PF0310A

MOS FET Power Amplifier Module for VHF Band

HITACHI

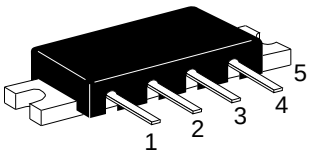
ADE-208-315A (Z)
2nd. Edition
July 1996

Features

- Small package: 30 × 10 × 5.9 mm
- High efficiency: 55% Typ
- Low power control current: 0.5 mA Max

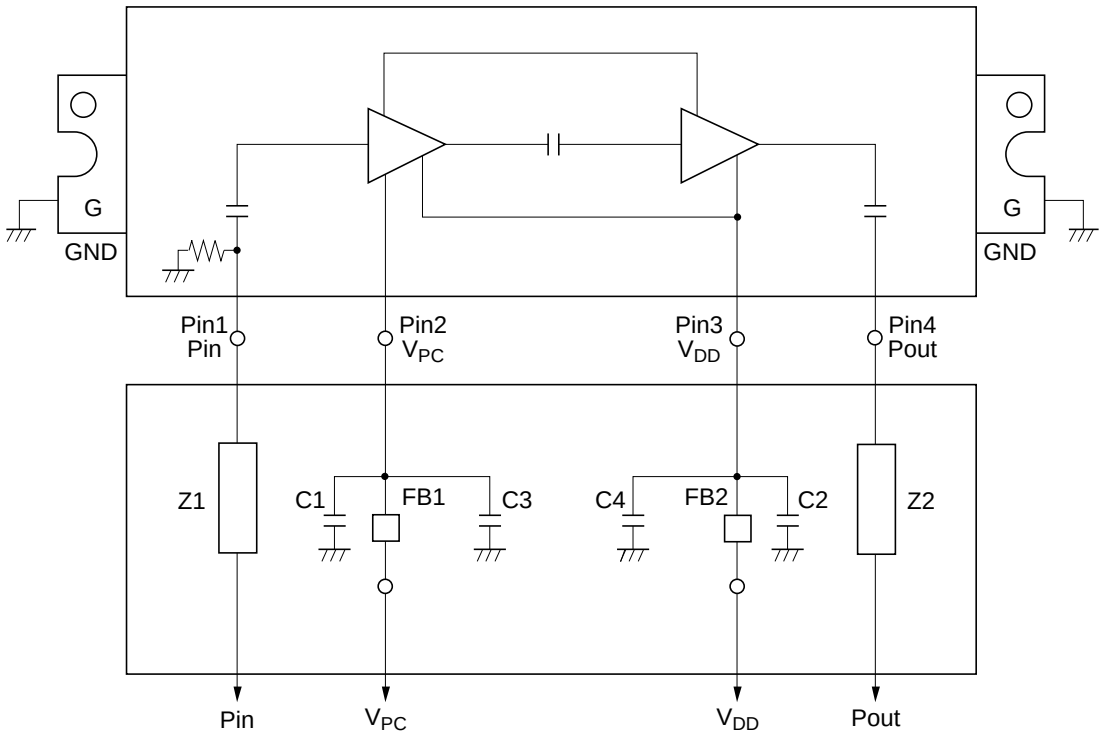
Pin Arrangement

• RF-J



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

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)

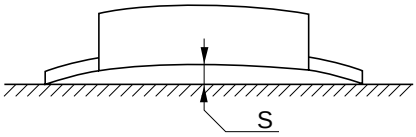
Absolute Maximum Ratings (Tc = 25°C)

Item	Symbol	Rating	Unit
Supply voltage	VDD	17	V
Supply current	IDD	3	A
PC voltage	VPC	4.5	V
Input power	Pin	100	mW
Operating case temperature	Tc (op)	–30 to +100	°C
Storage temperature	Tstg	–40 to +110	°C

Electrical Characteristics (Tc = 25°C)

