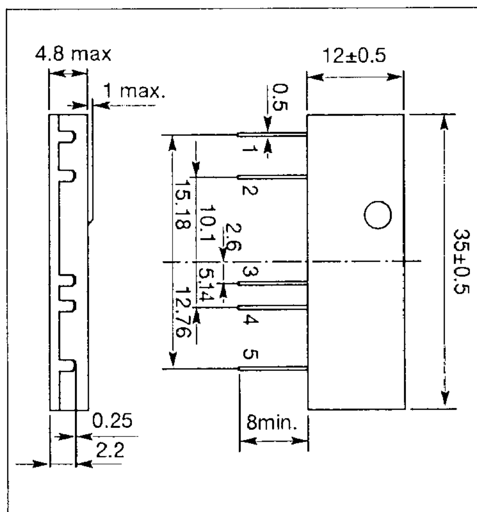
PF0055

Preliminary

MOS FET Power Amplifier Module Handy Mobile Phone

MOS FET Power Amplifier
FOR AMPS 824 ~ 849 MHz

■ OUTLINE DRAWING



■ FEATURES

- Small outline 12 × 35 × 4.9 mm^3
- Low voltage operation 6V
- Low power control current 300 μA
- High stability load VSWR ≥ 20

■ ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V_{DD}	12	V
Supply Current	I_{DD}	2	A
APC Voltage	V_{APC}	± 8	V
Input Power	P_{in}	20	mW
Operating Case Temperature	$T_{C(op)}$	-30 ~ +100	°C
Storage Temperature	T_{stg}	-30 ~ +100	°C

The absolute maximum ratings are limiting values, to be applied individually, beyond which the device may be permanently damaged. Functional operation under any of these conditions is not guaranteed. Exposing a circuit to its absolute maximum rating for extended periods of time may affect the device's reliability.

■ ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Item	Symbol	Test Condition	min.	typ.	max.	Unit
Drain Cutoff Current	I_{DS}	V_{DD1} = V_{DD2} = V_{DD3} = 12V, V_{APC} = 0V	—	—	100	μA
Total Efficiency	η_T	f = 824, 849 MHz, P_{in} = 1 mW, V_{DD1} = V_{DD2} = V_{DD3} = 6V, P_{out} = 1.2W (at APC Control), Z_{in} = Z_{out} = 50 Ω	35	40	—	%
2nd Harmonic Distortion	2nd H.D.		—	-40	-30	dB
3rd Harmonic Distortion	3rd H.D.		—	-50	-30	dB
Input VSWR	VSWR(in)		—	1.8	3	—
Output VSWR	VSWR(out)		—	2	—	—
Stability	—	V_{DD1} = V_{DD2} = V_{DD3} = 6V, P_{in} = 1 mW, f = 824 MHz, R_g = 50 Ω, P_{out} = 1.2W (at APC Control), Output VSWR = 20 All Phases, t = 20 sec	No Parastic Oscillation			—

