

N-CHANNEL SILICON POWER MOSFET FOR UHF-TV TRANSMITTER POWER AMPLIFIER

FEATURES

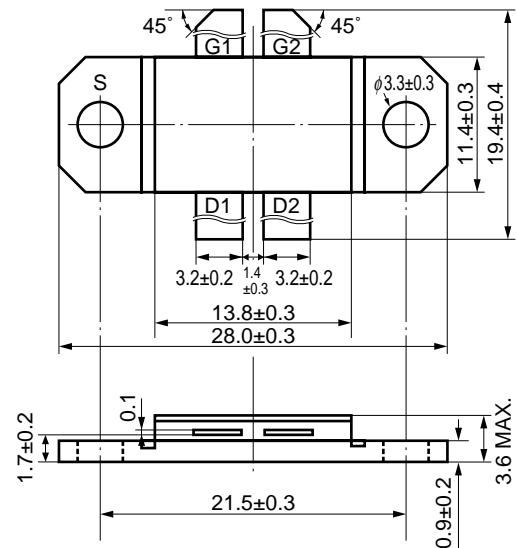
- High output, high gain, high efficiency
 $P_o = 100\text{ W}$, $G_L = 12\text{ dB}$, $\eta_D = 50\%$
 $(V_{DD} = 30\text{ V}$, $f = 860\text{ MHz}$, $I_{DQ} = 150\text{ mA} \times 2$, $P_{in} = 40\text{ dBm})$
- Wide band operation ($f = 470\text{ to }860\text{ MHz}$)
- Internal matching circuit
- High-reliability gold electrodes
- Hermetic sealed package

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 ^{Note}	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 +200	$^\circ\text{C}$

Note Per side

PACKAGE DRAWING (Unit: mm)



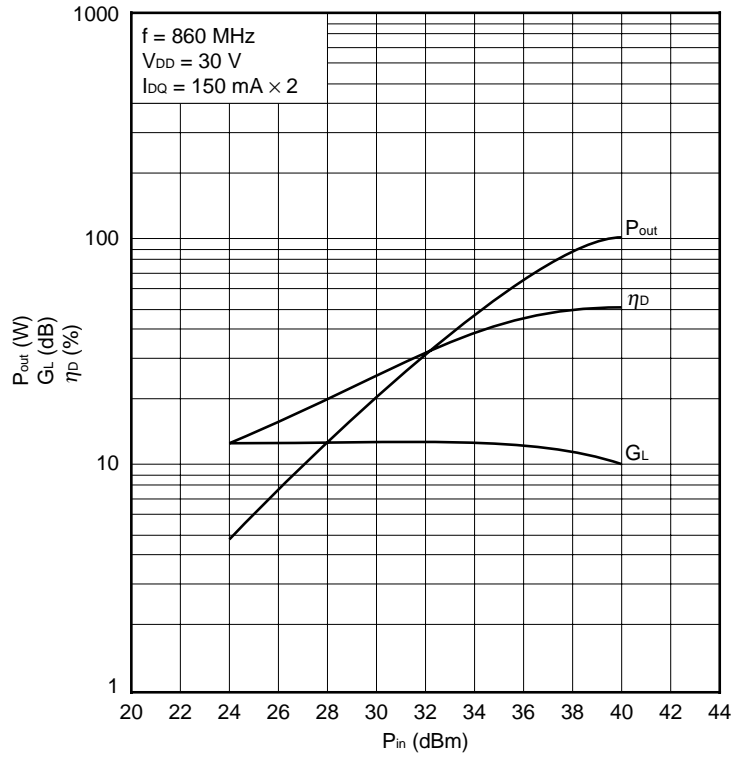
G₁, G₂: gate
 D₁, D₂: drain
 S : source
 Flange is connected to the source.

