

PF0030 Series

MOS FET Power Amplifier

HITACHI

ADE-208-460 (Z)

1st Edition

July 1996

Features

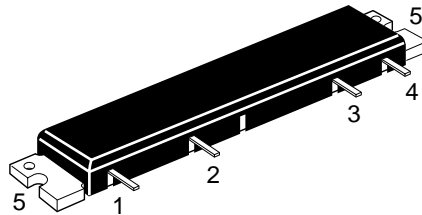
- High stability: Load VSWR = 20 : 1
- Low power control current: 400 μ A
- Thin package: 5 mmt

Ordering Information

Type No	Operating Frequency	Application
PF0030	824 to 849 MHz	AMPS
PF0032	872 to 905 MHz	E-TACS

Pin Arrangement

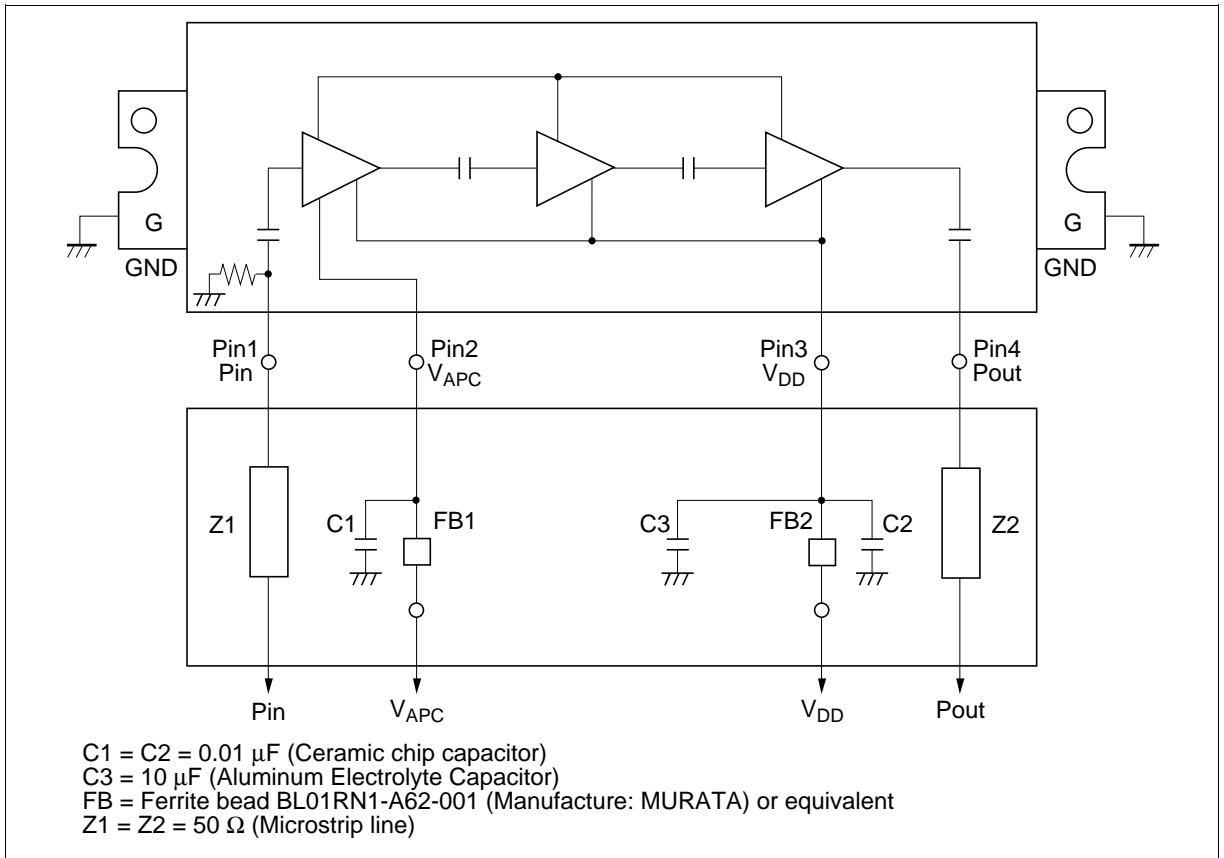
• RF-B2



1: Pin
2: V_{APC}
3: V_{DD}
4: P_{out}
5: GND

PF0030 Series

Internal Diagram and External Circuit



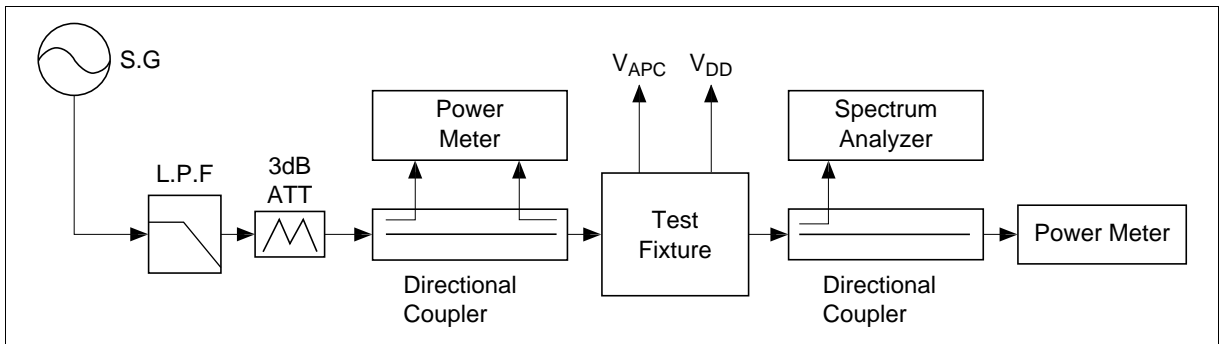
Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Item	Symbol	Rating	Unit
Supply voltage	V_{DD}	17	V
Supply current	I_{DD}	3	A
APC voltage	V_{APC}	± 8	V
Input power	Pin	20	mW
Operating case temperature	T_c (op)	-30 to +110	$^\circ\text{C}$
Storage temperature	T_{stg}	-40 to +110	$^\circ\text{C}$

