



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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$ Drain-Source Breakdown Voltage	$V_{GS} = 0$ $I_D = 100mA$	40			V
$I_{DSS}$ Zero Gate Voltage Drain Current	$V_{DS} = 12.5V$ $V_{GS} = 0$			1	mA
$I_{GSS}$ Gate Leakage Current	$V_{GS} = 20V$ $V_{DS} = 0$			1	$\mu A$
$V_{GS(th)}$ Gate Threshold Voltage*	$I_D = 10mA$ $V_{DS} = V_{GS}$	1		7	V
$g_{fs}$ Forward Transconductance*	$V_{DS} = 10V$ $I_D = 3A$	2.4			S
$G_{PS}$ Common Source Power Gain	$P_O = 30W$	10			dB
$\eta$ Drain Efficiency	$V_{DS} = 12.5V$ $I_{DQ} = 0.6A$	50			%
VSWR Load Mismatch Tolerance	$f = 175MHz$	20:1			—
$C_{iss}$ Input Capacitance	$V_{DS} = 0$ $V_{GS} = -5V$ $f = 1MHz$			180	pF
$C_{oss}$ Output Capacitance	$V_{DS} = 12.5V$ $V_{GS} = 0$ $f = 1MHz$			120	pF
$C_{rss}$ Reverse Transfer Capacitance	$V_{DS} = 12.5V$ $V_{GS} = 0$ $f = 1MHz$			12	pF

\* Pulse Test: Pulse Duration = 300  $\mu s$  , 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. 1.5°C / W
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Semelab Plc 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.

