

PF0030 Series

MOS FET Power Amplifier

HITACHI

ADE-208-460 (Z)

1st Edition

July 1996

Features

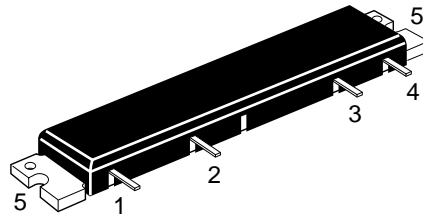
- High stability: Load VSWR = 20 : 1
- Low power control current: 400 μ A
- Thin package: 5 mm

Ordering Information

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

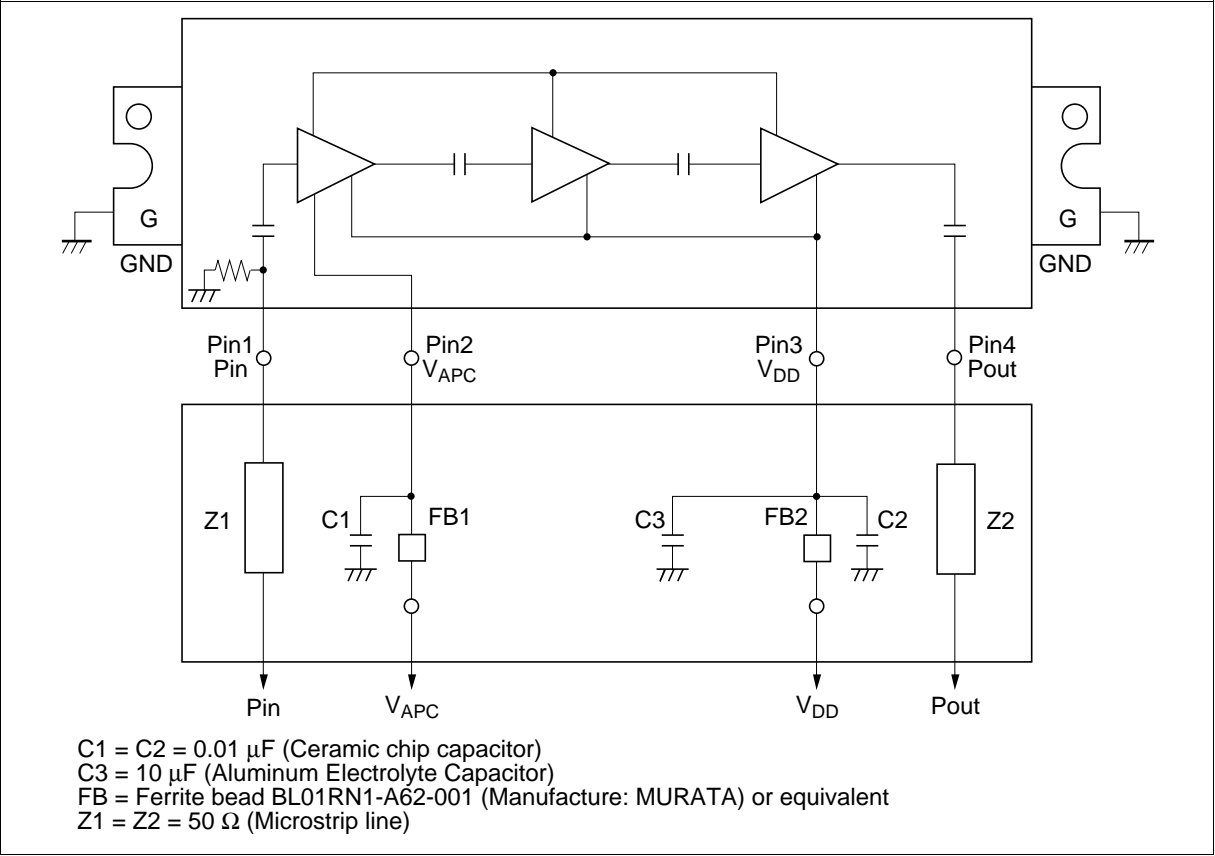
Pin Arrangement

• RF-B2



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

Internal Diagram and External Circuit



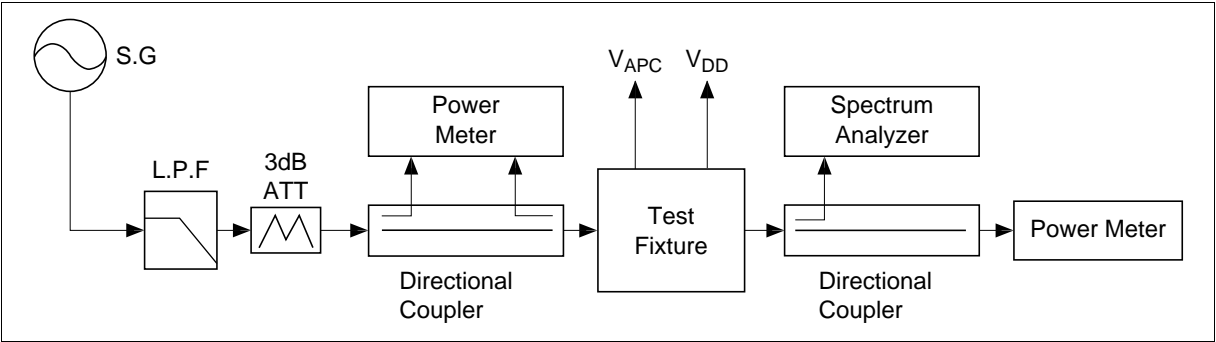
Absolute Maximum Ratings (Ta = 25°C)

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	Tc (op)	-30 to +110	°C
Storage temperature	Tstg	-40 to +110	°C