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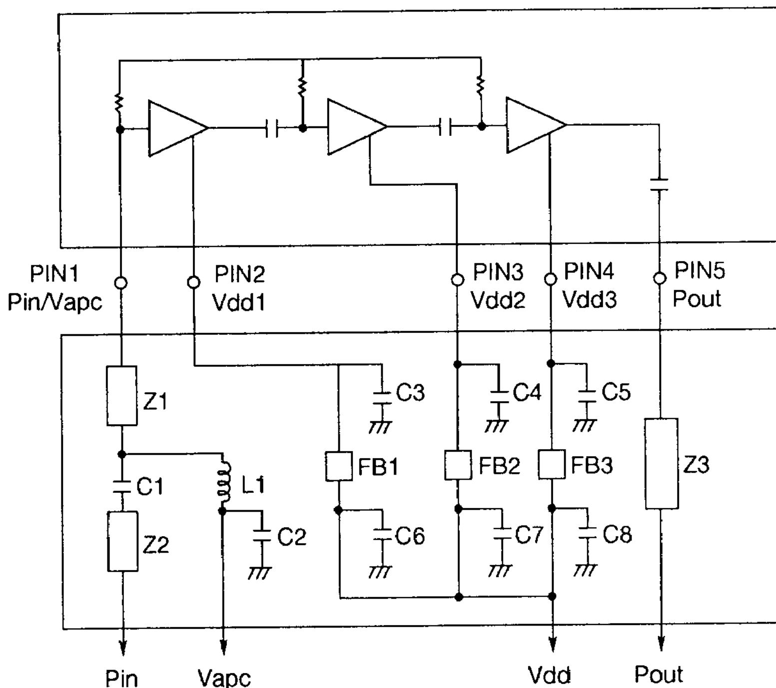
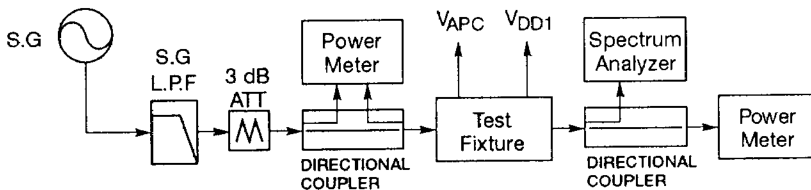
■ TEST SYSTEM DIAGRAM



C_1 = 0.02 μF Ceramic Chip
C_2, C_3, C_4, C_5 = 0.01 μF Ceramic Dip
C_6, C_7, C_8 = 10 μF Tantalum
L_1 = RFC 1mm φ, 15 turns
FB = Ferrite Bead BL01RN1-A62-001 (MURATA) or equivalent
Z_1, Z_2, Z_3 = 50 Ω Microstrip Line

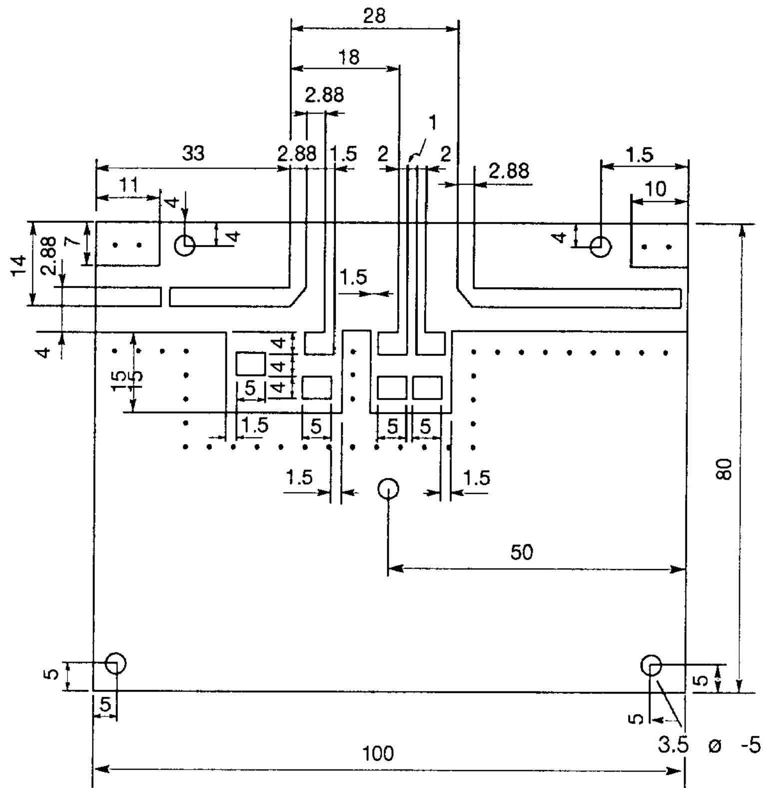


Output power P_{out} is defined at the root point of the module output pin P_{out}. The coefficient of output power loss in the PCB output line Z3 is shown below.

