PF0341A Series

MOS FET Power Amplifier Module for UHF Band

HITACHI

ADE-208-338C (Z)
4th Edition
July 1996

Features

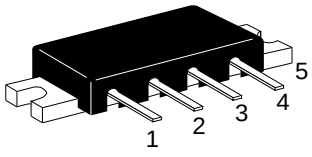
- Small package: 30 × 10 × 5.9 mm
- High output power at low voltage: 2 W Typ at 4.8 V
- Low power control current: 200 μA Typ

Ordering Information

Type Name	Operating Frequency
PF0341A	400 to 430 MHz
PF0342A	440 to 470 MHz
PF0343A	470 to 490 MHz
PF0344A	490 to 512 MHz
PF0345A	380 to 400 MHz

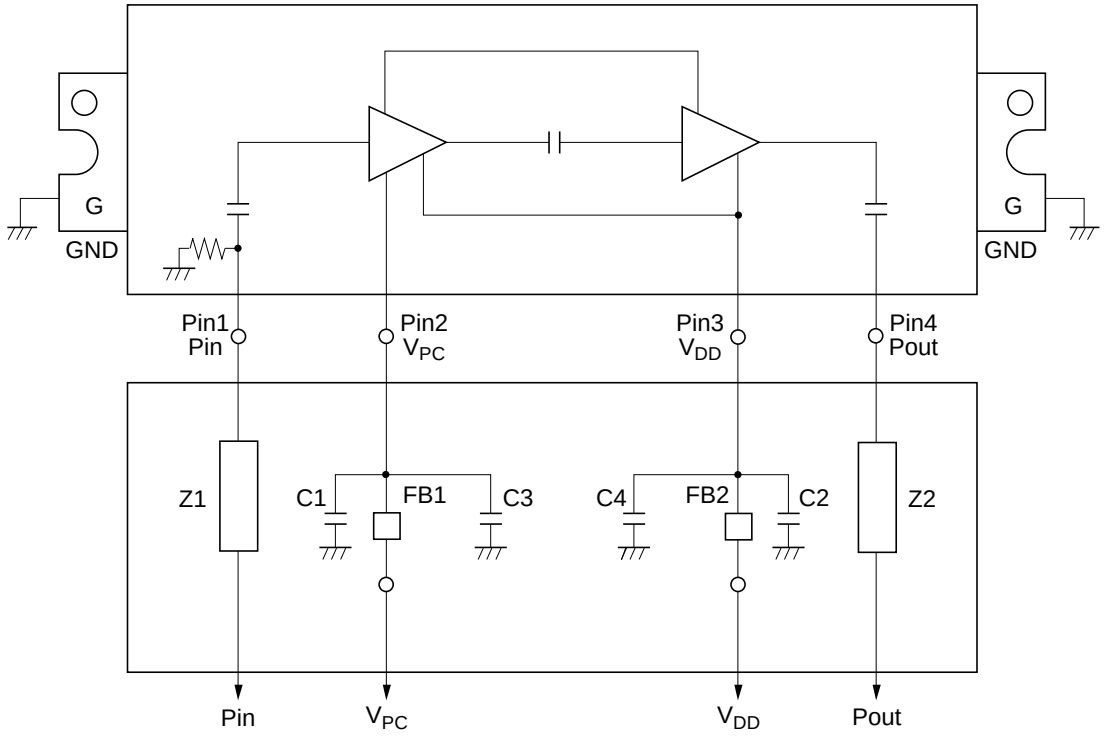
Pin Arrangement

• RF-J1



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

Internal Diagram and External Circuit



C1 = C2 = 0.01 μF (Ceramic chip capacitor)
C3 = C4 = 10 μF (Aluminum Electrolyte Capacitor)
FB = Ferrite bead BL01RN1-A62-001 (Manufacture: MURATA) or equivalent
Z1 = Z2 = 50 Ω (Microstrip line)

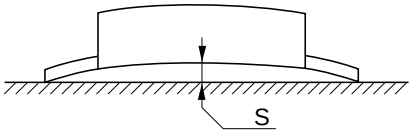
Absolute Maximum Ratings (Tc = 25°C)

