

**N-CHANNEL SILICON POWER MOSFET  
FOR BASE STATION OF 900 MHz BAND CELLULAR PHONE  
POWER AMPLIFICATION**

**FEATURES**

- High output, high gain  
 $P_o = 100\text{ W}$ ,  $G_L = 13\text{ dB}$  (TYP.) ( $f = 900\text{ MHz}$ )  
 $P_o = 90\text{ W}$ ,  $G_L = 12\text{ dB}$  (TYP.) ( $f = 960\text{ MHz}$ )
- Low intermodulation distortion
- Covers all base station frequencies such as 800-MHz PDC and GSM
- High-reliability gold electrodes
- Hermetic sealed package
- Internal matching circuit
- Push-pull structure

**ABSOLUTE MAXIMUM RATINGS ( $T_A = 25\text{ }^\circ\text{C}$ )**

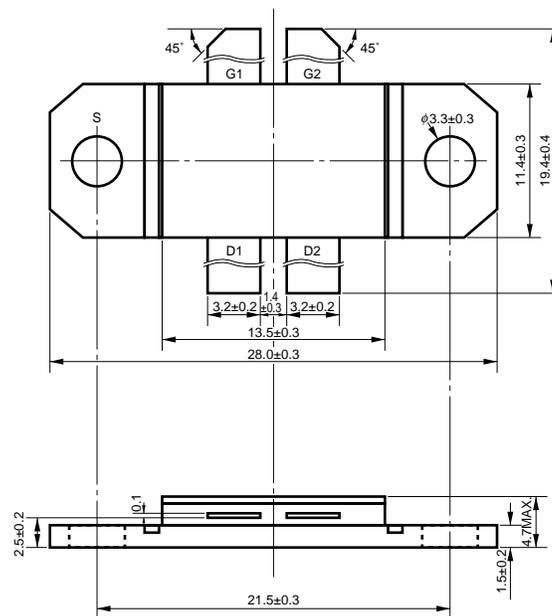
Parameter	Symbol	Ratings	Unit
Drain-source voltage	$V_{DS}$	60	V
Gate-source voltage	$V_{GS}$	7	V
Drain current (D.C.)	$I_D$	15 <sup>Note</sup>	A
Total power dissipation	$P_T$	290	W
Thermal resistance	$R_{th}$	0.6	$^\circ\text{C/W}$
Channel temperature	$T_{ch}$	200	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-65 to +150	$^\circ\text{C}$

**Note** Per side

**ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ )**

Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit
Gate leakage current	$I_{GSS}$	$V_{GS} = 7\text{ V}$			1	$\mu\text{A}$
Cut-off voltage	$V_{GS(off)}$	$V_{DS} = 5\text{ V}$ , $I_D = 50\text{ mA}$	1.5		4	V
Drain current	$I_{DSS}$	$V_{DS} = 60\text{ V}$			2	mA
Mutual conductance	$g_m$	$V_{DS} = 5\text{ V}$ , $I_D = 3\text{ A}$ , $\Delta I_D = 100\text{ mA}$	2.0			S
Output power	$P_o$	$f = 960\text{ MHz}$ , $V_{DD} = 30\text{ V}$	80	90		W
Drain efficiency	$\eta_D$	$I_{DQ} = 200\text{ mA} \times 2$ , $P_{in} = 40\text{ dBm}$	35	40		%
Linear gain	$G_L$	$f = 960\text{ MHz}$ , $V_{DD} = 30\text{ V}$ $I_{DQ} = 200\text{ mA} \times 2$ , $P_{in} = 30\text{ dBm}$	11	12		dB
Third intermodulation distortion	$IM_3$	$f = 900\text{ MHz}$ , $\Delta f = 0.1\text{ MHz}$ , $V_{DD} = 30\text{ V}$ $I_{DQ} = 200\text{ mA} \times 2$ , $P_o = 42\text{ dBm}$		-38		dBc

