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# PF0311

MOS FET Power Amplifier Module for VHF Band

# HITACHI

ADE-208-104B (Z)  
3rd. Edition  
July 1996

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## Application

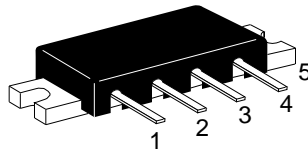
VHF Band 150 to 174 MHz

## Features

- Small package:  $30 \times 10 \times 5.9$  mm
- High efficiency: 50% Typ
- Low power control current: 0.5 mA Max

## Pin Arrangement

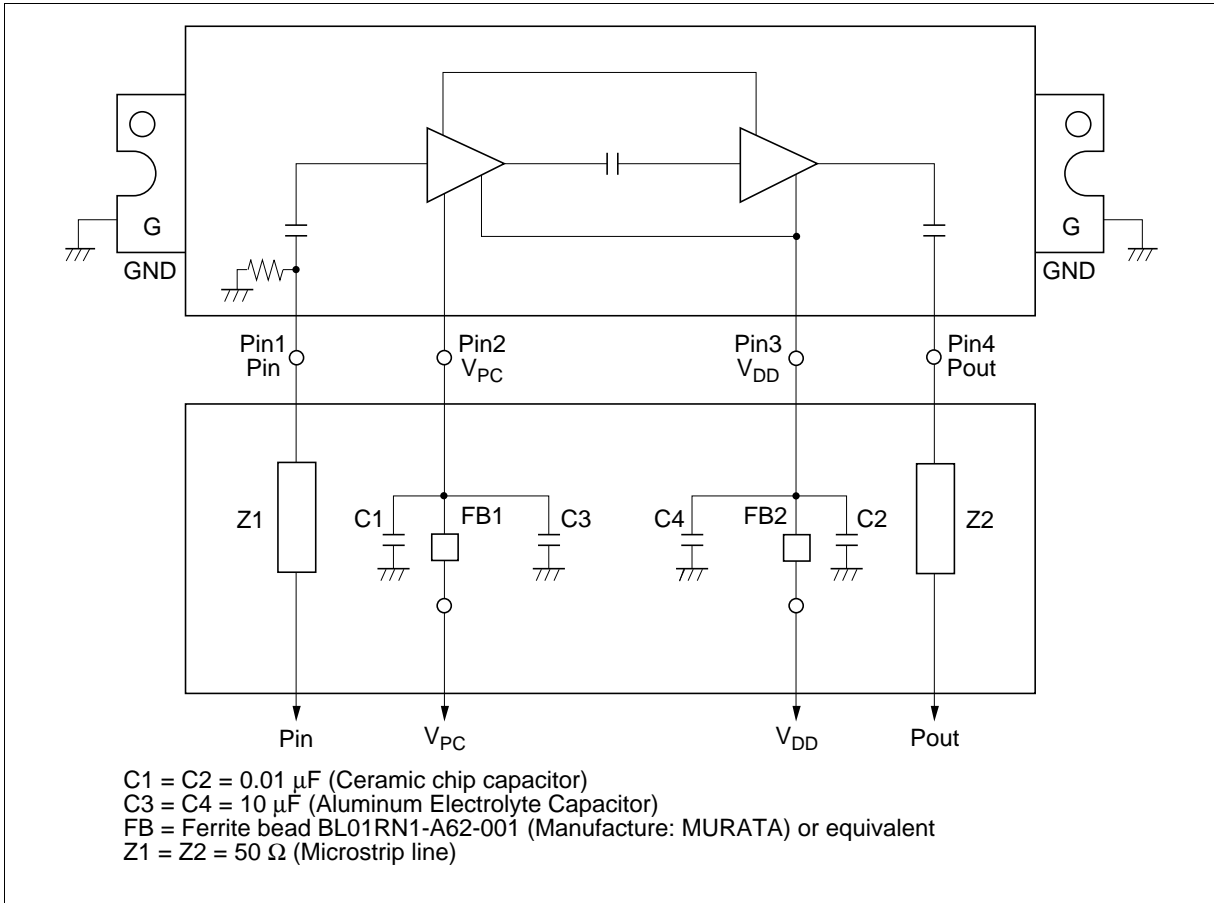
• RF-J



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

# PF0311

## Internal Diagram and External Circuit



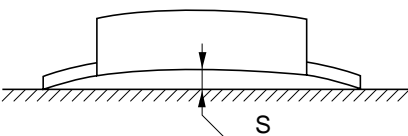
### Absolute Maximum Ratings ( $T_c = 25^\circ\text{C}$ )