Electrical Characteristics (Ta = 25°C)

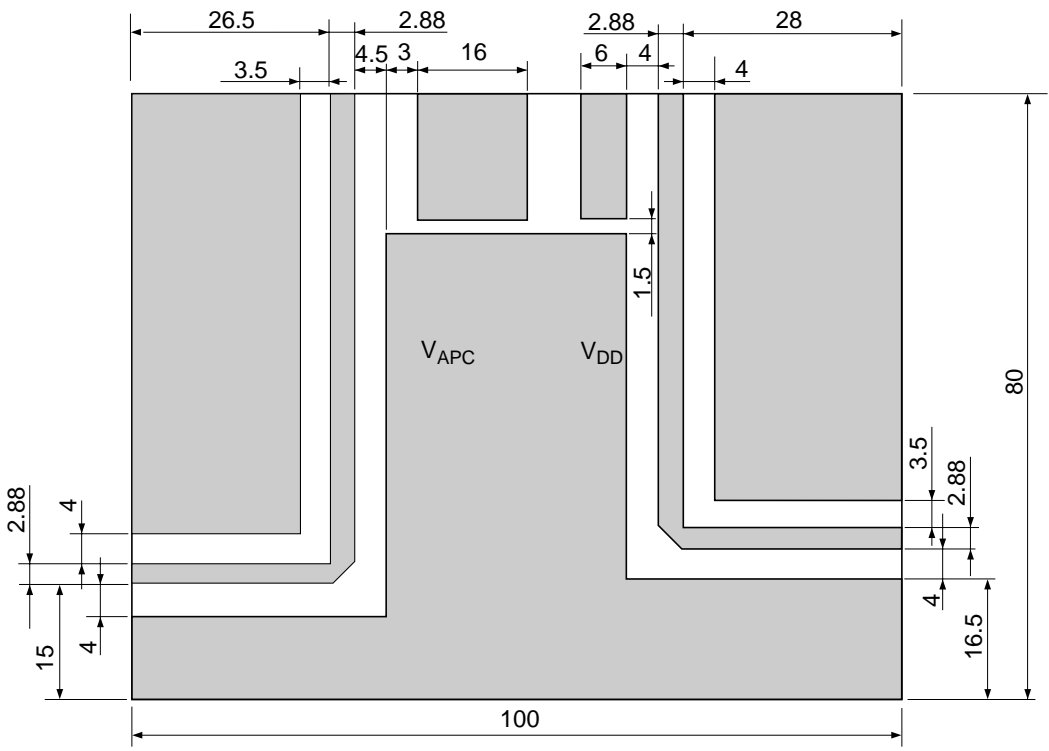
Item	Symbol	Min	Typ	Max	Unit	Test Condition
Drain cutoff current	I_{DS}	—	—	500	μA	$V_{DD} = 17 V, V_{APC} = 0 V$
Total efficiency	η_T	35	40	—	%	$P_{in} = 2 mW,$
2nd harmonic distortion	2nd H.D.	—	-50	-30	dB	$V_{DD} = 12.5 V,$
3rd harmonic distortion	3rd H.D.	—	-50	-30	dB	$P_{out} = 6 W$ (at APC controlled)
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



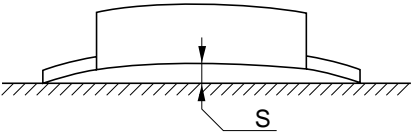
Test Fixture Pattern

Unit: mm



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

Mechanical Characteristics

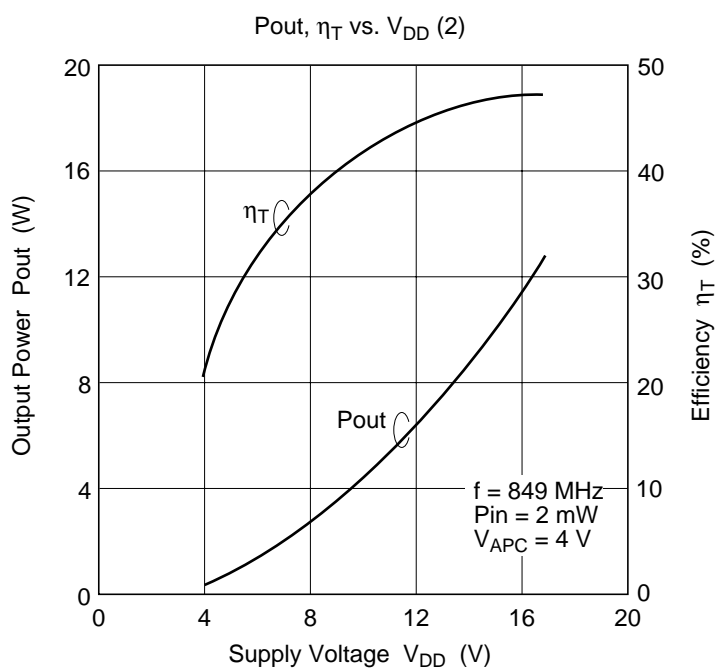
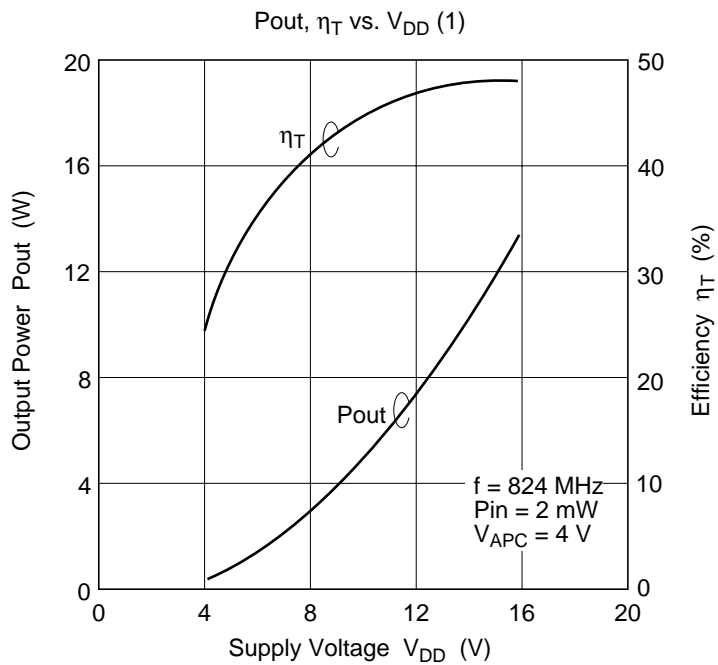
Item	Conditions	Spec
Torque for screw up the heatsink flange	M3 Screw Bolts	4 to 6 kg•cm
Warp size of the heatsink flange: S		S = 0 +0.3/-0 mm

