
PF0231A

MOS FET Power Amplifier Module for ADC Handy Phone

HITACHI

ADE-208-378A (Z)
2nd Edition
July 1996

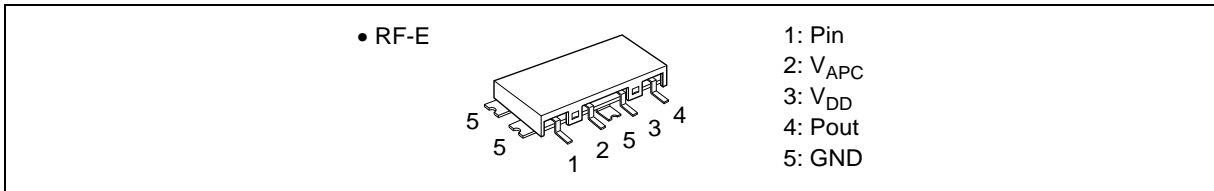
Application

For ADC class3 824 to 849 MHz

Features

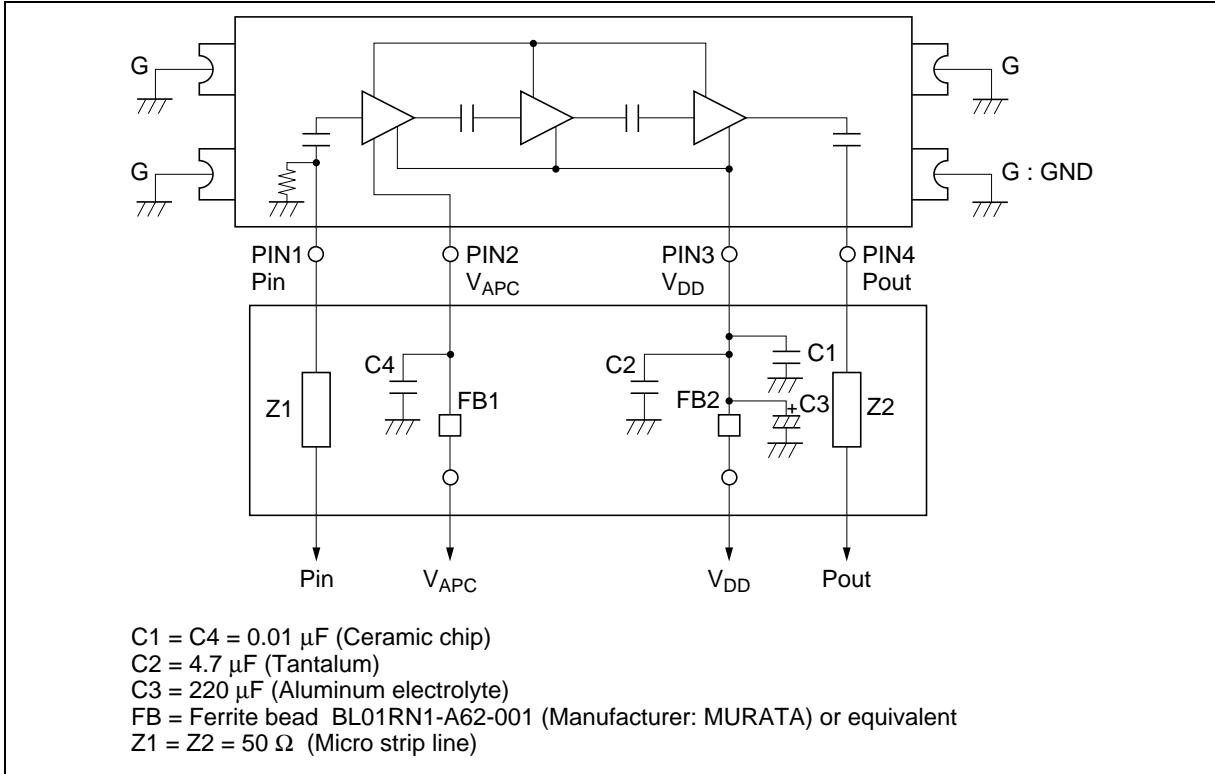
- Low voltage operation 4.8 V
- High efficiency: 42% Typ for CW
34% Typ for $\pi/4$ -DQPSK
- Simple Pout control: Controllable by V_{APC}
- Low power control current: 600 μ A Typ.

