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# PF0210

MOS FET Power Amplifier Module for ADC Mobile Phone

# HITACHI

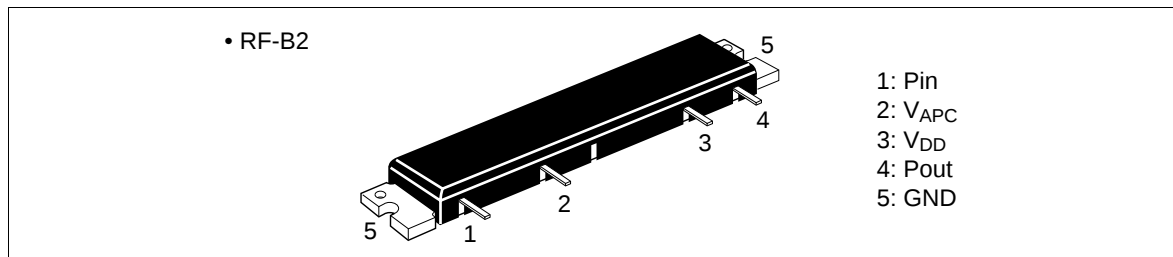
ADE-208-102E (Z)  
Preliminary 6th. Edition  
July 1996

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## Features

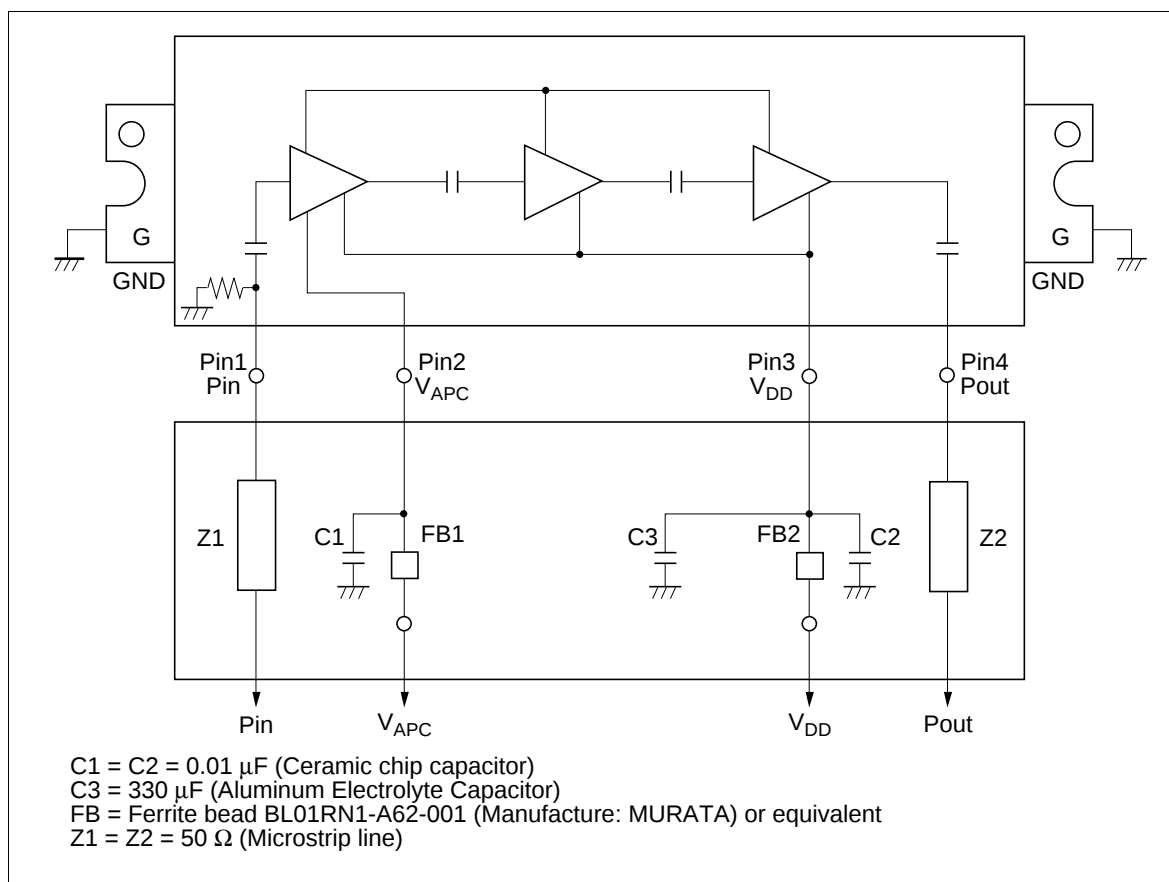
- High efficiency: 34% Typ for CW  
30% Typ for  $\pi/4$ -DQPSK
- Low input power: 0 dBm ave. Typ for  $\pi/4$ -DQPSK
- Simple bias circuit
- High speed switching: 8  $\mu$ s Typ

