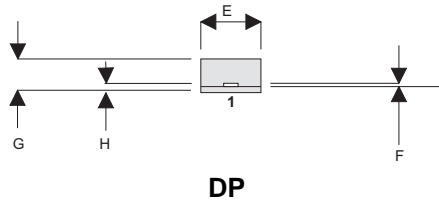
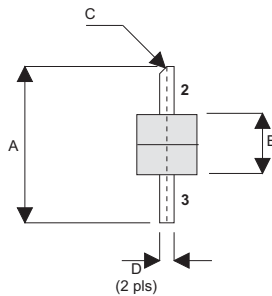


MECHANICAL DATA

DP

PIN 1 SOURCE PIN 2 DRAIN
 PIN 3 GATE

DIM	mm	Tol.	Inches	Tol.
A	16.51	0.25	0.650	0.010
B	6.35	0.13	0.250	0.005
C	45°	5°	45°	5°
D	1.52	0.13	0.060	0.005
E	6.35	0.13	0.250	0.005
F	0.13	0.03	0.005	0.001
G	3.56	0.51	0.140	0.020
H	0.64	0.13	0.024	0.005

GOLD METALLISED MULTI-PURPOSE SILICON DMOS RF FET 20W – 12.5V – 500MHz SINGLE ENDED

FEATURES

- SIMPLIFIED AMPLIFIER DESIGN
- SUITABLE FOR BROAD BAND APPLICATIONS
- LOW C_{rss}
- SIMPLE BIAS CIRCUITS
- LOW NOISE
- HIGH GAIN – 10 dB MINIMUM

APPLICATIONS

- VHF/UHF COMMUNICATIONS
 from DC to 1 GHz

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

P_D	Power Dissipation	70W
BV_{DSS}	Drain – Source Breakdown Voltage	40V
BV_{GSS}	Gate – Source Breakdown Voltage	±20V
$I_{D(sat)}$	Drain Current	16A
T_{stg}	Storage Temperature	–65 to 150°C
T_j	Maximum Operating Junction Temperature	200°C

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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	40			V
I _D SS Zero Gate Voltage Drain Current	V _{DS} = 12.5V V _{GS} = 0			8	mA
I _G SS Gate Leakage Current	V _{GS} = 20V V _{DS} = 0			8	μA
V _{GS(th)} Gate Threshold Voltage*	I _D = 10mA V _{DS} = V _{GS}	0.5		7	V
g _{fs} Forward Transconductance*	V _{DS} = 10V I _D = 1.6A	1.44			S
G _{PS} Common Source Power Gain	P _O = 20W	10			dB
η Drain Efficiency	V _{DS} = 12.5V I _{DQ} = 1.6A	40			%
VSWR Load Mismatch Tolerance	f = 500MHz	20:1			—
C _{iss} Input Capacitance	V _{DS} = 12.5V V _{GS} = -5V f = 1MHz			96	pF
C _{oss} Output Capacitance	V _{DS} = 12.5V V _{GS} = 0 f = 1MHz			80	pF
C _{rss} Reverse Transfer Capacitance	V _{DS} = 12.5V V _{GS} = 0 f = 1MHz			8	pF

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

HAZARDOUS MATERIAL WARNING

The ceramic portion of the device between leads and metal flange is beryllium oxide. Beryllium oxide dust is highly toxic and care must be taken during handling and mounting to avoid damage to this area.

THESE DEVICES MUST NEVER BE THROWN AWAY WITH GENERAL INDUSTRIAL OR DOMESTIC WASTE.

THERMAL DATA

R _{THj-case}	Thermal Resistance Junction – Case	Max. 2.5°C / W
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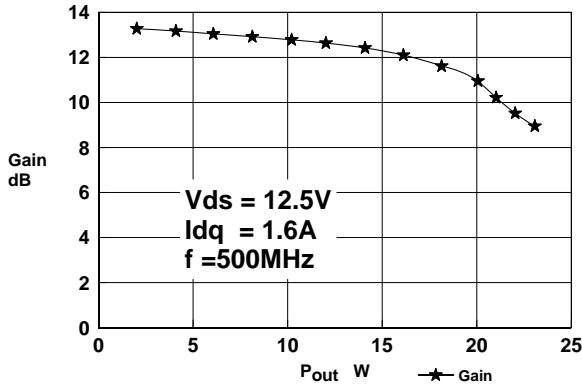


Figure 1 – Gain vs. Power Output.