Pin Arrangement



PF0231A

Internal Diagram and External Circuit



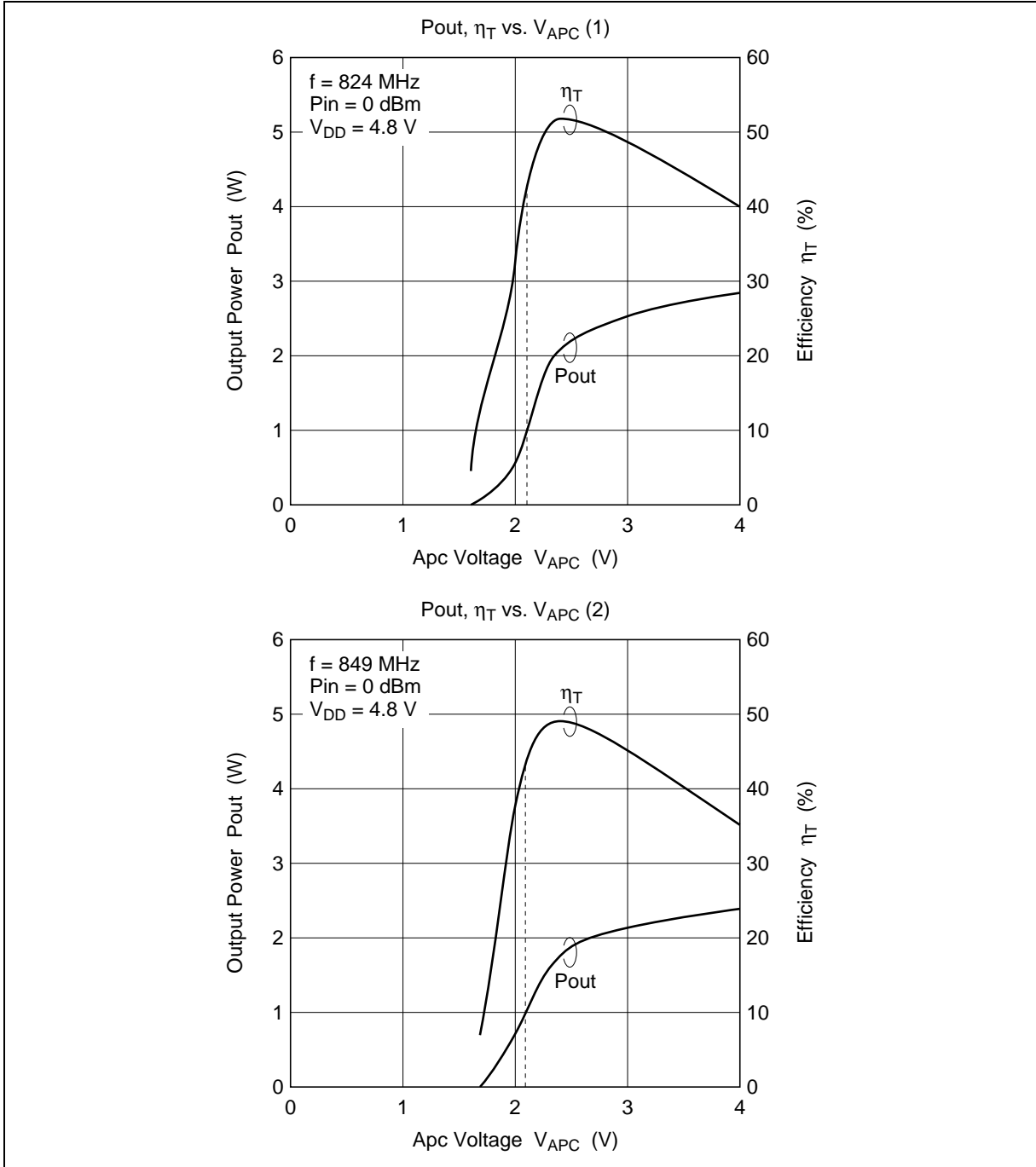
Absolute Maximum Ratings ($T_c = 25^\circ\text{C}$)