Item	Symbol	Rating	Unit
Supply voltage	V_{DD}	17	V
Supply current	I_{DD}	3	A
PC voltage	V_{PC}	4.5	V
Input power	Pin	50	mW
Operating case temperature	Tc (op)	–30 to +100	°C
Storage temperature	Tstg	–40 to +110	°C

Electrical Characteristics (Tc = 25°C)

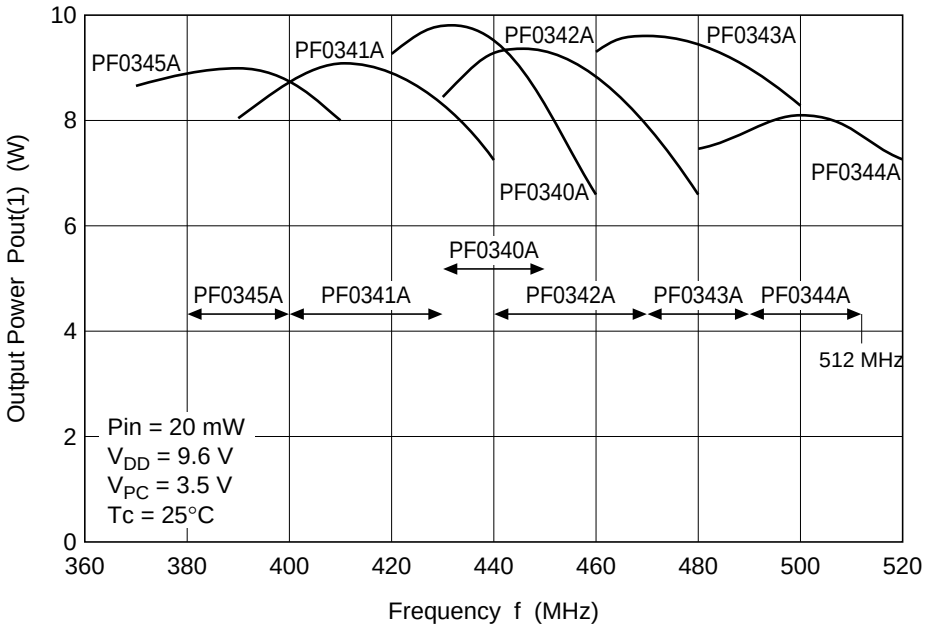
Item	Symbol	Min	Typ	Max	Unit	Test Condition
Drain cutoff current	I_{DS}	—	—	100	µA	V_{DD} = 17 V, V_{PC} = 0 V, R_L = Rg = 50 Ω,
Total efficiency	η_T	35	38	—	%	Pin = 20 mW, V_{DD} = 9.6 V, Pout = 7 W (at V_{PC} controlled), R_L = Rg = 50 Ω, Tc = 25°C
2nd harmonic distortion	2nd H.D.	—	–30	–25	dBc	
3rd harmonic distortion	3rd H.D.	—	–60	–40	dBc	
Input VSWR	VSWR (in)	—	2.0	3.0	—	
Output power (1)	Pout (1)	7	8	—	W	Pin = 20 mW, V_{DD} = 9.6 V, V_{PC} = 3.5 V, R_L = Rg = 50 Ω
Output power (2)	Pout (2)	1.8	2	—	W	Pin = 20 mW, V_{DD} = 4.8 V, V_{PC} = 3.5 V, R_L = Rg = 50 Ω
Load VSWR tolerance	—	No degradation			—	Pin = 20 mW, V_{DD} = 15 V, Pout ≤ 7 W, (at V_{PC} controlled), Output VSWR = 6:1 All phases
Stability	—	No parasitic oscillation			—	Pin = 20 mW, V_{DD} = 4.8 to 15 V, Pout ≤ 7 W, (at V_{PC} controlled), Output VSWR = 6:1 All phases