Note for Use

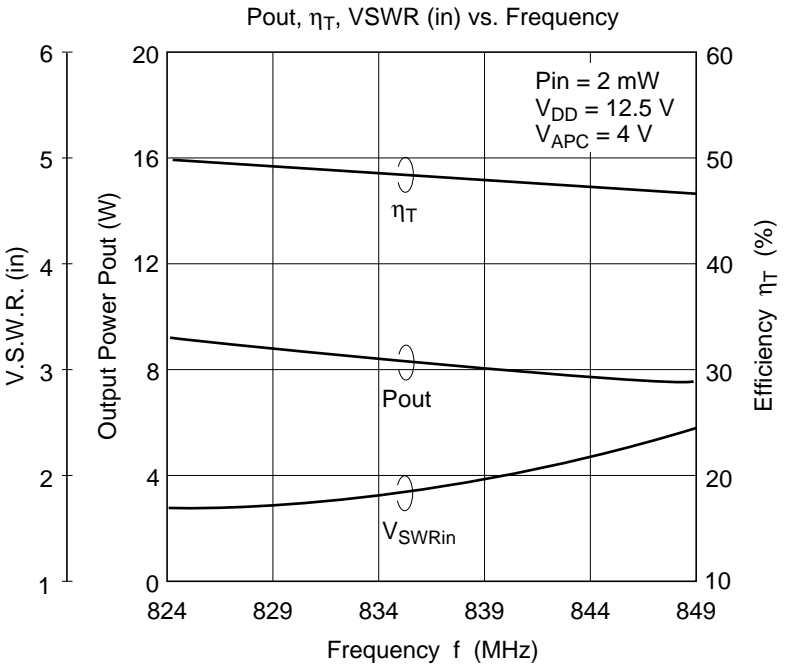
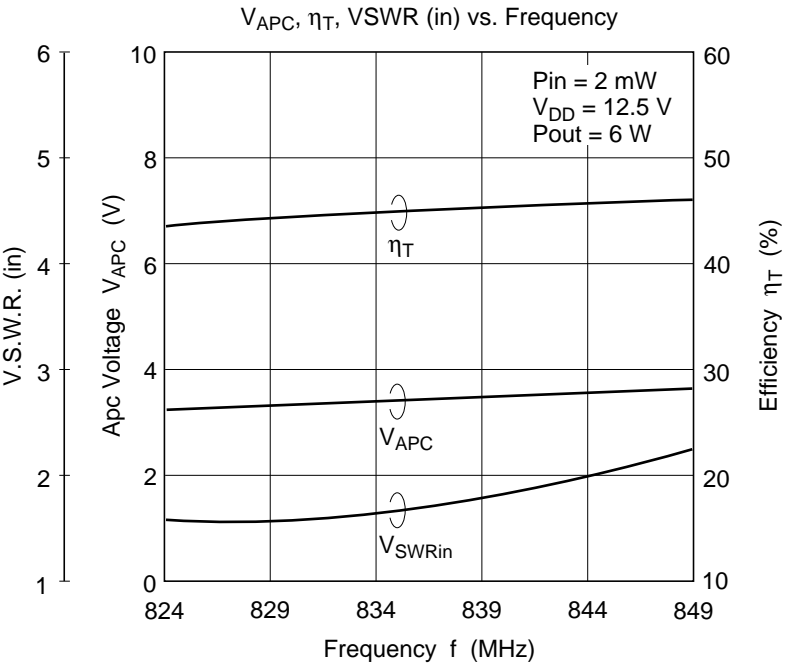
- Unevenness and distortion at the surface of the heatsink attached module should be less than 0.05 mm.
- It should not be existed any dust between module and heatsink.
- MODULE should be separated from PCB less than 1.5 mm.
- Soldering temperature and soldering time should be less than 230°C, 10 sec.
(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.

