PF0047A/PF0067A

MOS FET Power Amplifier Module for E-TACS Handy Phone

HITACHI

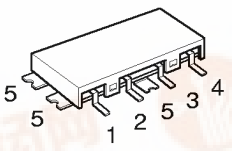
ADE-208-311B (Z)
Preliminary 3rd. Edition
July 1996

Features

- High Efficiency
  - — PF0047A: 58 % Typ at 1.2 W
  - — PF0067A: 52 % Typ at 1.2 W
- Low voltage operation: 4.8 V
- High power gain: 1 mW input
- Low power control current: 500 µA Typ
- Reflowable surface mounted small package: 1 cc, 3 g

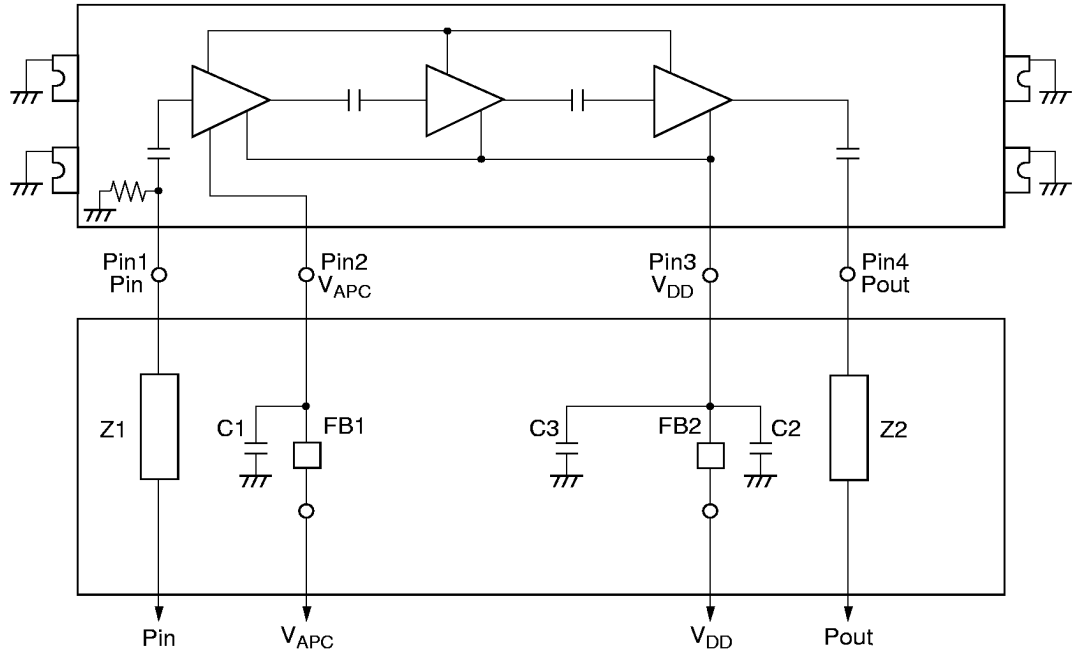
Pin Arrangement

• RF-E



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

Internal Diagram and External Circuit



C1 = C2 = 0.01 μF (Ceramic chip capacitor)
C3 = 4.7 μF (Tantalum)
FB = Ferrite bead BL01RN1-A62-001 (Manufacture: MURATA) or equivalent
Z1 = Z2 = 50 Ω (Microstrip line)