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

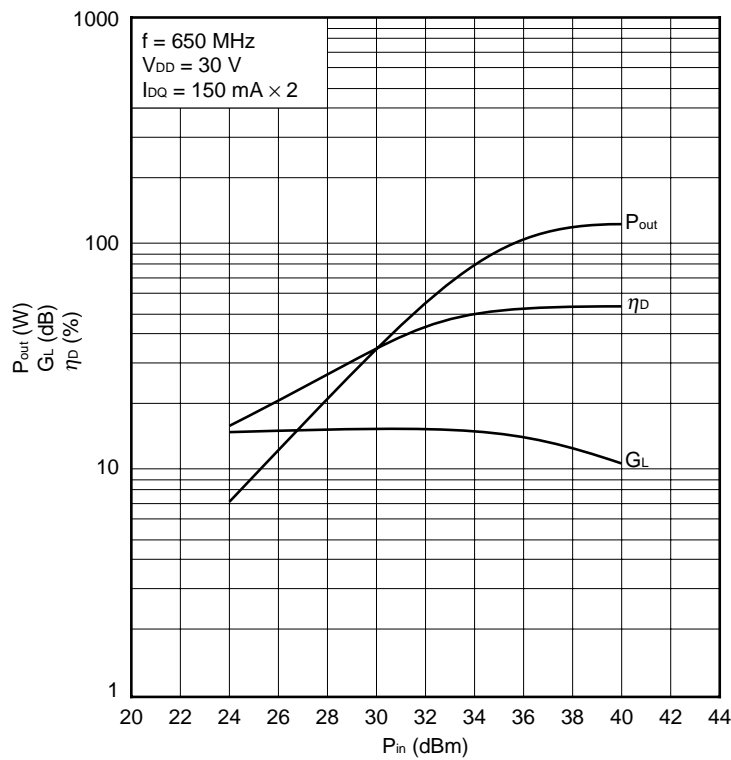
Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit
Gate leakage current	I_{GSS}	$V_{GS} = 7\text{ V}$			1	μA
Cut-off voltage	$V_{GS(off)}$	$V_{DS} = 5\text{ V}$, $I_D = 50\text{ mA}$	1.5		4	V
Drain current	I_{DSS}	$V_{DS} = 60\text{ V}$			2	mA
Mutual conductance	g_m	$V_{DS} = 5\text{ V}$, $I_D = 3\text{ A}$, $\Delta I_D = 100\text{ mA}$	2.0			S
Output power	P_o	$f = 860\text{ MHz}$, $V_{DD} = 30\text{ V}$	90	100		W
Drain efficiency	η_D	$I_{DQ} = 150\text{ mA} \times 2$, $P_{in} = 40\text{ dBm}$	48	50		%
Linear gain	G_L	$f = 860\text{ MHz}$, $V_{DD} = 30\text{ V}$ $I_{DQ} = 150\text{ mA} \times 2$, $P_{in} = 30\text{ dBm}$	10	12		dB

INPUT vs. OUTPUT POWER, LINEAR GAIN, DRAIN EFFICIENCY

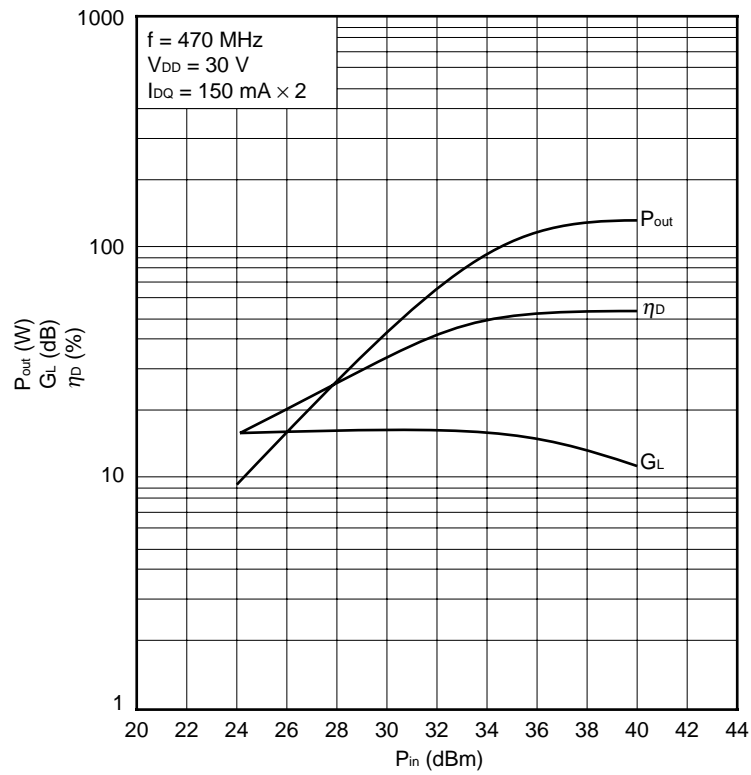
OUTPUT POWER/DRAIN EFFICIENCY/
LINEAR GAIN vs. INPUT POWER (f = 860 MHz)



