
PF0210

MOS FET Power Amplifier Module for ADC Mobile Phone

HITACHI

ADE-208-102E (Z)

Preliminary

6th Edition

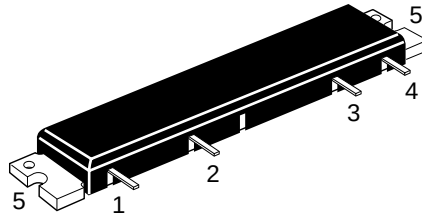
July 1996

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 μ s Typ

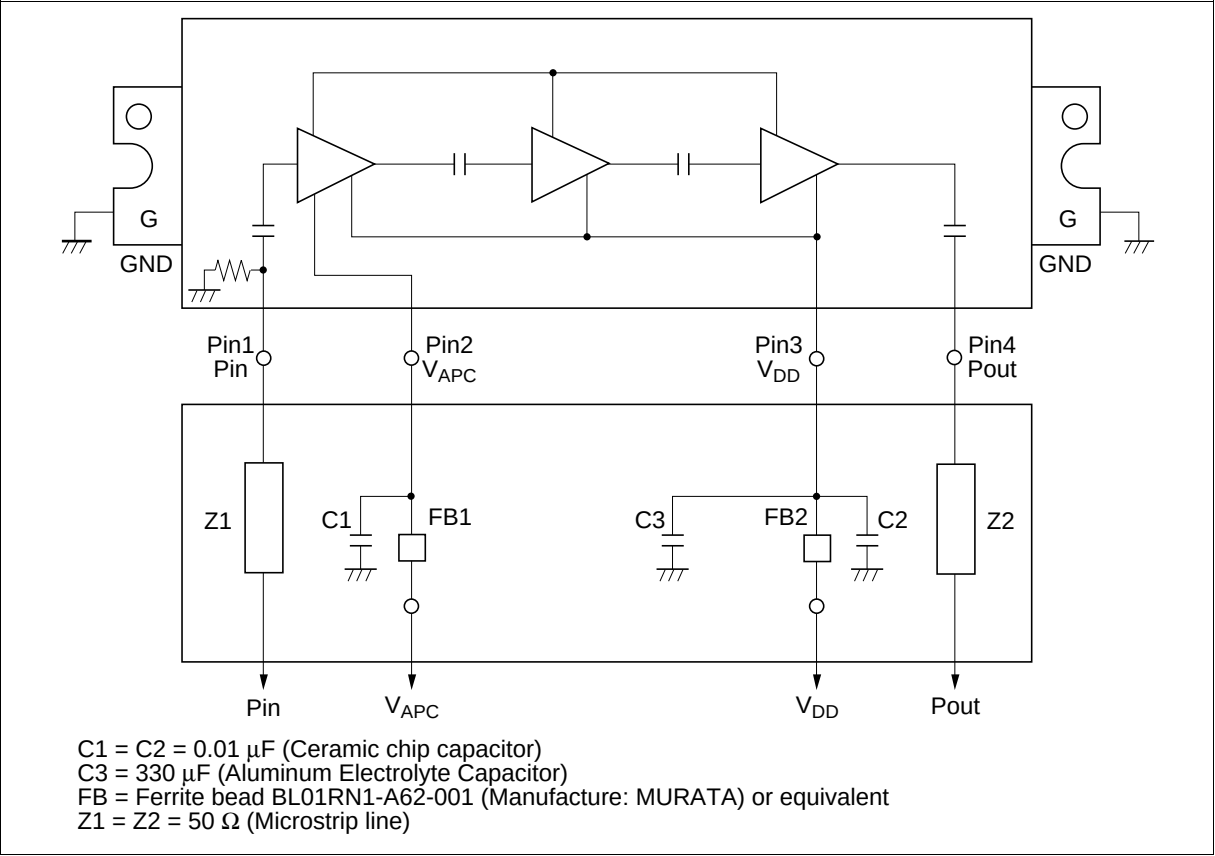
Pin Arrangement

• RF-B2



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

Internal Diagram and External Circuit



Absolute Maximum Ratings (T_c = 25°C)