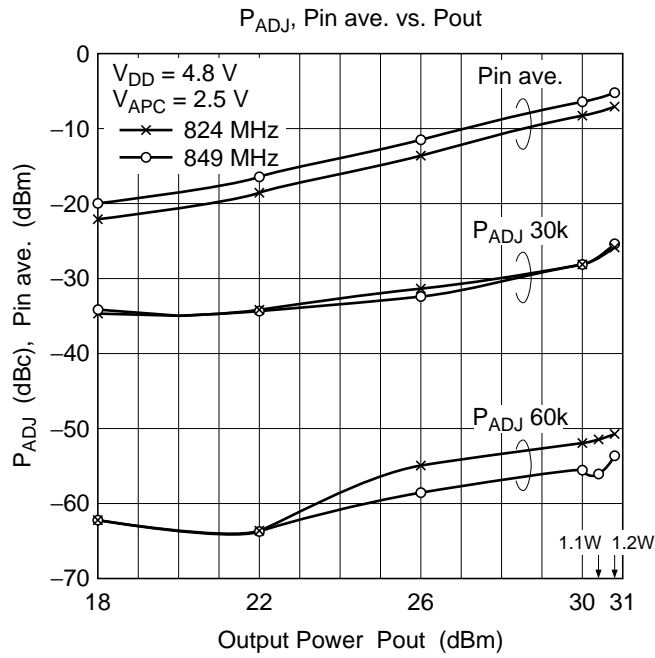
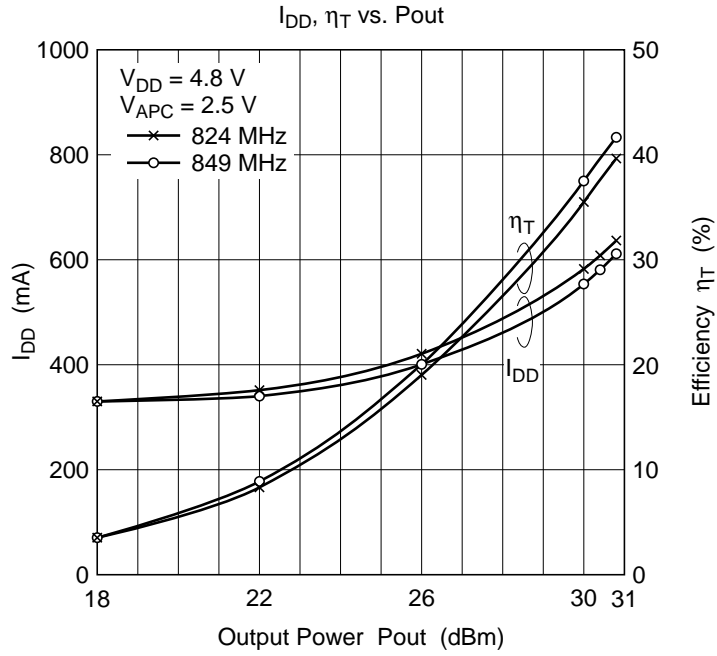
| Item | Symbol | Rating | Unit |
|----------------------------|------------|-------------|------------------|
| Supply voltage | V_{DD} | 10 | V |
| Supply current | I_{DD} | 1.5 | A |
| V_{APC} voltage | V_{APC} | 4.5 | V |
| Input power | Pin | 20 | mW |
| Operating case temperature | T_c (op) | -30 to +100 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -30 to +100 | $^\circ\text{C}$ |

