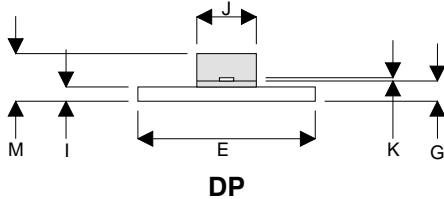
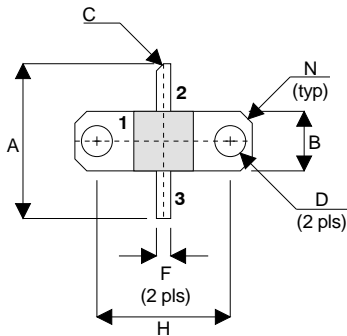


MECHANICAL DATA

**GOLD METALLISED
MULTI-PURPOSE SILICON
DMOS RF FET
20W – 50V – 500MHz
SINGLE ENDED**



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	3.30	0.13	0.130	0.005
E	18.92	0.08	0.745	0.003
F	1.52	0.13	0.060	0.005
G	2.16	0.13	0.085	0.005
H	14.22	0.08	0.560	0.003
I	1.52	0.13	0.060	0.005
J	6.35	0.13	0.250	0.005
K	0.13	0.03	0.005	0.001
M	5.08	0.51	0.200	0.020
N	1.27 x 45°	0.13	0.050 x 45°	0.005

FEATURES

- SIMPLIFIED AMPLIFIER DESIGN
- SUITABLE FOR BROAD BAND APPLICATIONS
- LOW C_{rss}
- USEFUL P_O AT 1GHz
- LOW NOISE
- HIGH GAIN – 13 dB MINIMUM

APPLICATIONS

- HF/VHF/UHF COMMUNICATIONS
from 1 MHz to 1 GHz

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

P_D	Power Dissipation	50W
BV_{DSS}	Drain – Source Breakdown Voltage	125V
BV_{GSS}	Gate – Source Breakdown Voltage	$\pm 20V$
$I_{D(sat)}$	Drain Current	3A
T_{stg}	Storage Temperature	-65 to 150°C
T_j	Maximum Operating Junction Temperature	200°C

Semelab Ltd 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.

ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DSS} Drain-Source Breakdown Voltage	$V_{GS} = 0$ $I_D = 100mA$	125			V
I_{DSS} Zero Gate Voltage Drain Current	$V_{DS} = 50V$ $V_{GS} = 0$			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*	$V_{DS} = 10V$ $I_D = 0.5A$	0.8			S
G_{PS} Common Source Power Gain	$P_O = 20W$	13			dB
η Drain Efficiency	$V_{DS} = 50V$ $I_{DQ} = 0.1A$	50			%
VSWR Load Mismatch Tolerance	$f = 500MHz$	20:1			—
C_{iss} Input Capacitance	$V_{DS} = 50V$ $V_{GS} = -5V$ $f = 1MHz$			60	pF
C_{oss} Output Capacitance	$V_{DS} = 50V$ $V_{GS} = 0$ $f = 1MHz$			25	pF
C_{rss} Reverse Transfer Capacitance	$V_{DS} = 50V$ $V_{GS} = 0$ $f = 1MHz$			1.5	pF

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

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. 3.5 $^{\circ}C / W$
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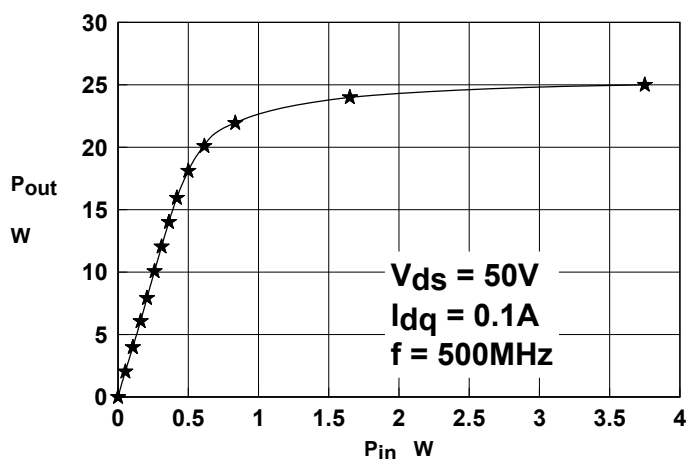