Item	Symbol	Rating	Unit
Supply voltage	V _{DD}	17	V
Supply current	I _{DD}	4	A
V _{APC} voltage	V _{APC}	5.5	V
Input power	Pin	20	mW
Operating case temperature	T _c (op)	−30 to +100	°C
Storage temperature	T _{stg}	−40 to +110	°C

Electrical Characteristics (T_c = 25°C)

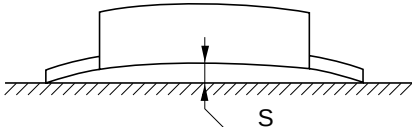
Analog Transmission

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Frequency	f	824	—	849	MHz	—
Drain cutoff current	I _{DS}	—	—	500	μA	V _{DD} = 17 V, V _{APC} = 0 V
Total efficiency(1)	η _T (1)	30	34	—	%	Pin = 3 dBm, V _{DD} = 12.5 V,
2nd harmonic distortion	2nd H.D.	—	−55	−30	dBc	Pout = 6 W (V _{APC} controlled),
3rd harmonic distortion	3rd H.D.	—	−60	−40	dBc	
Input VSWR	VSWR (in)	—	2	3	—	
Output power	Pout	6	9	—	W	Pin = 3 dBm, V _{DD} = 12.5 V, V _{APC} = 4 V
Isolation	—	—	−45	−40	dBm	Pin = 3dBm, V _{DD} = 12.5 V, V _{APC} = 0.5 V
Stability	—	No parasitic oscillation			—	Pin = 3 dBm, V _{DD} = 12.5 V, Pout ≤ 6 W, Output VSWR = 20:1 All phases

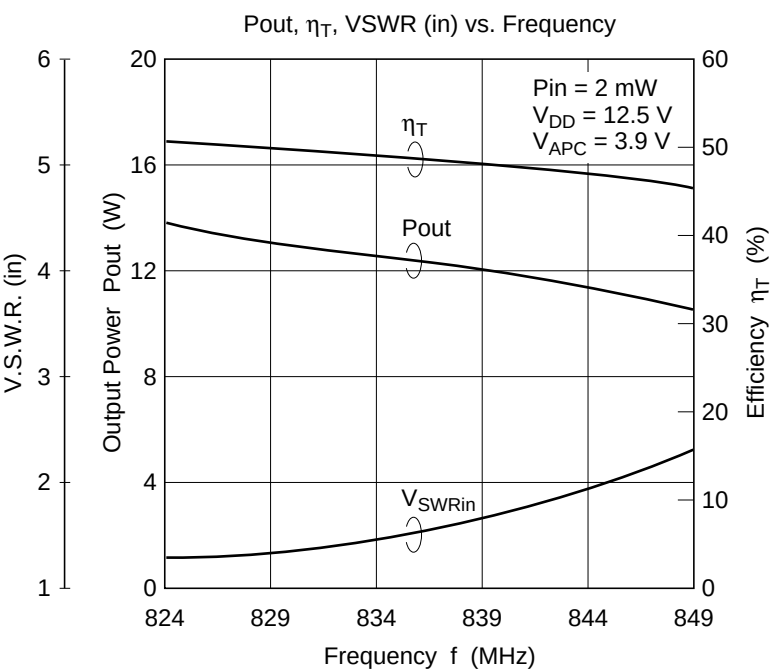
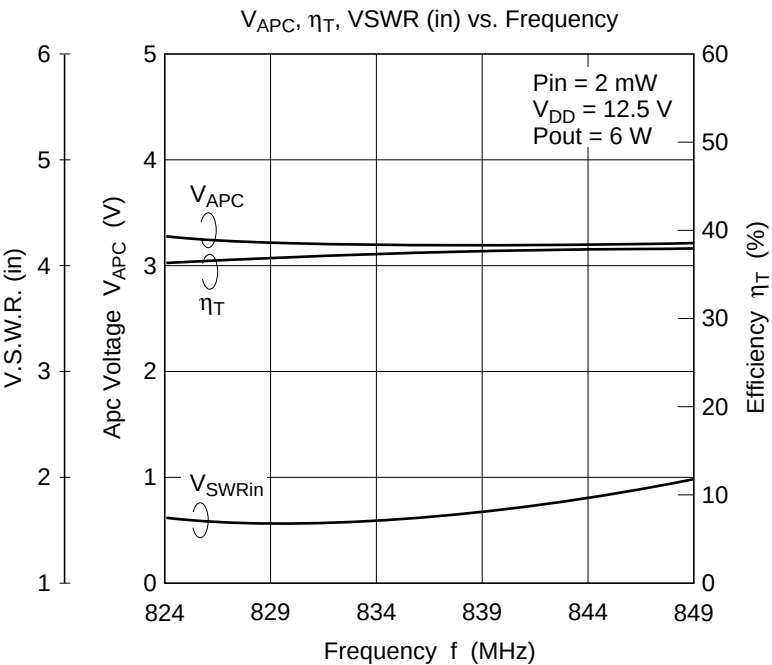
Digital Transmission