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Issue 3

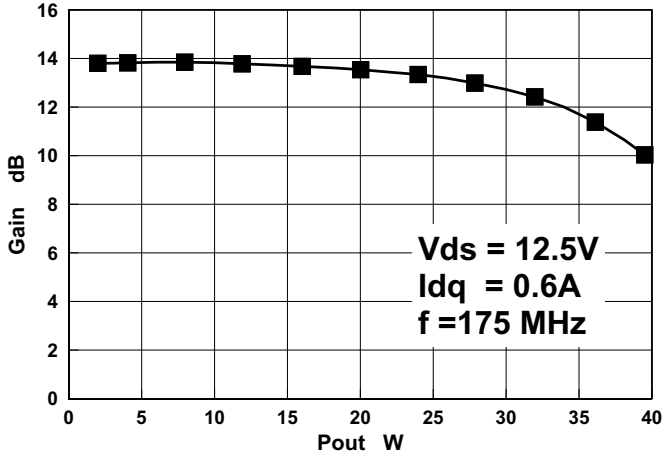


Figure 1- Gain vs. Power Output

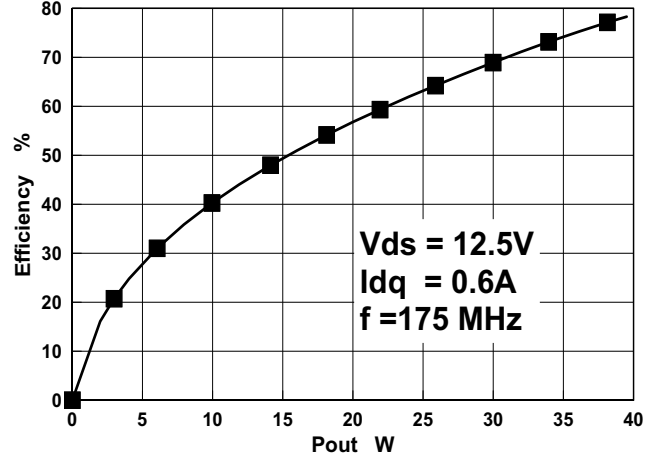


Figure 2 - Efficiency vs Power Output

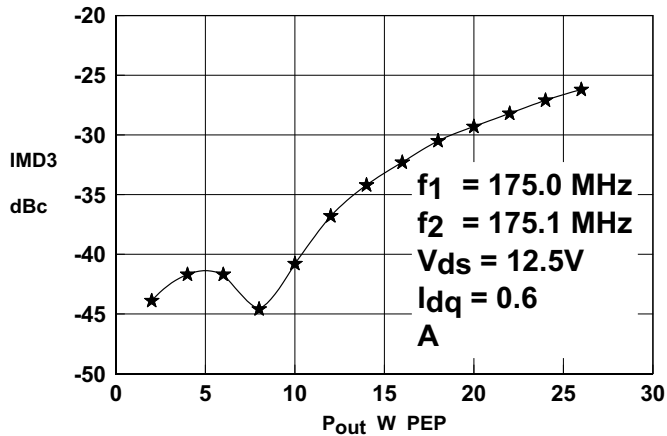


Figure 3 - IMD vs Power Output

### Typical S Parameters

!  $V_{DS} = 12.5V$ ,  $I_{DQ} = 0.6A$   
 # MHz S M A R 50

Freq MHz	S11		S21		S12		S22	
	mag	ang	mag	ang	mag	ang	mag	ang
50	0.78	-167.2	17.2	76.0	0.011	0.0	0.72	-164.2
100	0.82	-171.7	7.7	57.9	0.008	3.9	0.78	-167.6
150	0.87	-174.9	4.5	44.5	0.006	31.6	0.84	-170.3
200	0.90	-178.2	2.9	34.2	0.008	63.1	0.88	-173.3
250	0.93	-178.6	2.0	26.2	0.012	75.9	0.91	-176.2
300	0.94	-175.4	1.5	19.9	0.016	79.6	0.93	-178.9
350	0.96	-172.5	1.1	14.8	0.020	80.1	0.95	-178.5
400	0.96	-169.6	0.9	10.5	0.025	79.2	0.96	-176.1
450	0.97	-166.9	0.7	7.1	0.029	77.7	0.97	-173.8
500	0.97	-164.3	0.6	4.2	0.033	76.0	0.97	-171.7

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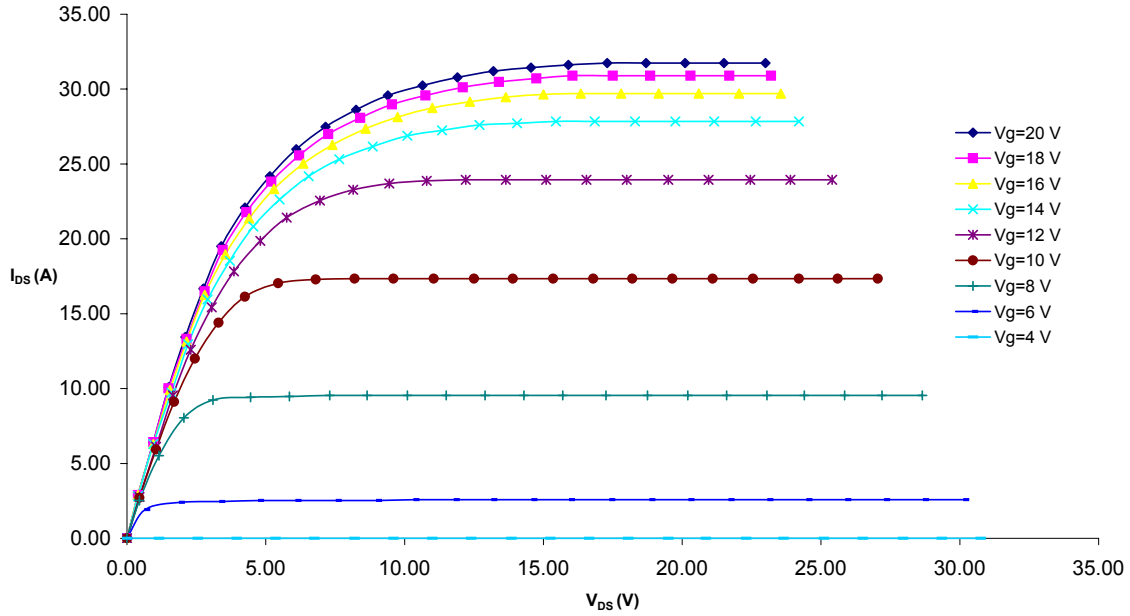


Figure 4 – Typical IV Characteristics.