## Pin Arrangement



## PF0210

### Internal Diagram and External Circuit



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

| Item                       | Symbol           | Rating      | Unit             |
|----------------------------|------------------|-------------|------------------|
| Supply voltage             | VDD              | 17          | V                |
| Supply current             | IDD              | 4           | A                |
| VAPC voltage               | VAPC             | 5.5         | V                |
| Input power                | Pin              | 20          | mW               |
| Operating case temperature | $T_c$ (op)       | -30 to +100 | $^\circ\text{C}$ |
| Storage temperature        | $T_{\text{stg}}$ | -40 to +110 | $^\circ\text{C}$ |

## Electrical Characteristics (T<sub>c</sub> = 25°C)

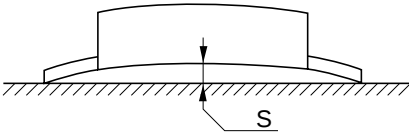
### Analog Transmission

| Item                    | Symbol    | Min                      | Typ | Max | Unit | Test Condition                                                             |
|-------------------------|-----------|--------------------------|-----|-----|------|----------------------------------------------------------------------------|
| Frequency               | f         | 824                      | —   | 849 | MHz  | —                                                                          |
| Drain cutoff current    | IDS       | —                        | —   | 500 | μA   | VDD = 17 V, VAPC = 0 V                                                     |
| Total efficiency(1)     | ηT(1)     | 30                       | 34  | —   | %    | Pin = 3 dBm, VDD = 12.5 V,                                                 |
| 2nd harmonic distortion | 2nd H.D.  | —                        | −50 | −30 | dBc  | Pout = 6 W (VAPC controlled),                                              |
| 3rd harmonic distortion | 3rd H.D.  | —                        | −60 | −40 | dBc  |                                                                            |
| Input VSWR              | VSWR (in) | —                        | 2   | 3   | —    |                                                                            |
| Output power            | Pout      | 6                        | 12  | —   | W    | Pin = 3 dBm, VDD = 12.5 V,<br>VAPC = 4 V                                   |
| Isolation               | —         | —                        | −50 | −40 | dBm  | Pin = 3dBm, VDD = 12.5 V,<br>VAPC = 0.5 V                                  |
| Stability               | —         | No parasitic oscillation |     |     | —    | Pin = 3 dBm, VDD = 12.5 V,<br>Pout ≤ 6 W,<br>Output VSWR = 20:1 All phases |