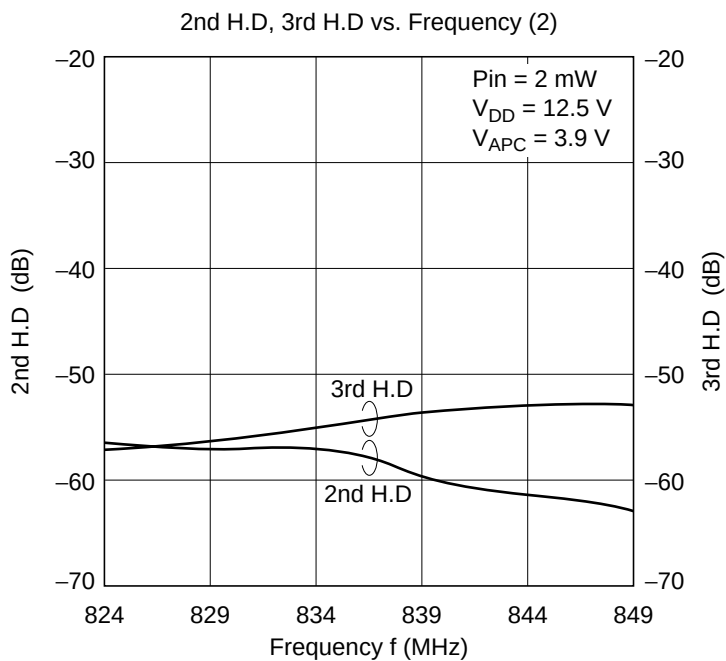
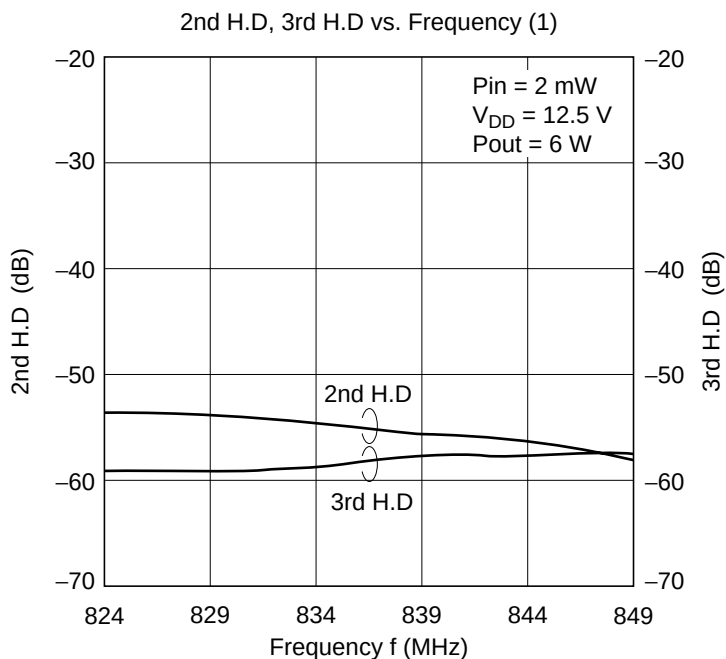
Item	Symbol	Min	Typ	Max	Unit	Test Condition
Frequency	f	824	—	849	MHz	—
Total efficiency(2)	η _T (2)	25	30	—	%	Pin controlled (π/4-DQPSK, $\sqrt{\alpha} =$
Adjacent channel	P _{ADJ} (30k)	—	−30	−28	dBc	0.35, 48.6 kbps),
leakage power	P _{ADJ} (60k)	—	−50	−46	dBc	BW = 24.3 kHz with Root Nyquist
Input power	Pin	—	—	5	dBm ave.	Filter, Pout = 5.5 W ave., V _{DD} = 12.5 V V _{APC} = 3.9 V