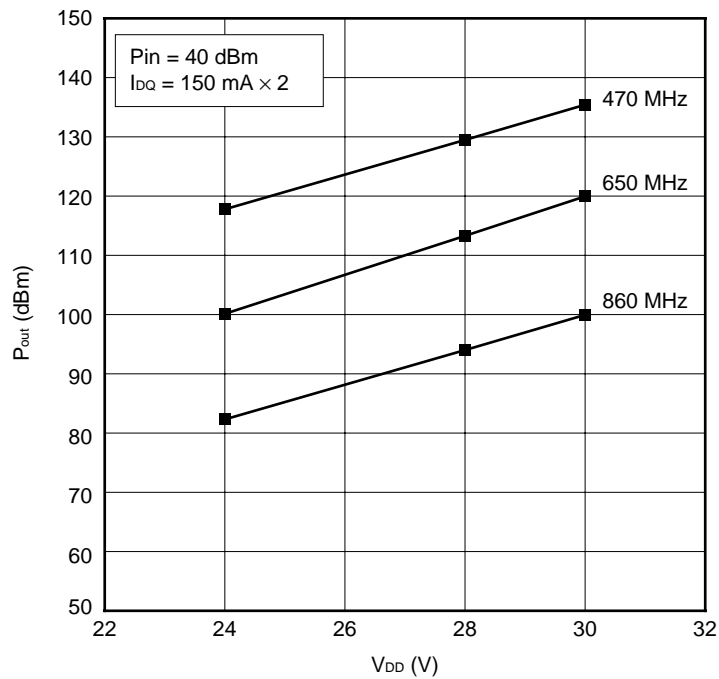
OUTPUT POWER/DRAIN EFFICIENCY/
LINEAR GAIN vs. INPUT POWER (f = 650 MHz)



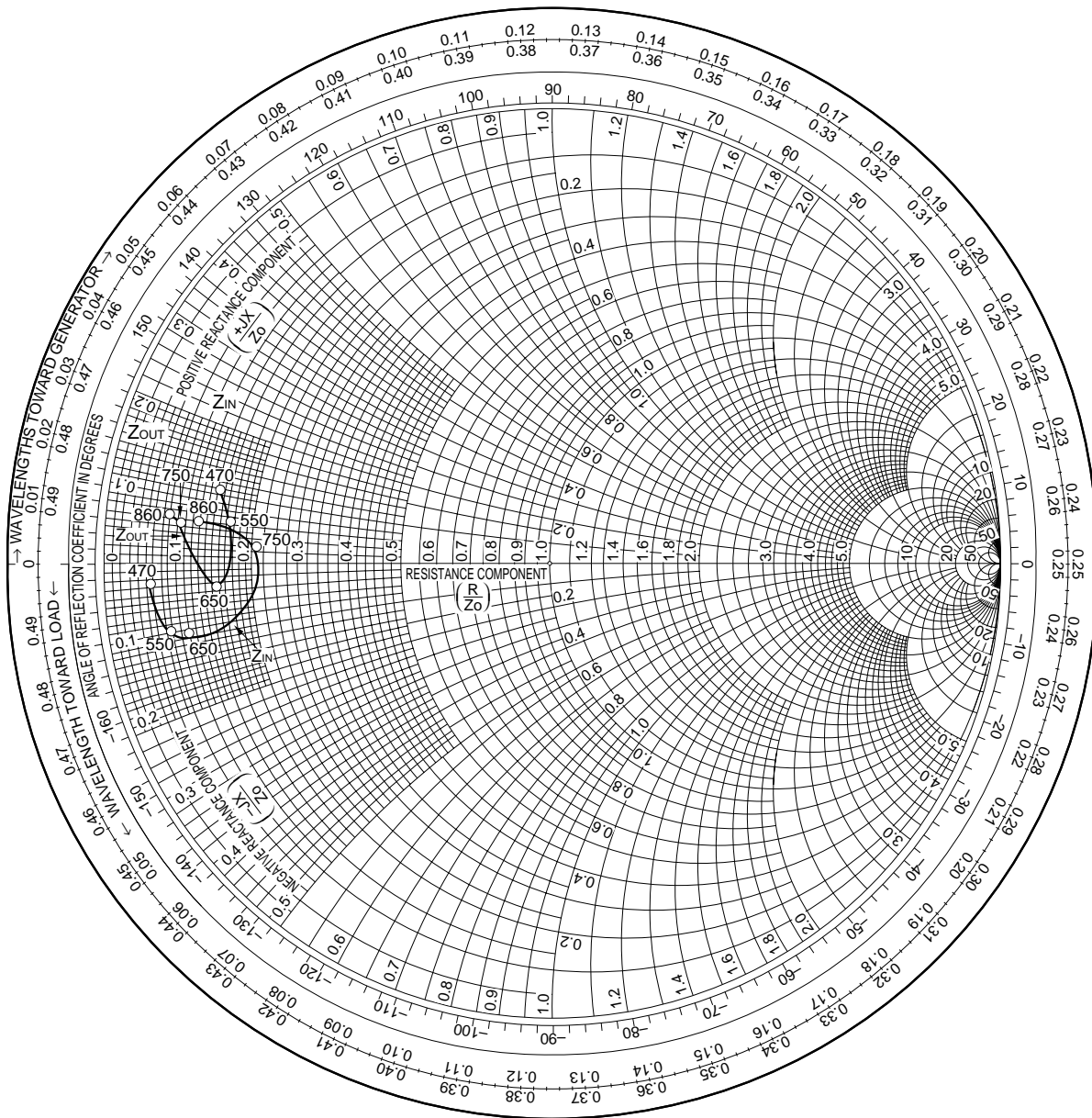
**OUTPUT POWER/DRAIN EFFICIENCY/
LINEAR GAIN vs. INPUT POWER (f = 470 MHz)**