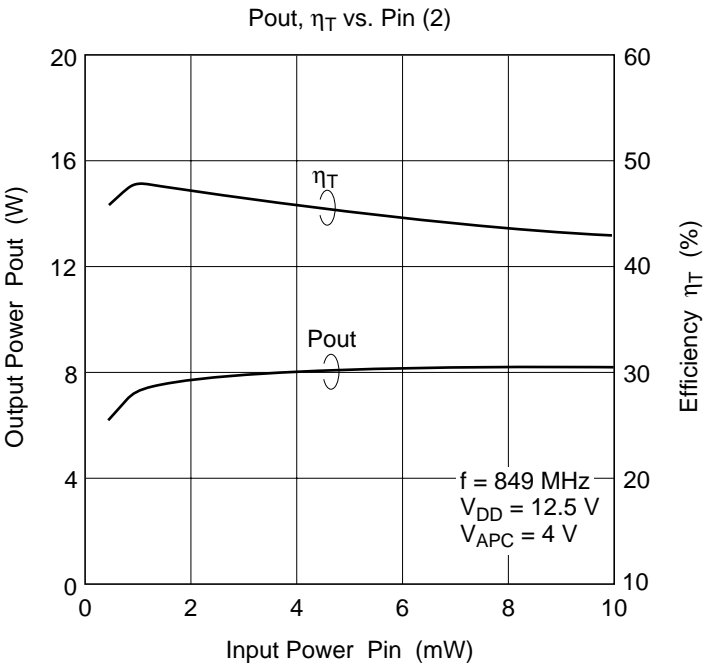
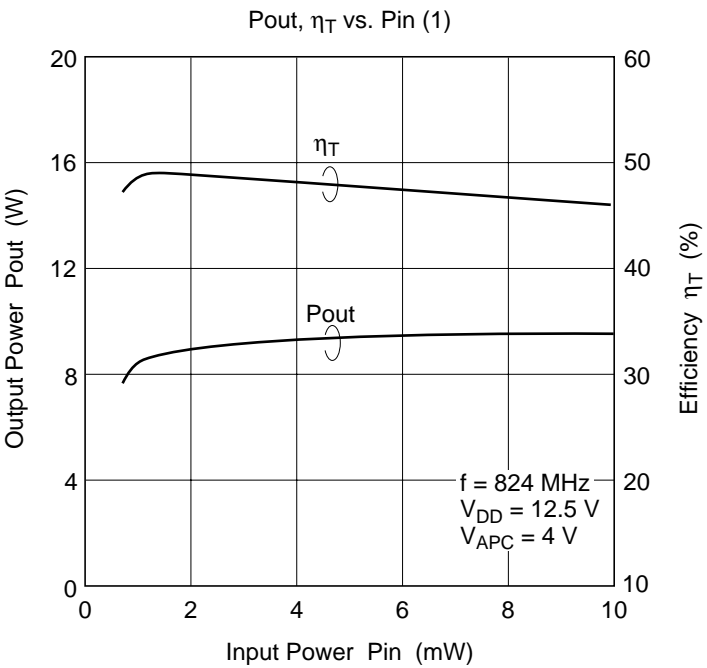
Characteristics Curve

PF0030

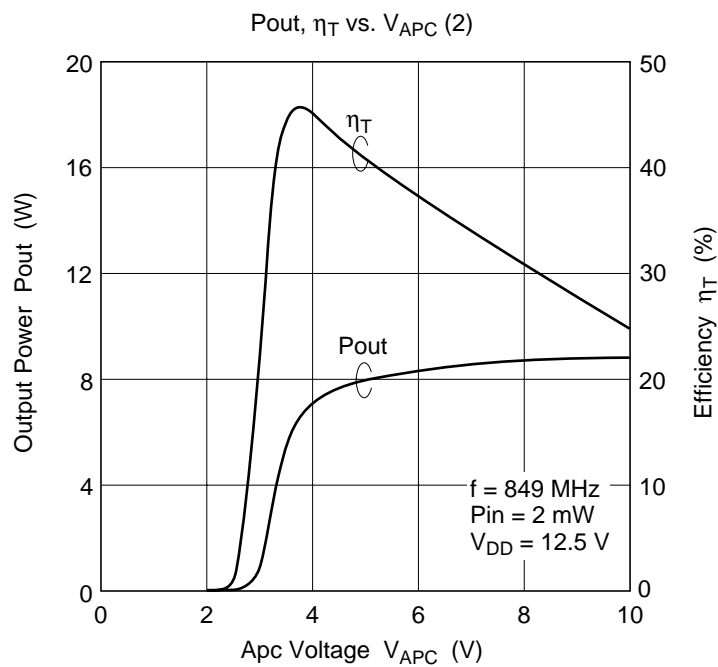
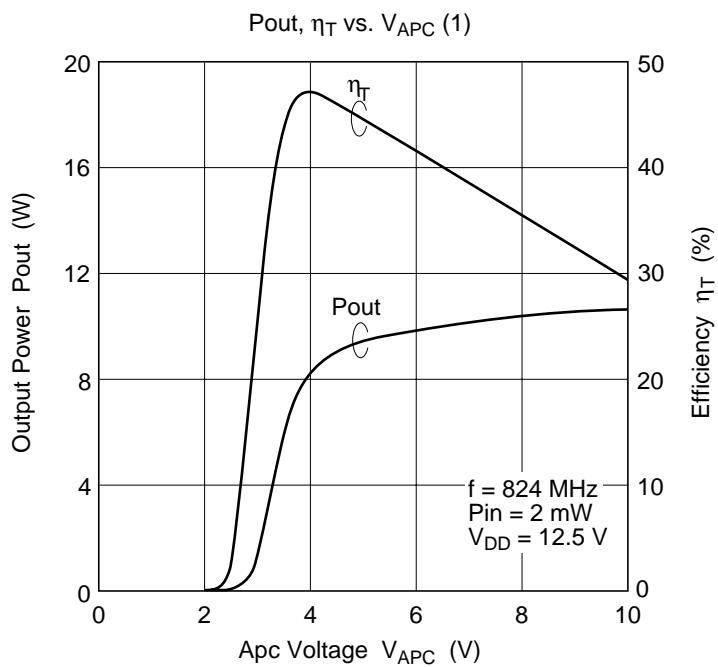