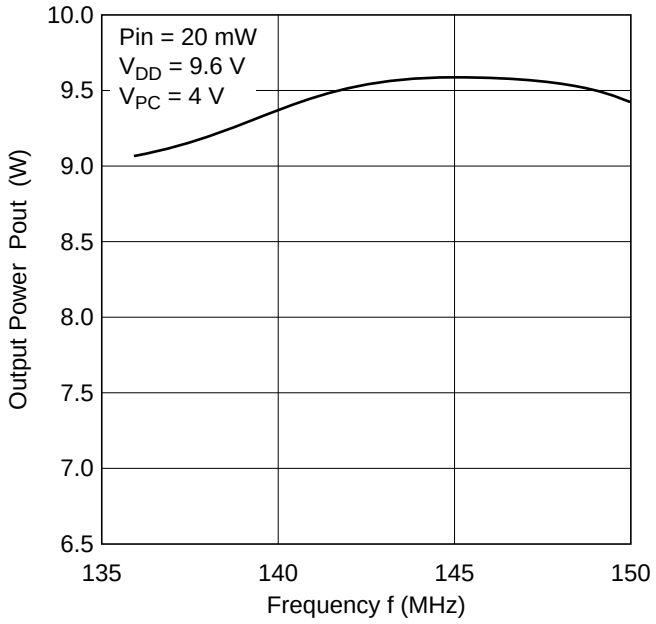
Item	Symbol	Min	Typ	Max	Unit	Test Condition
Frequency range	f	136	—	150	MHz	—
Drain cutoff current	IDS	—	—	100	μA	VDD = 17 V, VPC = 0 V
Total efficiency	ηT	45	55	—	%	Pin = 20 mW, VDD = 9.6 V,
2nd harmonic distortion	2nd H.D.	—	–25	–20	dBc	Pout = 7 W (at VPC controlled),
3rd harmonic distortion	3rd H.D.	—	–35	–30	dBc	RL = Rg = 50 Ω, Tc = 25°C
4th harmonic distortion	4rd H.D.	—	–40	–30	dBc	
Input VSWR	VSWR (in)	—	1.5	3.0	—	
Output VSWR	VSWR (out)	—	1.5	—	—	
Output power (1)	Pout (1)	7	9	—	W	Pin = 20 mW, VDD = 9.6 V, VPC = 4 V, RL = Rg = 50 Ω
Output power (2)	Pout (2)	2.5	3.5	—	W	Pin = 20 mW, VDD = 6 V, VPC = 3.7 V, RL = Rg = 50 Ω
Load VSWR tolerance	—	No degradation		—		Pin = 20 mW, VDD = 15 V, Pout ≤ 7 W, (at VPC controlled), Output VSWR = 6:1 All phases
Stability	—	No parasitic oscillation		—		Pin = 20 mW, VDD = 6 to 15 V, Pout ≤ 7 W, (at VPC controlled), Output VSWR = 3:1 All phases

Mechanical Characteristics

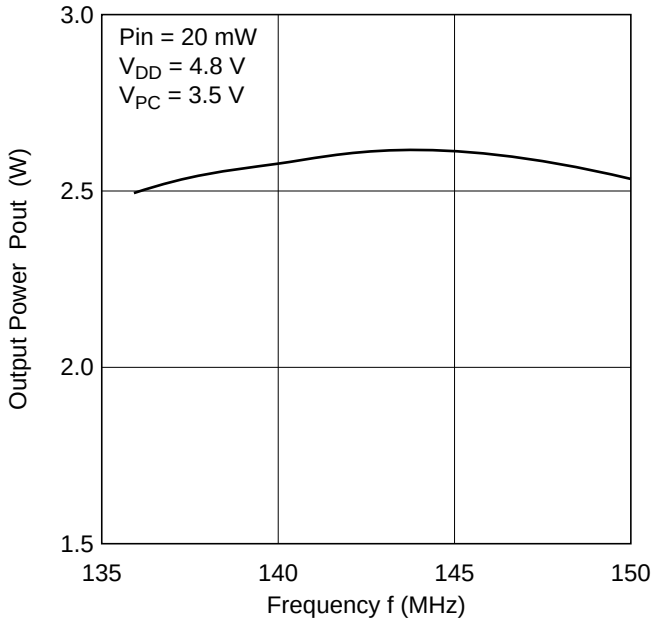
Item	Conditions	Spec
Torque for screw up the heatsink flange	M2.6 Screw Bolts	1.5 to 3.5 kg•cm
Warp size of the heatsink flange: S		S = 0 +0.1/–0 mm