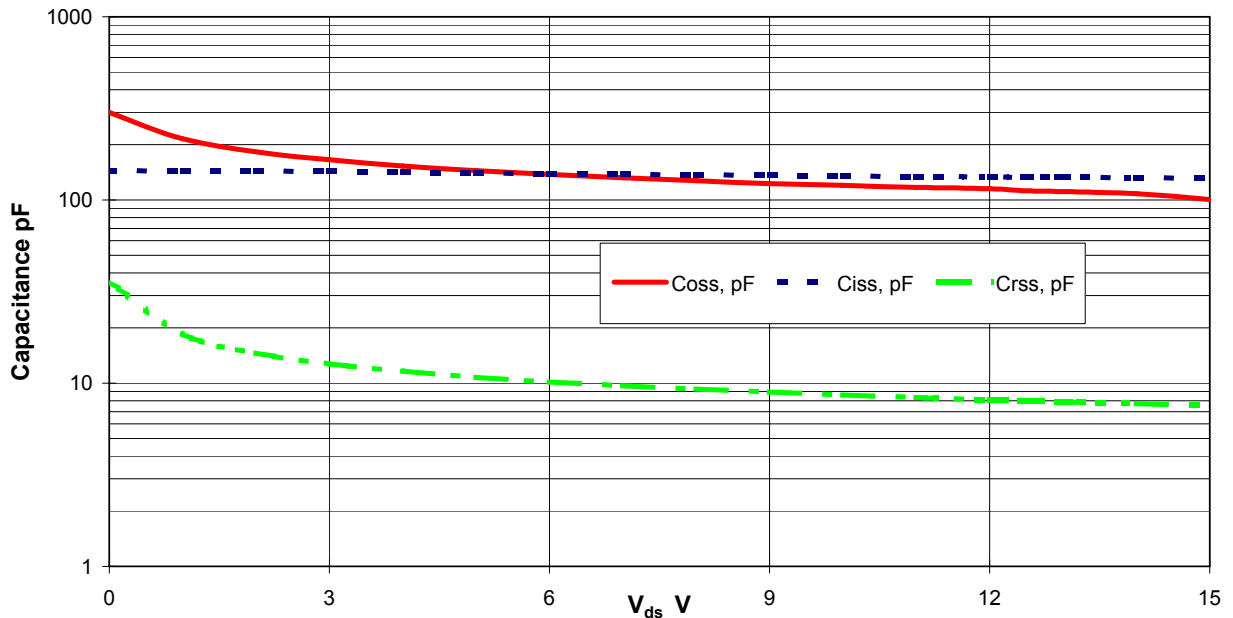
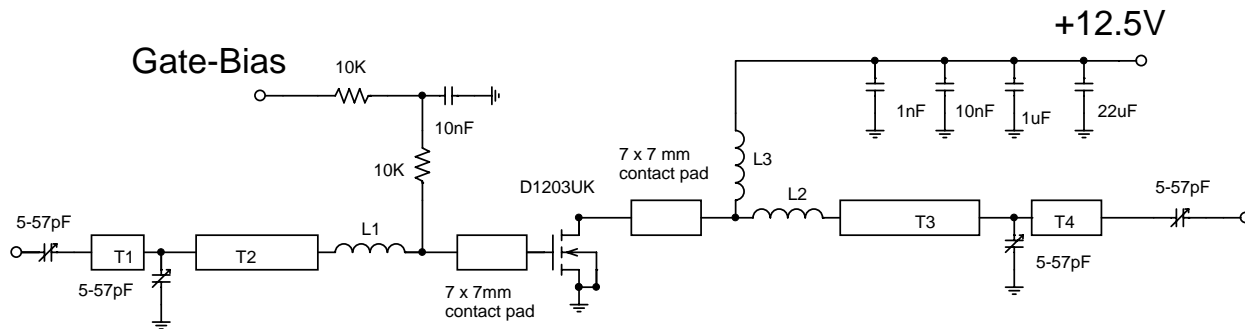


Figure 5 – Typical CV Characteristics.

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# D1203UK 175MHz TEST FIXTURE

Substrate 1.6mm PTFE/glass,  $\epsilon_r=2.5$

All microstrip lines  $W=4.4\text{mm}$

T1 8mm

T2 22mm

T3 18mm

T4 4.5mm

L1 Hairpin loop 16swg 15.5mm dia

L2 Hairpin loop 16swg 10mm dia

L3 11 turns 18swg enamelled copper wire, 10mm i.d.