**PACKAGE DRAWING (Unit: mm)**

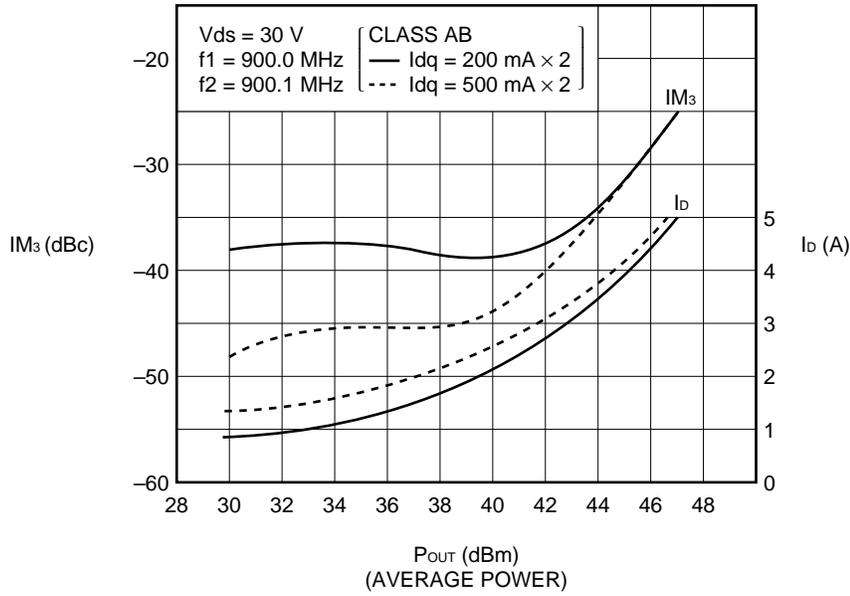


G1, G2: gate  
 D1, D2: drain  
 S : source  
 Flange is connected to the source.

The information in this document is subject to change without notice.

OUTPUT v.s. IM<sub>3</sub>, I<sub>D</sub> CHARACTERISTICS

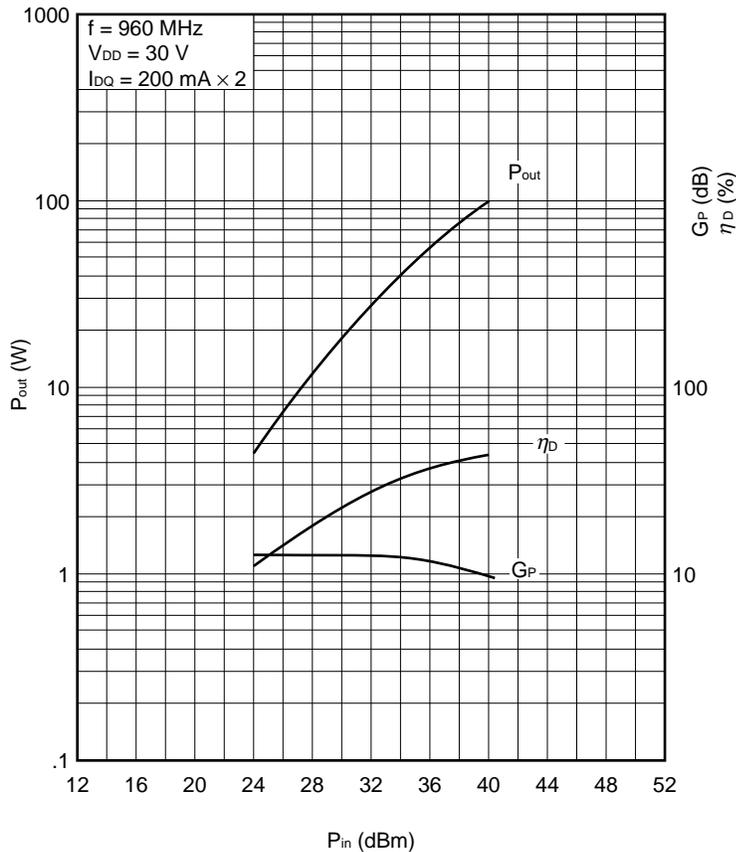
THIRD ORDER INTERMODULATION DISTORTION / DRAIN CURRENT v.s. OUTPUT POWER