Characteristics Curve

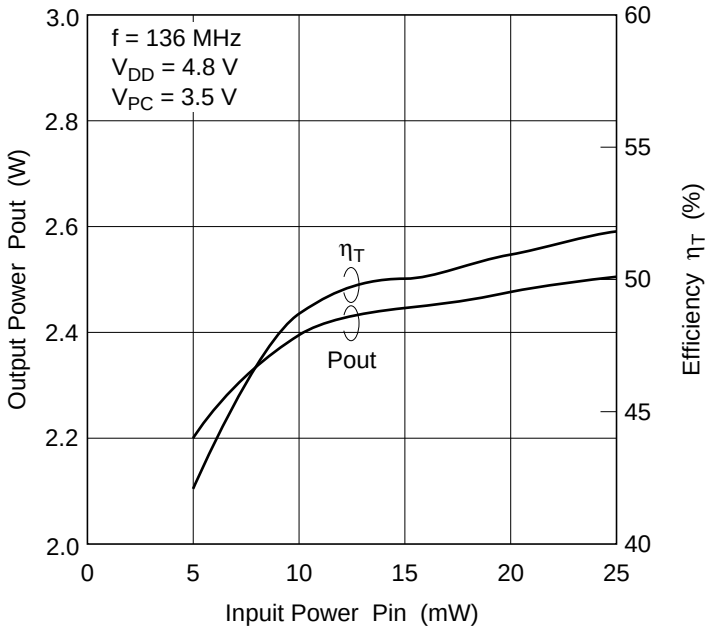
Pout vs. Frequency (1)



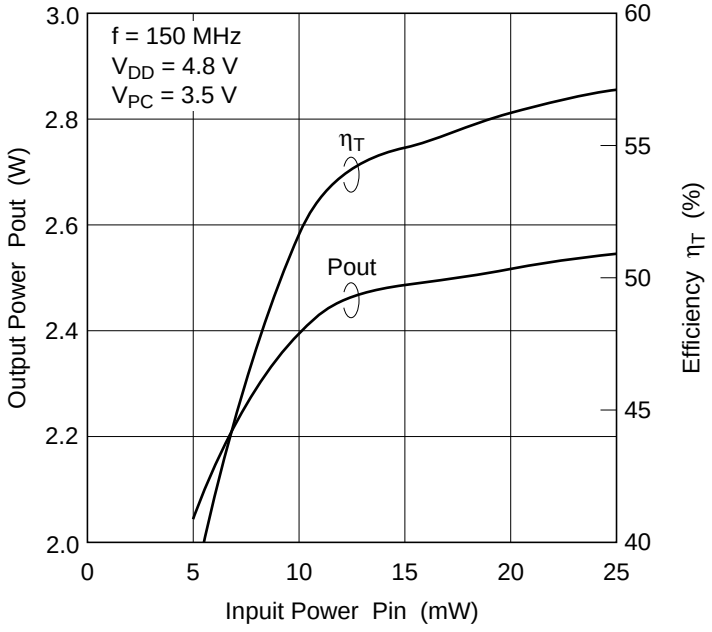
Pout vs. Frequency (2)



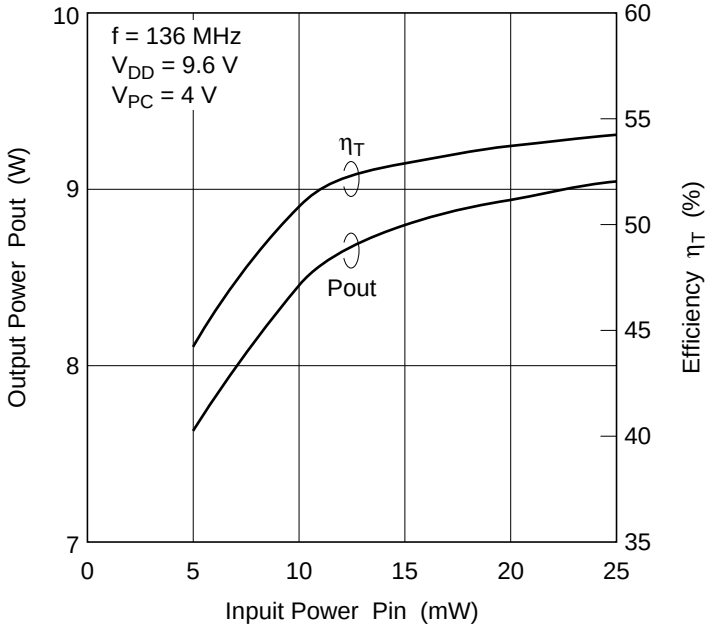
Pout, η_T vs. Pin (1)