Figure 1. Output Power vs Input Power

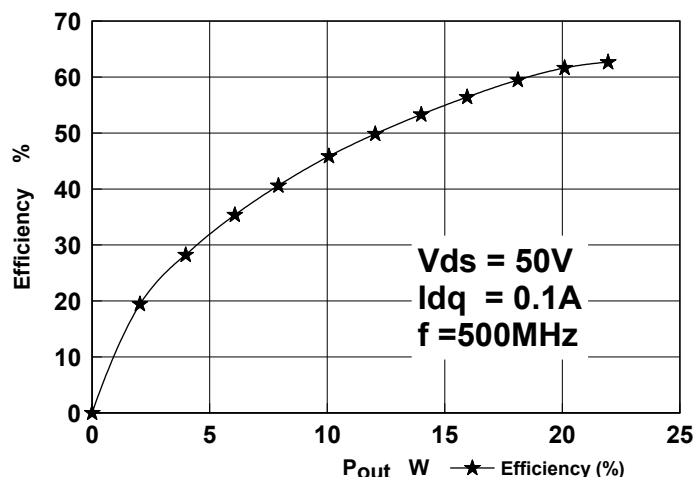


Figure 2. Efficiency vs. Output Power

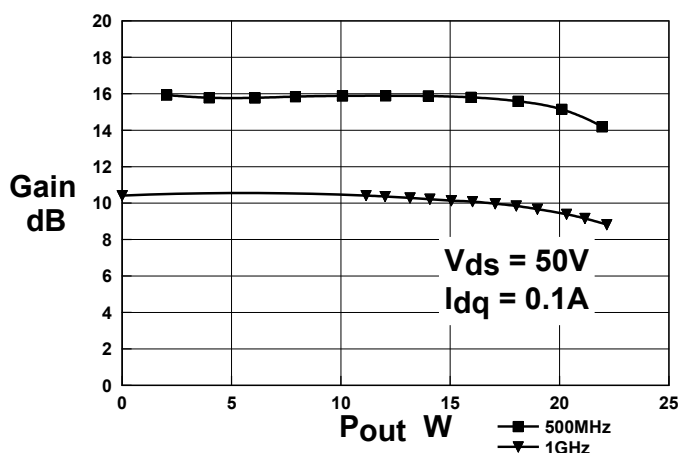


Figure 3. Gain vs Output Power

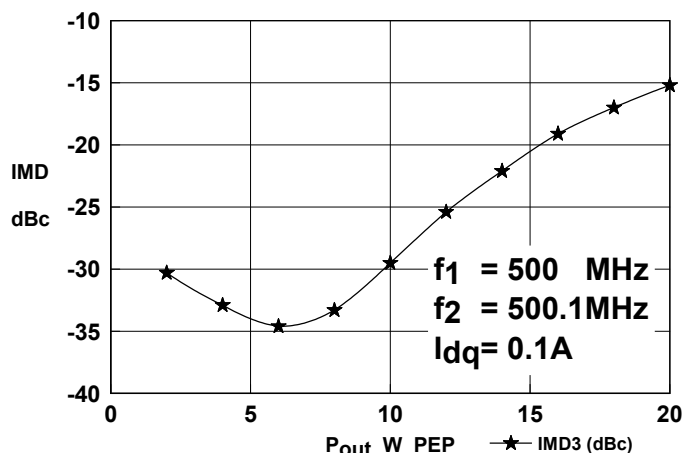