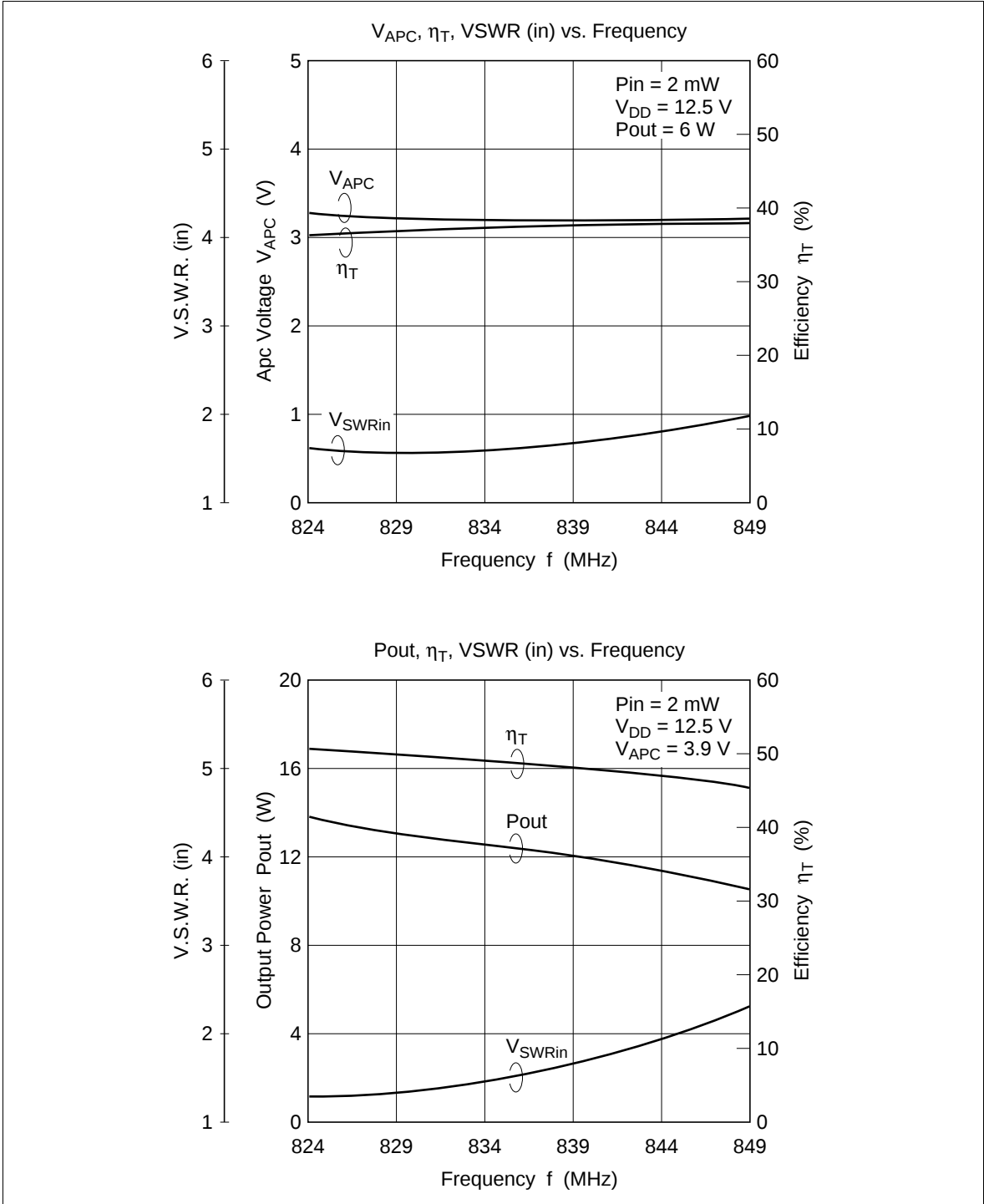
### Digital Transmission

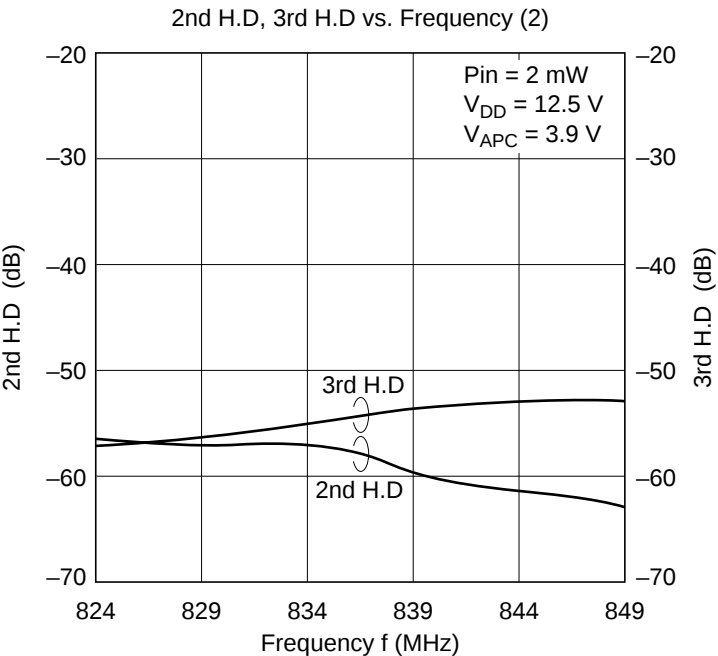
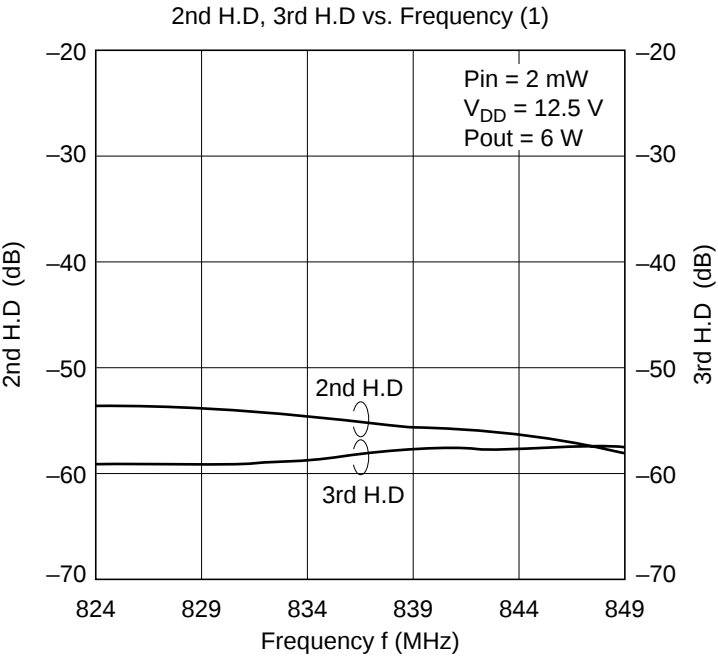
| Item                | Symbol        | Min | Typ | Max | Unit     | Test Condition                                             |
|---------------------|---------------|-----|-----|-----|----------|------------------------------------------------------------|
| Frequency           | f             | 824 | —   | 849 | MHz      | —                                                          |
| Total efficiency(2) | ηT(2)         | 25  | 30  | —   | %        | Pin controlled (π/4-DQPSK, √α =                            |
| Adjacent channel    | PADJ<br>(30k) | —   | −30 | −28 | dBc      | 0.35, 48.6 kbps),                                          |
| leakage power       | PADJ<br>(60k) | —   | −50 | −46 | dBc      | BW =24.3 kHz with Root Nyquist                             |
| Input power         | Pin           | —   | —   | 5   | dBm ave. | Filter,<br>Pout = 5.5 W ave., VDD = 12.5 V<br>VAPC = 3.9 V |