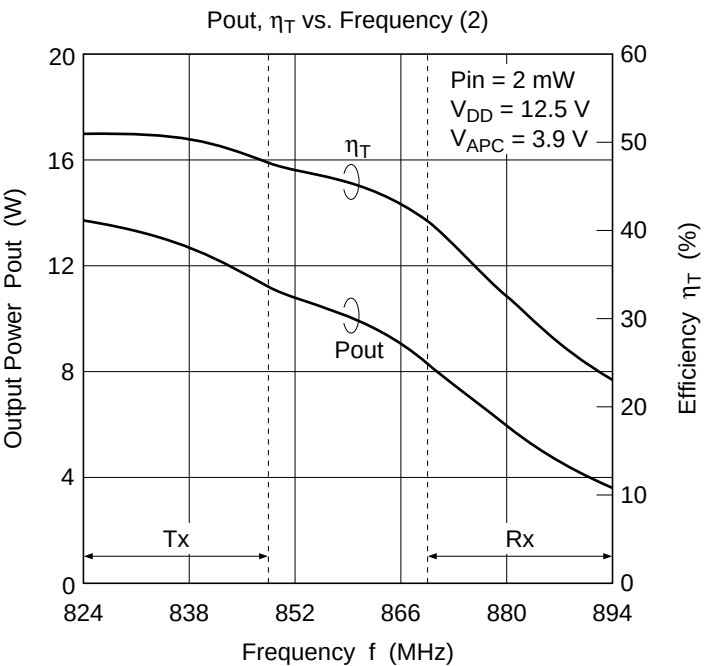
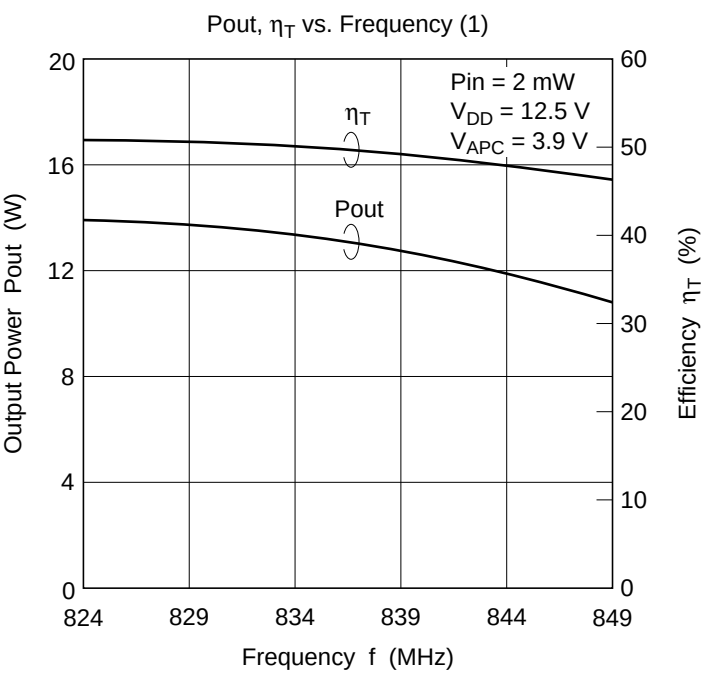
Mechanical Characteristics