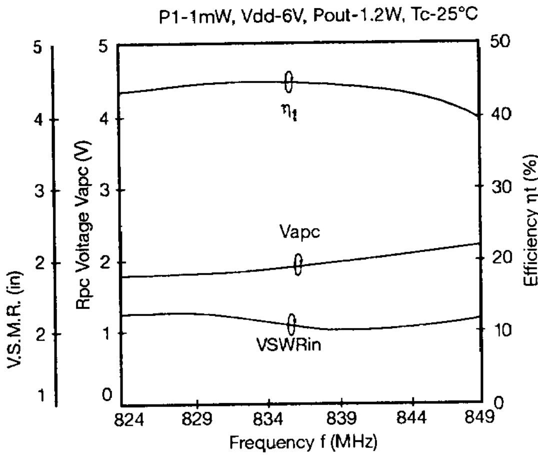
$$1/S_{21})^2 = 1/(0.9805)^2 = 1.04$$

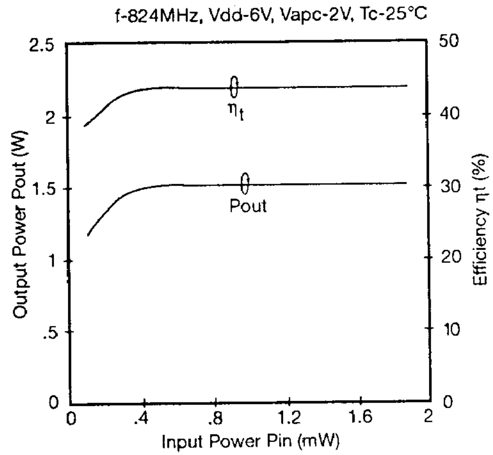
7

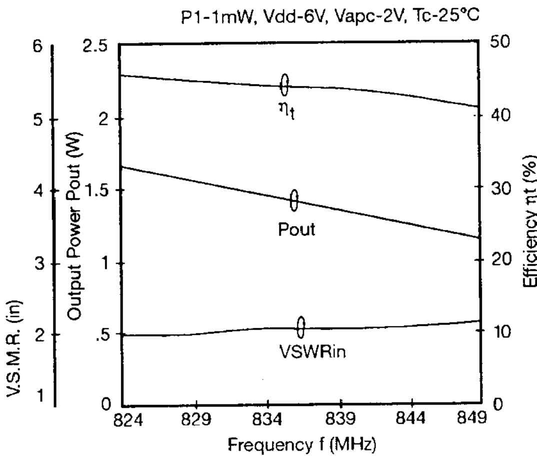
■ TEST FIXTURE PATTERN

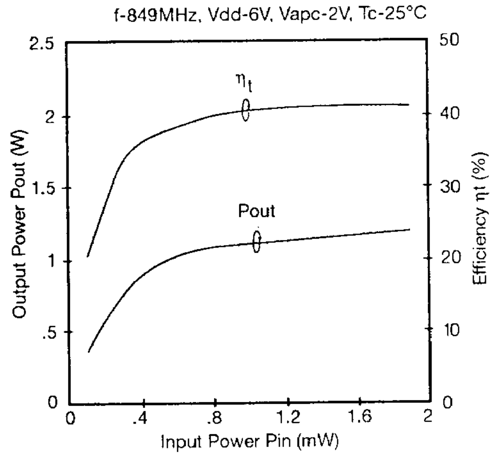


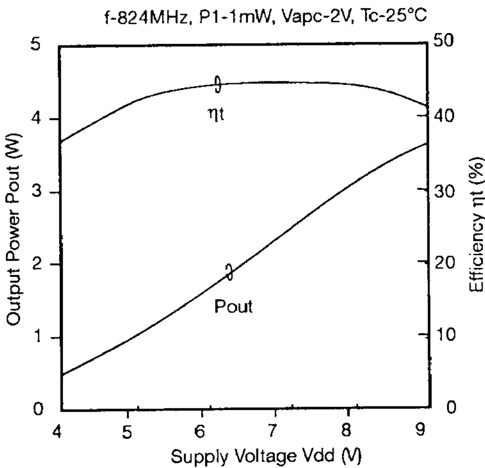
Grass Epoxy Double Sided PCB
(t = 1.6 mm, εr = 4.8)