Mechanical Characteristics

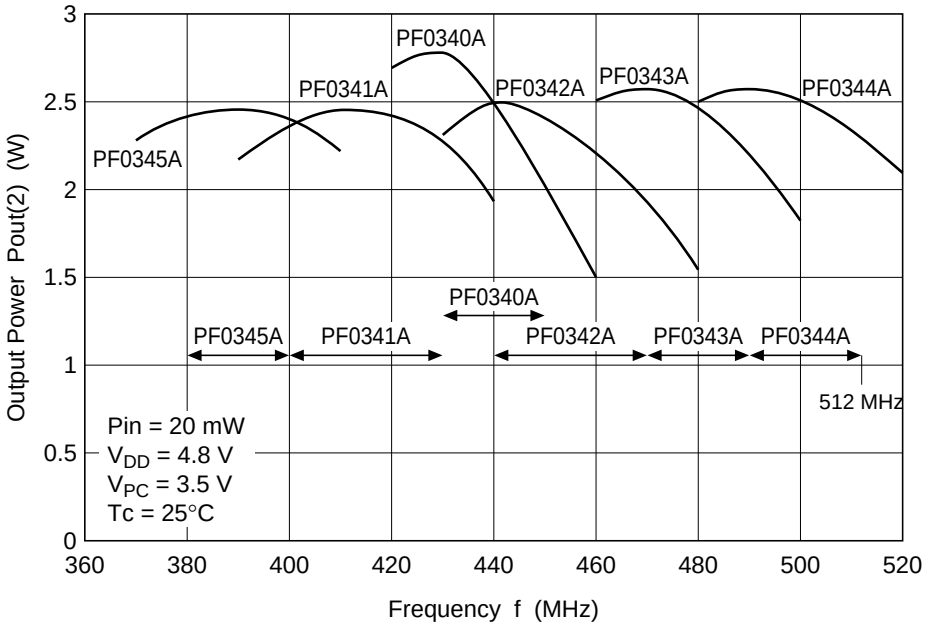
Item	Measuring Conditions	Spec
Torque for screw up the heatsink flange	M2.6 Screw Bolts	1.5 to 3.5 kg•cm
Warp size of the heatsink flange: S		S = 0 +0.1/–0 mm

