

# PF0030 Series

## MOS FET Power Amplifier

# HITACHI

ADE-208-460 (Z)  
1st Edition  
July 1996

### Features

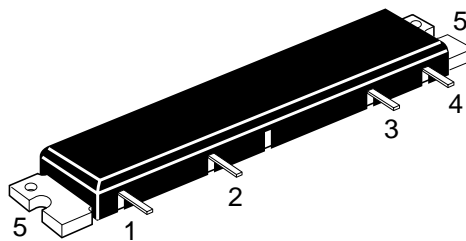
- High stability: Load VSWR = 20 : 1
- Low power control current: 400  $\mu$ A
- Thin package: 5 mm

### Ordering Information

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

### Pin Arrangement

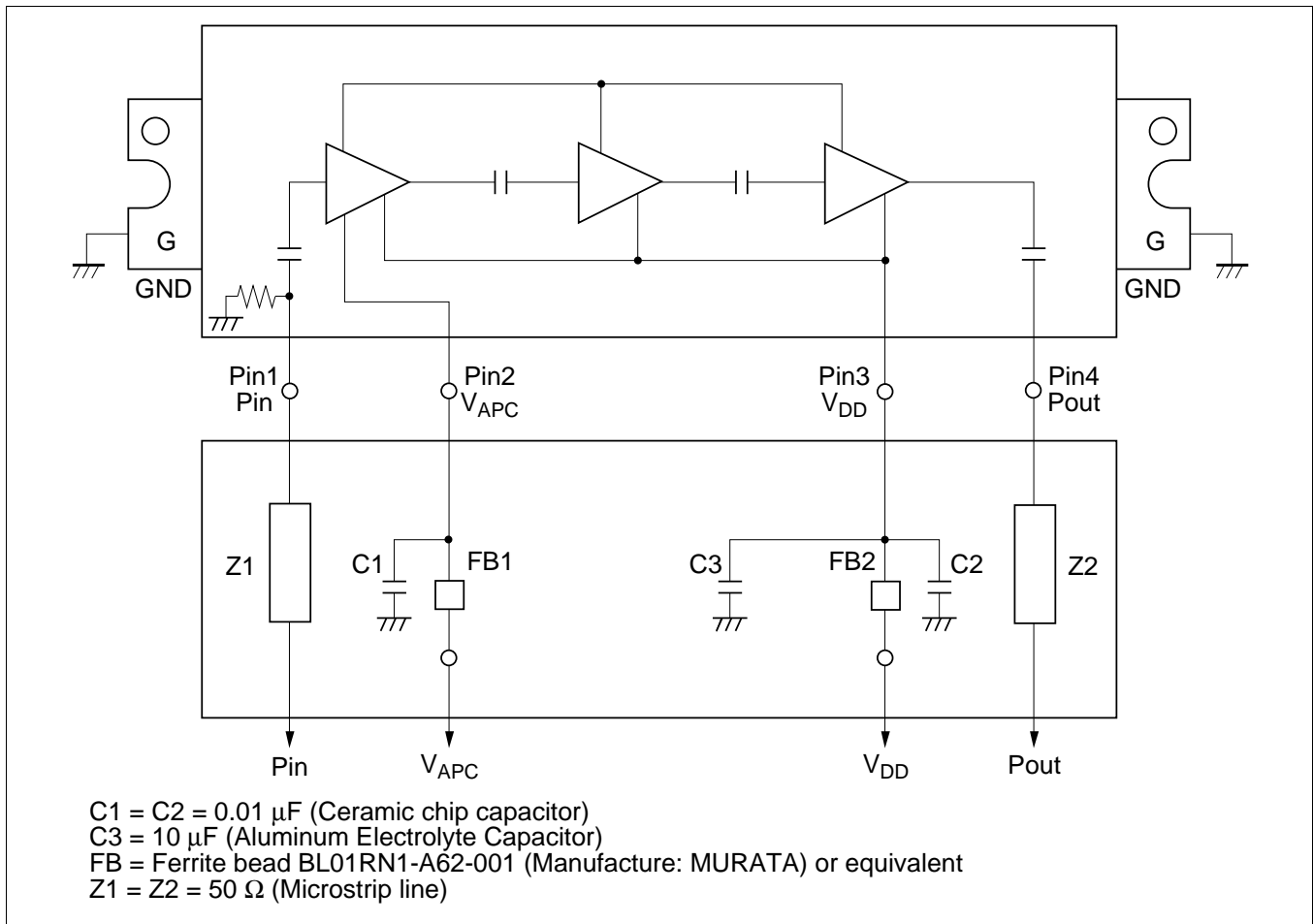
• RF-B2



- 1: Pin
- 2: V<sub>APC</sub>
- 3: V<sub>DD</sub>
- 4: P<sub>out</sub>
- 5: GND

# PF0030 Series

## Internal Diagram and External Circuit



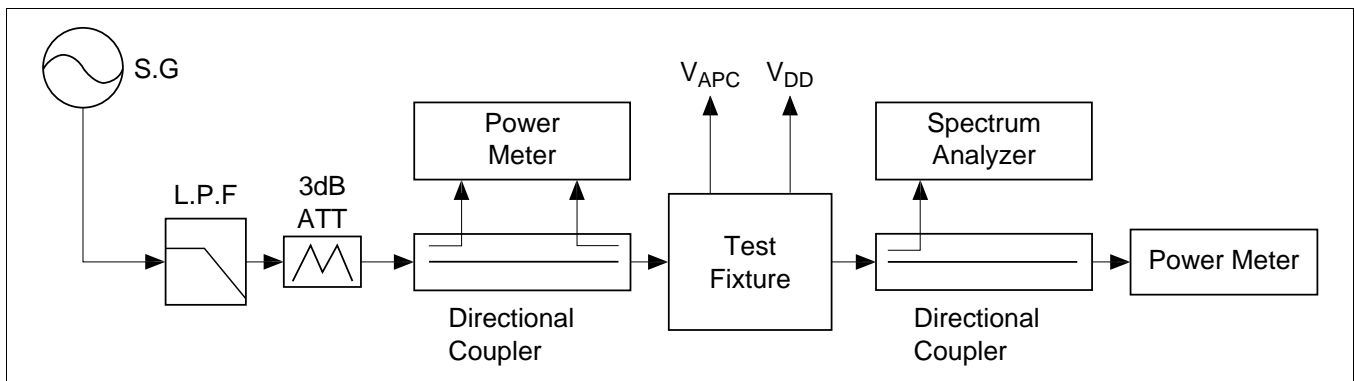
### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Rating	Unit
Supply voltage	$V_{DD}$	17	V
Supply current	$I_{DD}$	3	A
APC voltage	$V_{APC}$	$\pm 8$	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** ( $T_a = 25^\circ\text{C}$ )