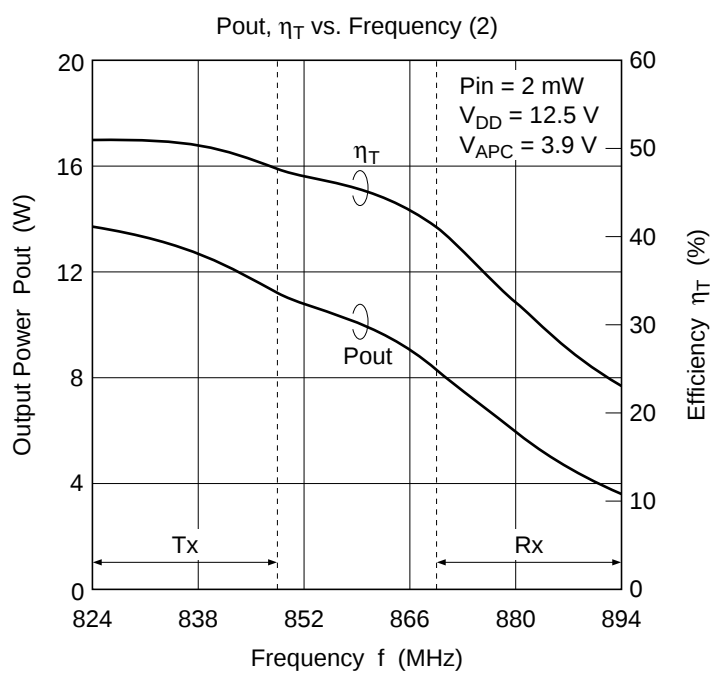
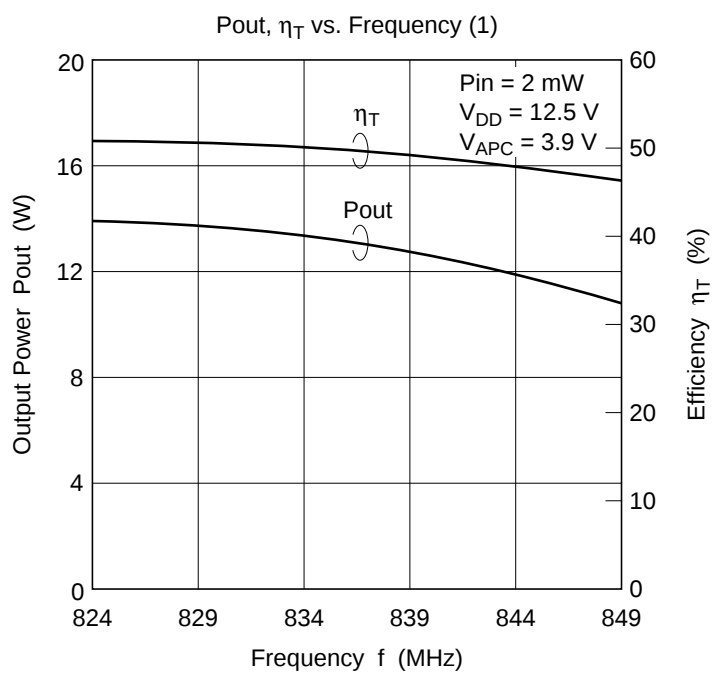
## Mechanical Characteristics