Electrical Characteristics (Ta = 25°C)

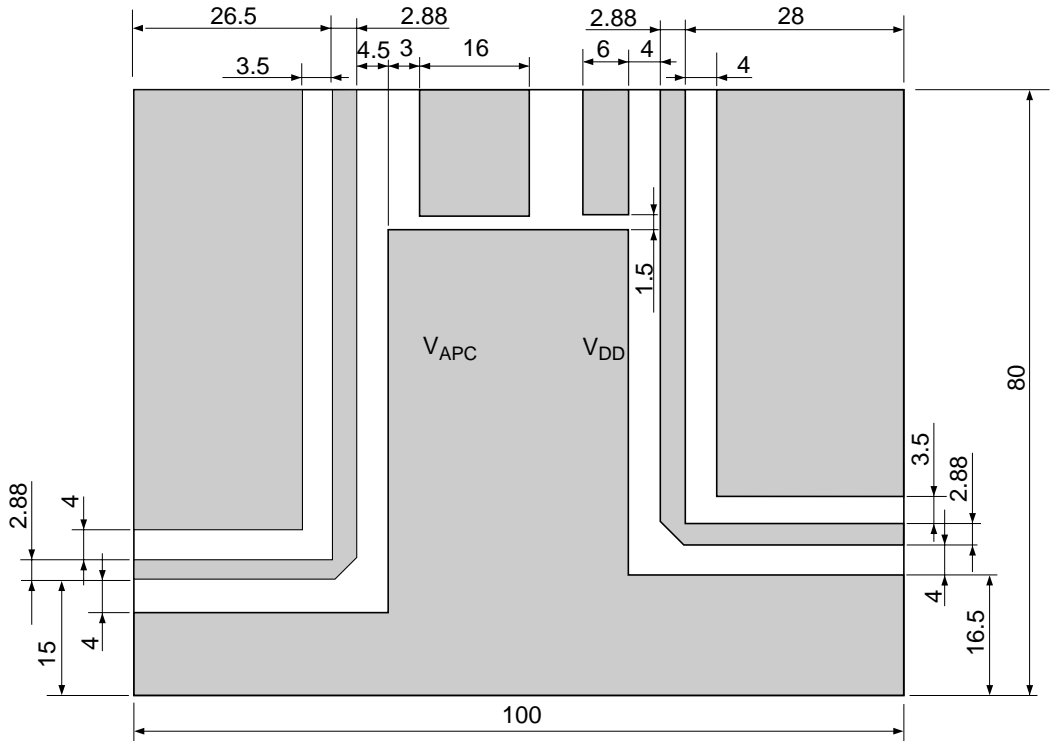
Item	Symbol	Min	Typ	Max	Unit	Test Condition
Drain cutoff current	I_{DS}	—	—	500	μA	$V_{DD} = 17 V, V_{APC} = 0 V$
Total efficiency	η_T	35	40	—	%	$P_{in} = 2 mW,$
2nd harmonic distortion	2nd H.D.	—	-50	-30	dB	$V_{DD} = 12.5 V,$
3rd harmonic distortion	3rd H.D.	—	-50	-30	dB	$P_{out} = 6 W$ (at APC controlled)
Input VSWR	VSWR (in)	—	1.5	3	—	$Z_{in} = Z_{out} = 50 \Omega$
Output VSWR	VSWR (out)	—	1.5	—	—	
Stability	—	No parasitic oscillation			—	$P_{in} = 2 mW, V_{DD} = 12.5 V,$ $P_{out} = 6 W$ (at APC controlled), $Z_{in} = 50 \Omega,$ Output VSWR = 20:1 All phases, $t = 20 sec$

Test System Diagram



Test Fixture Pattern

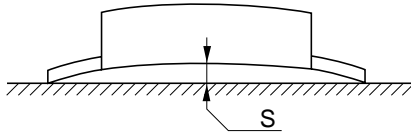
Unit: mm



Grass Epoxy Double sided PCB
(t = 1.6 mm, $\epsilon_r = 4.8$)

