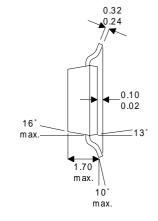


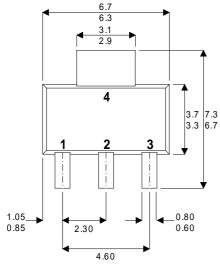
D2081UK

ROHS COMPLIANT METAL GATE RF SILICON FET

MECHANICAL DATA

Dimensions in mm.





PIN 1 **GATE** PIN₂ **DRAIN** PIN₃ SOURCE PIN 4 **DRAIN**

SOT-223

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)

$\overline{P_D}$	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 PIc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

E-mail: sales@semelab.co.uk

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.

Website: http://www.semelab.co.uk

Document Number 2811 Issue 1



D2081UK

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

	Parameter	Test Co	Min.	Тур.	Max.	Unit	
BV _{DSS}	Drain-Source	V _{GS} = 0	_D = 10mA	65			V
	Breakdown Voltage	VGS – 0	ID = IOIIIA				\ \ \
I _{DSS}	Zero Gate Voltage	\/ _ 20\/	V V _{GS} = 0			1	mA
	Drain Current	V _{DS} = 28V				ı	IIIA
I _{GSS}	Gate Leakage Current	V _{GS} = 20V	V _{DS} = 0			1	μΑ
V _{GS(th)}	Gate Threshold Voltage*	I _D = 10mA	$V_{DS} = V_{GS}$	1		7	V
9 _{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	$I_{DQ} = 75 \text{mA}$	40			%
VSWR	Load Mismatch Tolerance	f = 1GHz		10:1			_
C _{iss}	Input Capacitance	$V_{DS} = 0V V_{GS}$	s = -5V f = 1MHz			12	
C _{oss}	Output Capacitance	$V_{DS} = 28V V_{GS}$	f = 0 $f = 1MHz$			6	pF
C _{rss}	Reverse Transfer Capacitance	$V_{DS} = 28V V_{GS}$	f = 0 $f = 1MHz$			0.5	

Pulse Duration = 300 μs , Duty Cycle $\leq 2\%$ * Pulse Test:

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

Semelab PIc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

E-mail: sales@semelab.co.uk

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.

Website: http://www.semelab.co.uk

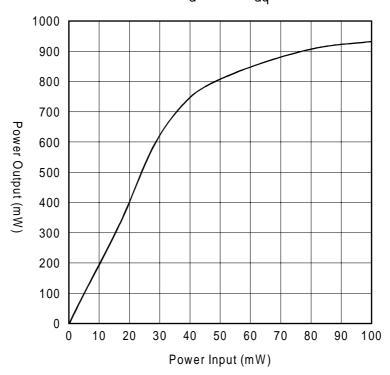
Document Number 2811 Issue 1

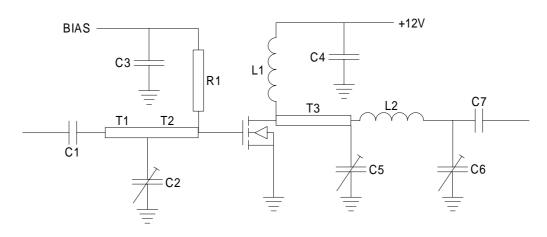




TYPICAL PERFORMANCE D2081UK at 1GHz

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 T3 50Ω microstrip, 5mm long $0.1 \mu H$ L2 10mm of 1.6mm tcw (half turn)

Semelab PIc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

E-mail: sales@semelab.co.uk

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.

Website: http://www.semelab.co.uk

Document Number 2811 Issue 1