Item	Symbol	Rating	Unit
Supply voltage	$V_{DD}$	17	V
Supply current	$I_{DD}$	3	A
PC voltage	$V_{PC}$	7	V
Input power	Pin	100	mW
Operating case temperature	$T_c$ (op)	-30 to +100	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-40 to +110	$^\circ\text{C}$

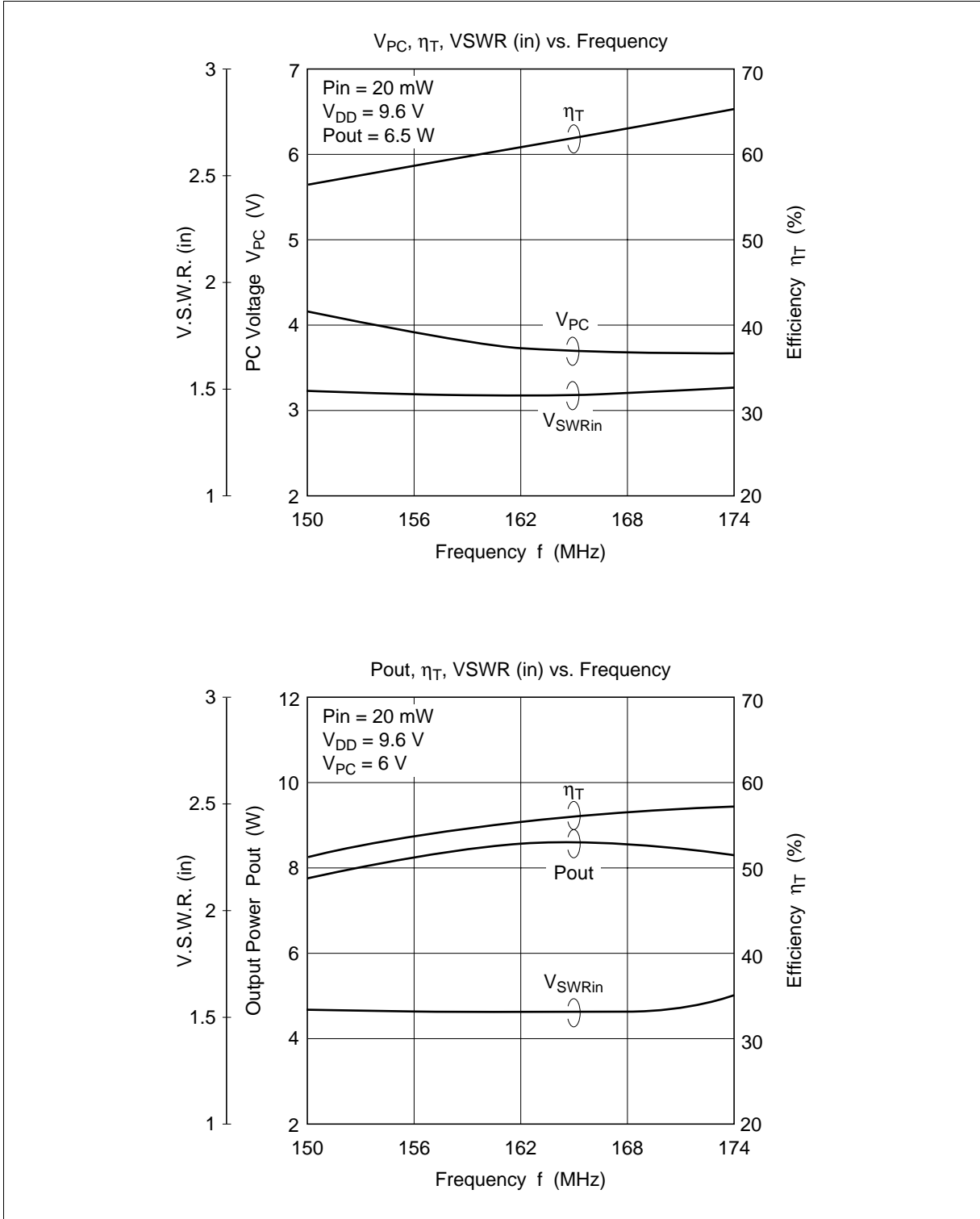
**Electrical Characteristics** ( $T_c = 25^\circ\text{C}$ )