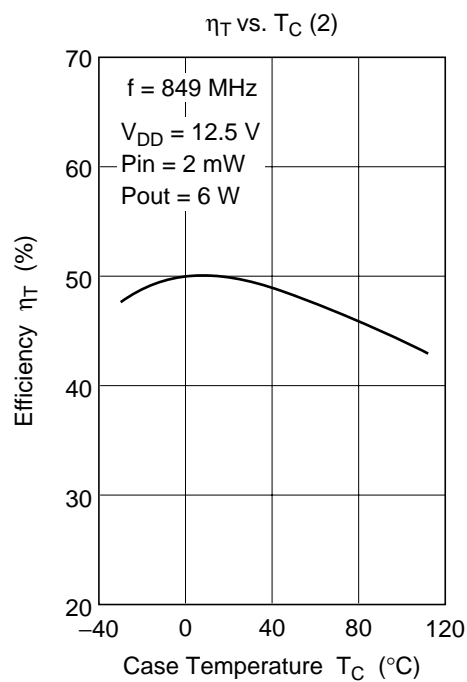
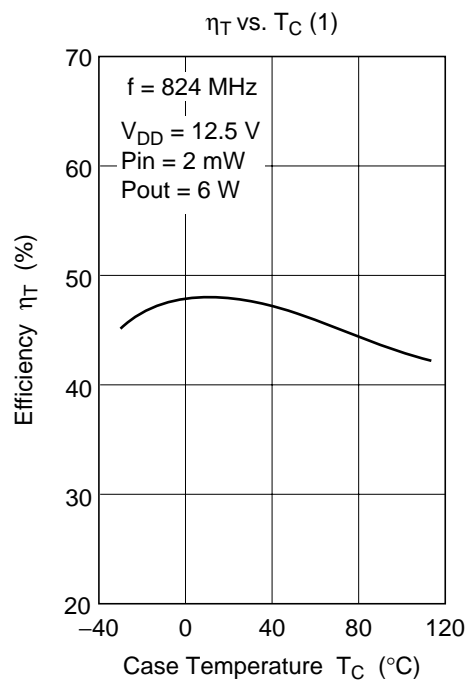
PF0030 (cont)



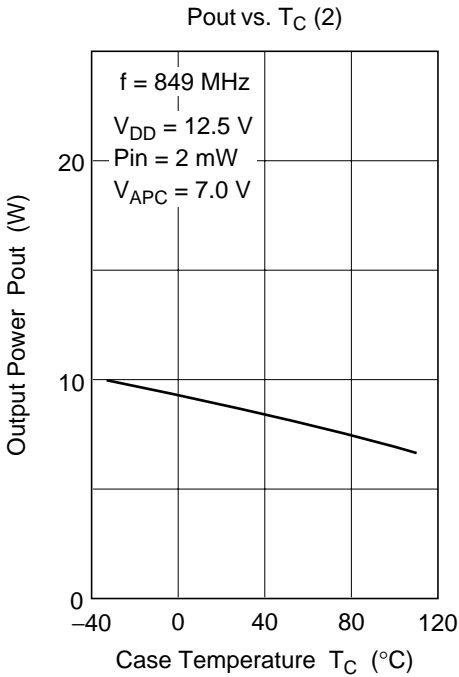
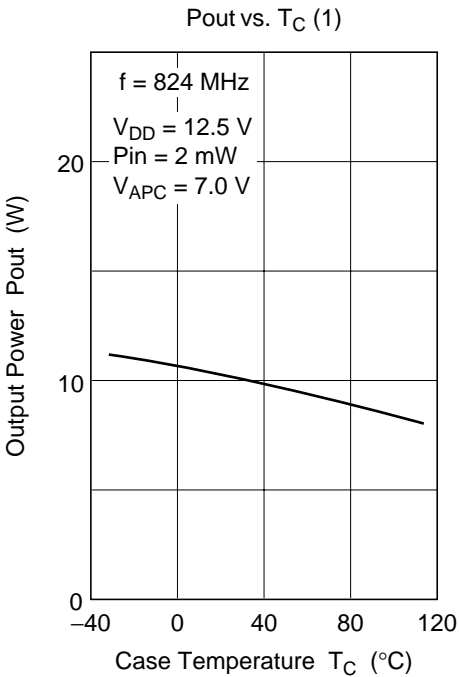