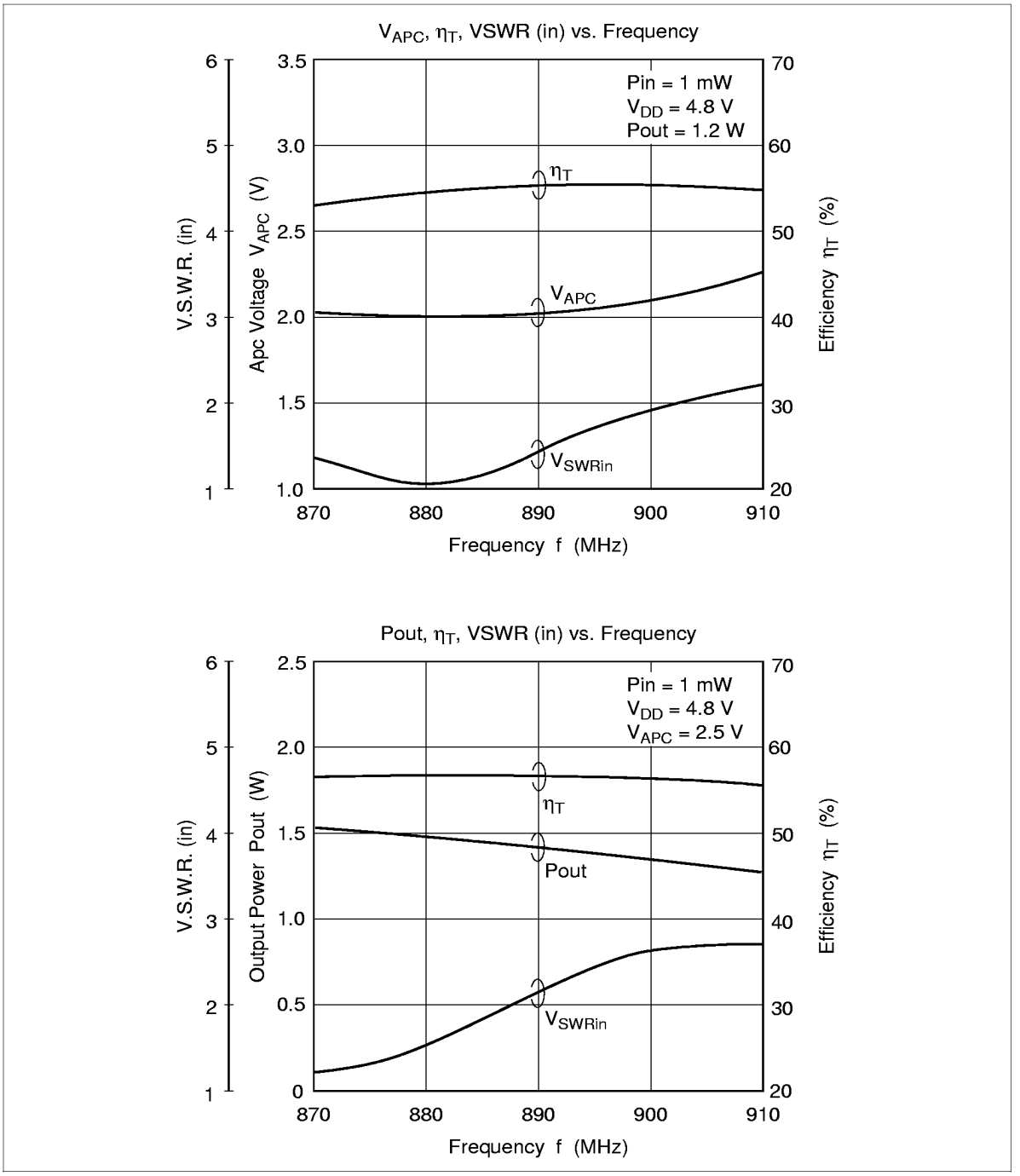
Absolute Maximum Ratings (Tc = 258C)

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	Tc (op)	–30 to +100	8C
Storage temperature	Tstg	–30 to +100	8C

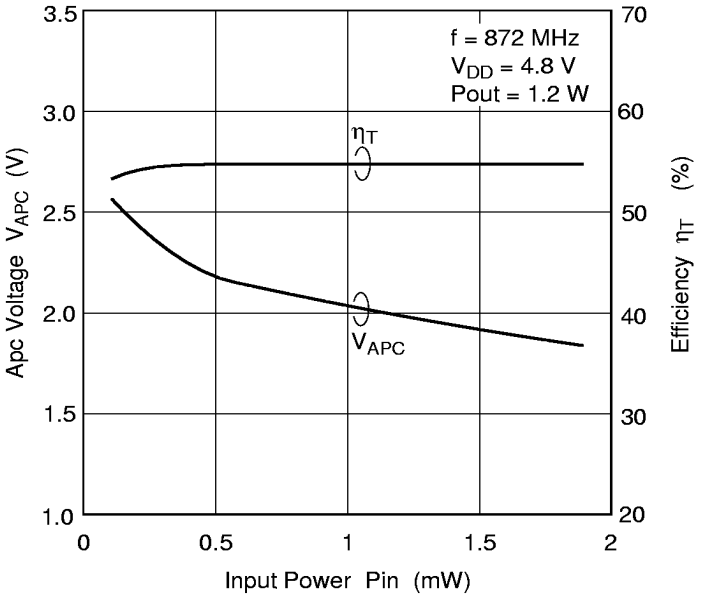
Electrical Characteristics (Tc = 258C)