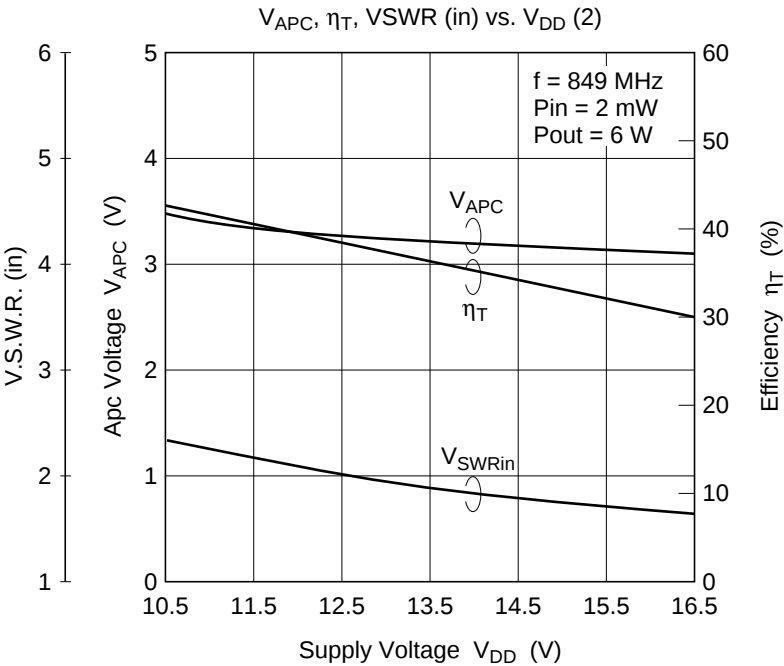
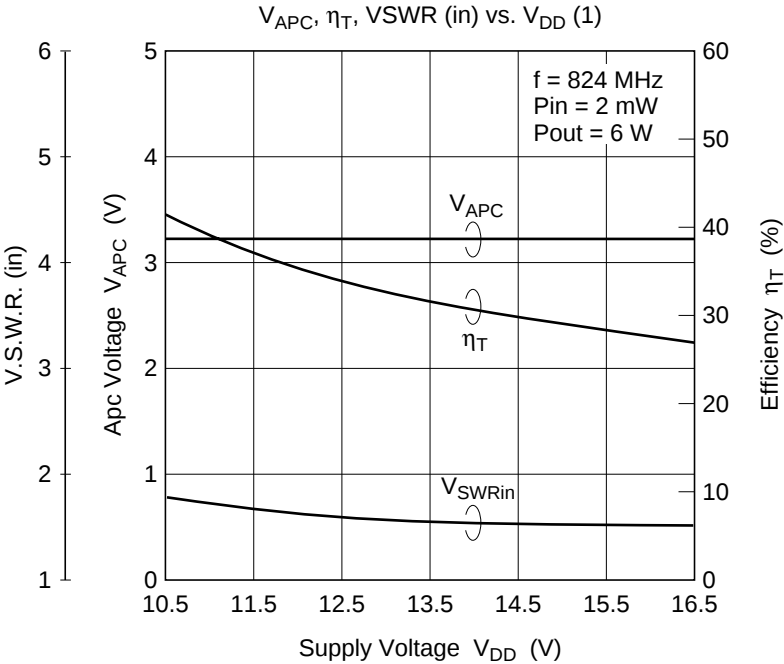
| Item                                    | Conditions                                                                           | Spec         |
|-----------------------------------------|--------------------------------------------------------------------------------------|--------------|
| Torque 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  |

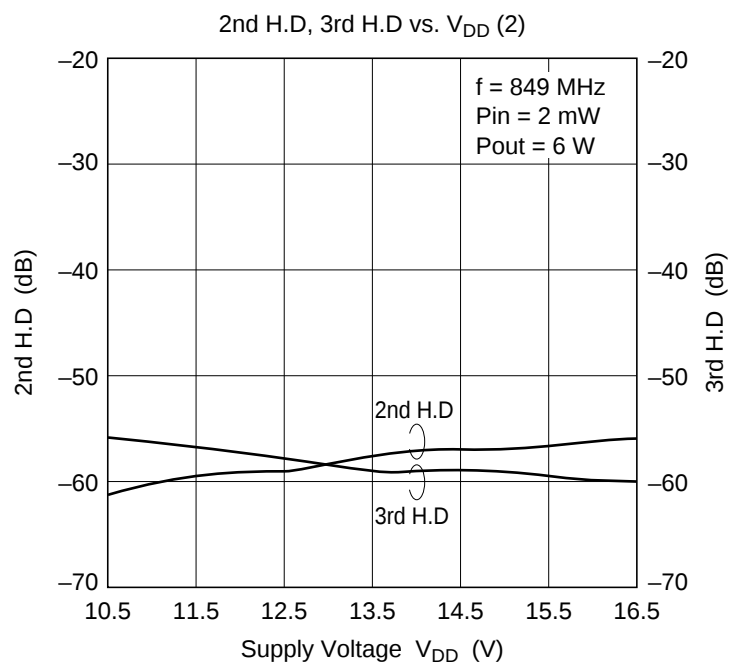
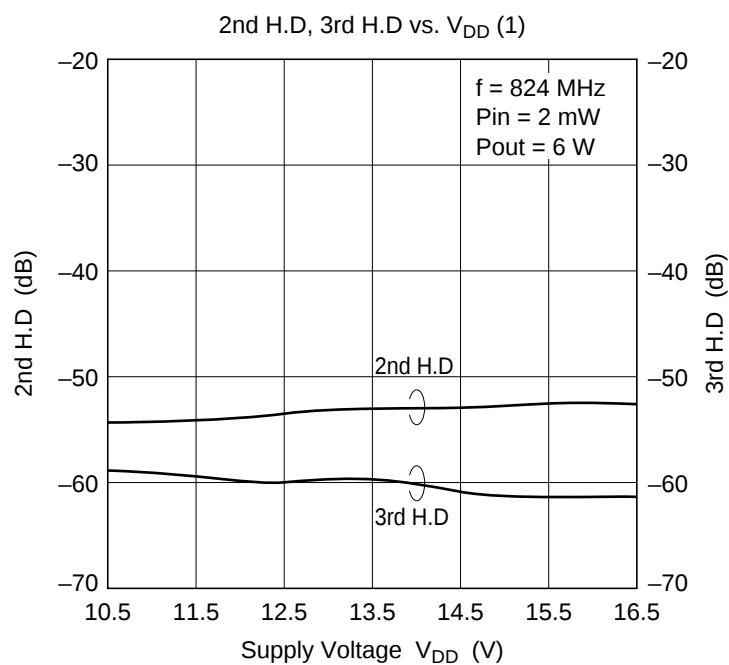
Characteristics Curve