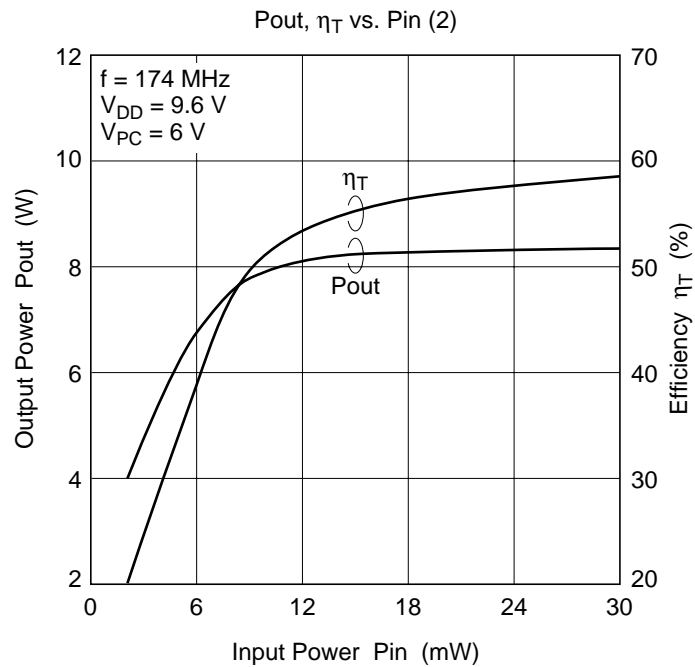
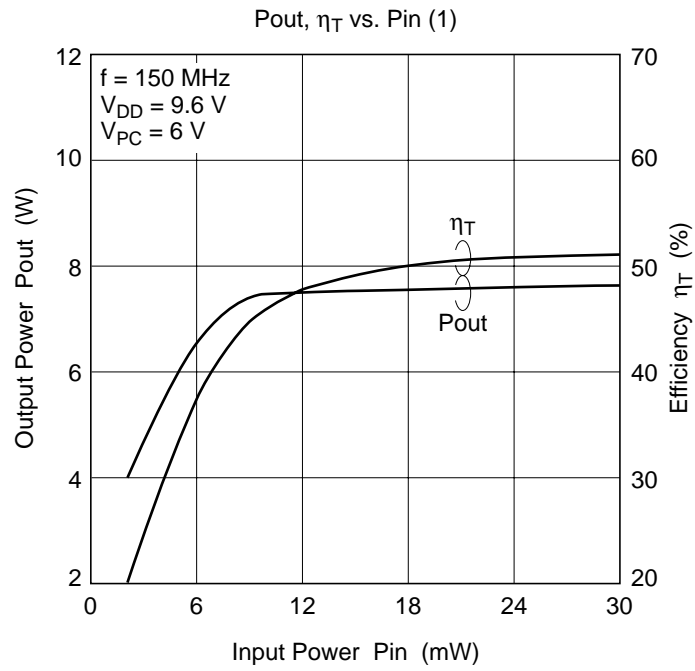
Item	Symbol	Min	Typ	Max	Unit	Test Condition
Frequency range	f	150	—	174	MHz	—
Drain cutoff current	$I_{DS}$	—	—	100	$\mu\text{A}$	$V_{DD} = 17\text{ V}$ , $V_{PC} = 0\text{ V}$ , $R_L = R_g = 50\ \Omega$ ,
Total efficiency	$\eta_T$	45	55	—	%	$P_{in} = 20\text{ mW}$ , $V_{DD} = 9.6\text{ V}$ , $P_{out} = 6.5\text{ W}$ (at $V_{PC}$ controlled), $R_L = R_g = 50\ \Omega$ , $T_c = 25^\circ\text{C}$
2nd harmonic distortion	2nd H.D.	—	-25	-15	dBc	
3rd harmonic distortion	3rd H.D.	—	-35	-25	dBc	
4th harmonic distortion	4th H.D.	—	-40	-30	dBc	
Input VSWR	VSWR (in)	—	1.5	3.0	—	
Output power (1)	$P_{out}$ (1)	6.8	7.5	—	W	$P_{in} = 20\text{ mW}$ , $V_{DD} = 9.6\text{ V}$ , $V_{PC} = 6\text{ V}$ , $R_L = R_g = 50\ \Omega$
Output power (2)	$P_{out}$ (2)	2	3	—	W	$P_{in} = 20\text{ mW}$ , $V_{DD} = 6\text{ V}$ , $V_{PC} = 5.5\text{ V}$ , $R_L = R_g = 50\ \Omega$
Load VSWR tolerance (1)	—	No degradation			—	$P_{in} = 20\text{ mW}$ , $V_{DD} = 15\text{ V}$ , $P_{out} \leq 6.5\text{ W}$ , (at $V_{PC}$ controlled), Output VSWR = 6:1 All phases
Load VSWR tolerance (2)	—	No degradation			—	$P_{in} = 20\text{ mW}$ , $V_{DD} = 9.6\text{ V}$ , $P_{out} \leq 6.5\text{ W}$ , (at $V_{PC}$ controlled), Output VSWR = 20:1 All phases
Stability	—	No parasitic oscillation			—	$P_{in} = 20\text{ mW}$ , $V_{DD} = 6\text{ to }15\text{ V}$ , $P_{out} \leq 6.5\text{ W}$ , (at $V_{PC}$ controlled), Output VSWR = 3:1 All phases,