Mechanical Characteristics

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

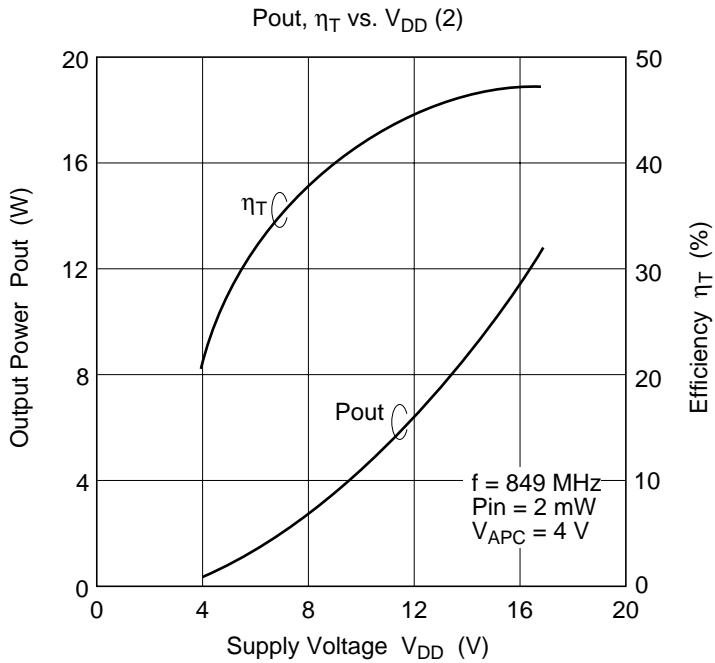
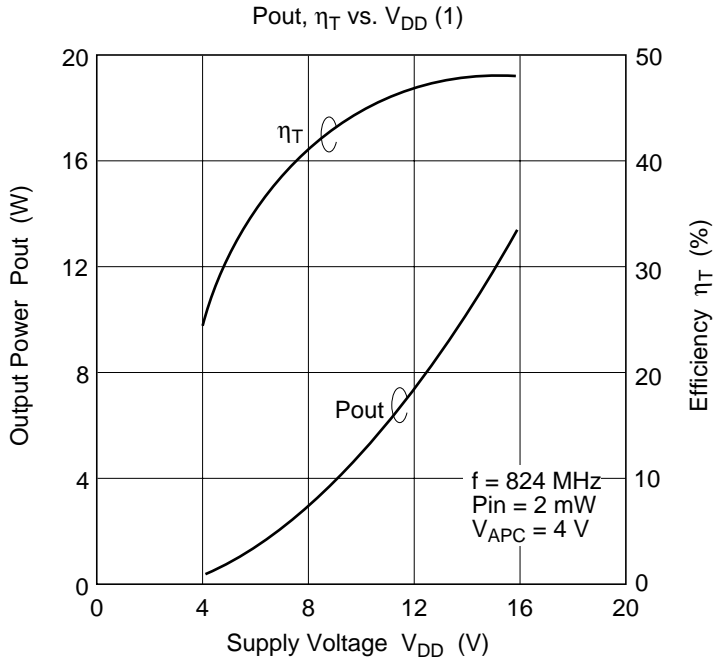


Note for Use

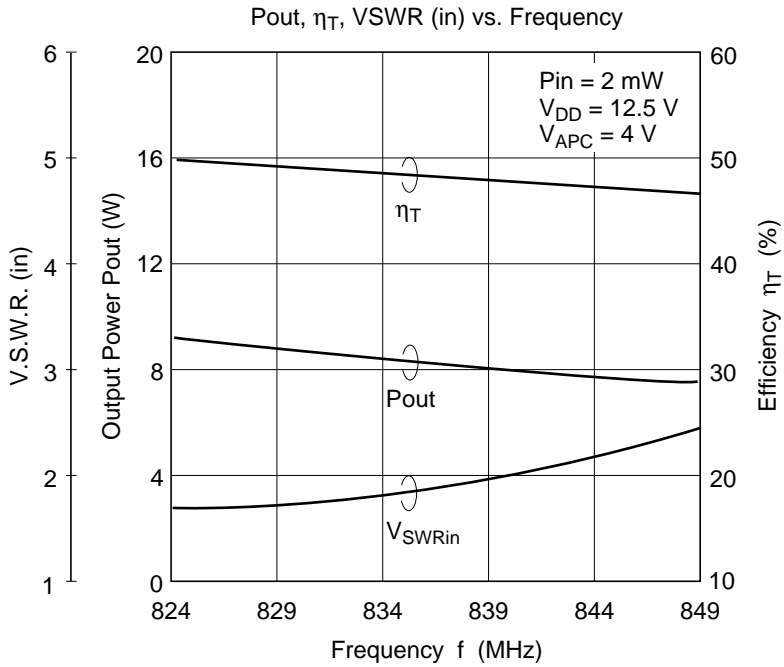
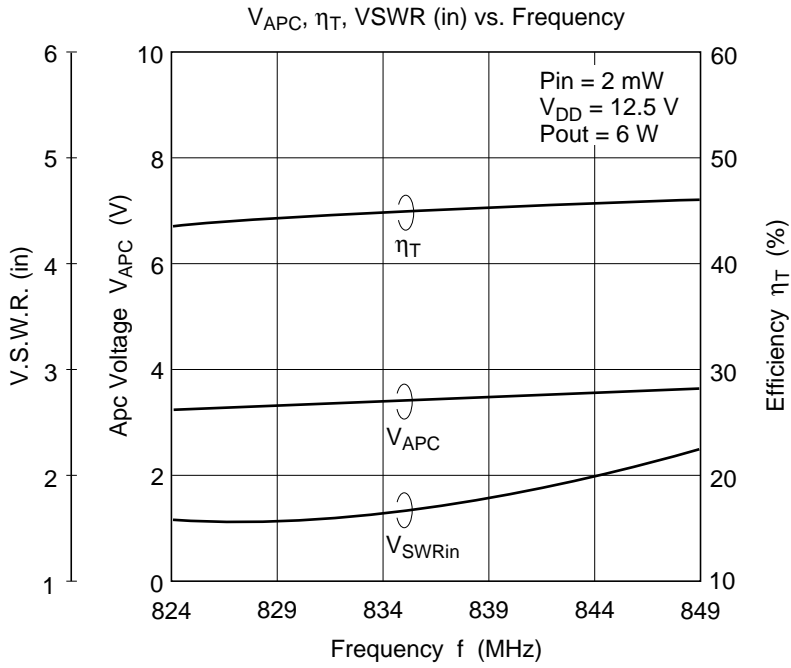
- Unevenness and distortion at the surface of the heatsink attached module should be less than 0.05 mm.
- It should not be existed any dust between module and heatsink.
- MODULE should be separated from PCB less than 1.5 mm.
- Soldering temperature and soldering time should be less than 230°C, 10 sec.
(Soldering position spaced from the root point of the lead frame: 2 mm)
- Recommendation of thermal joint compounds is TYPE G746.
(Manufacturer: Shin-Etsu Chemical, Co., Ltd.)
- To protect devices from electro-static damage, soldering iron, measuring-equipment and human body etc. should be grounded.
- Torque for screw up the heatsink flange should be 4 to 6 kg · cm with M3 screw bolts.
- Don't solder the flange directly.
- It should make the lead frame as straight as possible.
- The module should be screwed up before lead soldering.
- It should not be given mechanical and thermal stress to lead and flange of the module.
- When the external parts (Isolator, Duplexer, etc.) of the module are changed, the electrical characteristics should be evaluated enough.
- Don't washing the module except lead pins.
- To get good stability, ground impedance between the module GND flange and PCB GND pattern should be designed as low as possible.