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Drain cutoff current	I_{DS}	—	—	100	μA	V_{DD} = 10 V, V_{APC} = 0 V, R_L = Rg = 50 Ω
Total efficiency (PF0047A)	η_T	53	58	—	%	f = 872, 905 MHz,
Total efficiency (PF0067A)	η_T	48	52	—	%	Pin = 1 mW, V_{DD} = 4.8 V,
2nd harmonic distortion	2nd H.D.	—	–35	–30	dBc	Pout = 1.2 W (at V_{APC} controlled),
3rd harmonic distortion	3rd H.D.	—	–40	–30	dBc	R_L = Rg = 50 Ω
Input VSWR	VSWR (in)	—	2	3	—	
Output power	Pout	1.25	1.4	—	W	f = 872, 905 MHz, Pin = 1 mW, V_{DD} = 4.8 V, V_{APC} = 4 V, R_L = Rg = 50 Ω
Isolation	—	—	–40	–35	dBm	f = 872, 905 MHz, Pin = 1 mW, V_{DD} = 4.8 V V_{APC} = 0.5 V, R_L = Rg = 50 Ω
Stability	—	No parasitic oscillation			—	f = 872 to 905 MHz, Pin = 1 mW, V_{DD} = 4.3 to 6 V, Pout ≤ 1.4 W, Rg = 50 Ω, Load VSWR = 3:1, All phases angles
Load VSWR tolerance	—	No degradation			—	f = 872 to 905 MHz, Pin = 1 mW, t = 10 sec., V_{DD} = 4.3 to 6 V, Pout ≤ 1.4 W, Rg = 50 Ω, Load VSWR = 20:1, All phases angles

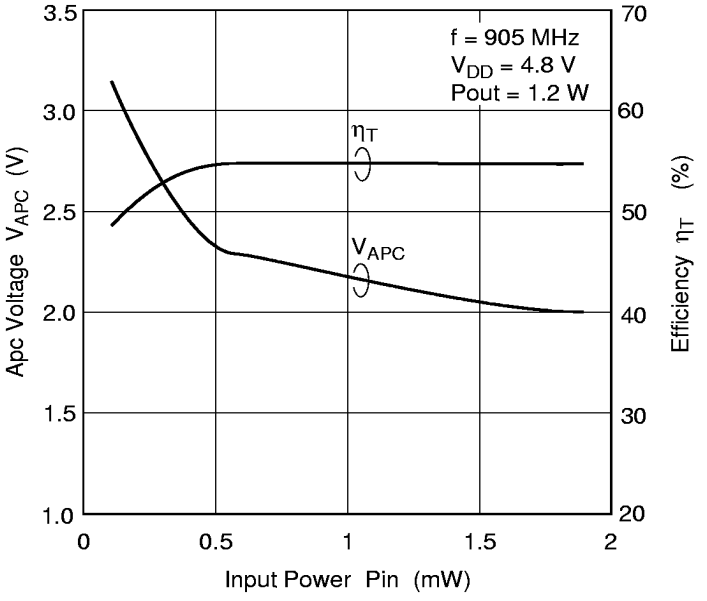
Characteristics Curve



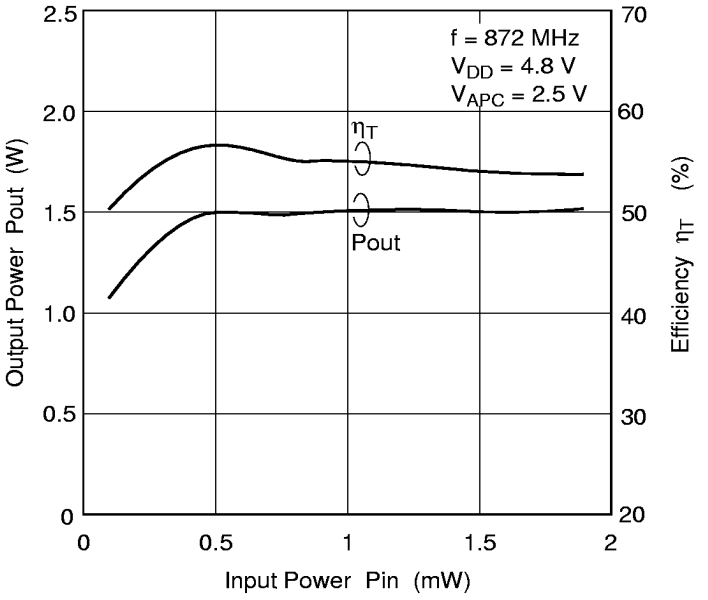
V_{APC}, η_T vs. Pin (1)