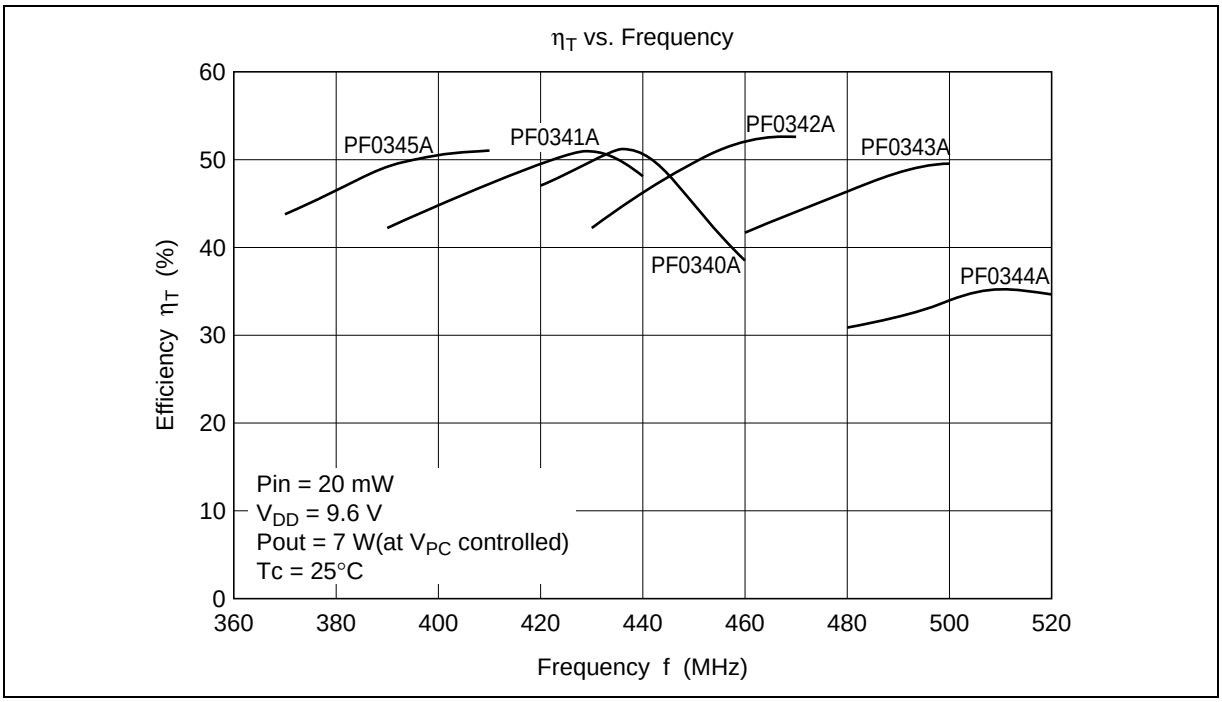
Characteristic Curves

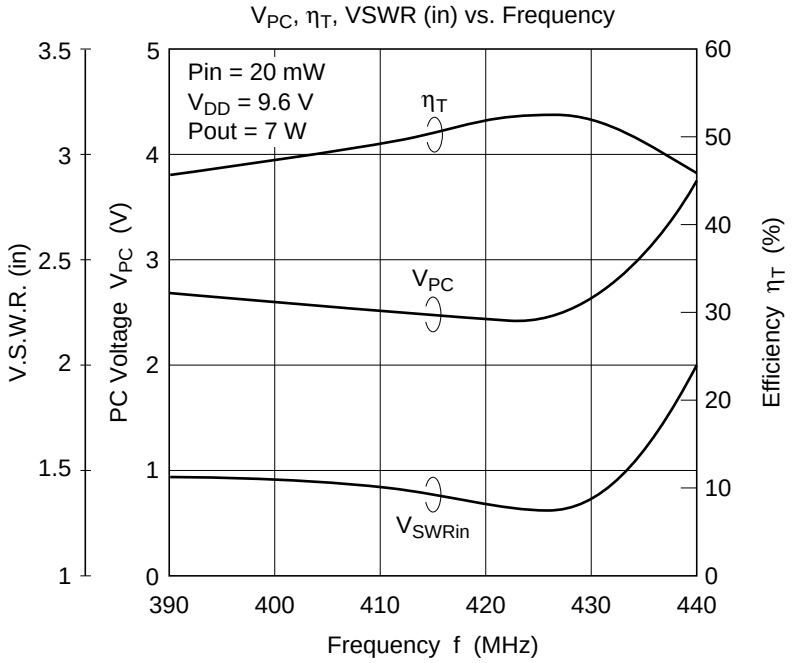
Pout vs. Frequency (1)