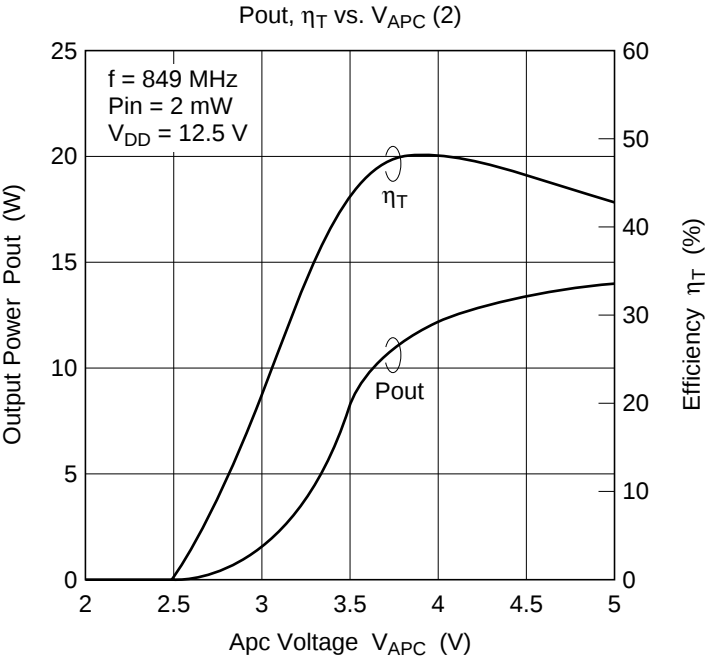
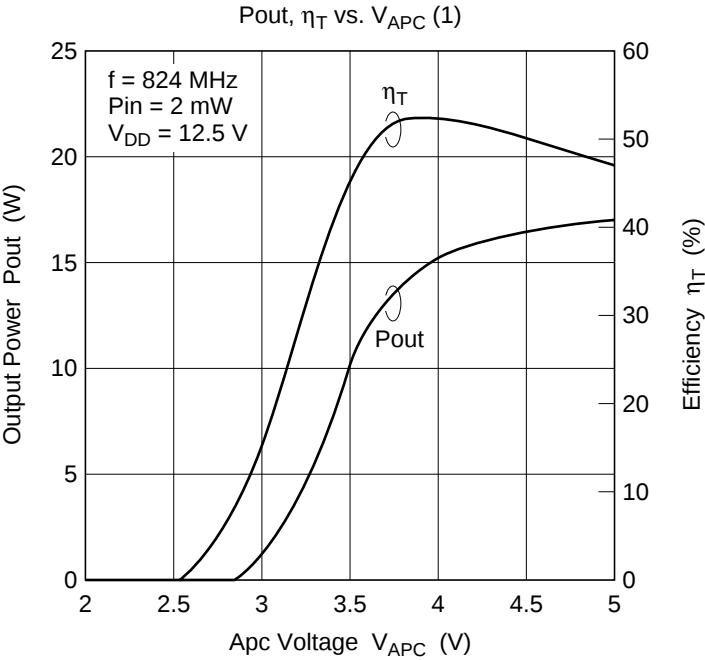