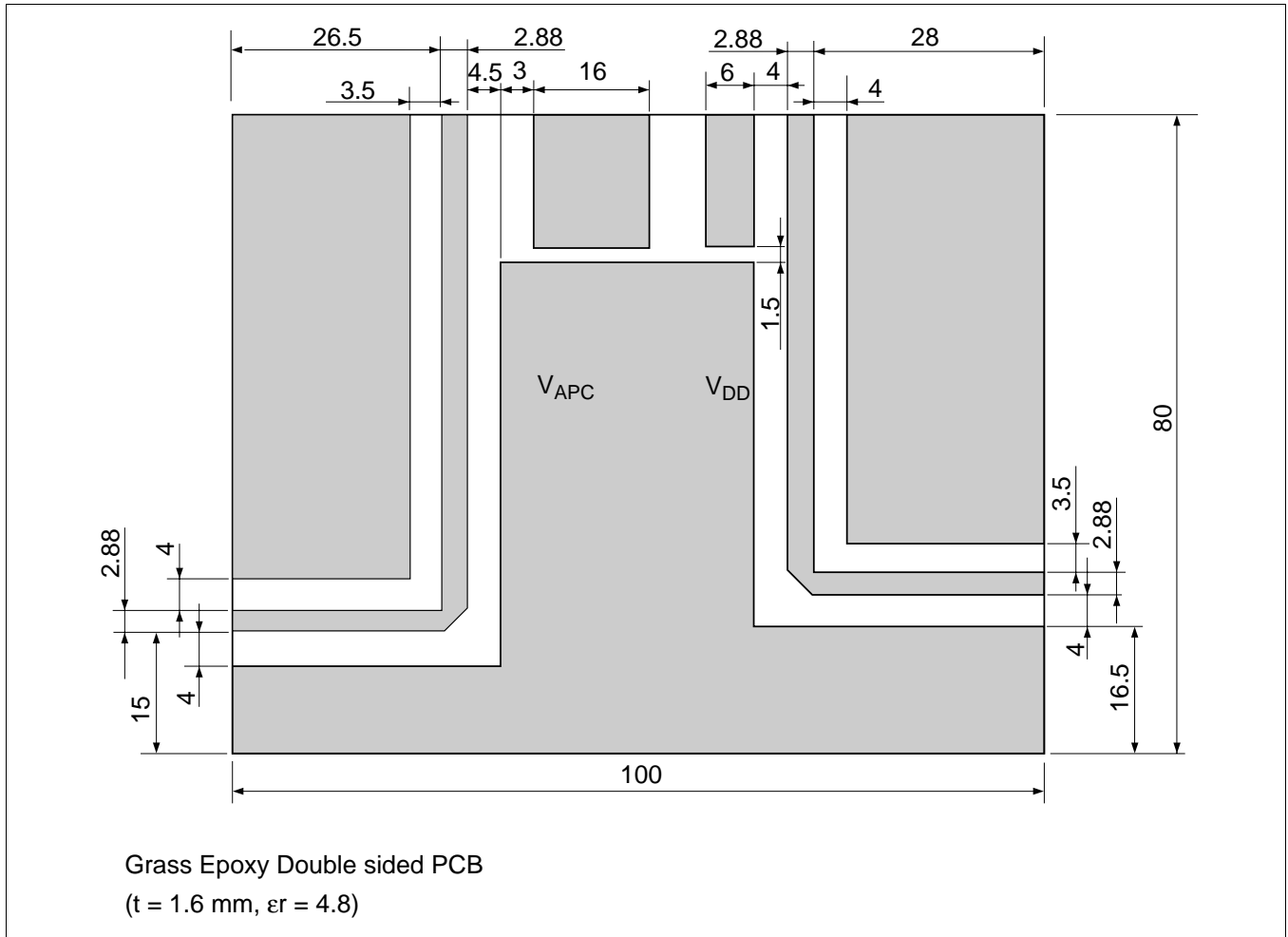
Item	Symbol	Min	Typ	Max	Unit	Test Condition
Drain cutoff current	$I_{DS}$	—	—	500	$\mu\text{A}$	$V_{DD} = 17\text{ V}$ , $V_{APC} = 0\text{ V}$
Total efficiency	$\eta_T$	35	40	—	%	$P_{in} = 2\text{ mW}$ ,
2nd harmonic distortion	2nd H.D.	—	-50	-30	dB	$V_{DD} = 12.5\text{ V}$ ,
3rd harmonic distortion	3rd H.D.	—	-50	-30	dB	$P_{out} = 6\text{ W}$ (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			—	$P_{in} = 2\text{ mW}$ , $V_{DD} = 12.5\text{ V}$ , $P_{out} = 6\text{ W}$ (at APC controlled), $Z_{in} = 50\ \Omega$ , Output VSWR = 20:1 All phases, $t = 20\text{ sec}$