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

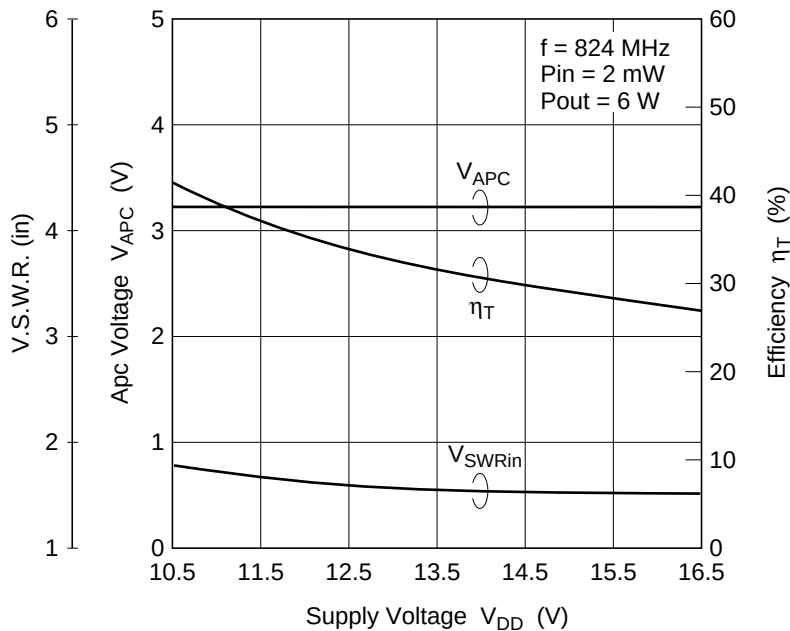
Characteristics Curve