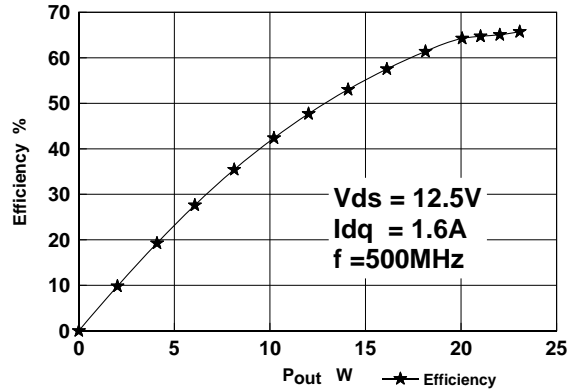


Figure 2 – Efficiency vs. Power Output.

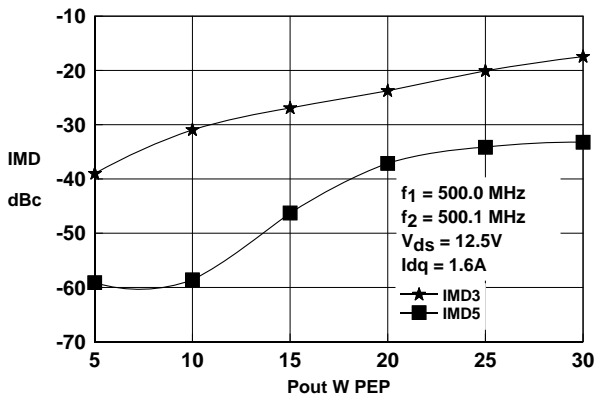


Figure 3 – IMD vs. Power Output.

D2218UK OPTIMUM SOURCE AND LOAD IMPEDANCE

Frequency MHz	Z_S Ω	Z_L Ω
500MHz	$1.4 + j1.1$	$2.4 - j0.4$

Typical S Parameters

! $V_{DS} = 12.5V, I_{DQ} = 0.8A$
MHz S M A R 50

!Freq MHz	S11		S21		S12		S22	
	mag	ang	mag	ang	mag	ang	mag	ang
100	0.82	-160	9.92	72	0.018	-12	0.7	-155
200	0.88	-169	3.92	50	0.011	-16	0.81	-162
300	0.91	-175	2.29	40	0.006	11	0.87	-169
400	0.93	-179	1.43	30	0.008	57	0.91	-175
500	0.95	178	1.03	23	0.013	77	0.93	-179
600	0.95	173	0.76	14	0.019	78	0.95	176
700	0.95	170	0.56	7	0.023	75	0.96	173
800	0.96	166	0.39	5	0.025	76	0.97	169
900	0.97	163	0.33	9	0.032	84	0.97	166
1000	0.98	158	0.3	7	0.041	78	0.97	162

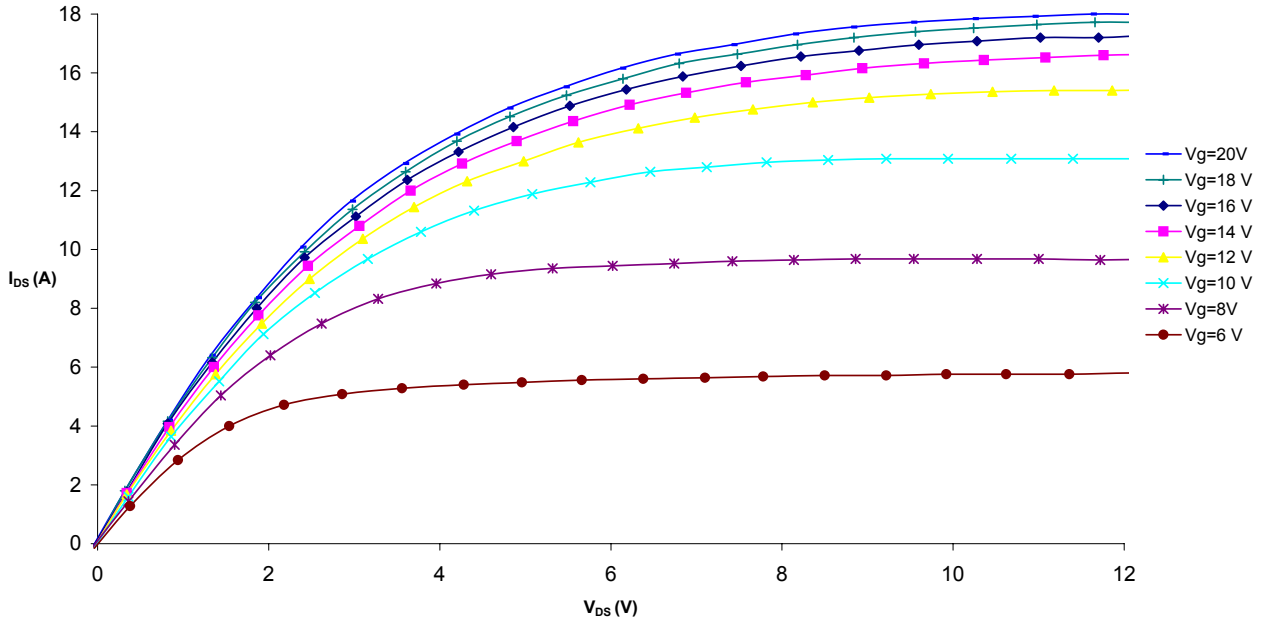


Figure 4 – Typical IV Characteristics.

