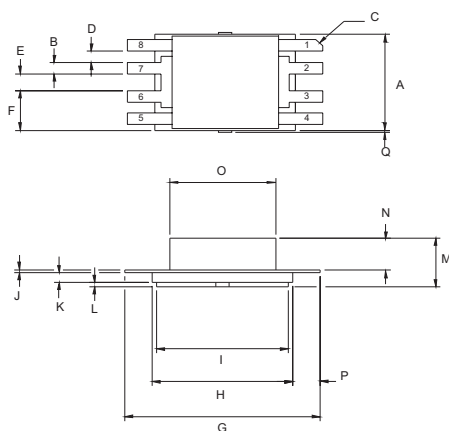


**MECHANICAL DATA****DBC1 Package**

PIN 1 Source	PIN 5 Source
PIN 2 Drain	PIN 6 Gate
PIN 3 Drain	PIN 7 Gate
PIN 4 Source	PIN 8 Source

DIM	mm	Tol.	Inches	Tol.
A	6.47	0.08	.255	.003
B	0.76	0.08	.030	.003
C	45°	5°	45°	5°
D	0.76	0.08	.030	.003
E	1.14	0.08	.045	.003
F	2.67	0.08	.105	.003
G	11.73	0.13	.462	.005
H	8.43	0.08	.332	.003
I	7.92	0.08	.312	.003
J	0.20	0.02	.008	.001
K	0.64	0.02	.025	.001
L	0.30	0.02	.012	.001
M	3.25	0.08	.128	.003
N	2.11	0.08	.083	.003
O	6.35SQ	0.08	.250SQ	.003
P	1.65	0.51	.065	.020
Q	0.13	max	.005	max

**GOLD METALLISED  
MULTI-PURPOSE SILICON  
DMOS RF FET  
6W – 7.2V – 500MHz  
SINGLE ENDED**

**FEATURES**

- SIMPLIFIED AMPLIFIER DESIGN
- SUITABLE FOR BROAD BAND APPLICATIONS
- LOW  $C_{rss}$
- LOW NOISE
- HIGH GAIN – 10 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	58W
$BV_{DSS}$	Drain – Source Breakdown Voltage	40V
$BV_{GSS}$	Gate – Source Breakdown Voltage	$\pm 20V$
$I_{D(sat)}$	Drain Current	20A
$T_{stg}$	Storage Temperature	$-65$ to $150^{\circ}C$
$T_j$	Maximum Operating Junction Temperature	$200^{\circ}C$

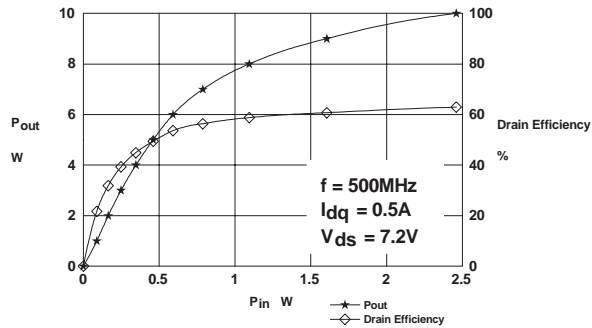
**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

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*	$I_D = 10mA$	$V_{DS} = V_{GS}$	0.5		7	V
$g_{fs}$	Forward Transconductance*	$V_{DS} = 10V$	$I_D = 2A$	1.6			S
$G_{PS}$	Common Source Power Gain	$P_O = 6W$		10			dB
$\eta$	Drain Efficiency	$V_{DS} = 7.2V$	$I_{DQ} = 0.5A$	50			%
VSWR	Load Mismatch Tolerance	$f = 500MHz$		20:1			—
$C_{iss}$	Input Capacitance	$V_{DS} = 0$	$V_{GS} = -5V$ $f = 1MHz$			120	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

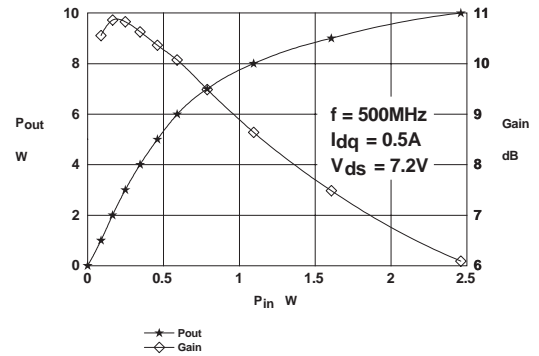
\* Pulse Test: Pulse Duration = 300  $\mu s$  , Duty Cycle  $\leq 2\%$

**THERMAL DATA**

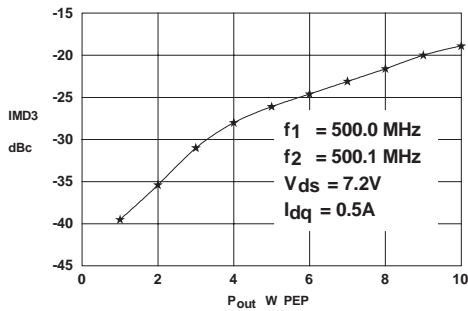
$R_{THj-case}$	Thermal Resistance Junction – Case	Max. 3°C / W
----------------	------------------------------------	--------------



**Figure 1 – Power Output and Efficiency vs. Power Input.**



**Figure 2 – Power Output & Gain vs. Power Input.**



**Figure 3 – IMD vs. Output Power.**

**D1213UK  
OPTIMUM SOURCE AND LOAD IMPEDANCE**

Frequency MHz	$Z_S$ $\Omega$	$Z_L$ $\Omega$
500	2.3 - j0.4	2.1 - j1.9

**Typical S Parameters**

!  $V_{DS} = 7.2V$   $I_{DQ} = 0.2A$   
 # MHZ S MA R 50

!Freq MHz	S11		S21		S12		S22	
	mag	ang	mag	ang	mag	ang	mag	ang
70	0.69	-147	6.8	68	0.021	-1	0.77	-160
100	0.74	-153	4.5	59	0.017	10	0.79	-163
150	0.82	-161	2.5	47	0.015	50	0.84	-167
200	0.86	-167	1.6	42	0.024	78	0.87	-169
250	0.89	-172	1.2	35	0.037	83	0.89	-171
300	0.90	-176	1.0	33	0.052	87	0.90	-173
350	0.91	-179	0.7	27	0.064	82	0.91	-175
400	0.92	178	0.6	26	0.082	82	0.92	-177
450	0.93	174	0.5	23	0.095	80	0.93	-178
500	0.93	171	0.5	21	0.116	77	0.93	-179
550	0.93	168	0.4	20	0.130	73	0.94	180
600	0.93	164	0.4	15	0.148	66	0.94	178
650	0.93	162	0.3	18	0.159	66	0.95	177
700	0.92	158	0.3	16	0.173	60	0.94	177
750	0.92	155	0.3	21	0.182	58	0.95	176
800	0.91	153	0.3	23	0.189	56	0.96	175
850	0.92	151	0.3	29	0.207	59	0.96	173
900	0.94	148	0.3	29	0.235	59	0.95	171
950	0.95	144	0.3	31	0.275	56	0.93	170
1000	0.93	140	0.4	29	0.308	52	0.92	168