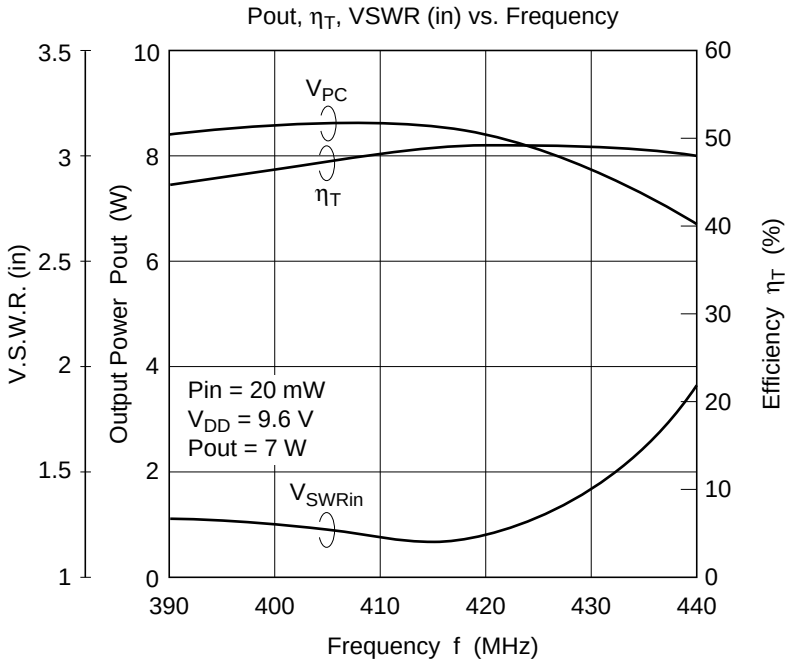


Pout vs. Frequency (2)

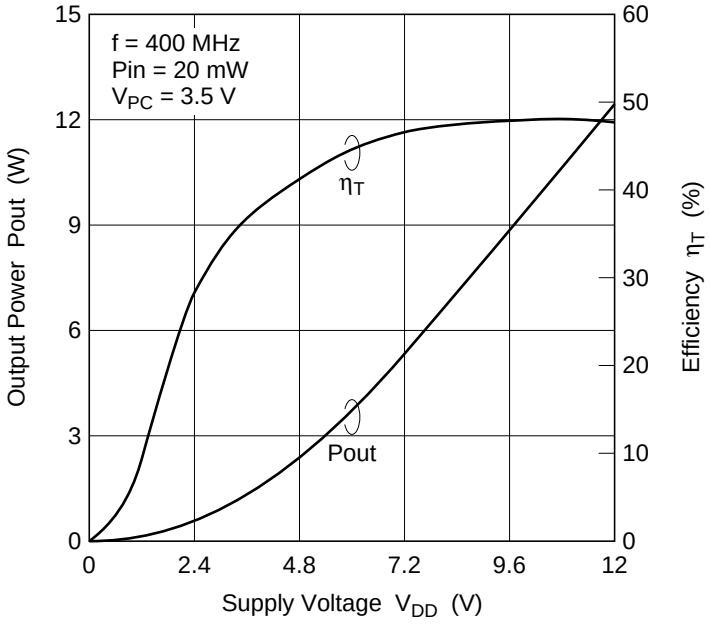



ηT vs. Frequency
60
50
40
30
20
10
0
Efficiency ηT (%)
PF0345A
PF0341A
PF0342A
PF0343A
PF0340A
PF0344A
Pin = 20 mW
VDD = 9.6 V
Pout = 7 W(at VPC controlled)
Tc = 25°C
360
380
400
420
440
460
480
500
520
Frequency f (MHz)

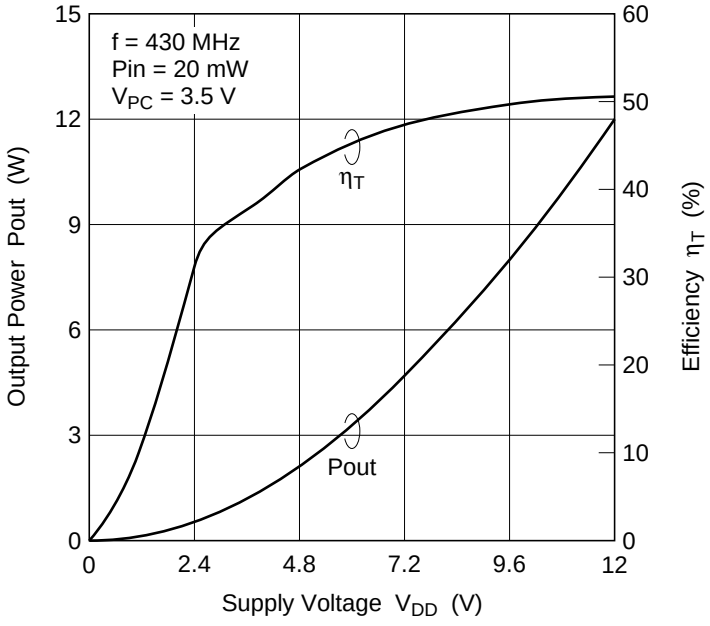

V_{PC}, η_T, VSWR (in) vs. Frequency
Pin = 20 mW
V_{DD} = 9.6 V
Pout = 7 W
η_T
V_{PC}
V_{SWRin}
V.S.W.R. (in)
PC Voltage V_{PC} (V)
Efficiency η_T (%)
Frequency f (MHz)