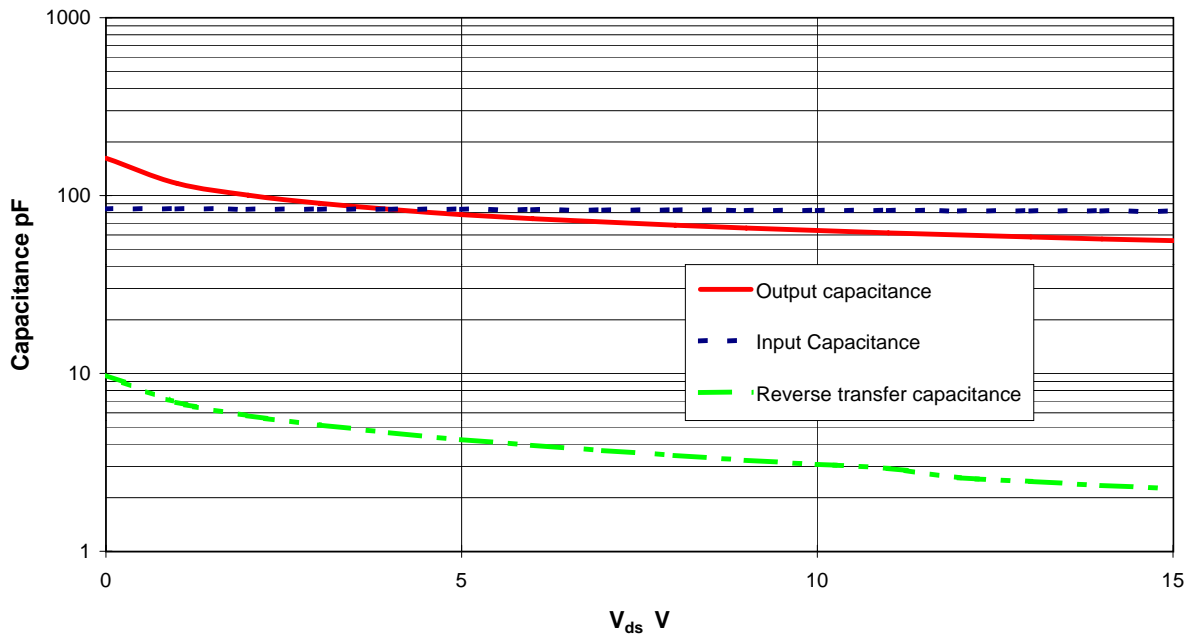
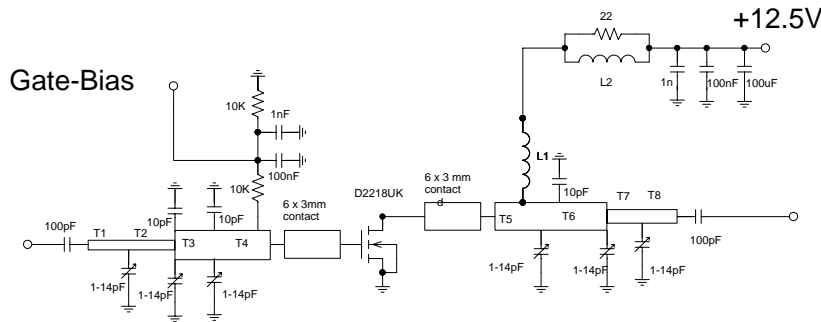


Figure 5 – Typical CV Characteristics.

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D2218UK 500MHz TEST FIXTURE

Substrate Taconic RF35 0.8mm, Er=3.5

T1 1.68mm wide, 21mm long

T2 1.68mm wide, 104mm long

T3 8.92mm wide, 17mm long

T4 8.92mm wide, 13.5mm long

T5 6.34mm wide, 11.5mm long

T6 6.34mm wide, 9mm long

T7 1.68mm wide, 13mm long

T8 1.68mm wide, 28mm long

L1 10 turns 0.5mm dia enamelled copper wire, 3mm i.d.

L2 1.5 turns 0.5mm dia enamelled copper wire on Siemens B62152-A7X ferrite core

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