V_{DD} dependence on P_{out}

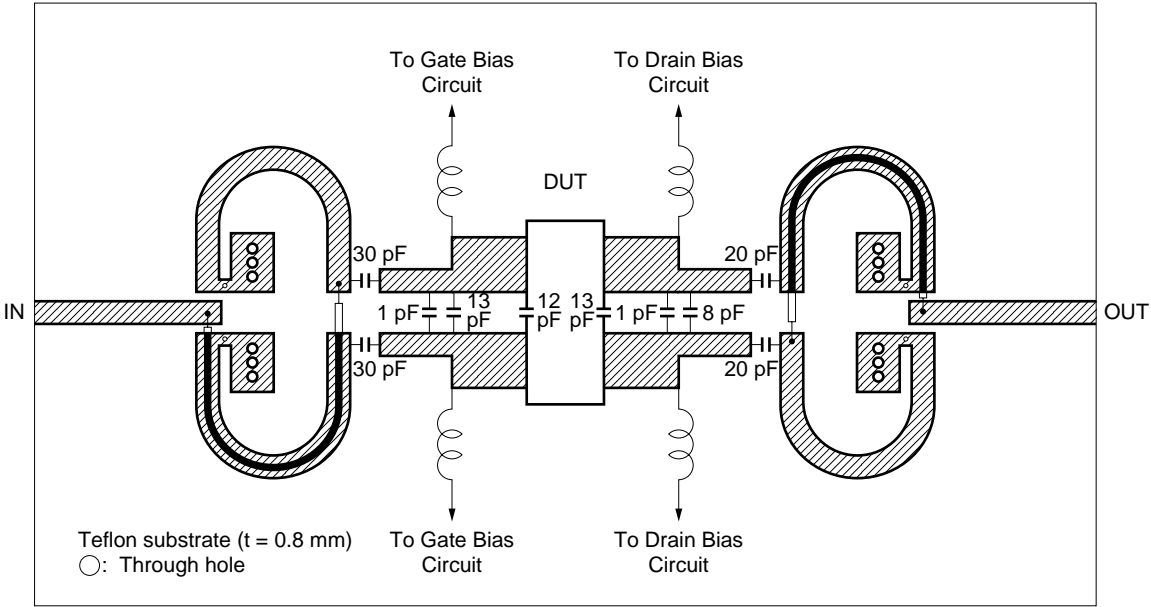


Z_{IN}, Z_{OUT}



f	Z _{IN} (Ω)	Z _{OUT} (Ω)
470	2.9 - j1.3	7.1 + j5.2
550	3.6 - j4.5	8.1 + j3.0
650	5.0 - j4.8	7.3 - j1.9
750	10.4 + j1.4	4.6 + j2.9
860	5.7 + j3.0	3.9 + j3.1

APPLICATION CIRCUIT EXAMPLE (f = 860 MHz)



[MEMO]

[MEMO]

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