Pout, η_T, VSWR (in) vs. Frequency
V_{PC}
η_T
Pin = 20 mW
V_{DD} = 9.6 V
Pout = 7 W
V_{SWRin}
V.S.W.R. (in)
Output Power Pout (W)
Efficiency η_T (%)
Frequency f (MHz)

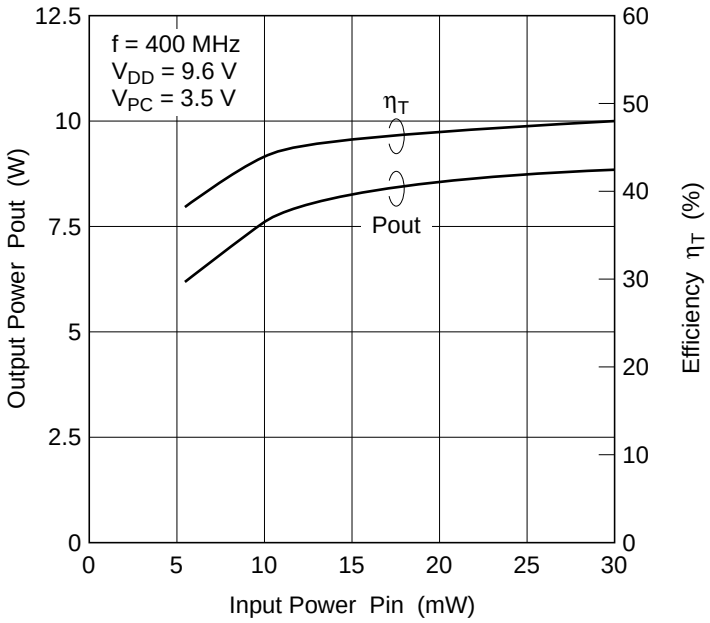
Pout, η_T vs. V_{DD} (1)



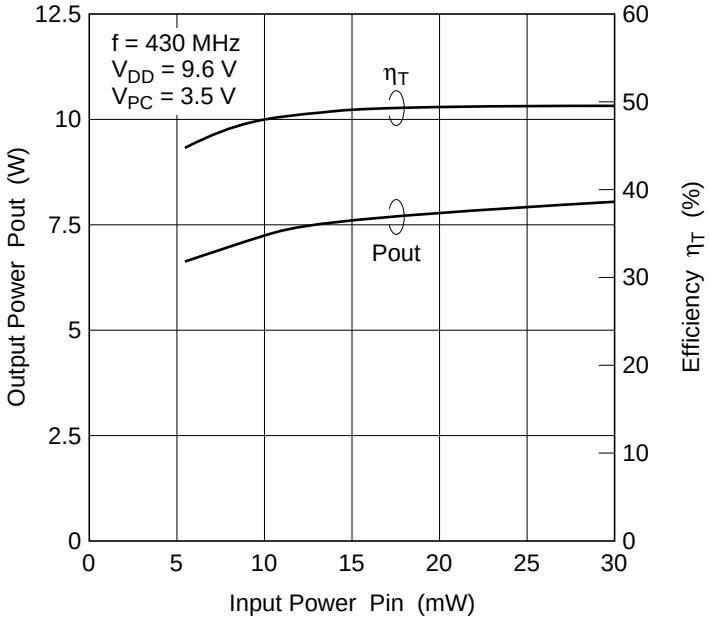
Pout, η_T vs. V_{DD} (2)