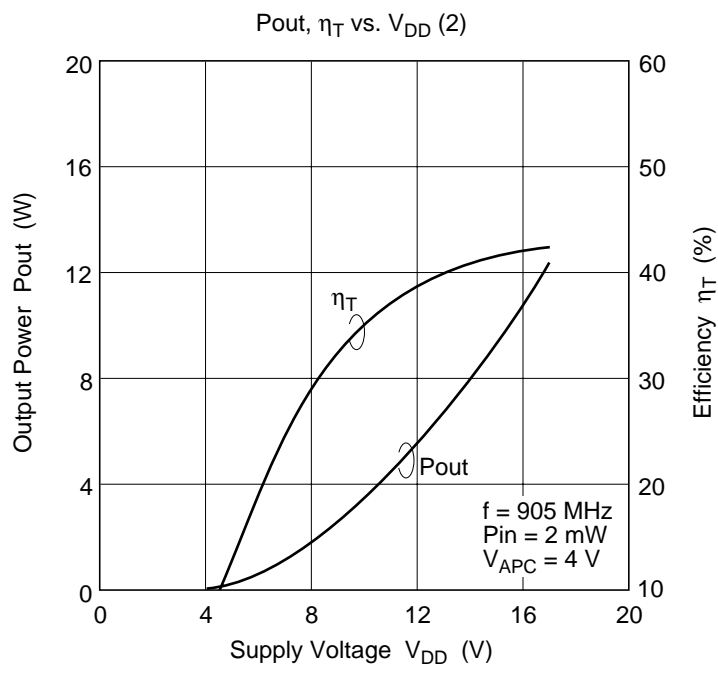
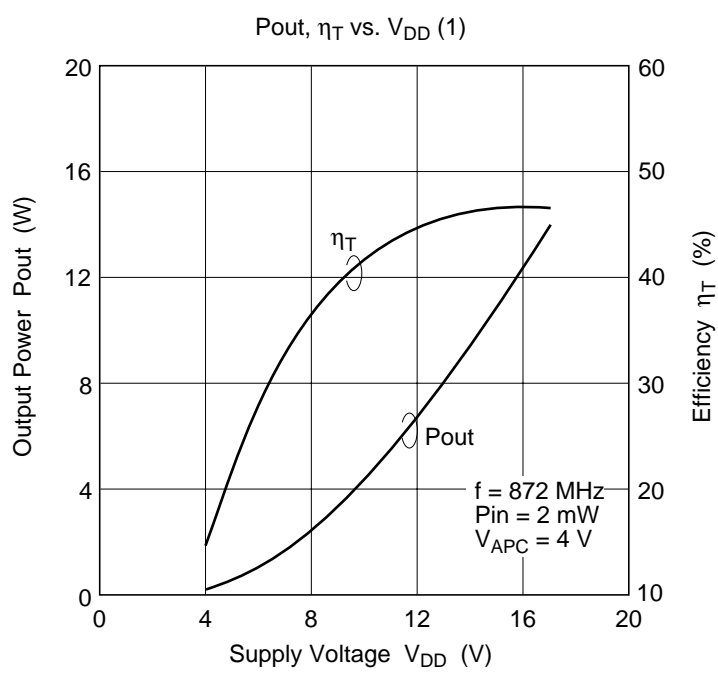
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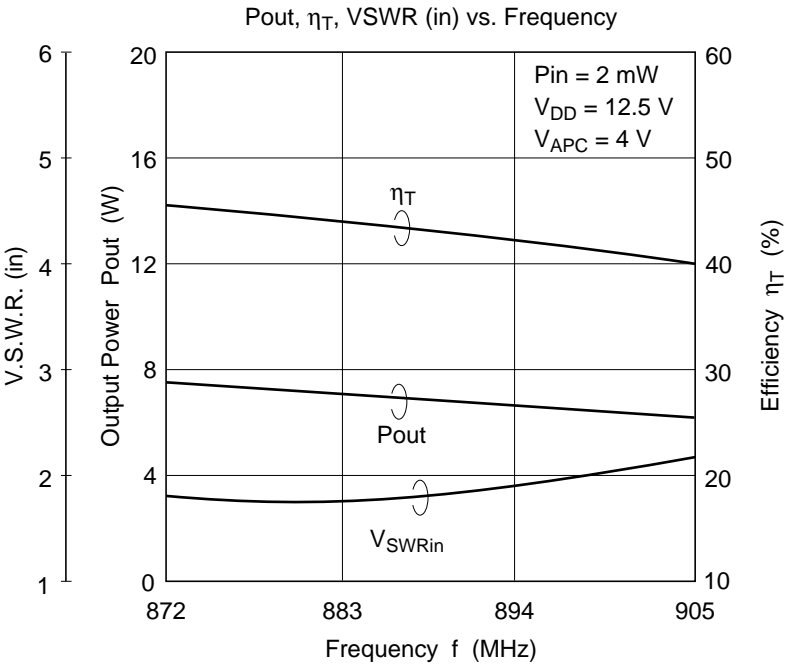
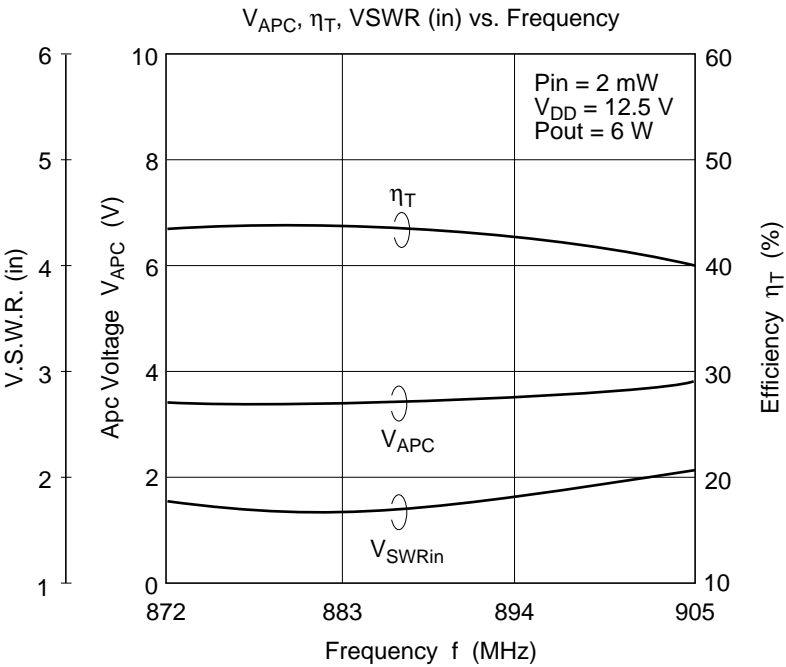