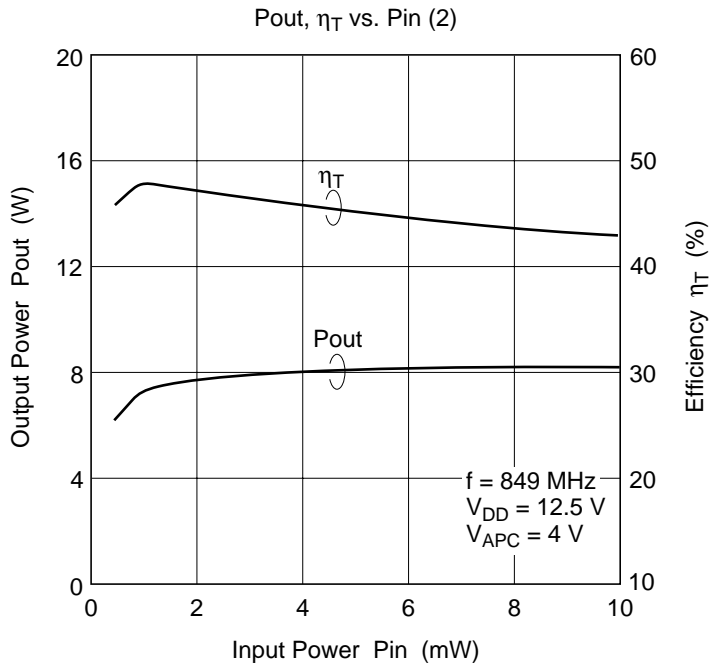
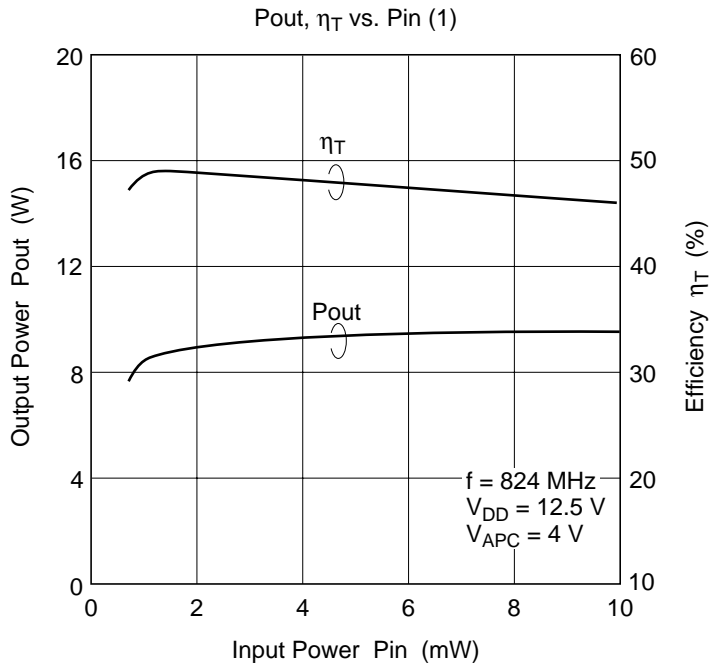
Characteristics Curve

PF0030

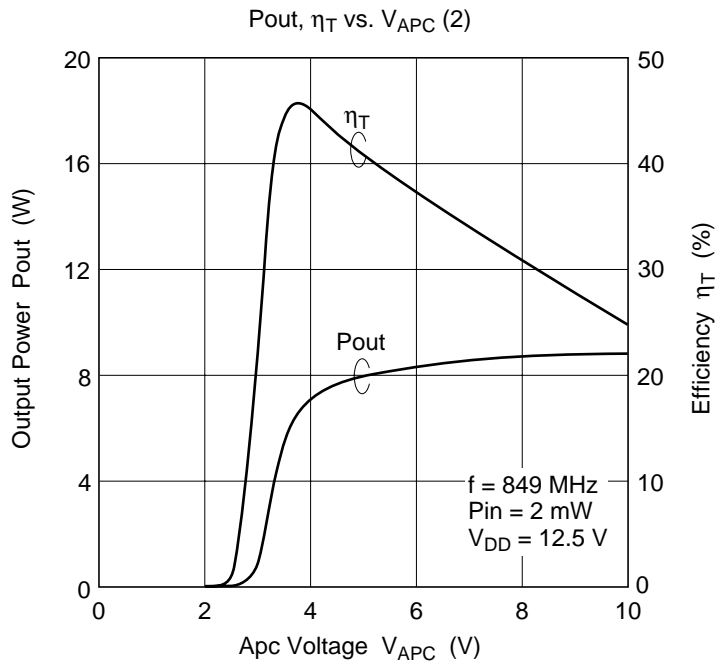
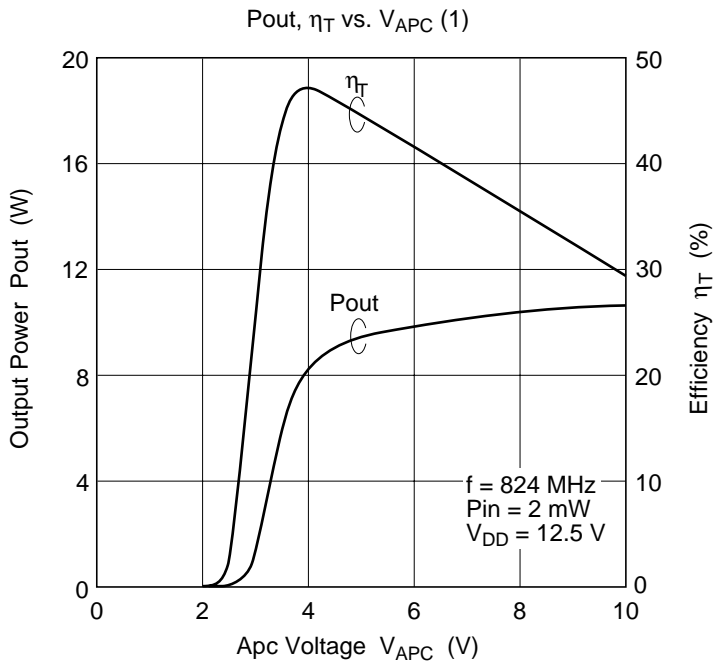