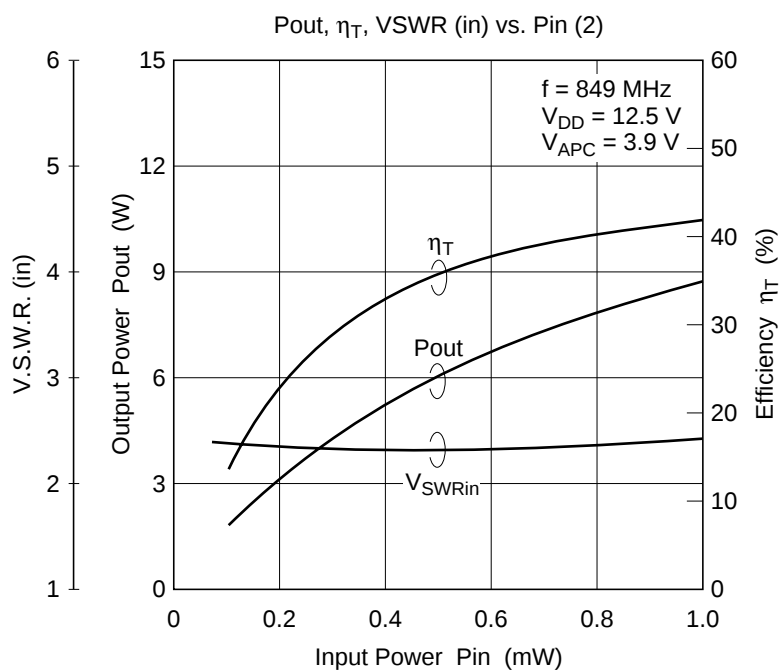
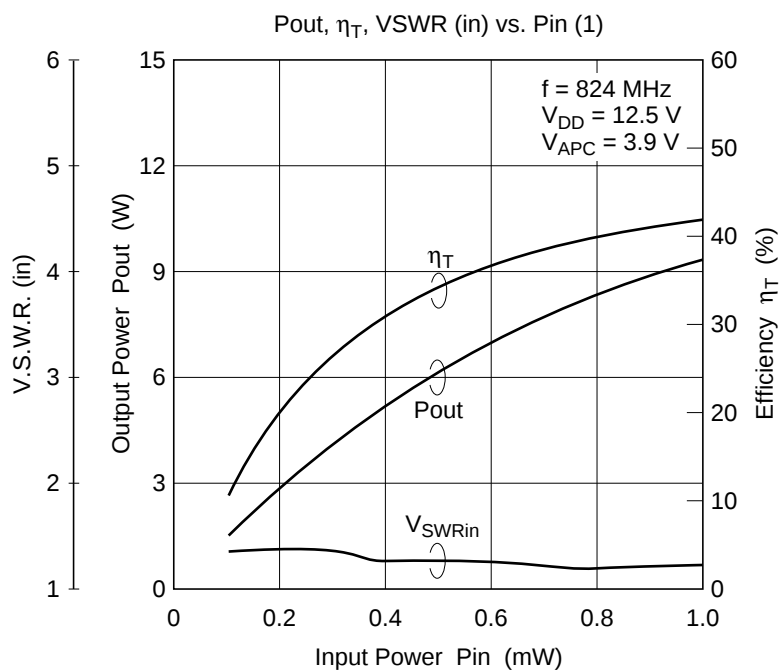












Package Dimensions

Unit: mm