Figure 3. IMD 3 vs Output Power

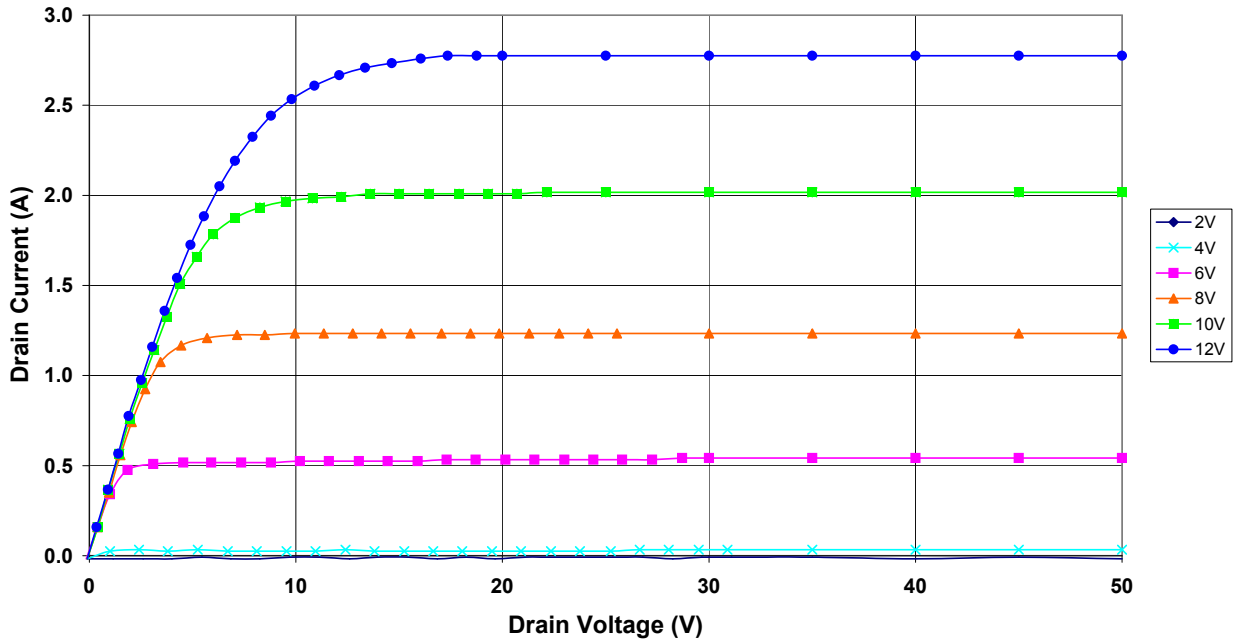


Figure 5 – Typical IV Characteristics.

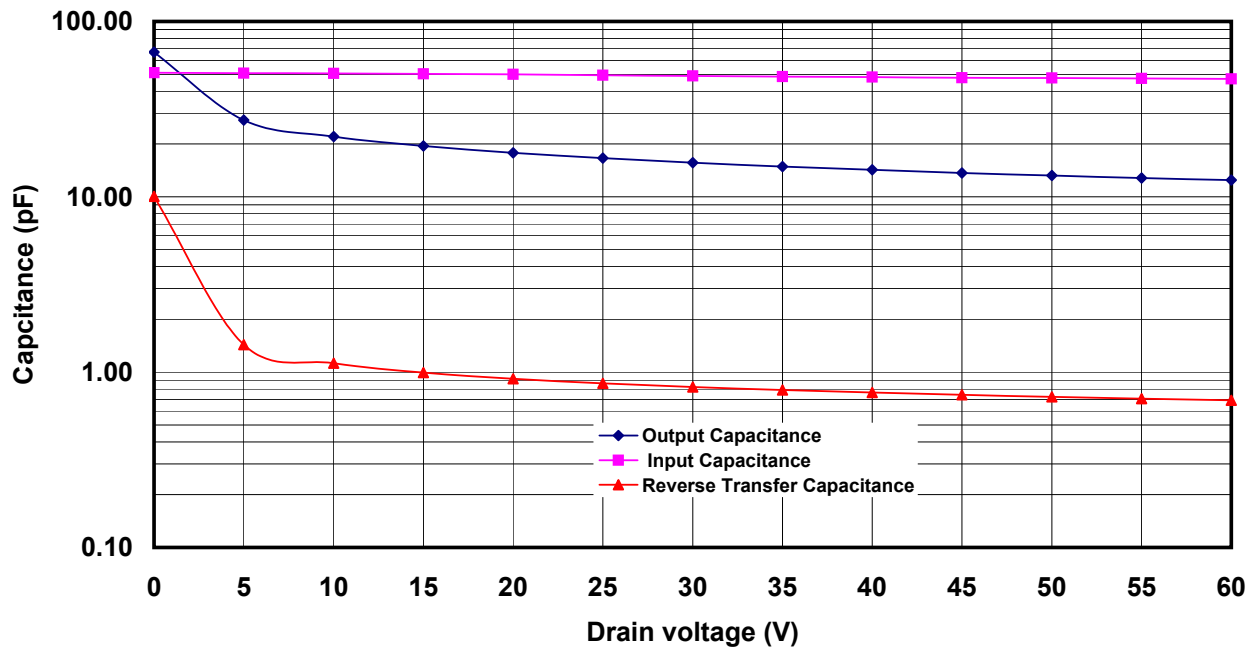
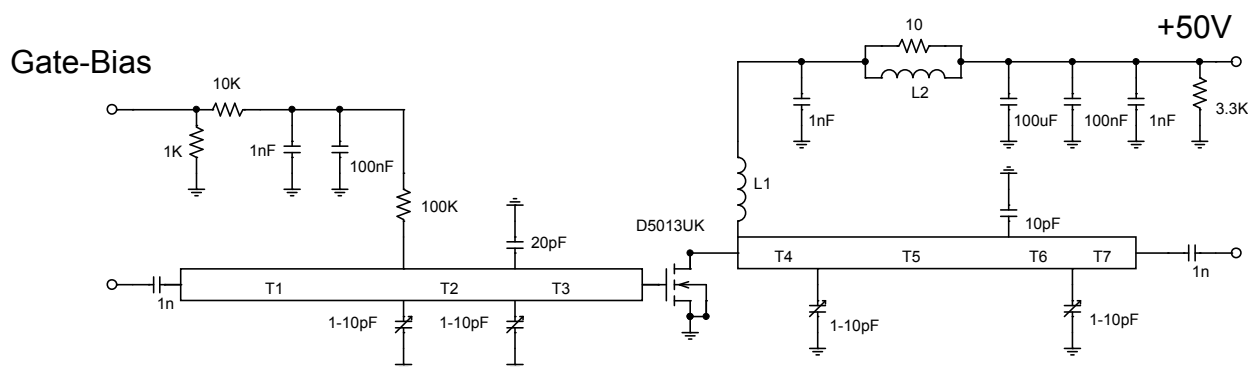