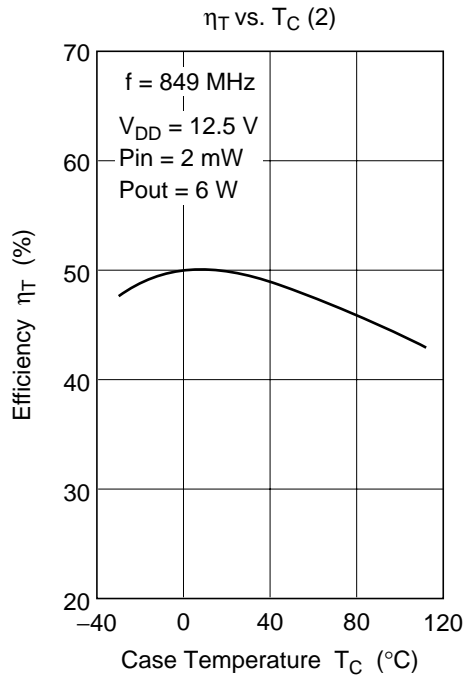
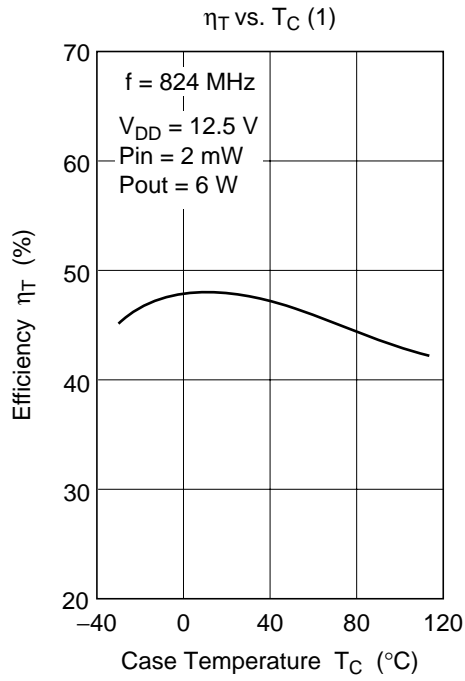
PF0030 (cont)





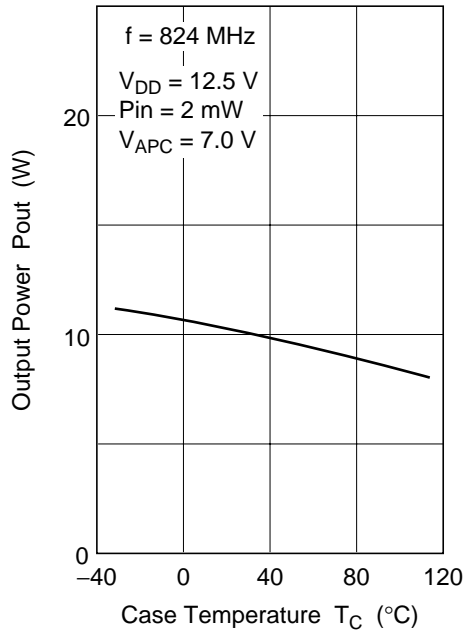
PF0030 (cont)