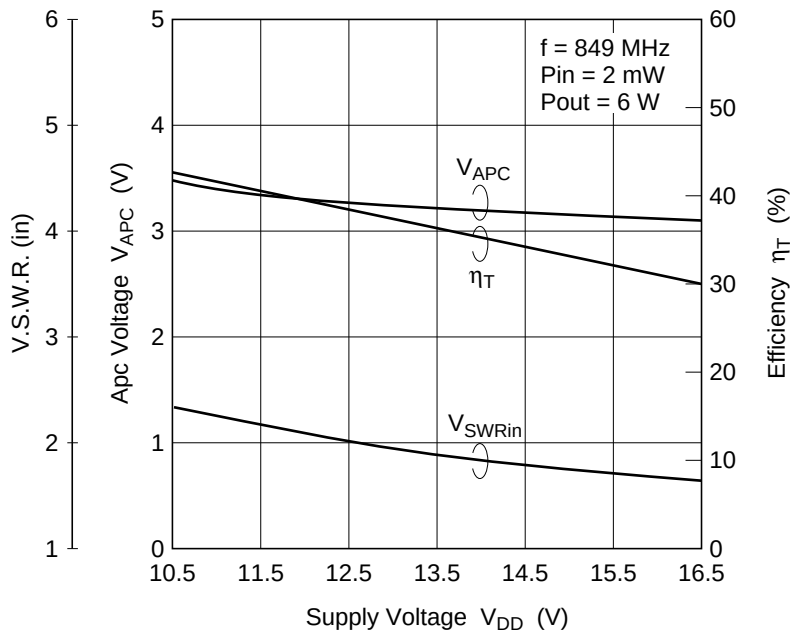


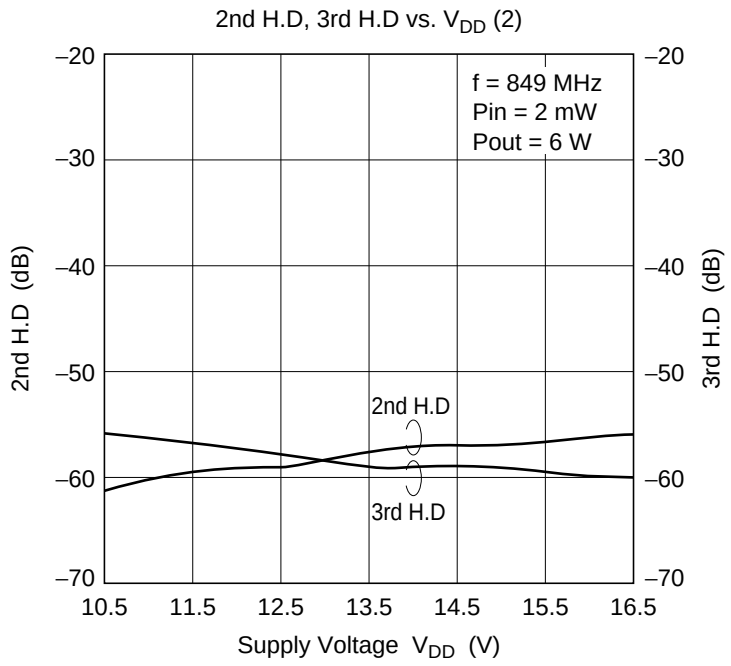
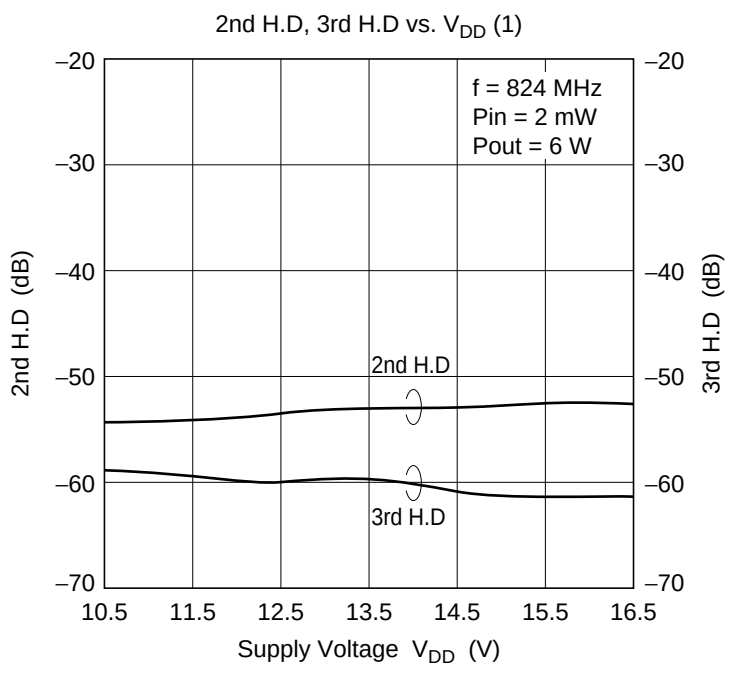