**Test System Diagram**



**Test Fixture Pattern**

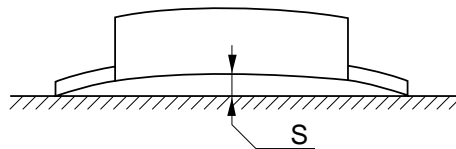
Unit: mm



**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



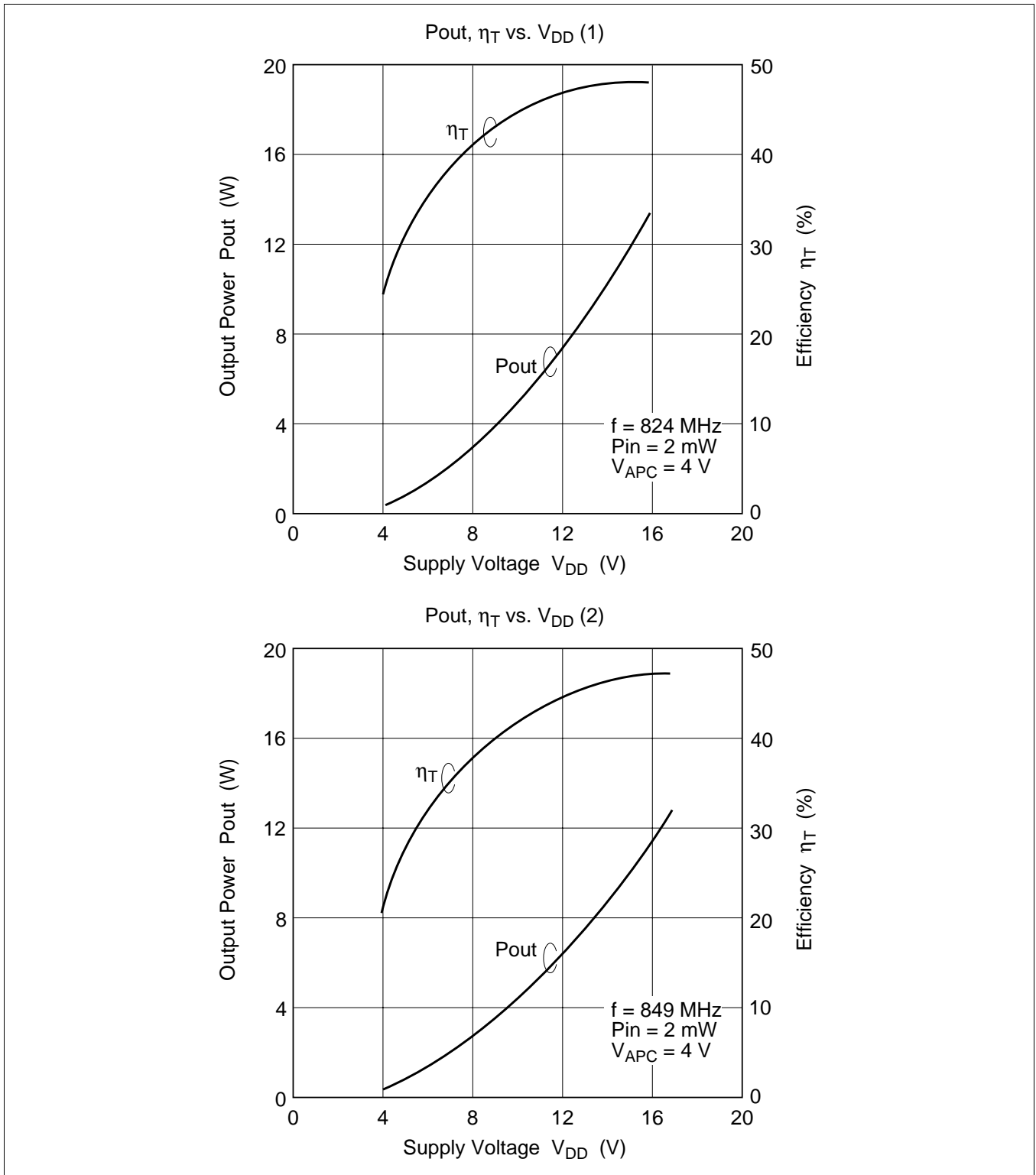
S = 0  
+0.3/-0 mm

## Note for Use

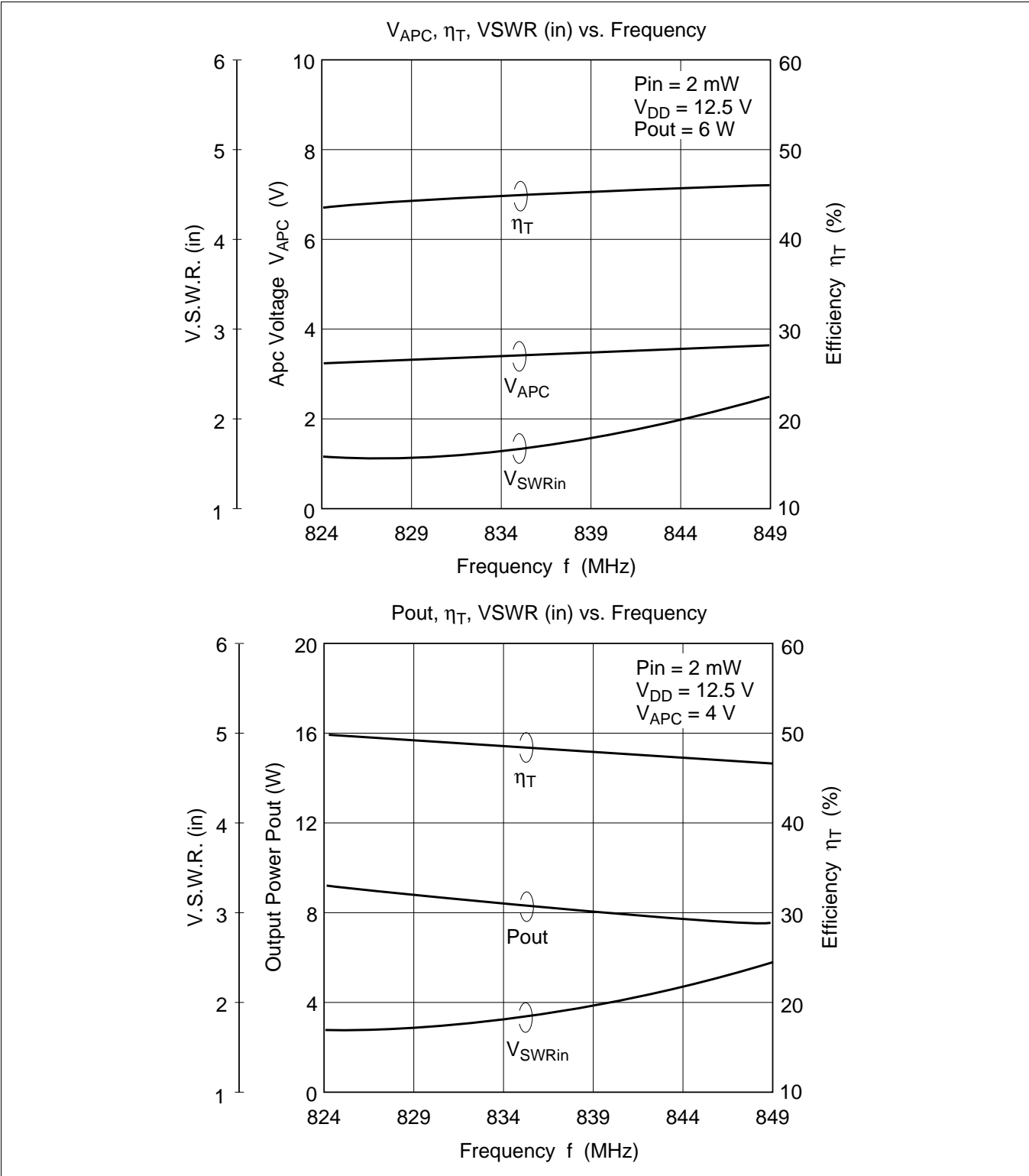
- Unevenness and distortion at the surface of the heatsink attached module should be less than 0.05 mm.
- It should not be existed any dust between module and heatsink.
- MODULE should be separated from PCB less than 1.5 mm.
- Soldering temperature and soldering time should be less than 230°C, 10 sec.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