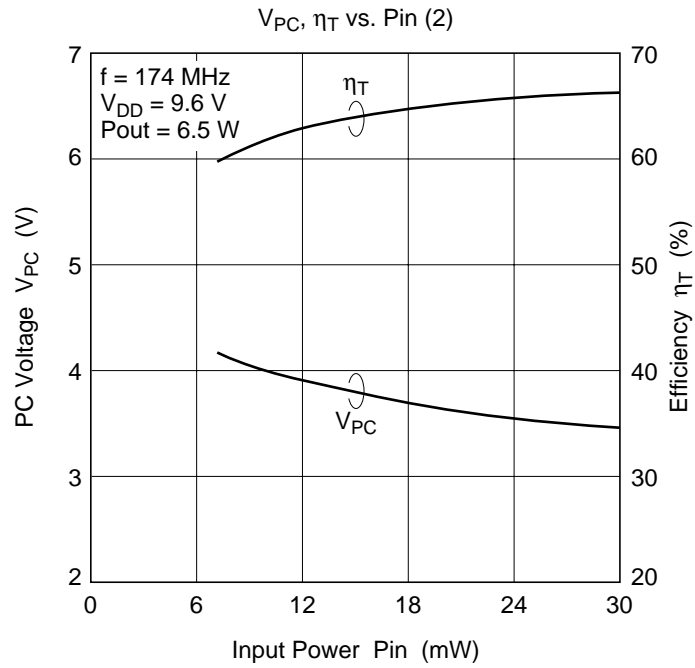
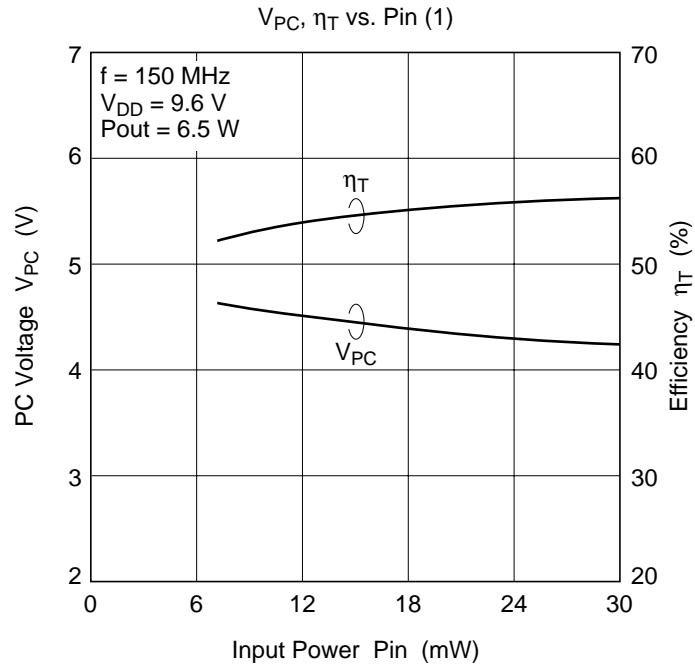
**Mechanical Characteristics**