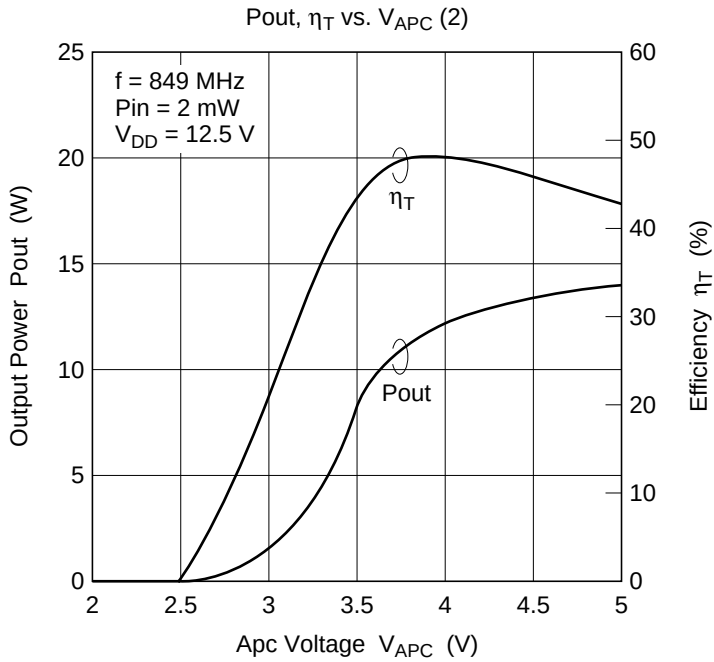
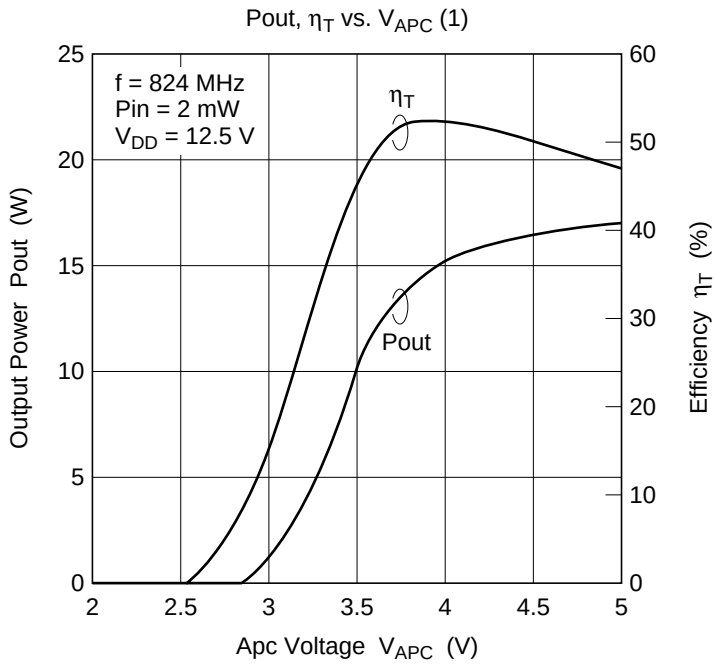
V_{APC} , η_T , VSWR (in) vs. V_{DD} (1)