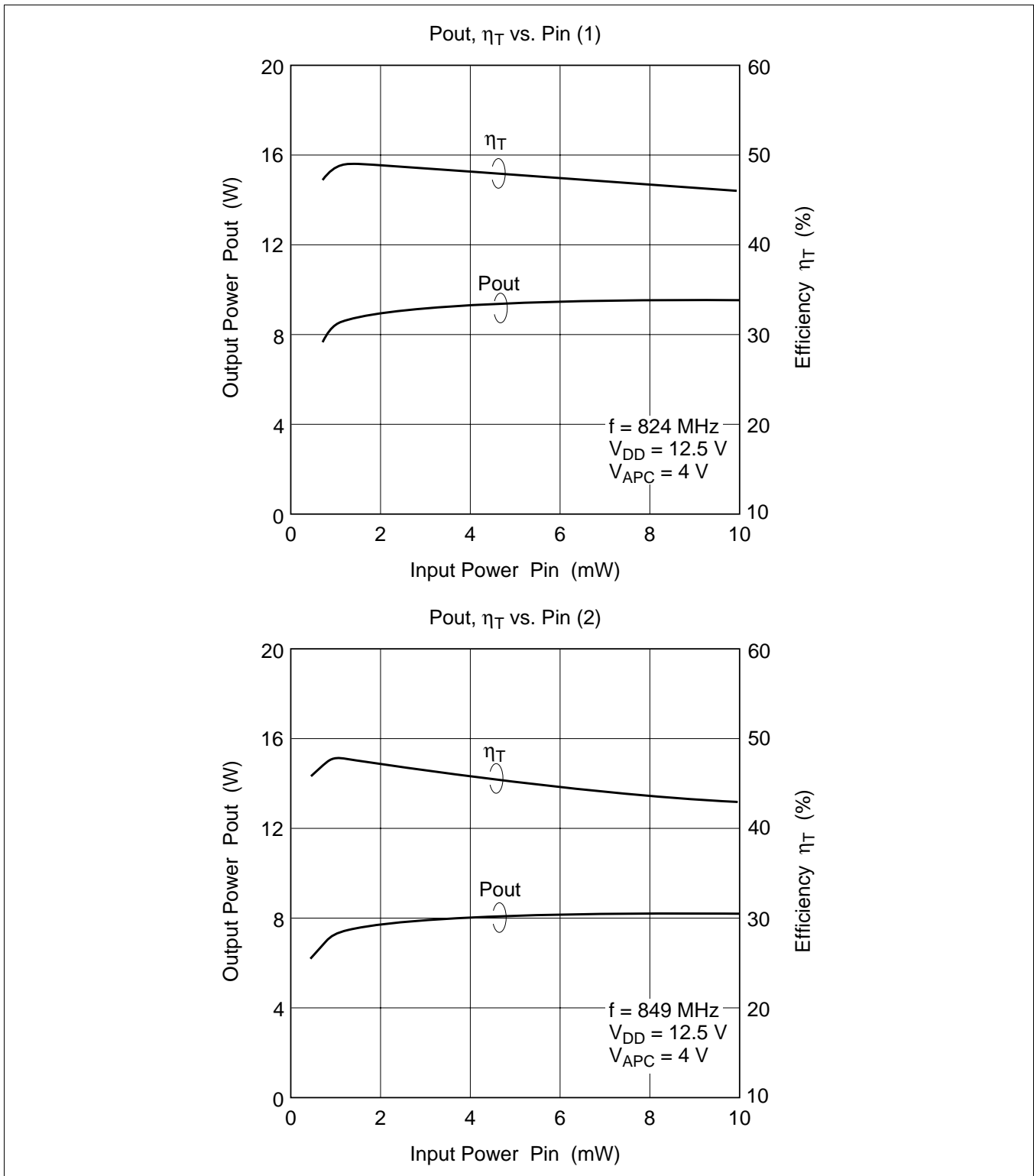
Characteristics Curve

PF0030



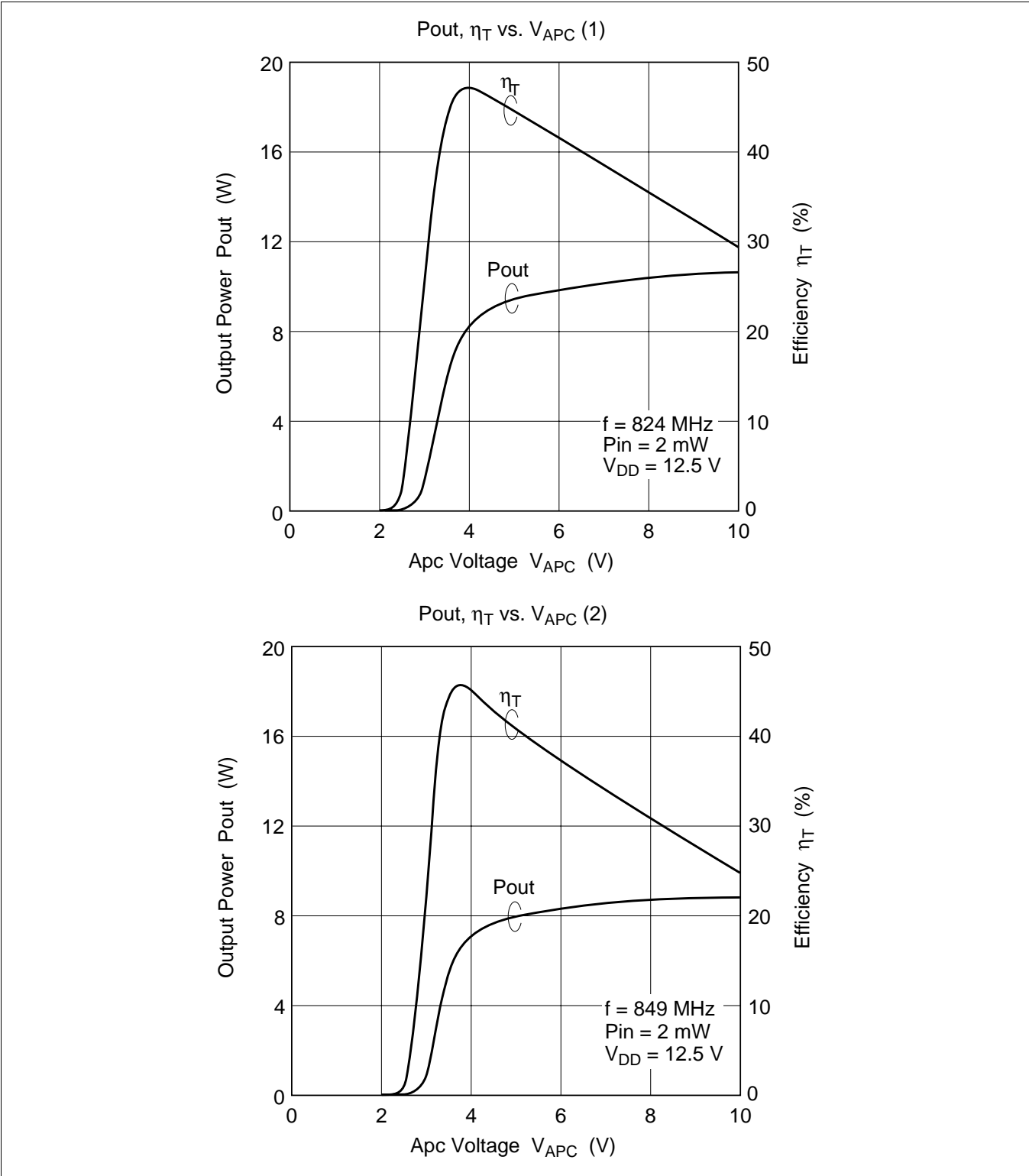
PF0030 (cont)