INPUT v.s. OUTPUT, POWER GAIN, EFFICIENCY

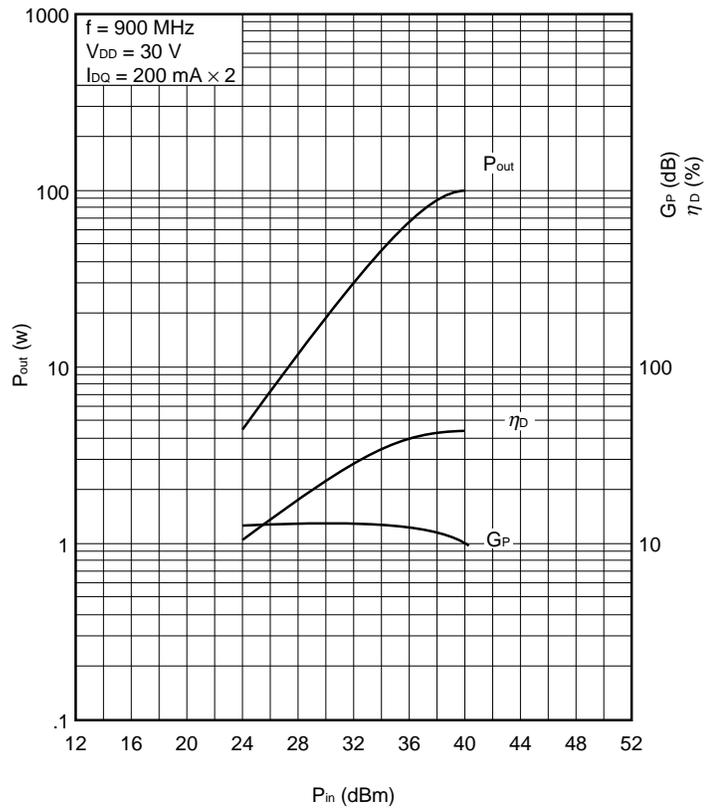
(1)  $f = 960\text{ MHz}$

OUTPUT POWER / DRAIN EFFICIENCY / POWER GAIN vs. INPUT POWER



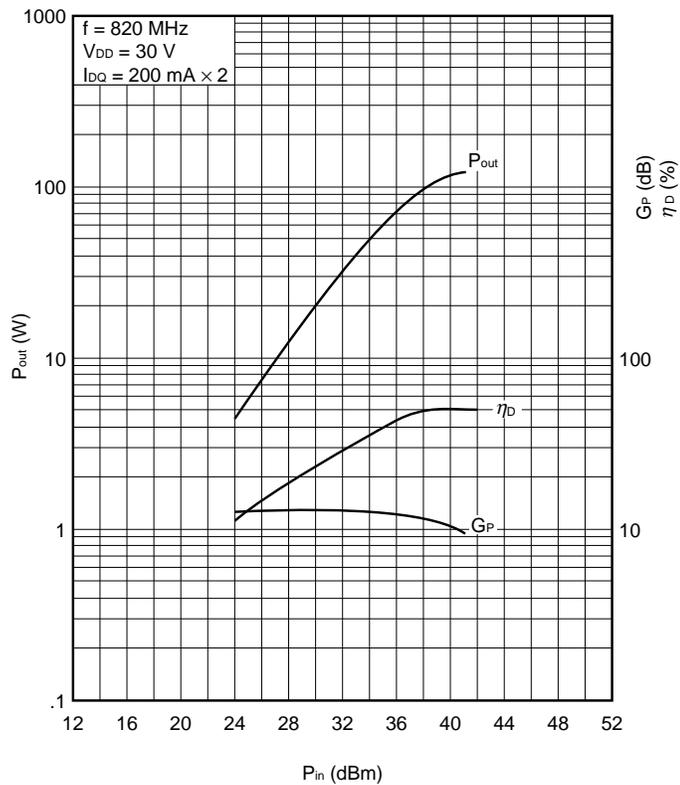
(2)  $f = 900 \text{ MHz}$

OUTPUT POWER / DRAIN EFFICIENCY /  
POWER GAIN vs. INPUT POWER

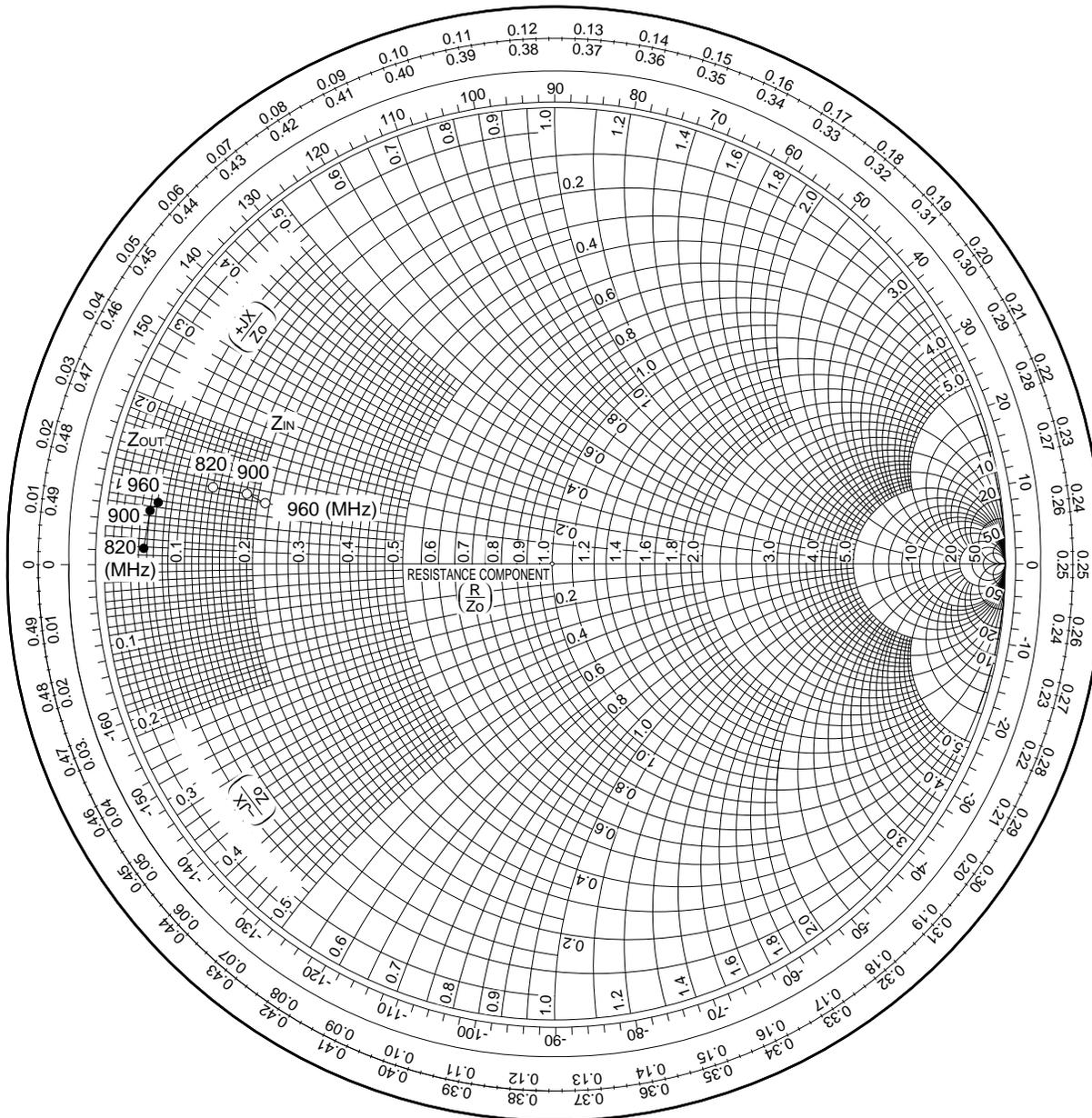


(3)  $f = 820 \text{ MHz}$

OUTPUT POWER / DRAIN EFFICIENCY /  