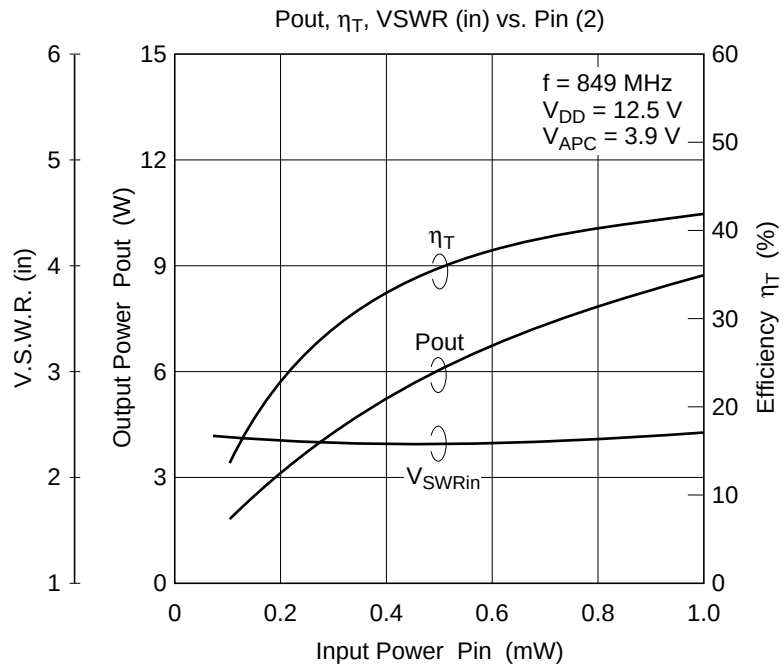
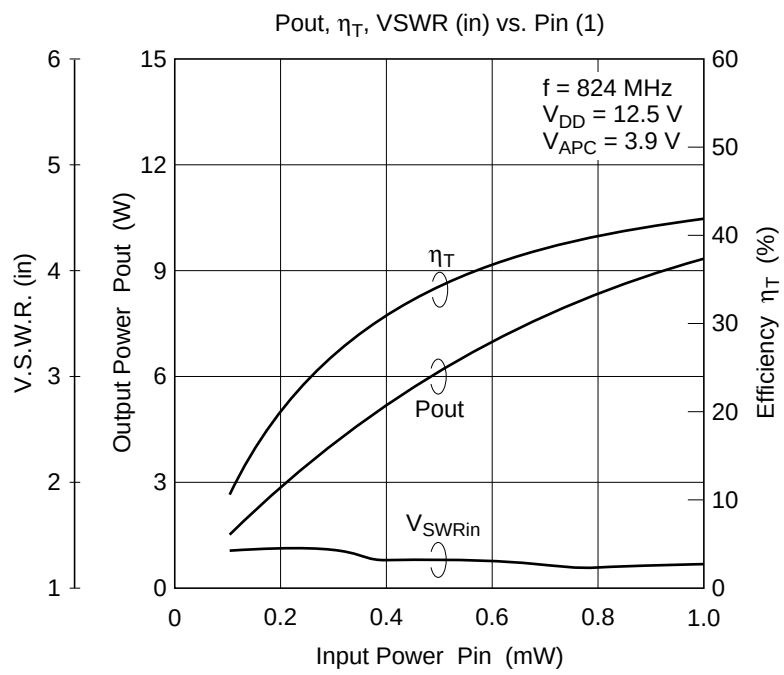


V_{APC} , η_T , VSWR (in) vs. V_{DD} (2)



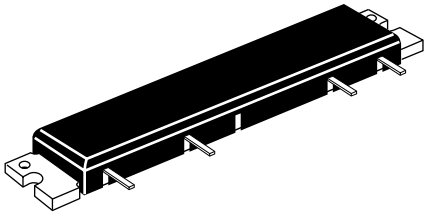
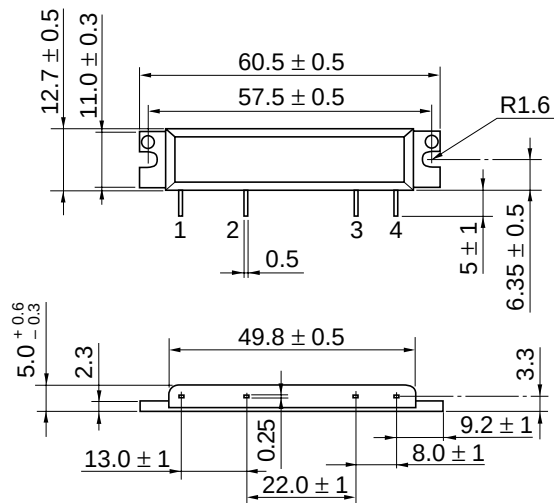






Package Dimensions

Unit: mm



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

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