Functional Tests (Tc=25°C unless otherwise specified, Cree Microwave Broadband Fixture)

Rating	Symbol	Min	Typ	Max	Unit
Pulsed Class AB Common Source Amplifier Power Gain V_{DD}=36V, I_{DQ}=700mA, P_{out} = 200 W Peak * f =1090 MHz	G_{PS}	15.0	17	-	dB
Pulse Drain Efficiency V_{DD} =36V, I_{DQ}=700mA, P_{out} = 200 W Peak* f =1090 MHz	η	50	54	-	%
Pout, 1dB Compression Point V_{DD}=36V, P_{out} = 200 W Peak * f = 1090 MHz	P1dB	-	200	-	
Input Return Loss V_{DD} =36V, I_{DQ}=700mA, P_{out} = 200 W Peak* f =1090 MHz	IRL	-	-10	-	dB
Load Mismatch Tolerance (Vds=36V, Idq = 700 mA, Pout=200W Peak* f=1030 MHz)	VSWR	3:1	-	-	Ψ

*RF Peak Operating Conditions -- 32μs, DF = 5 %

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

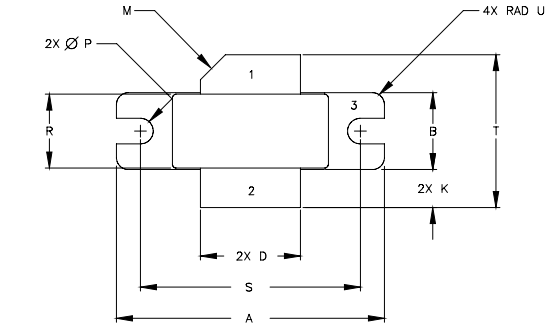
Frequency 1090 MHz
Pulse Width 32μs Duty cycle = 5%



V_{DD} (V)	Pin (dBm)	P_G (dB)	Pout @ -1dB	I_D (A)	Efficiency (%)
26	31.7	16.7	121	1.07	57.45
30	32.5	16.9	158	1.13	56.63
32	33.1	17.0	176	1.16	55.56
34	33.6	17.1	196	1.19	54.90
36	33.9	17.1	216	1.22	54.05
38	34.1	17.2	225	1.25	50.61
40	34.4	17.2	228	1.28	46.34

Package Dimensions

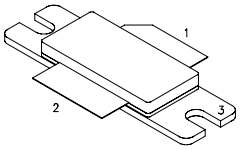
Package Number 440171



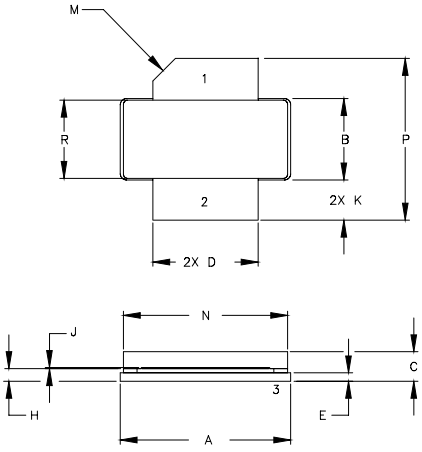
NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	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	45° REF		45° 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



Package Number 440133



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
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
J	0.003	0.006	.08	.15
K	0.170	0.210	4.32	5.33
M	45° REF		45° REF	
N	0.773	0.787	19.63	19.99
P	0.745	0.785	18.92	19.94
R	0.364	0.374	9.25	9.50

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