Figure 6 – Typical CV Characteristics.

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D5013UK 500MHz TEST FIXTURE

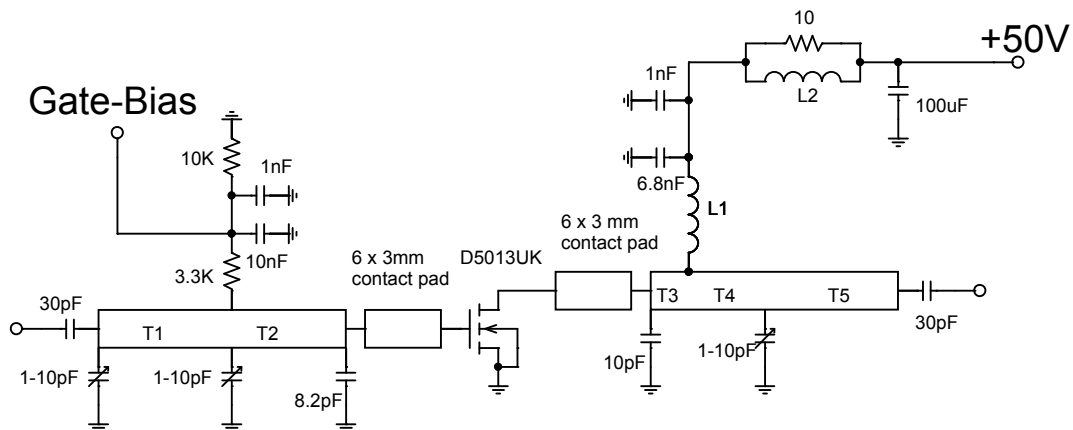
Substrate 0.8mm FR4, Er=2.2

All microstrip lines W=2.2mm

T1 37.5mm
 T2 14.2mm
 T3 10mm
 T4 12.5mm
 T5 30mm
 T6 6mm
 T7 12.5mm

L1 5.5 turns 20swg enamelled copper wire, 7mm i.d.

L2 1.5 turns 24swg enamelled copper wire on Siemens B62152A7X 2 hole core



D5013UK 1GHz TEST FIXTURE

Substrate 0.8mm PTFE/glass, $\epsilon_r=2.5$

All microstrip lines $W=2.2\text{mm}$

T1 35mm

T2 15mm

T3 4mm

T4 14 mm

T5 32mm

L1 7.5 turns 24swg enamelled copper wire, 3mm i.d.

L2 1.5 turns 24swg enamelled copper wire on ferrite core