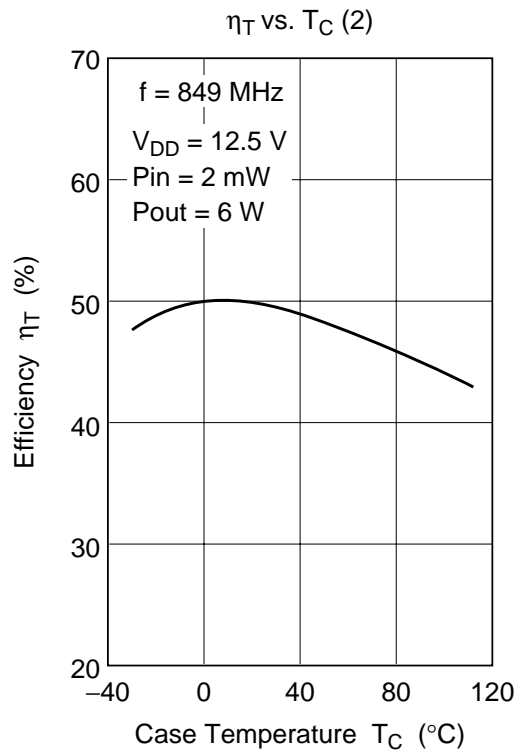
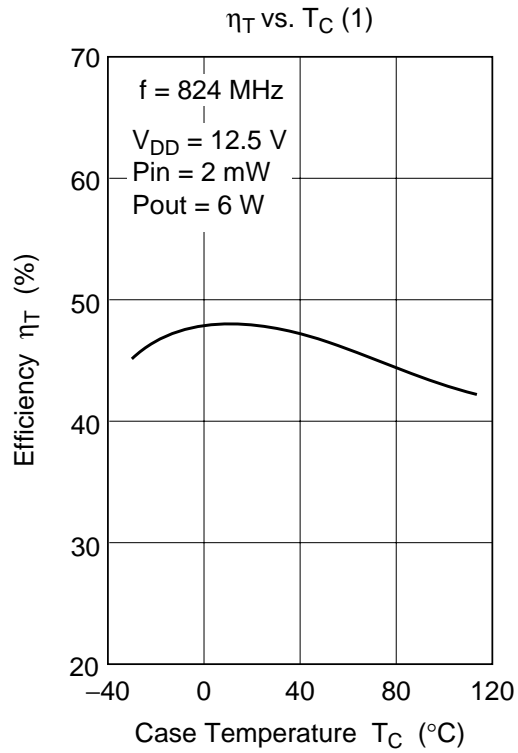




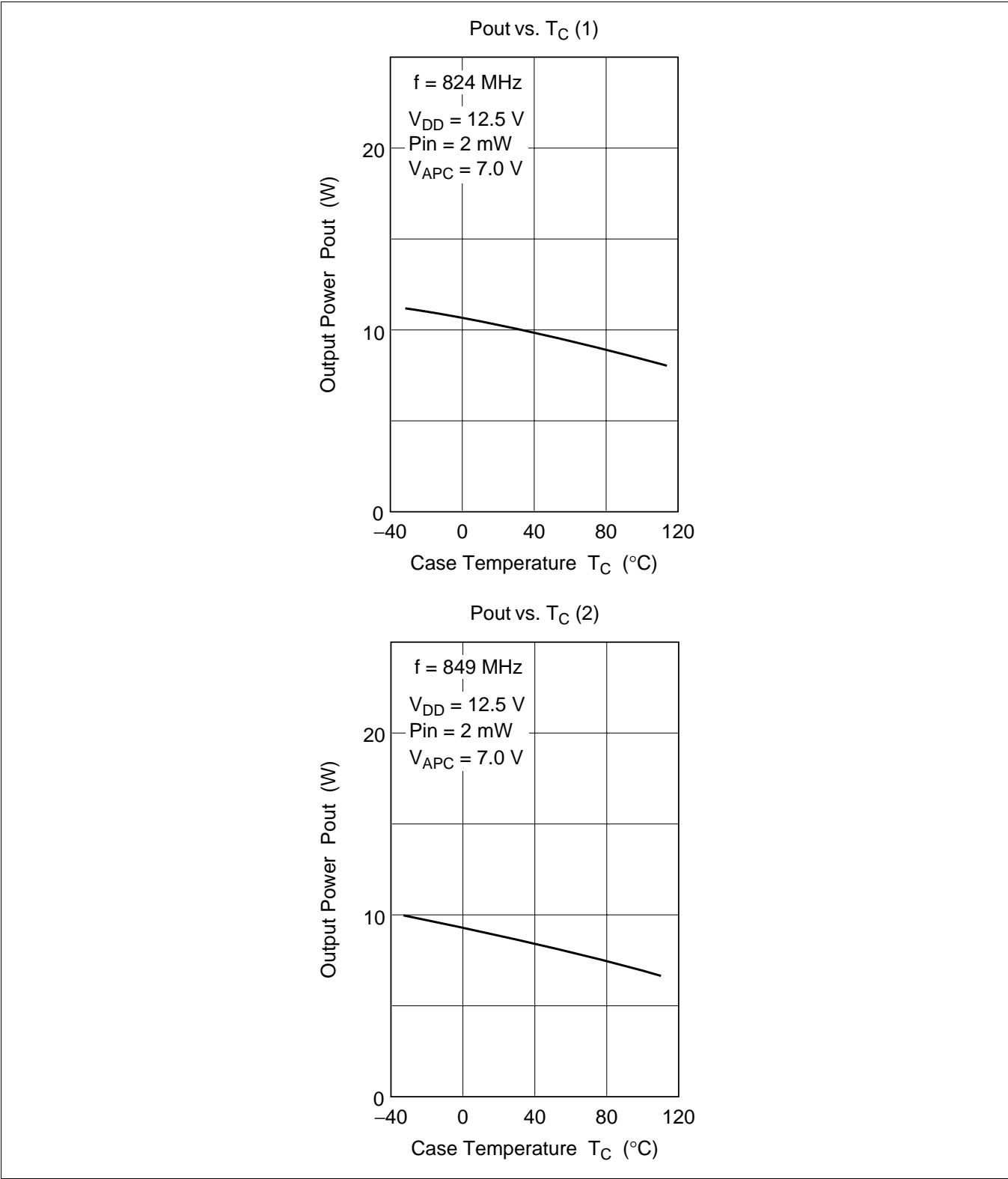


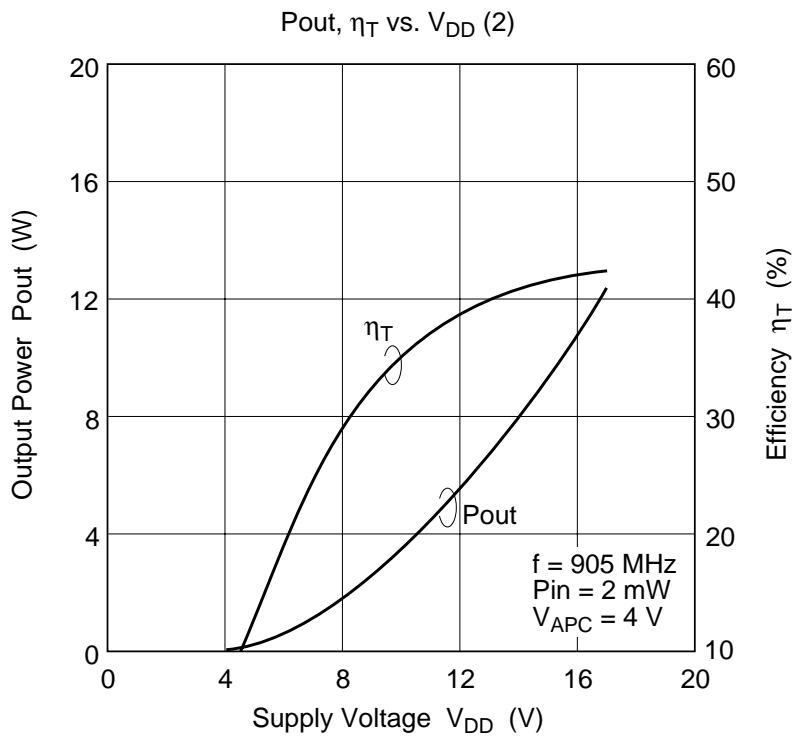
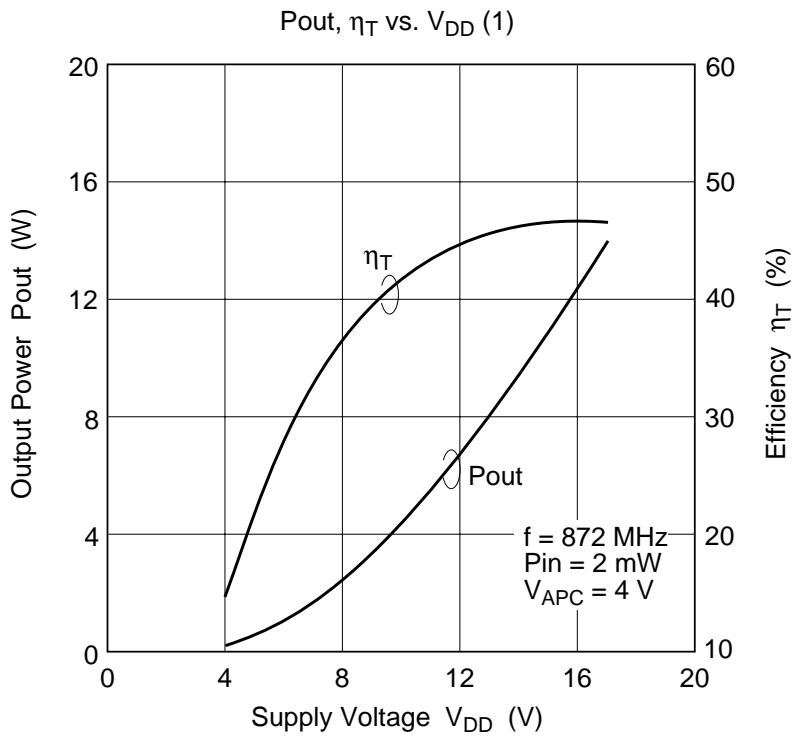
PF0030 (cont)