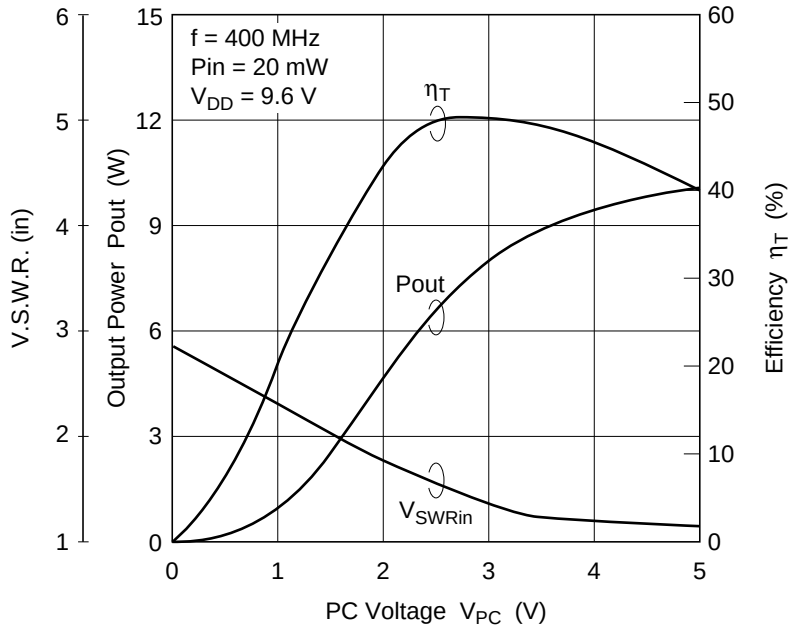
Pout, η_T vs. Pin (1)



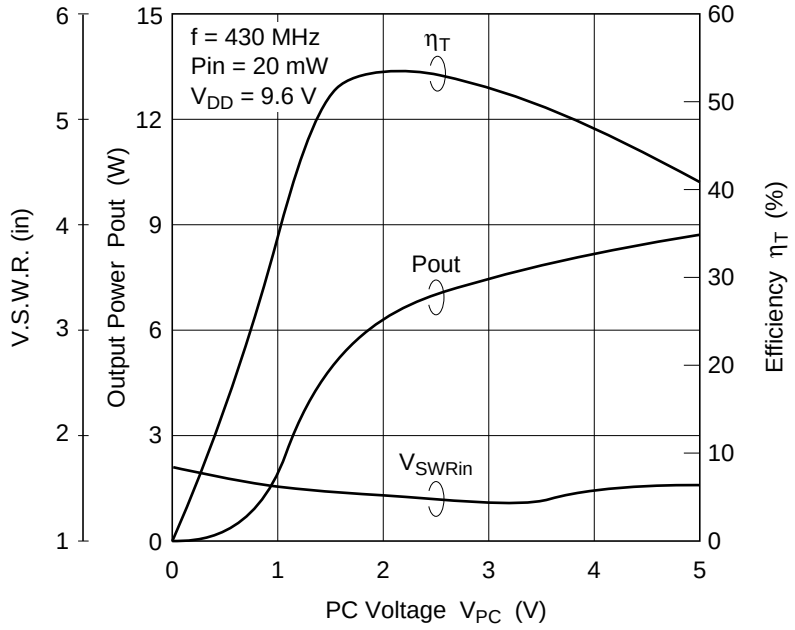
Pout, η_T vs. Pin (2)