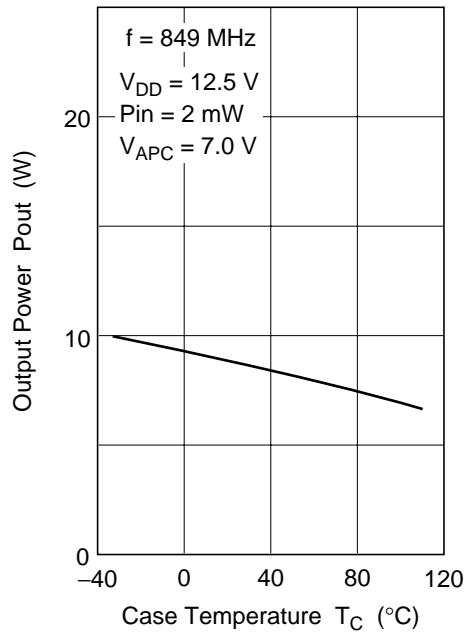


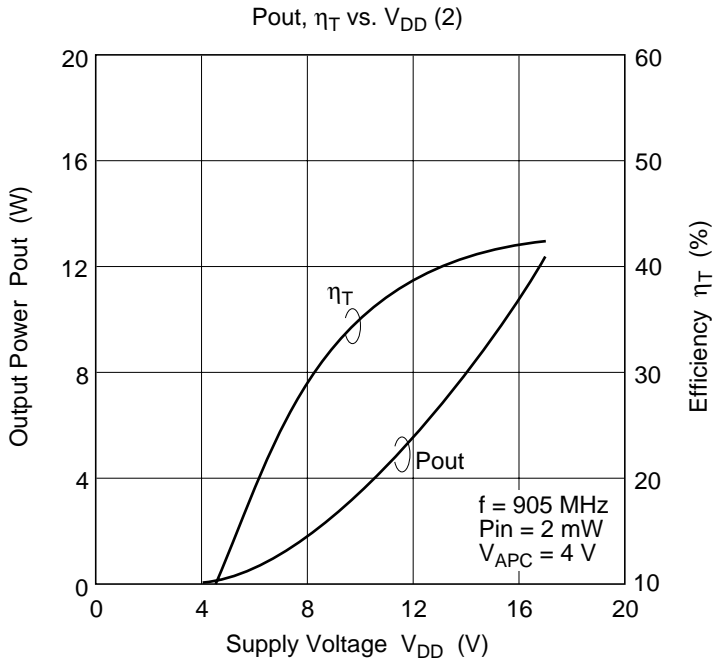
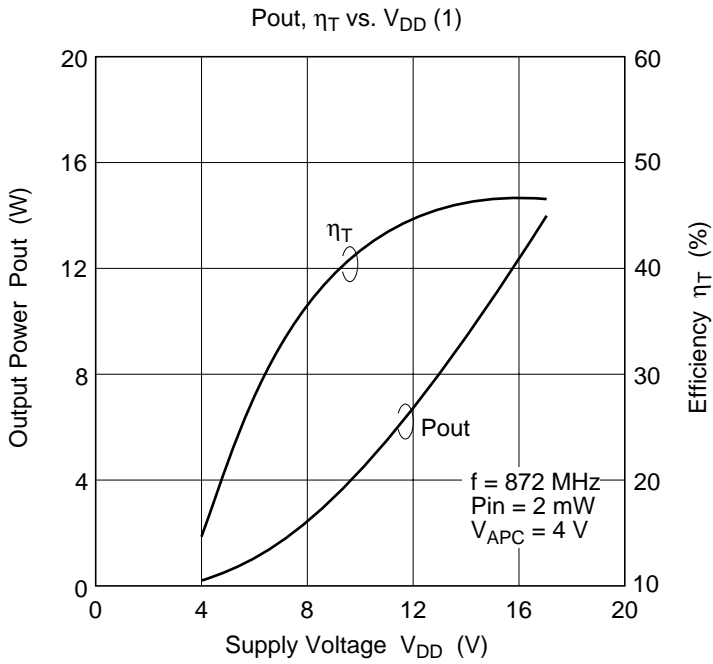
PF0030 (cont)

Pout vs. T_C (1)

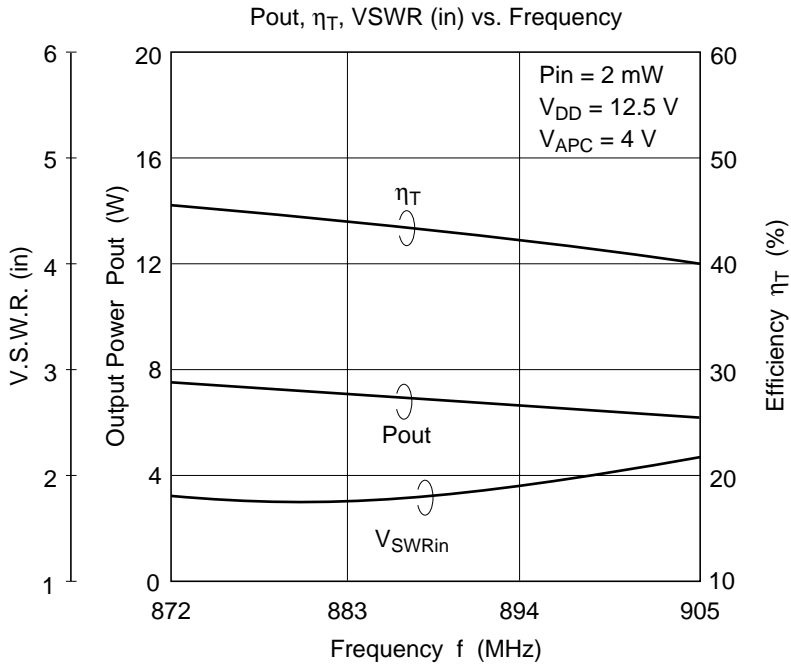
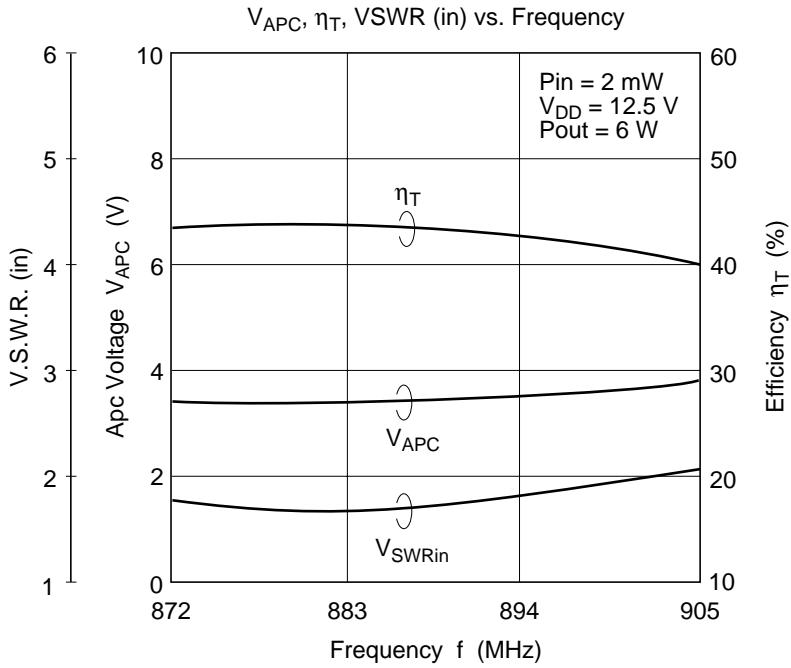