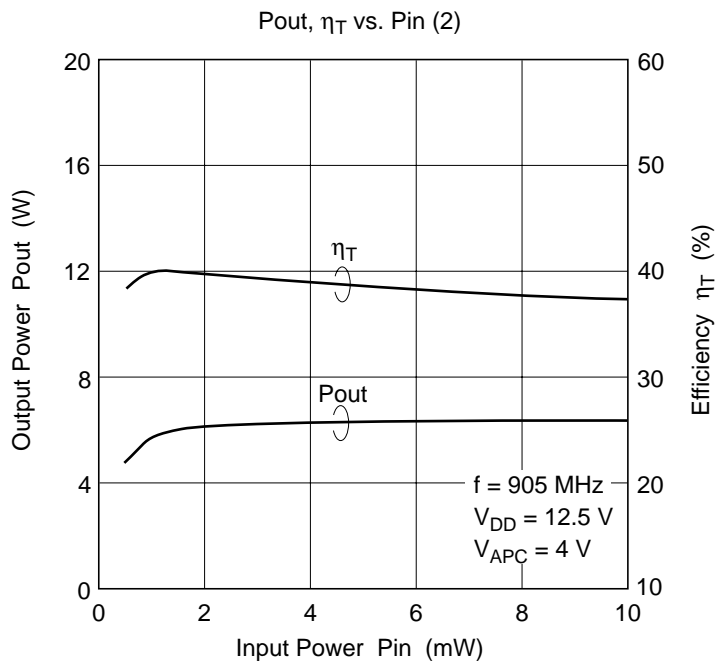
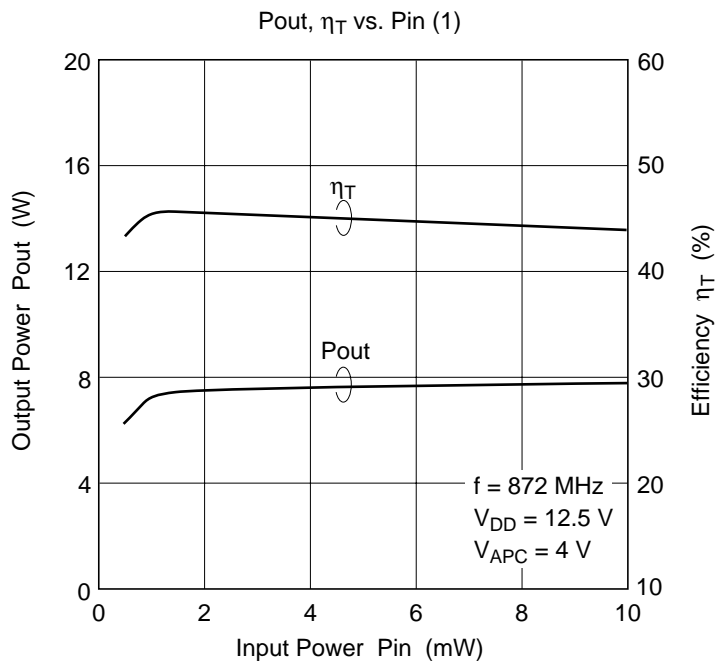
PF0030 (cont)



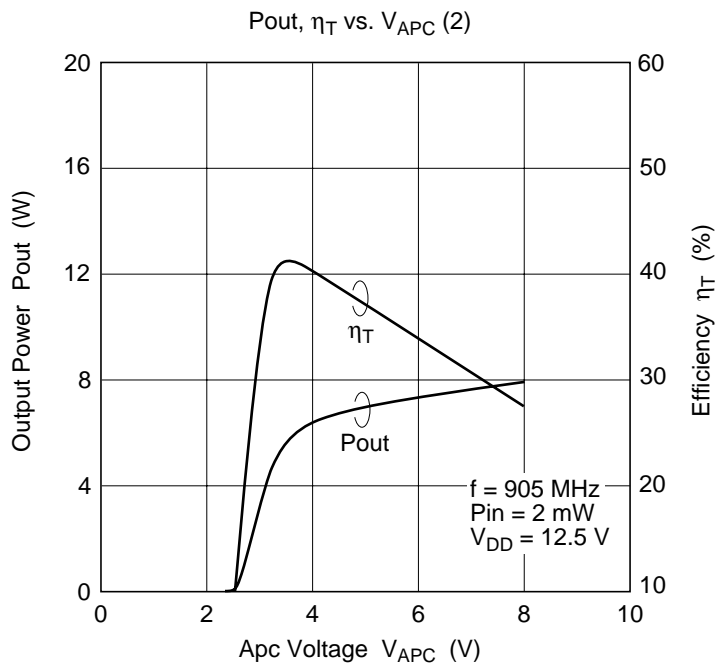
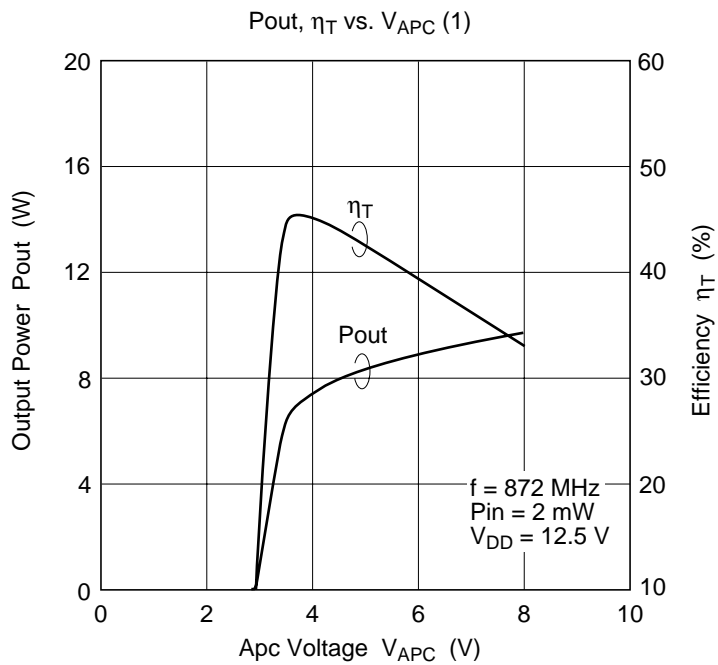