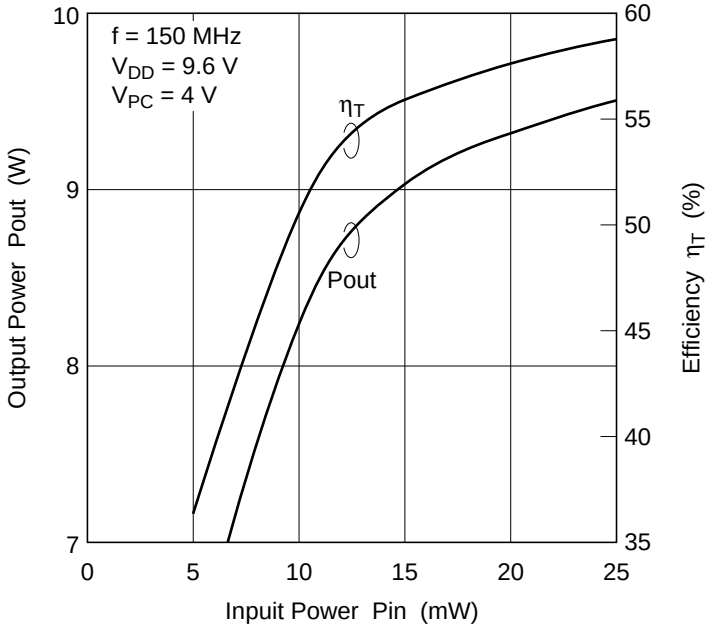
Pout, η_T vs. Pin (2)



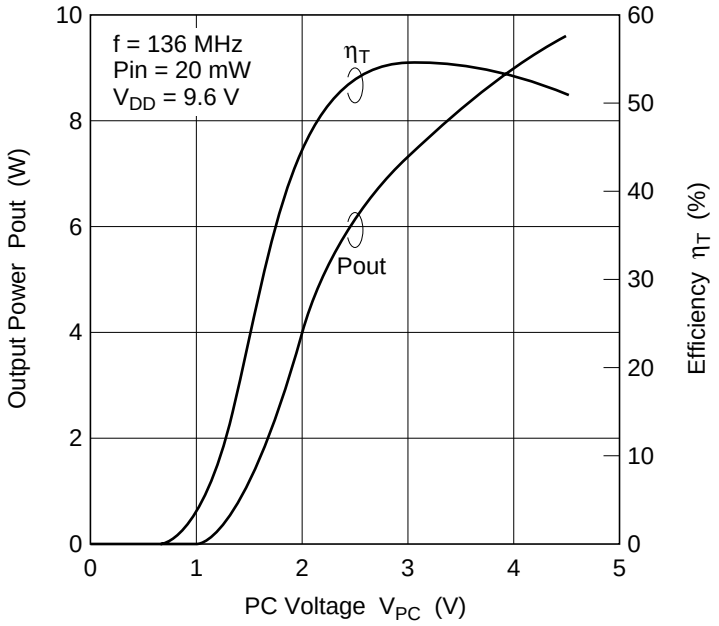
Pout, η_T vs. Pin (3)



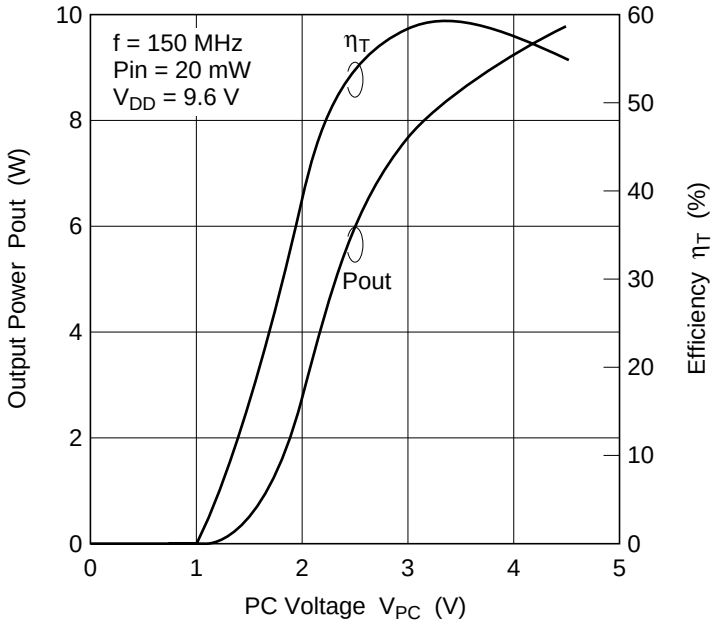
Pout, η_T vs. Pin (4)