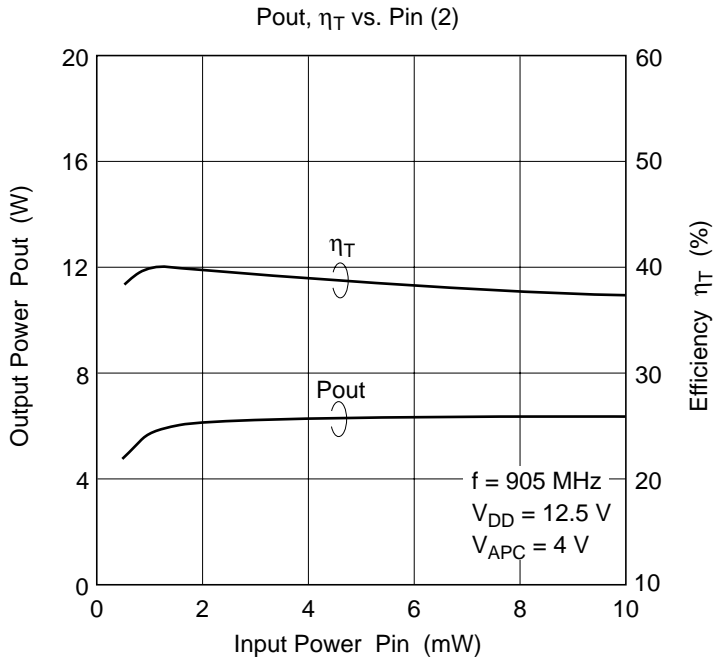
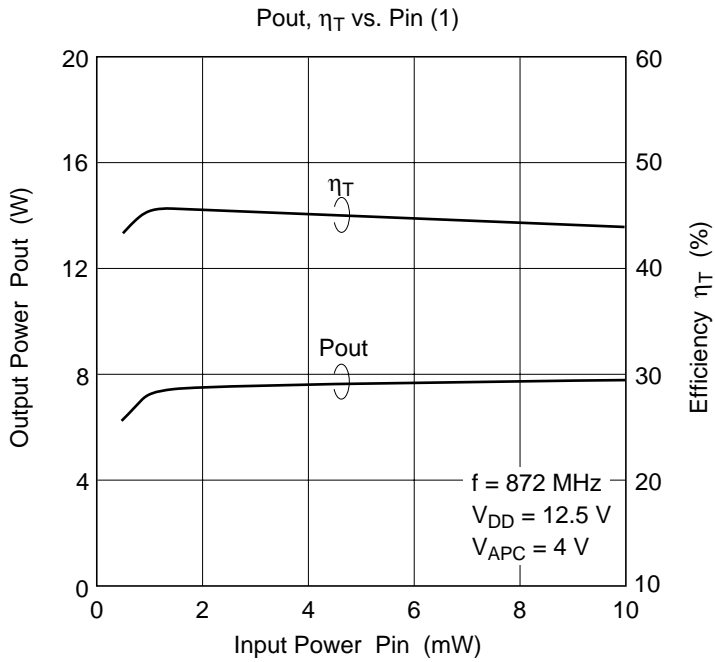
Pout vs. T_C (2)



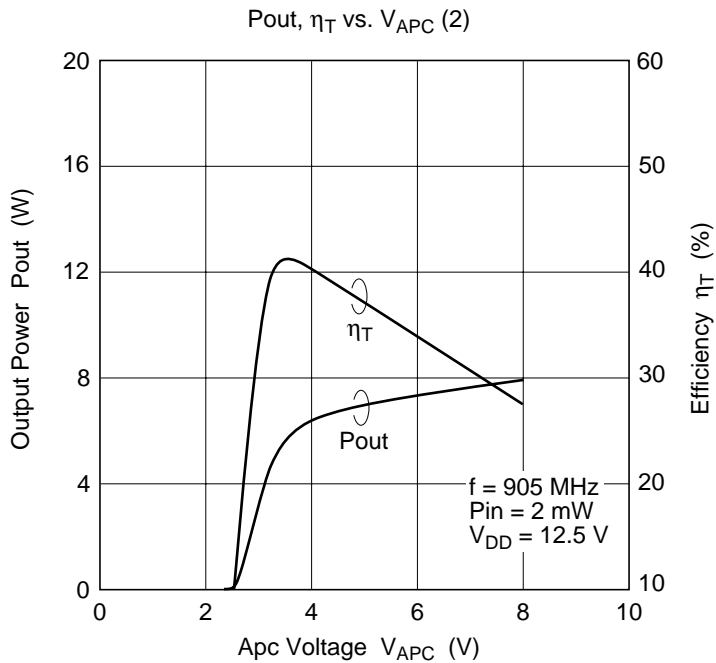
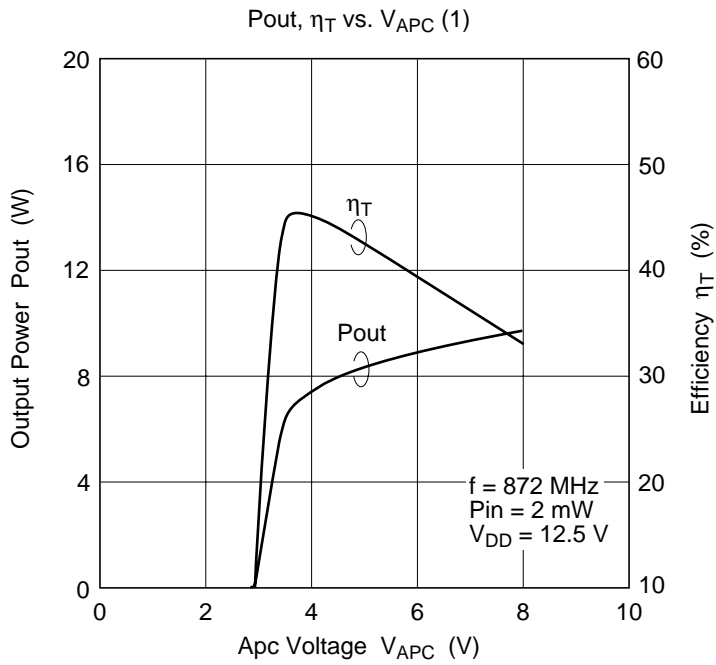