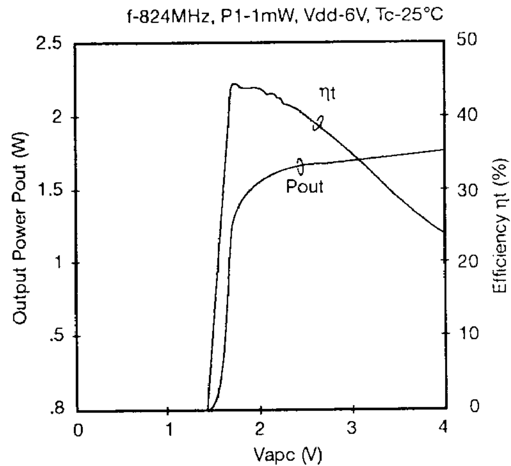












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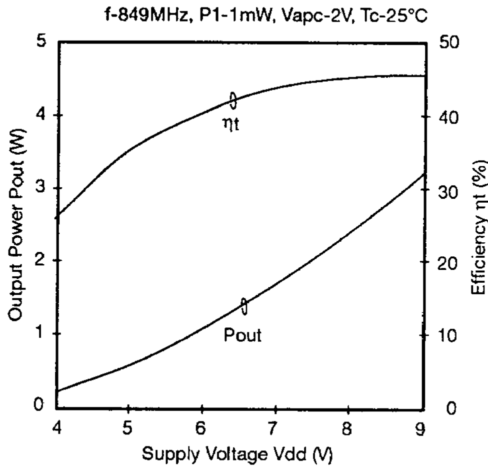
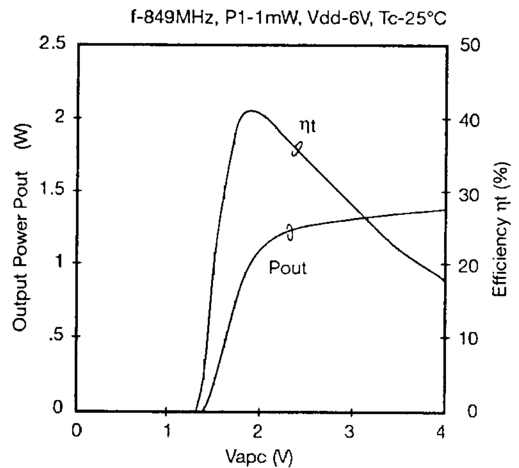
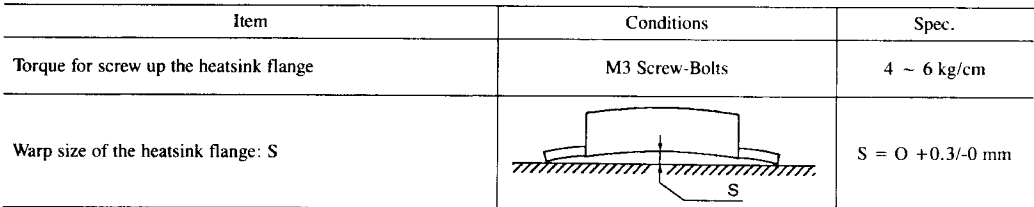




• **Mechanical Characteristics**



Item	Conditions	Spec.
Torque for screw up the heatsink flange	M3 Screw-Bolts	4 ~ 6 kg/cm
Warp size of the heatsink flange: S	S	S = O +0.3/-0 mm

Note for Use

1. Unevenness and distortion at the surface of the heatsink attached PF0055 should be less than 0.05 mm.
2. It should not be existed any dust between PF0055 and heatsink.
3. PF0055 should be separated from PCB more than 1.5 mm.
4. Soldering temperature and soldering time should be less than 230°C, 10 sec. (Soldering position spaced from the root point of the lead frame: 2 mm).
5. Recommendation of thermal joint compounds is TYPE G746 (Manufacturer: Shin-Etu Chemical, Co., Ltd.) or equivalent.
6. To protect devices from elecro-static damage, soldering iron, measuring-equipment and human body etc. should be grounded.