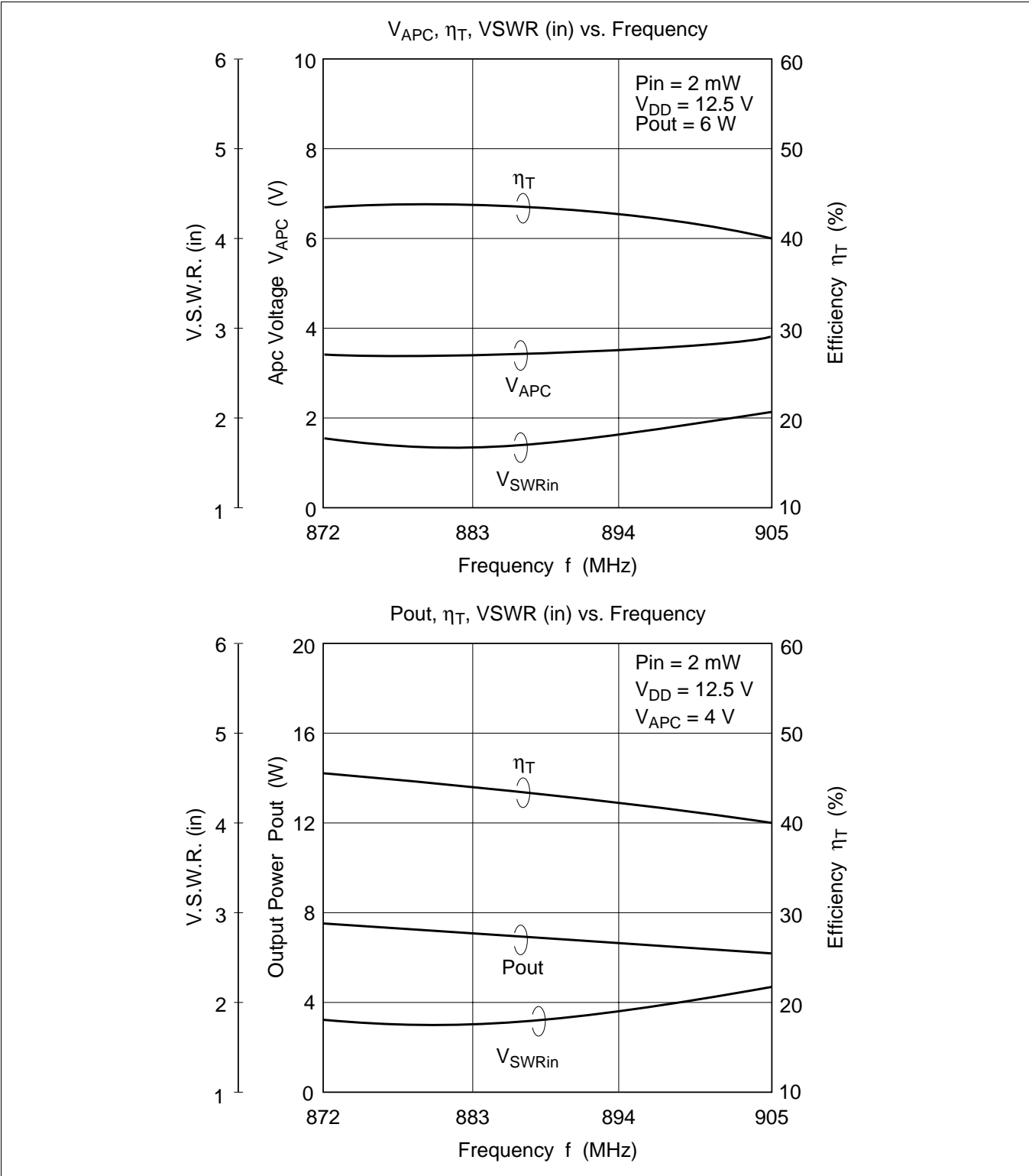


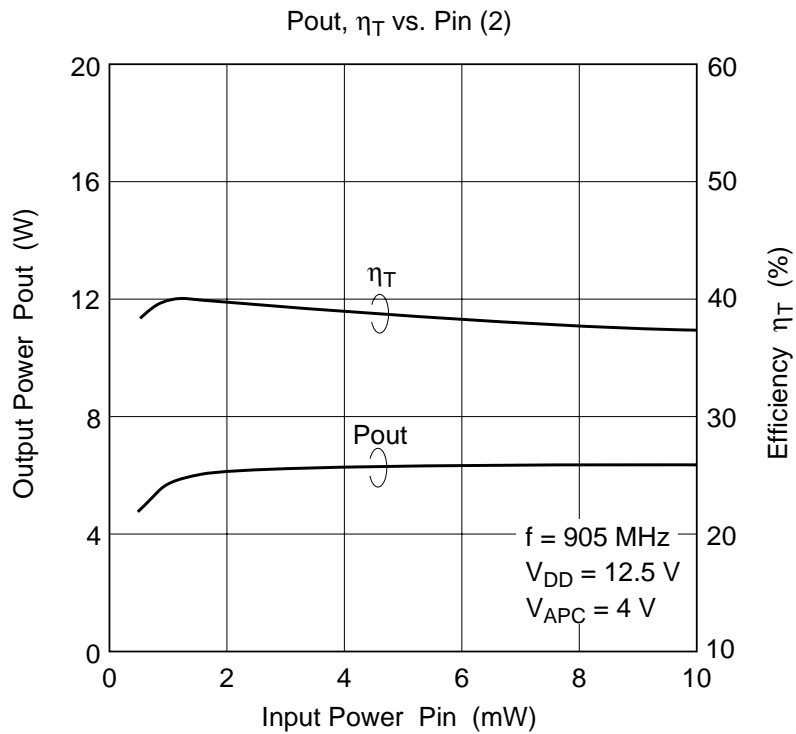
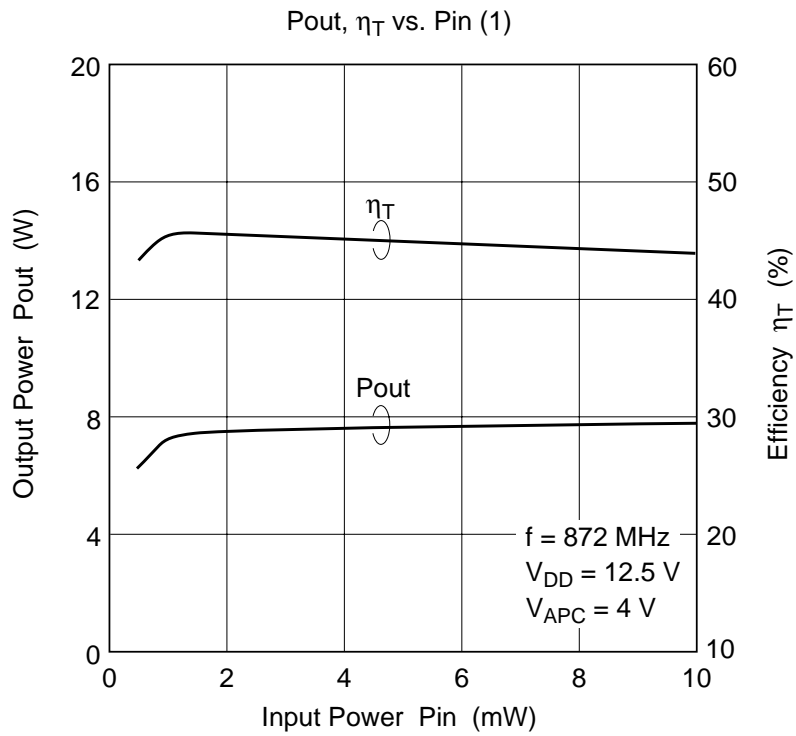
PF0030 (cont)