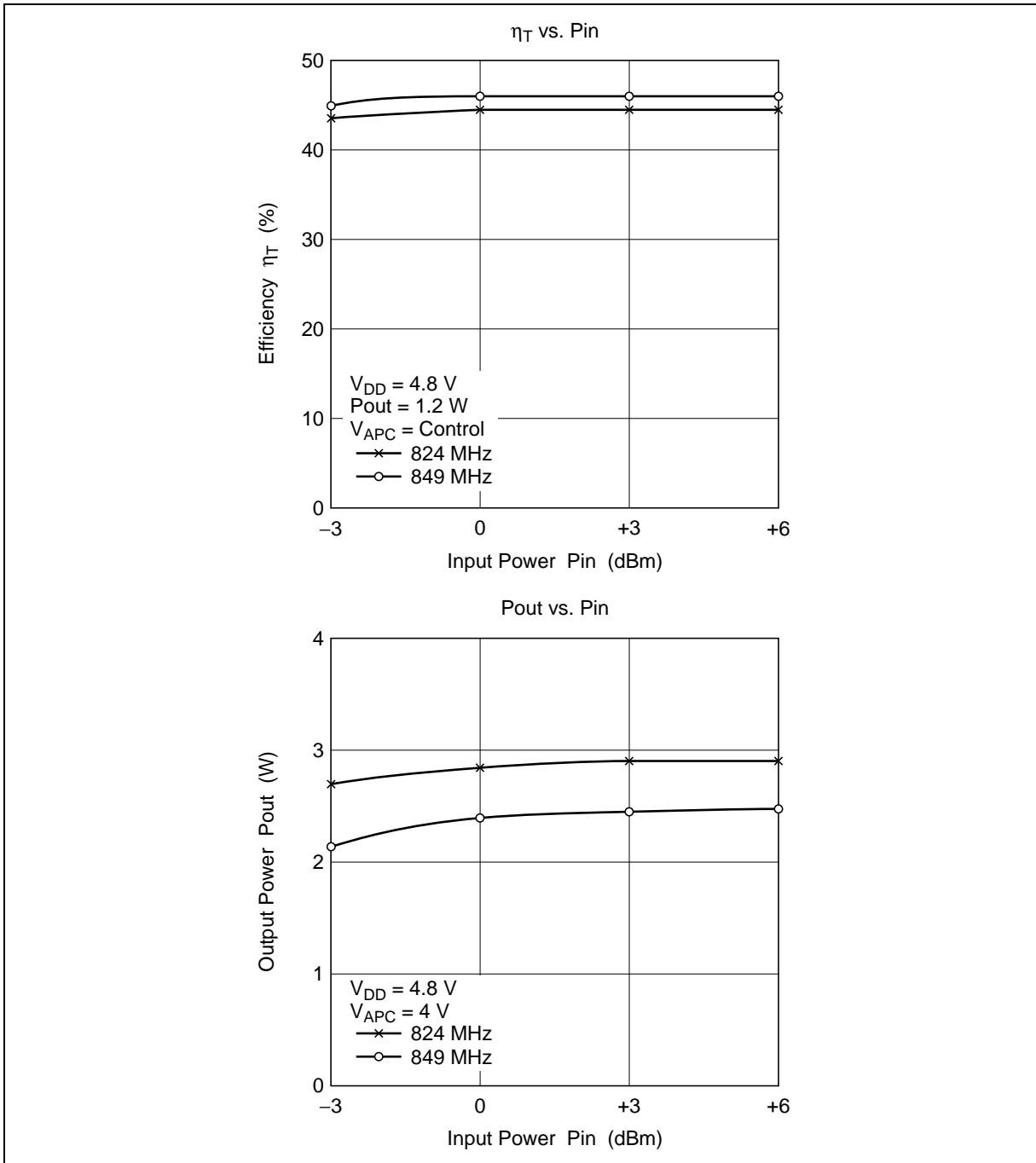
Electrical Characteristics (Tc = 25°C)

