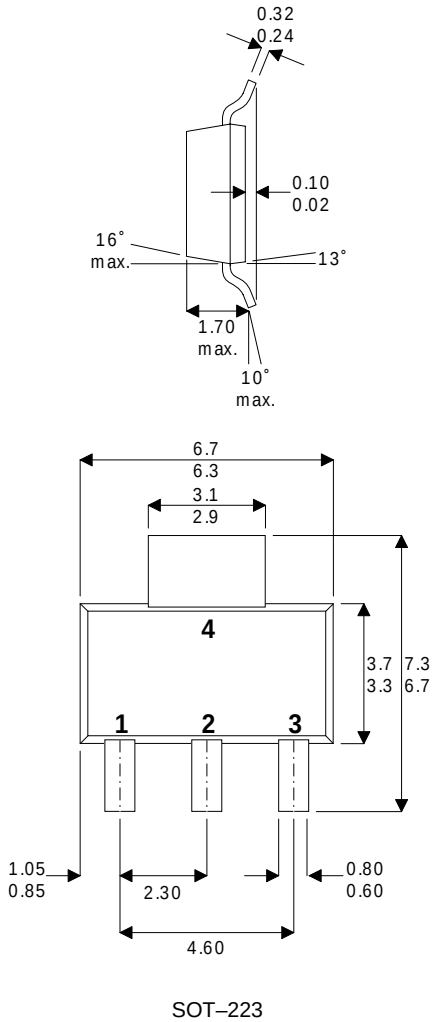
D2081UK

ROHS COMPLIANT METAL GATE RF SILICON FET

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°C unless otherwise stated)

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

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.
E-mail: sales@semelab.co.uk Website: http://www.semelab.co.uk

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

Parameter		Test Conditions	Min.	Typ.	Max.	Unit
BV_{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

S Parameters at V_d = 12V, I_d = 75mA

Freq	S11		S12		S21		S22	
MHz	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

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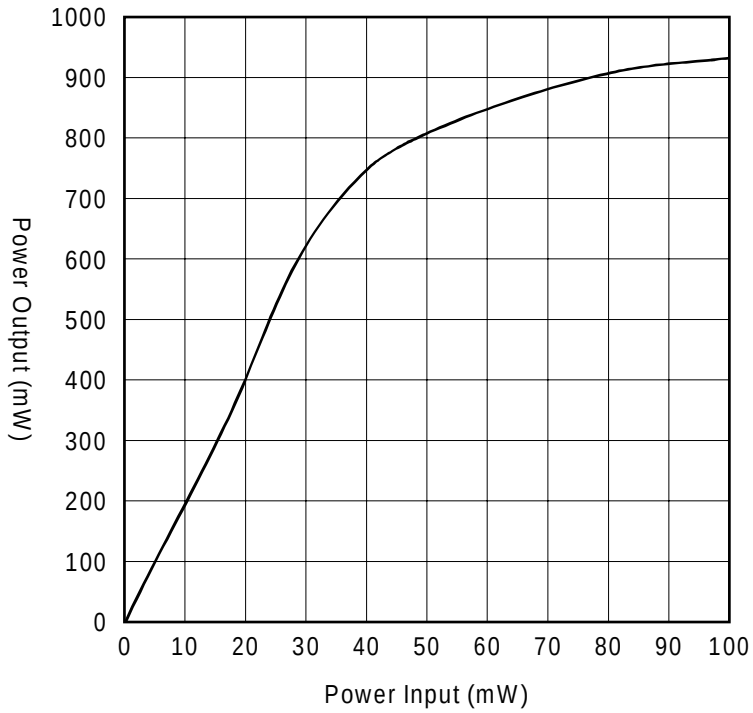
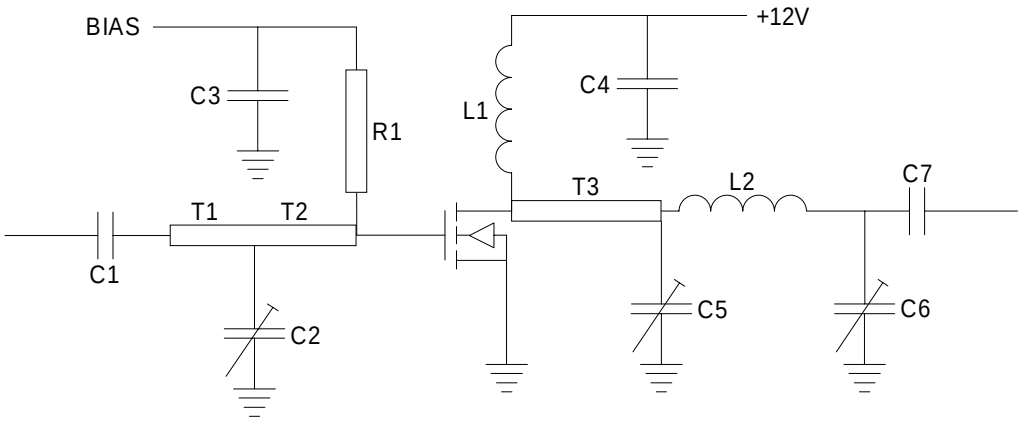
TYPICAL PERFORMANCE D2081UK at 1GHz

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





D2081UK 1GHz Test Circuit

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

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