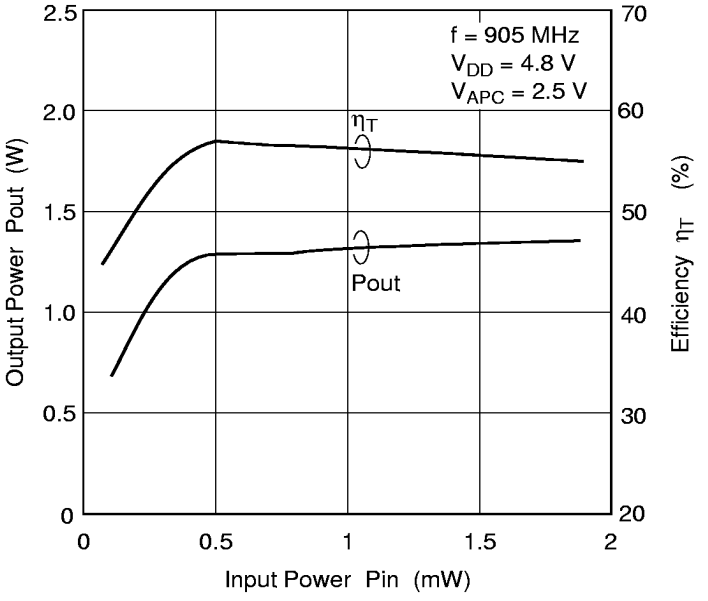
V_{APC}, η_T vs. Pin (2)



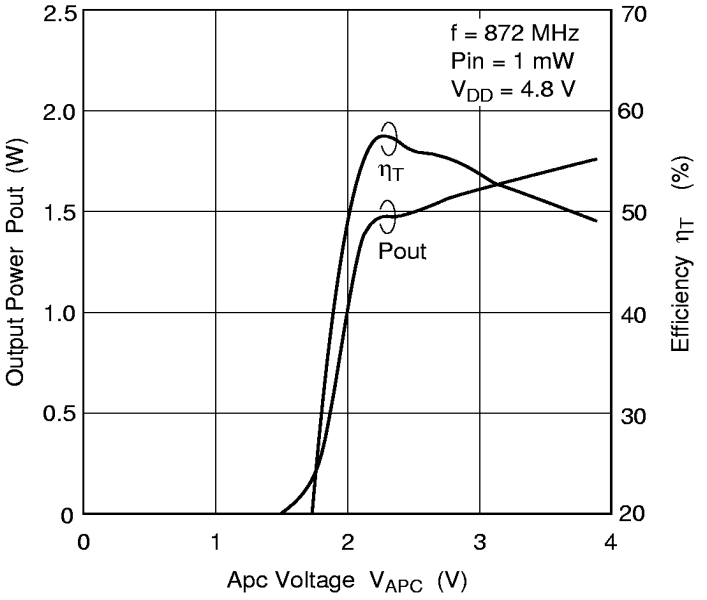
Pout, η_T vs. Pin (1)



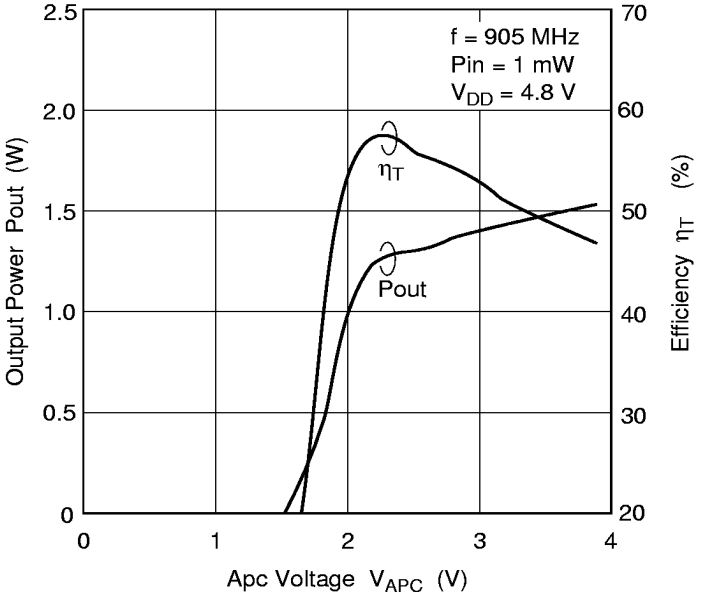
Pout, η_T vs. Pin (2)