POWER GAIN vs. INPUT POWER



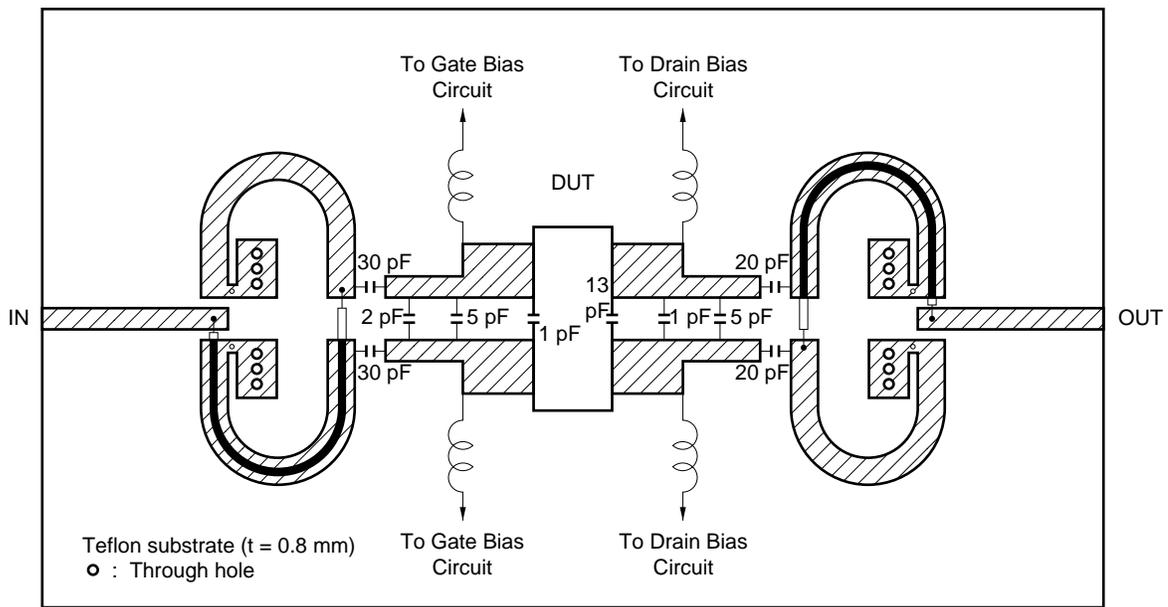
Z<sub>IN</sub>, Z<sub>OUT</sub>



V<sub>DD</sub> = 30 V, I<sub>DQ</sub> = 200 mA × 2, P<sub>in</sub> = 40 dBm

f (MHz)	Z <sub>IN</sub> (Ω)	Z <sub>OUT</sub> (Ω)
820	6.52 + j5.52	2.34 + j0.91
900	8.86 + j5.49	2.78 + j3.23
960	10.36 + j4.79	2.95 + j3.37

APPLICATION CIRCUIT EXAMPLE (f = 960 MHz)



**Notes on Handling**

This product internally uses beryllie porcelain (beryllium oxide). If powder or vapor of beryllium oxide enters your respiratory organs, you will have a difficulty in breathing, which is dangerous. Therefore, do no disassemble or chemically process the product.

Be sure to abolish the product separately from general industrial wastes or garbage.

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