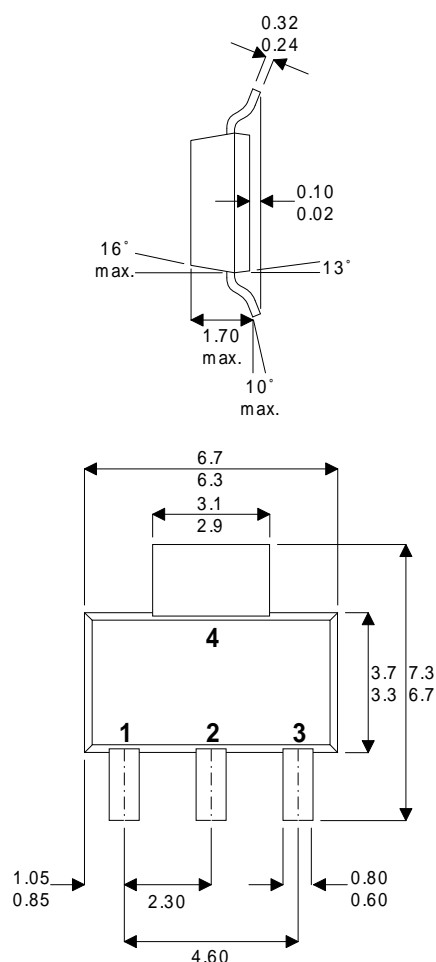


MECHANICAL DATA

Dimensions in mm.



SOT-223

PIN 1 GATE PIN 2 DRAIN
 PIN 3 SOURCE PIN 4 DRAIN

**GOLD METALLISED
 MULTI-PURPOSE SILICON
 DMOS RF FET
 750mW – 12V – 1GHz
 SINGLE ENDED**

FEATURES

- SIMPLIFIED AMPLIFIER DESIGN
- SUITABLE FOR BROAD BAND APPLICATIONS
- LOW C_{rss}
- SIMPLE BIAS CIRCUITS
- LOW NOISE (Typical < 2dB NF)
- HIGH GAIN – 11dB MINIMUM
- SURFACE MOUNT

APPLICATIONS

- VHF/UHF COMMUNICATIONS
 from DC to 2.5 GHz

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

P_D	Power Dissipation	2W
BV_{DSS}	Drain – Source Breakdown Voltage	65V
BV_{GSS}	Gate – Source Breakdown Voltage	$\pm 20V$
$I_{D(sat)}$	Drain Current	200mA
T_{stg}	Storage Temperature	-65 to 125°C
T_j	Maximum Operating Junction Temperature	150°C

ELECTRICAL CHARACTERISTICS (T_{case} = 25°C unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
B _V DSS Drain–Source Breakdown Voltage	V _{GS} = 0 I _D = 10mA	65			V
I _{DSS} Zero Gate Voltage Drain Current	V _{DS} = 28V V _{GS} = 0			1	mA
I _{GSS} Gate Leakage Current	V _{GS} = 20V V _{DS} = 0			1	μA
V _{GS(th)} Gate Threshold Voltage*	I _D = 10mA V _{DS} = V _{GS}	1		7	V
g _{fs} Forward Transconductance*	V _{DS} = 10V I _D = 0.2A	0.18			mhos
G _{PS} Common Source Power Gain	P _O = 750mW	11			dB
η Drain Efficiency	V _{DS} = 12V I _{DQ} = 75mA	40			%
VSWR Load Mismatch Tolerance	f = 1GHz	10:1			—
C _{iss} Input Capacitance	V _{DS} = 0V V _{GS} = -5V f = 1MHz			12	pF
C _{oss} Output Capacitance	V _{DS} = 28V V _{GS} = 0 f = 1MHz			6	
C _{rss} Reverse Transfer Capacitance	V _{DS} = 28V V _{GS} = 0 f = 1MHz			0.5	