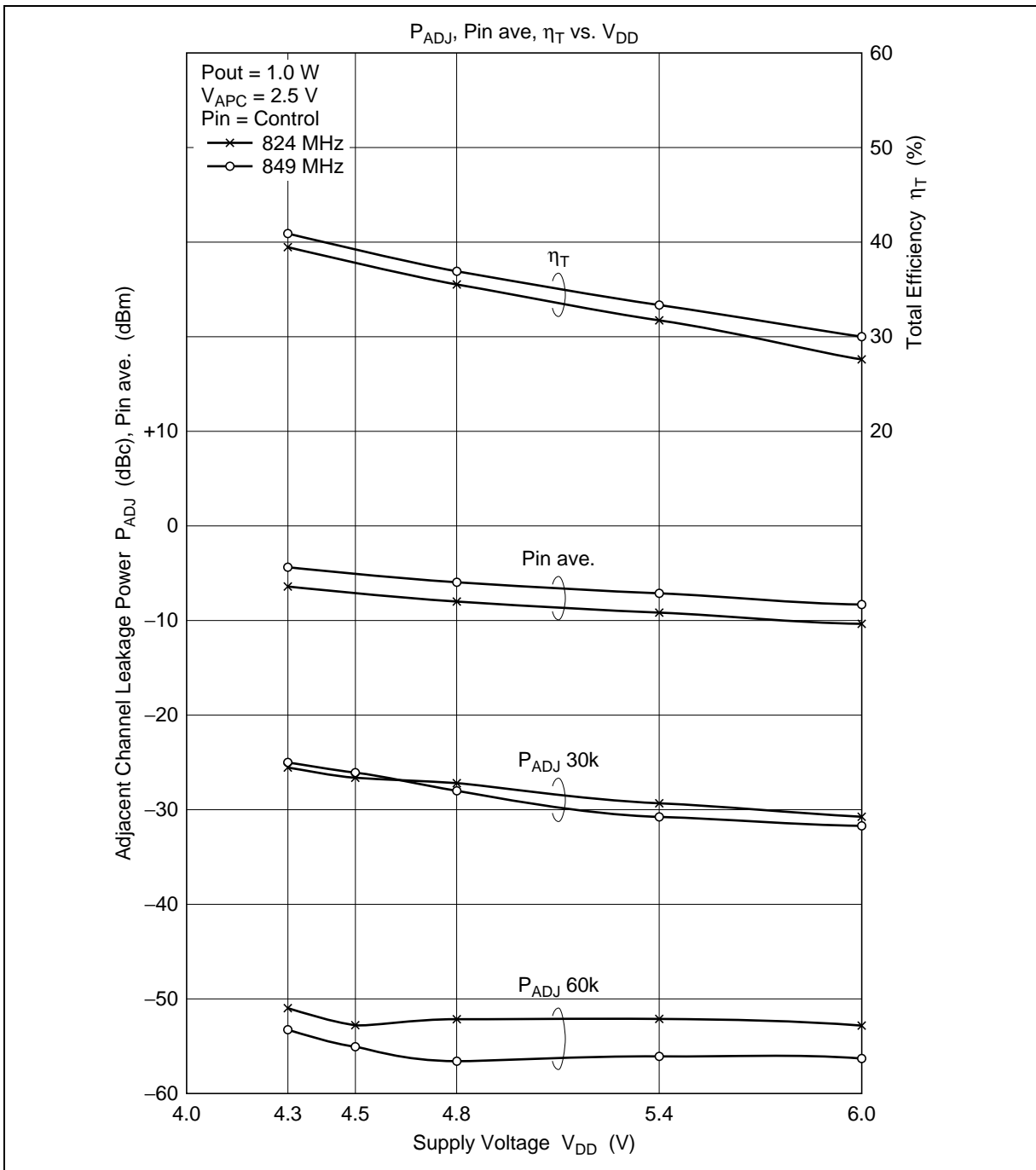
| Item | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------------|------------------------|--------------------------|-----|-----|------|---|
| Frequency range | f | 824 | — | 849 | MHz | — |
| Drain cutoff current | I _{DS} | — | — | 100 | μA | V _{DD} = 10 V, V _{APC} = 0 V |
| Total efficiency(1) | η _T (1) | 37 | 42 | — | % | Pin = 1 mW, V _{DD} = 4.8 V, Pout = 1.2 W (at V _{APC} controlled), R _L = Rg = 50 Ω |
| 2nd harmonic distortion | 2nd H.D. | — | -35 | -30 | dBc | |
| 3rd harmonic distortion | 3rd H.D. | — | -40 | -30 | dBc | |
| Input VSWR | VSWR (in) | — | 1.5 | 3 | — | |
| Output power | Pout | 1.6 | 2.1 | — | W | Pin = 1 mW, V _{DD} = 4.8 V, V _{APC} = 4.0 V, R _L = Rg = 50 Ω |
| Isolation | — | — | -40 | -35 | dBm | Pin = 1 mW, V _{DD} = 4.8 V, V _{APC} = 0.5 V, R _L = Rg = 50 Ω |
| Total efficiency(2) | η _T (2) | 30 | 34 | — | % | Pin = controlled (p/4-DQPSK, √α = 0.35, 48.6kbps), BW = 24.3 kHz with R-NYQT, Pout = 1.0 W ave., V _{DD} = 4.8 V, V _{APC} = 2.5 V |
| Adjacent channel leakage power | P _{ADJ} (30k) | — | -30 | -27 | dBc | |
| | P _{ADJ} (60k) | — | -55 | -47 | dBc | |
| Load VSWR tolerance | — | No degradation | | | — | Pin = 1 mW, V _{DD} = 6 V, Pout ≤ 1.4 W, t = 10 sec., Output VSWR = 20:1 All phases |
| Stability | — | No parasitic oscillation | | | — | Pin = 1 mW, V _{DD} = 4 to 6 V, Pout ≤ 1.4 W, Output VSWR = 3:1 All phases, Rg = 50 Ω |