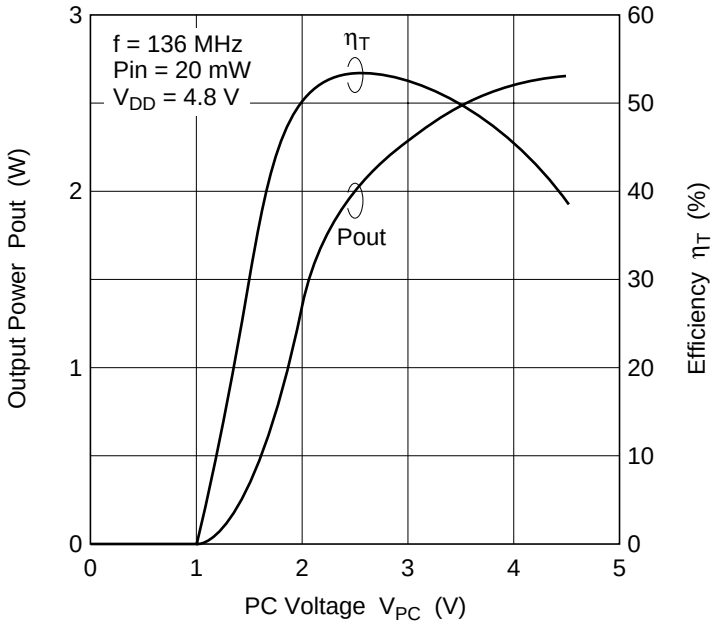
Pout, η_T vs. V_{PC} (1)



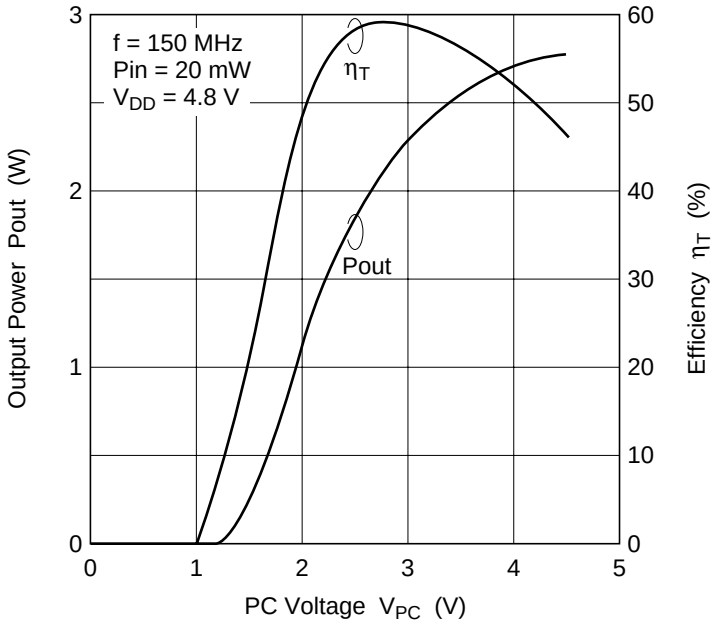
Pout, η_T vs. V_{PC} (2)



Pout, η_T vs. V_{PC} (3)

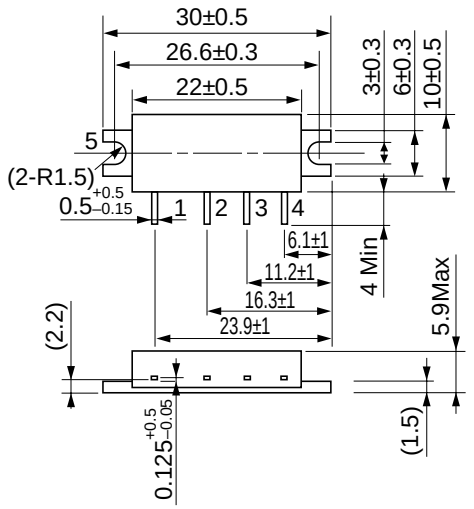


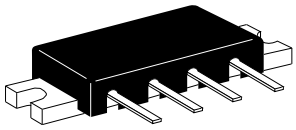
Pout, η_T vs. V_{PC} (4)



Package Dimensions

Unit: mm





Hitachi code	RF-J
EIAJ code	—
JEDEC code	—