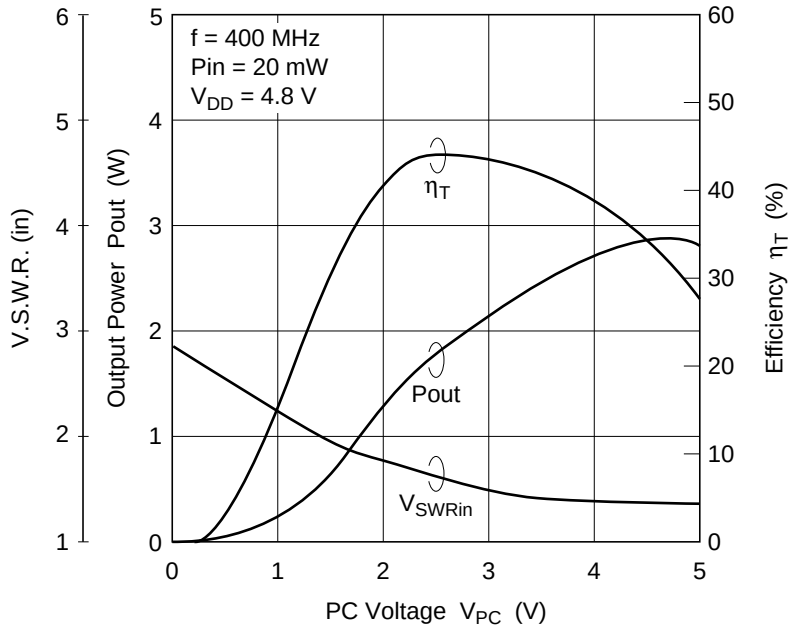
Pout, η_T, VSWR (in) vs. V_{PC} (1)



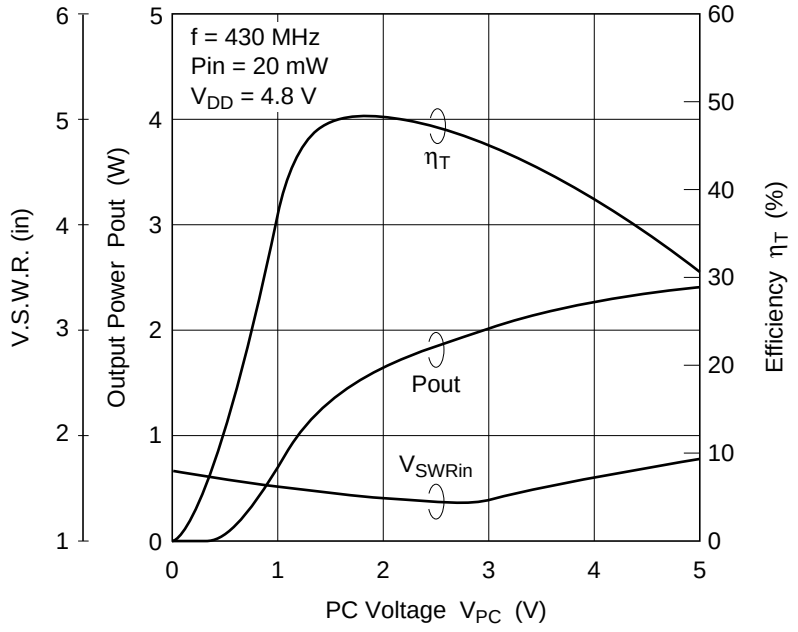
Pout, η_T, VSWR (in) vs. V_{PC} (2)



Pout, η_T, VSWR (in) vs. V_{PC} (3)

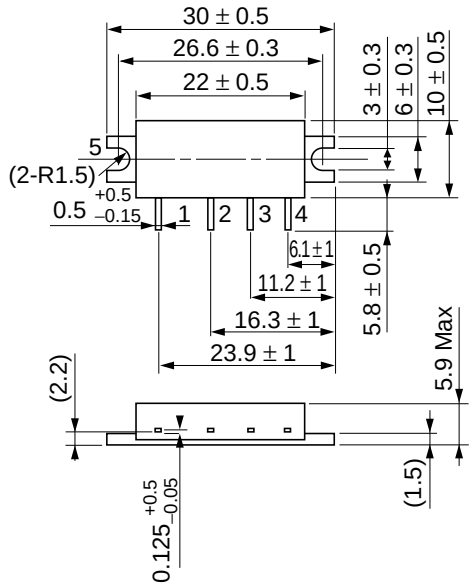


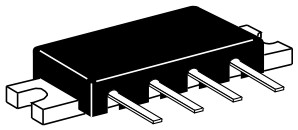
Pout, η_T, VSWR (in) vs. V_{PC} (4)



Package Dimensions

Unit: mm





Hitachi Code	RF-J1
JEDEC	—
EIAJ	—
Weight (reference value)	—

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