* Pulse Test: Pulse Duration = 300 μs , Duty Cycle ≤ 2%

THERMAL DATA

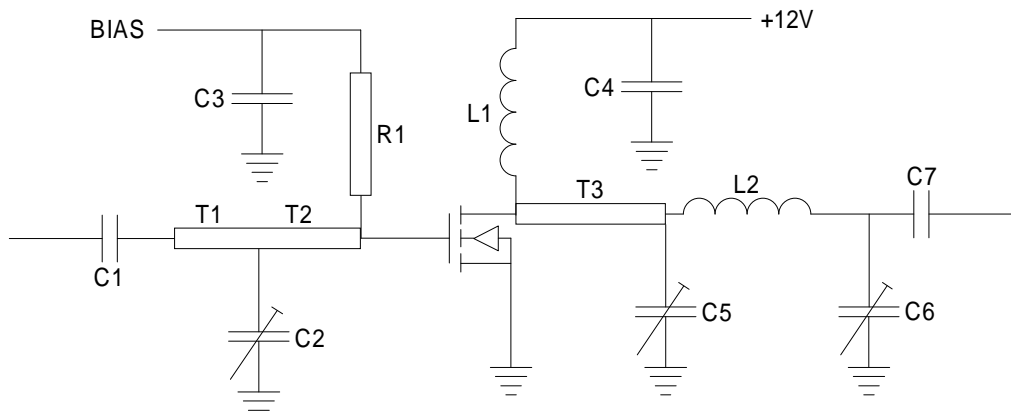
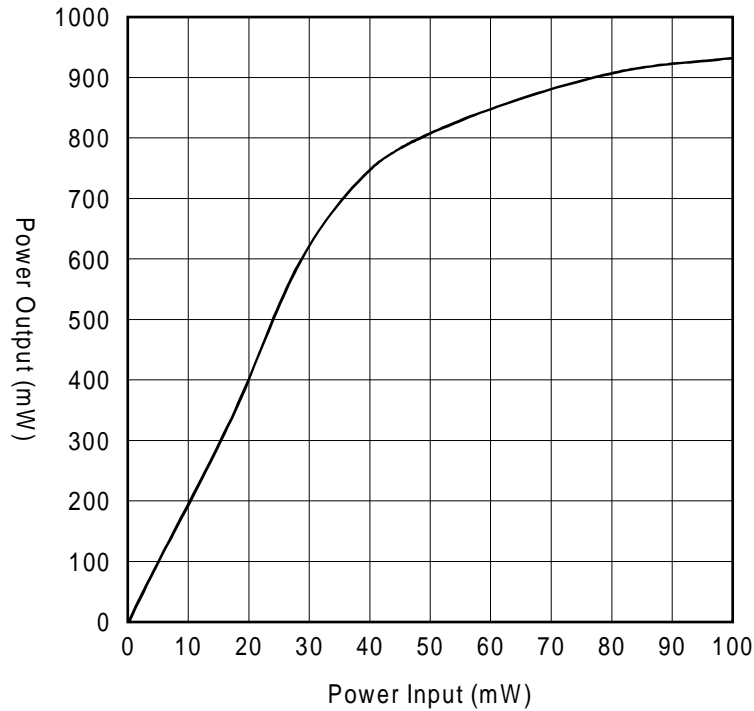
R _{THj-case}	Thermal Resistance Junction – Case	Max. 70°C / W
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S Parameters at V_d = 12V, I_d = 75mA

Freq MHz	S11		S12		S21		S22	
	mag	ang	mag	ang	mag	ang	mag	ang
300	0.47	-95	0.04	50	5.20	90	0.32	-90
400	0.46	-120	0.05	80	4.40	76	0.35	-91
500	0.47	-131	0.07	100	3.50	68	0.38	-94
600	0.49	-146	0.10	110	3.00	59	0.43	-98
700	0.51	-156	0.15	110	2.60	51	0.48	-103
800	0.53	-163	0.20	104	2.30	45	0.54	-108
900	0.54	-180	0.25	100	2.10	40	0.58	-112
1000	0.55	178	0.29	96	1.80	36	0.60	-116
1100	0.56	175	0.34	91	1.60	33	0.63	-120
1200	0.57	163	0.40	85	1.40	28	0.65	-126
1300	0.58	150	0.45	80	1.30	26	0.66	-129
1400	0.60	144	0.48	75	1.20	24	0.66	-133
1500	0.60	140	0.52	70	1.10	22	0.66	-135
1600	0.59	130	0.55	66	1.00	21	0.65	-138
1700	0.58	123	0.58	63	0.95	20	0.65	-140
1800	0.56	115	0.60	58	0.90	19	0.64	-142
1900	0.54	110	0.62	54	0.90	20	0.64	-144
2000	0.51	108	0.62	50	0.90	20	0.63	-145

TYPICAL PERFORMANCE BFM21 at 1GHz

Bias Conditions $V_d = 12V$, $I_{dq} = 75mA$



BFM21UK 1GHz Test Circuit

- | | | | |
|------------|-------------------------------|----|---------------------------|
| C1, C7 | 33pF ATC100B | T1 | 50Ω microstrip, 11mm long |
| C2, C5, C6 | 1–8pF | T2 | 50Ω microstrip, 15mm long |
| C3, C4 | 1000pF NPO | T3 | 50Ω microstrip, 5mm long |
| L1 | 0.1μH | | |
| L2 | 10mm of 1.6mm tcw (half turn) | | |