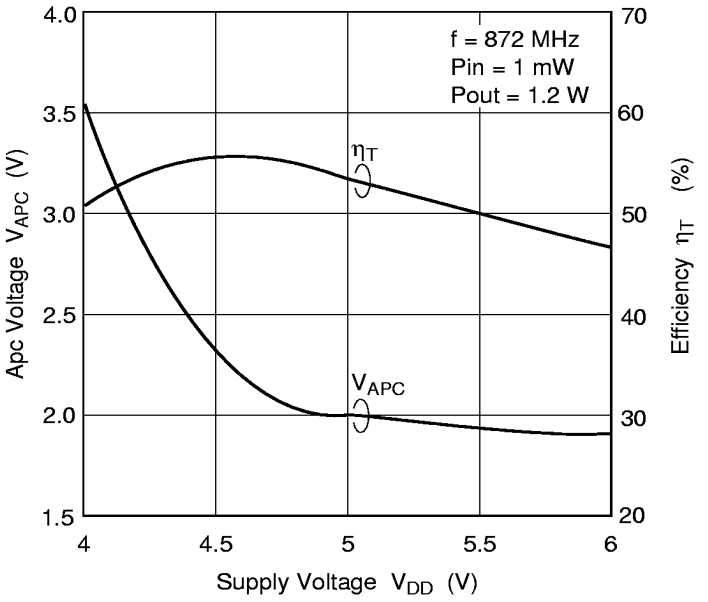
Pout, η_T vs. V_{APC} (1)



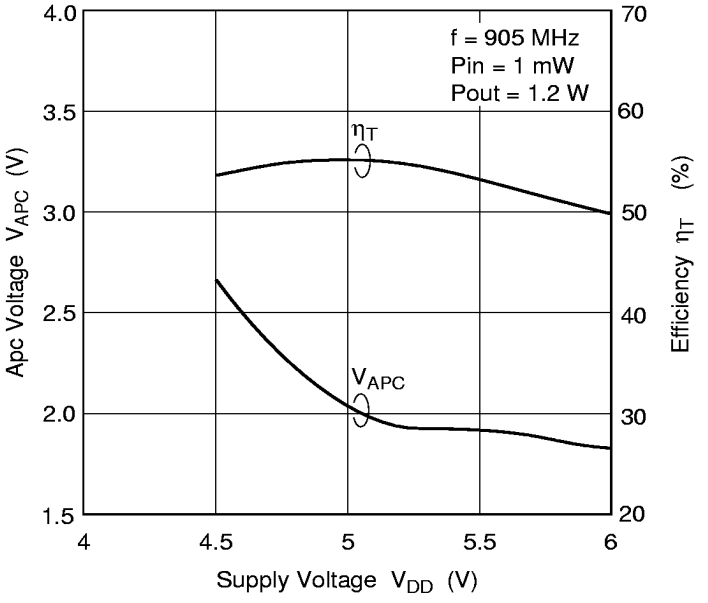
Pout, η_T vs. V_{APC} (2)



V_{APC}, η_T vs. V_{DD} (1)

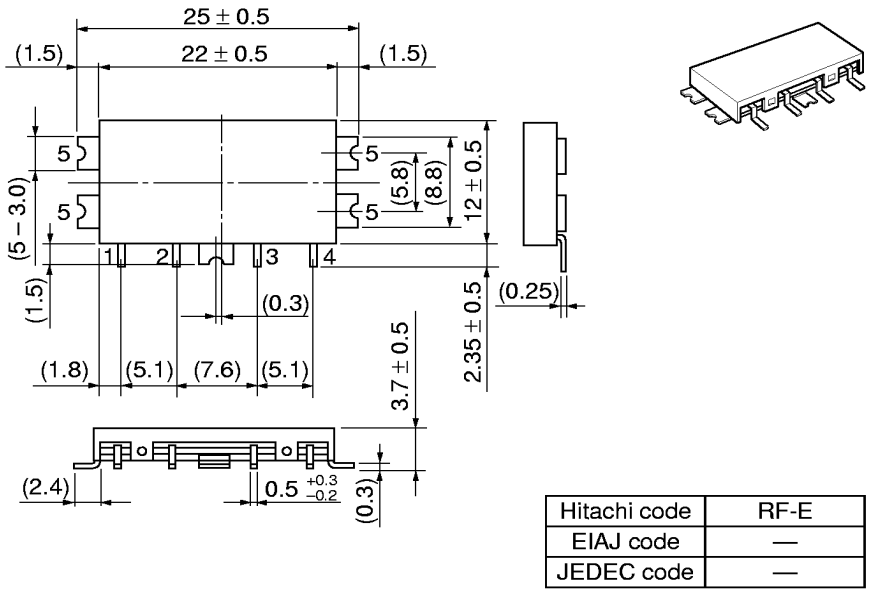


V_{APC}, η_T vs. V_{DD} (2)



Package Dimensions

Unit: mm



Hitachi code	RF-E
EIAJ code	—
JEDEC code	—