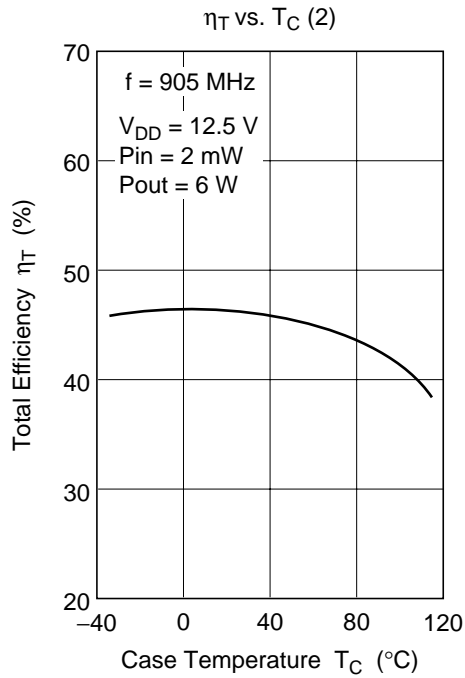
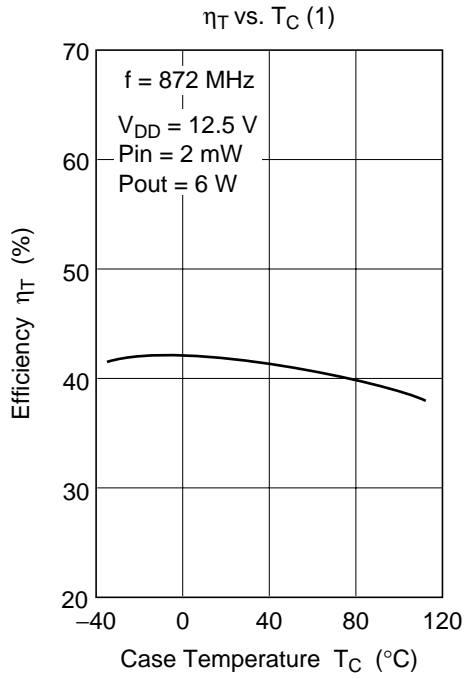
PF0032 (cont)





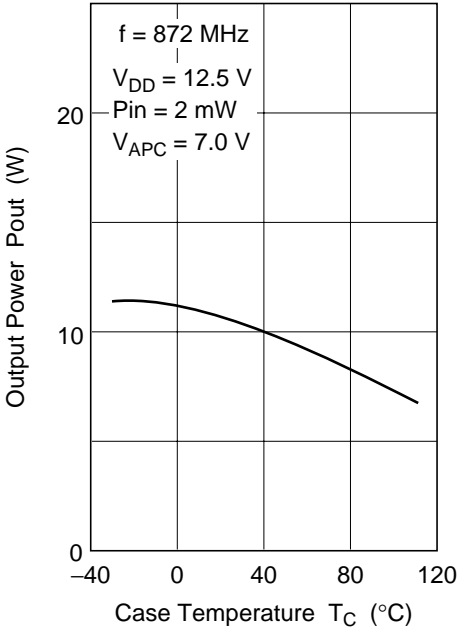
PF0032 (cont)



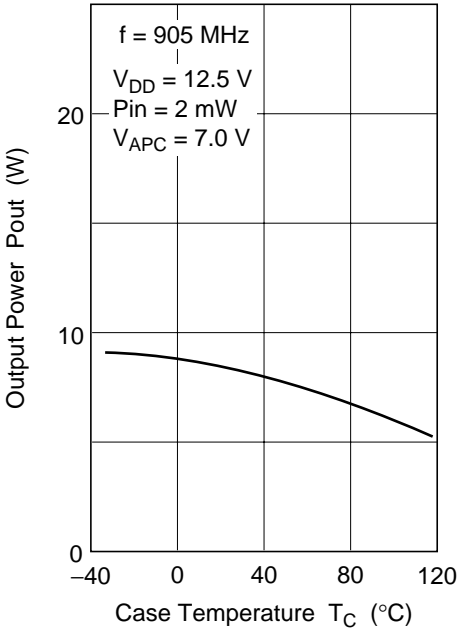


PF0032 (cont)

Pout vs. T_C (1)



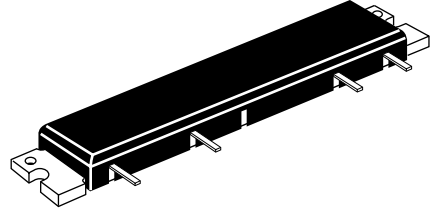
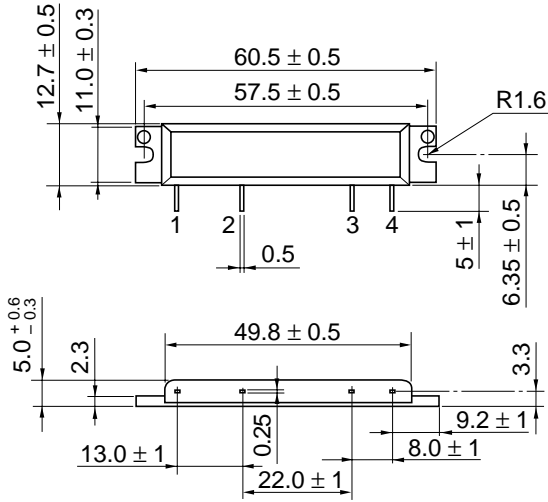
Pout vs. T_C (2)



PF0030 Series

Package Dimensions

Unit: mm



Hitachi Code	RF-B2
JEDEC	—
EIAJ	—
Weight (reference value)	16 g

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