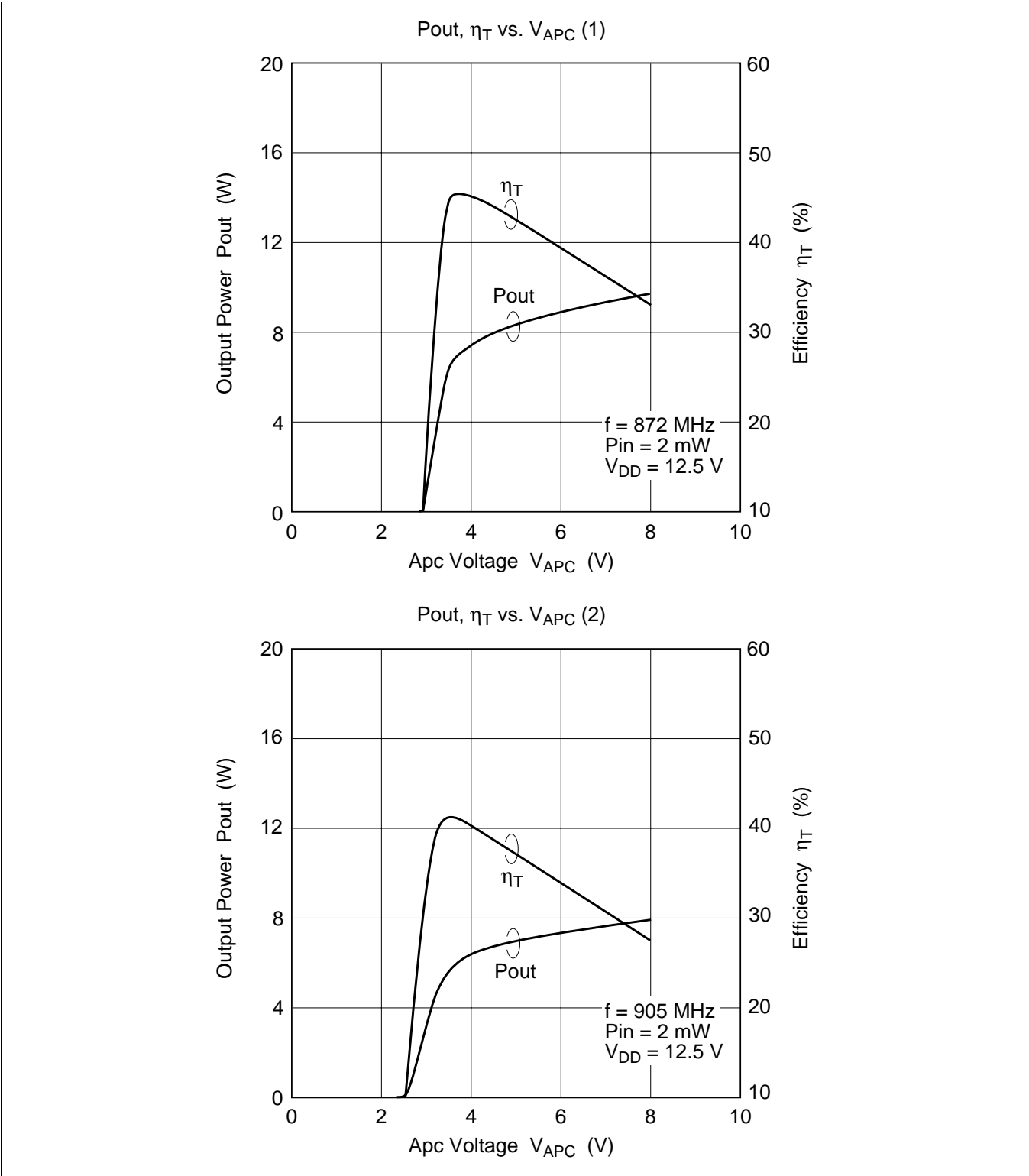


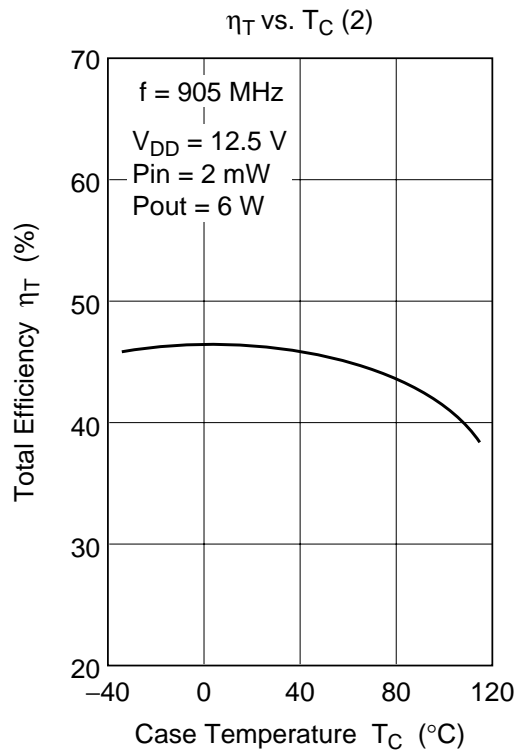
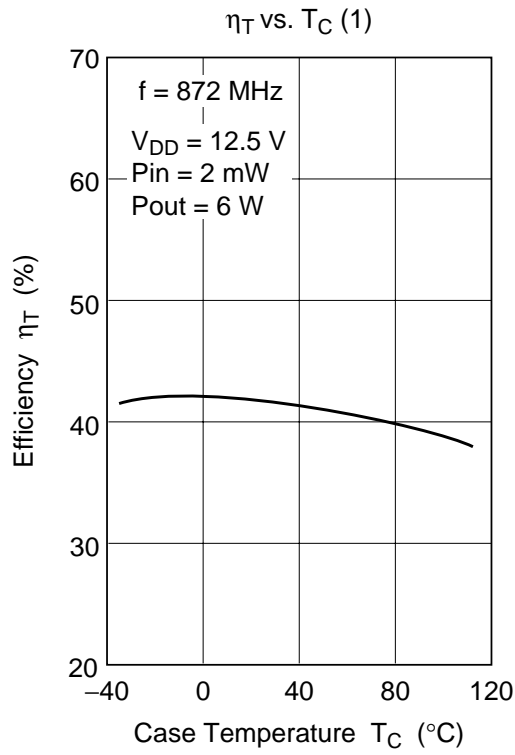
PF0032 (cont)





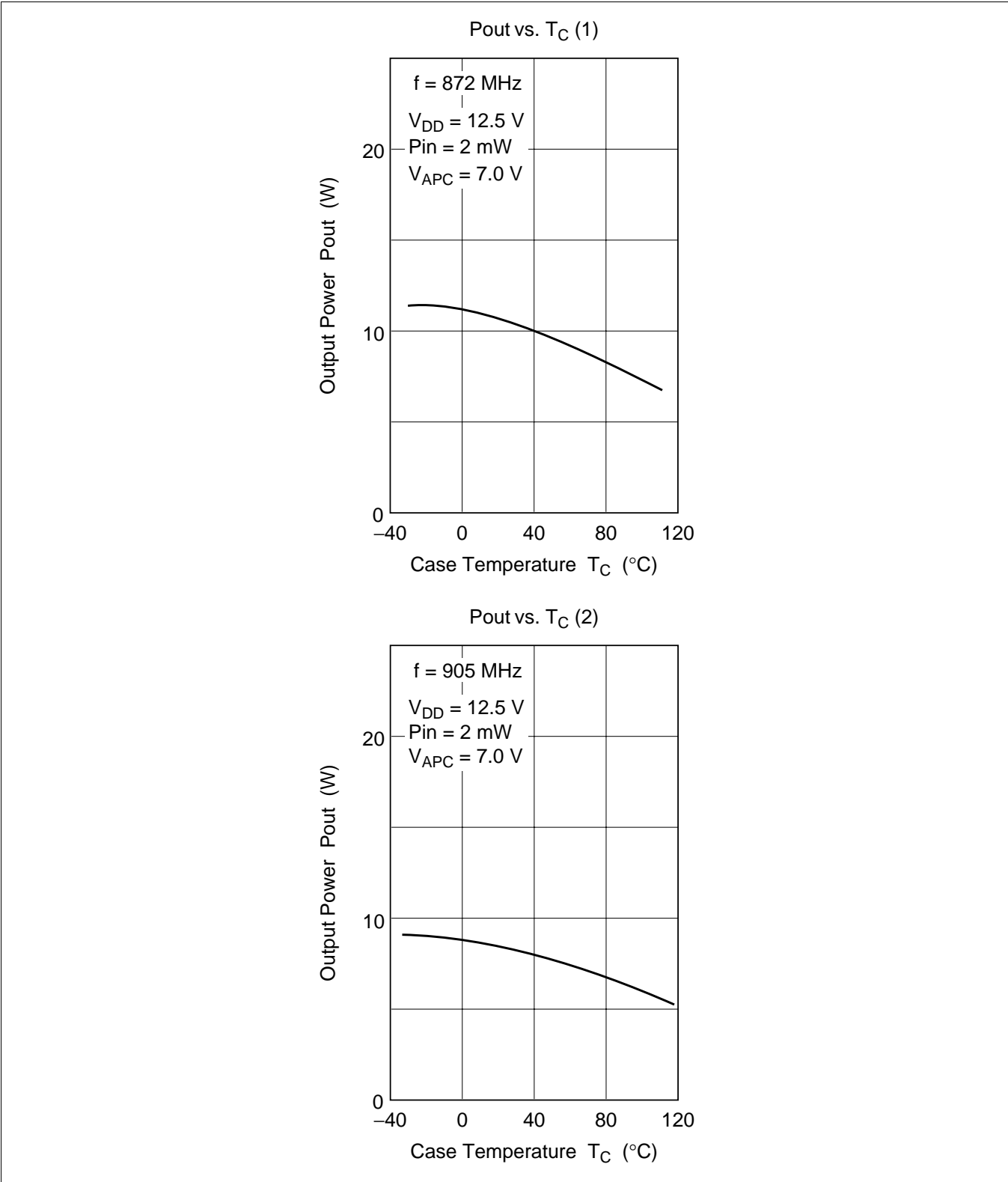
PF0032 (cont)







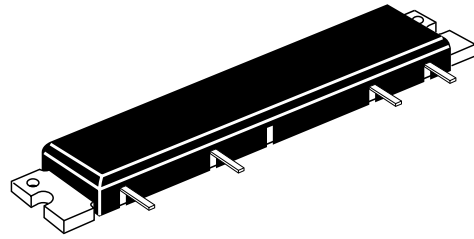
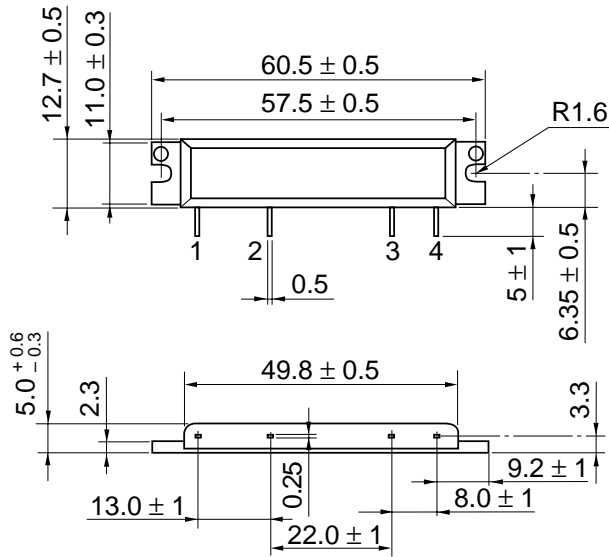
PF0032 (cont)



# PF0030 Series

## Package Dimensions

Unit: mm



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

## Cautions

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