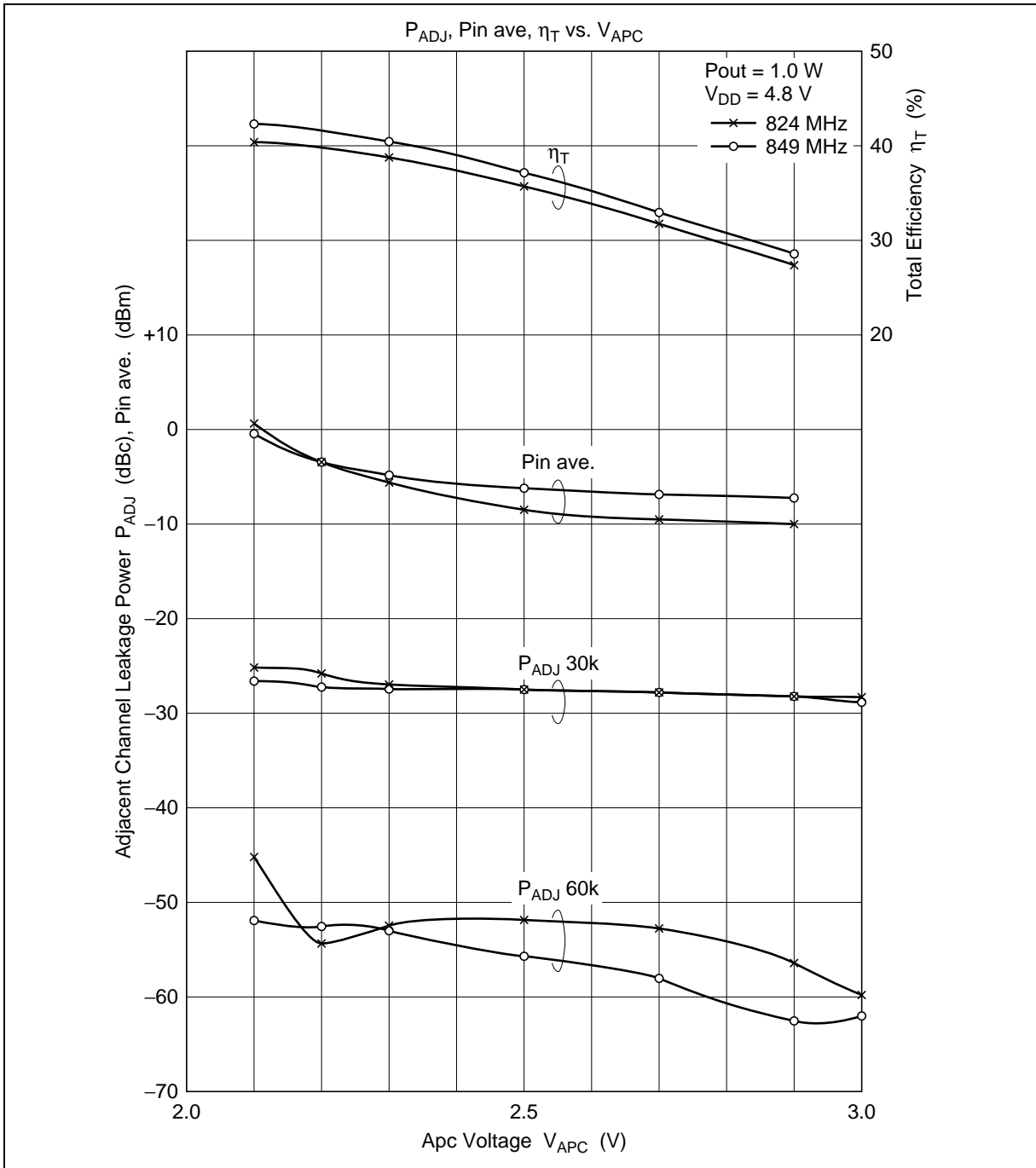
Characteristic Curves





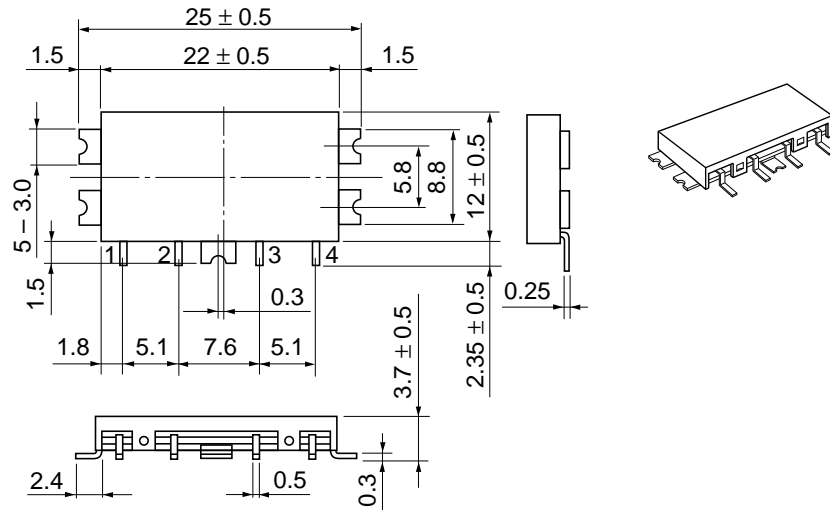






Package Dimensions

Unit: mm



| | |
|--------------------------|------|
| Hitachi Code | RF-E |
| JEDEC | — |
| EIAJ | — |
| Weight (reference value) | 3 g |

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