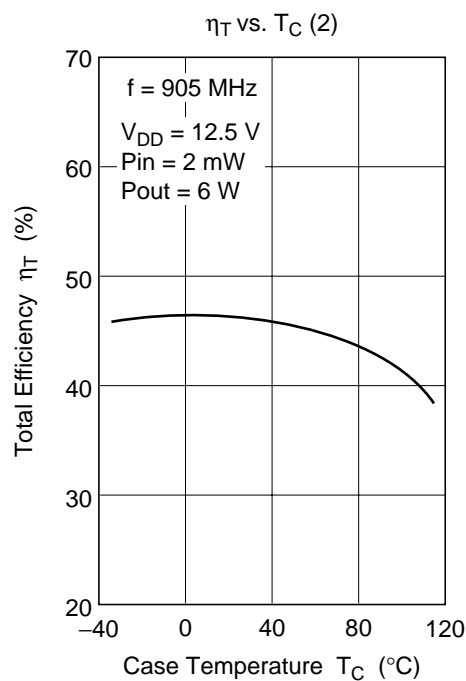
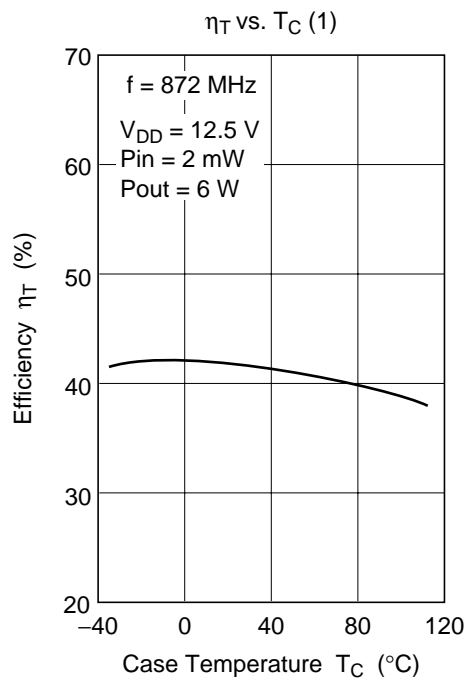
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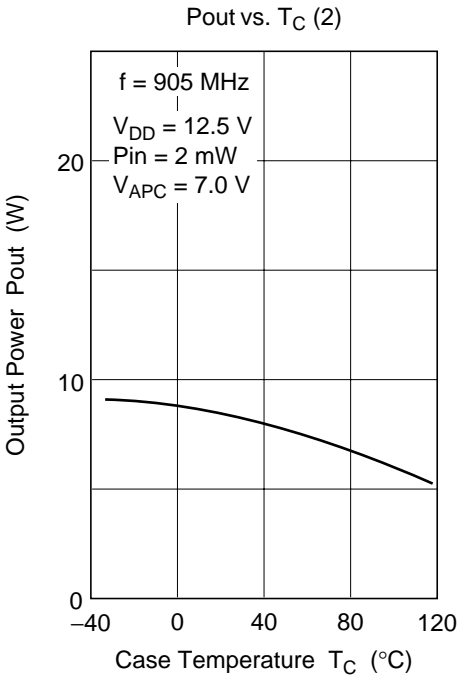
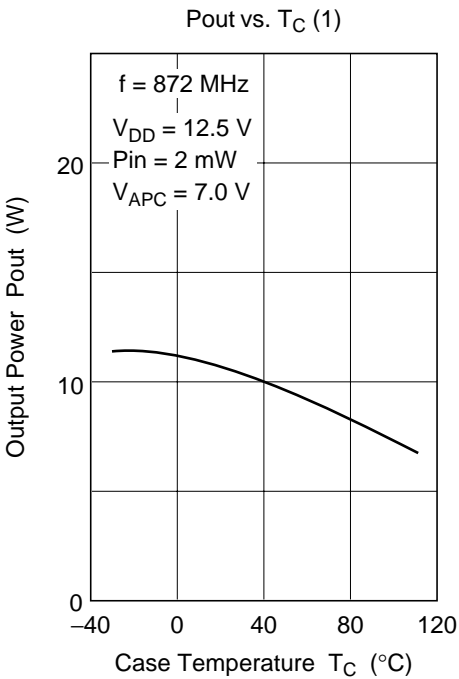


PF0032 (cont)



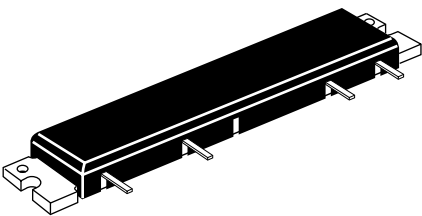
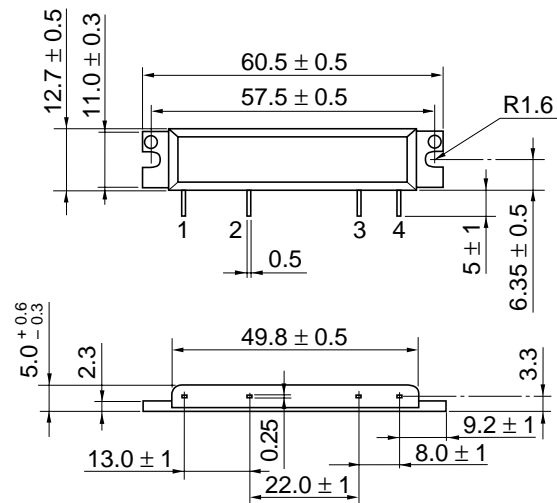


PF0032 (cont)



Package Dimensions

Unit: mm



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

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