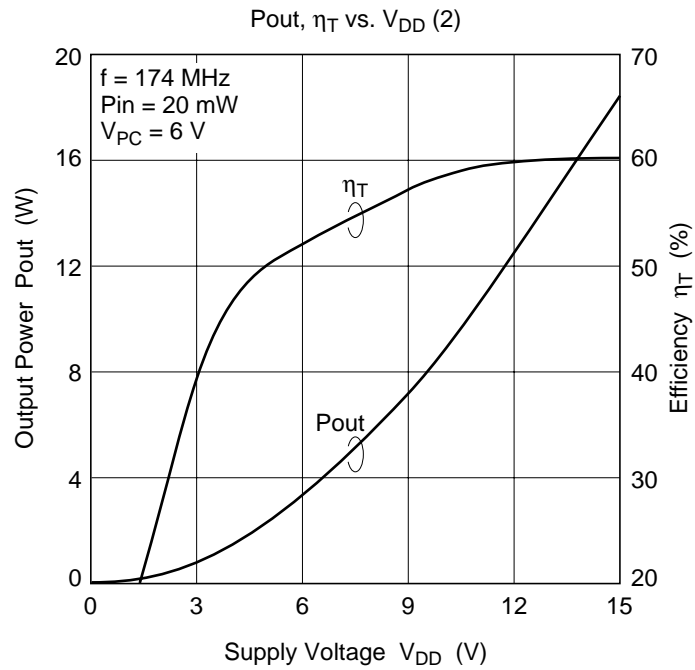
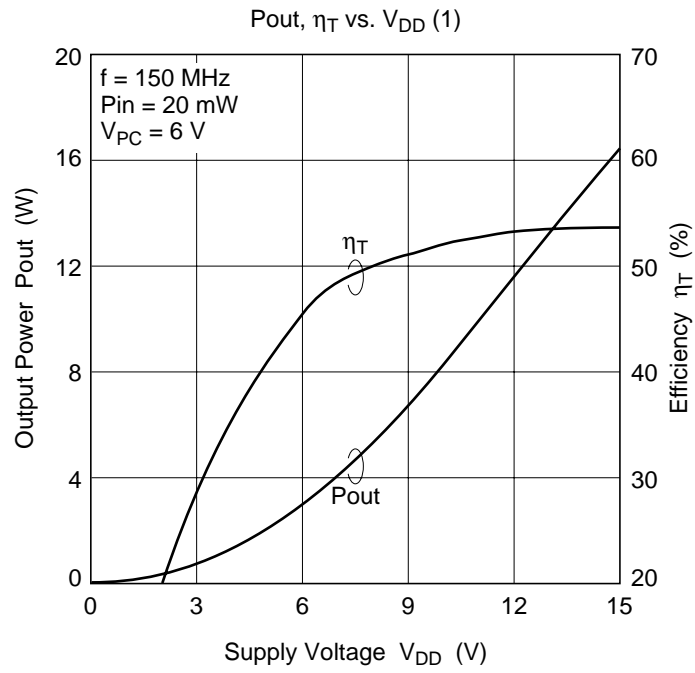
Item	Measuring Conditions	Spec
Torque for screw up the heatsink flange	M2.6 Screw Bolts	1.5 to 3.5 kg $\cdot$ cm
Warp size of the heatsink flange: S		S = 0 +0.1/-0 mm

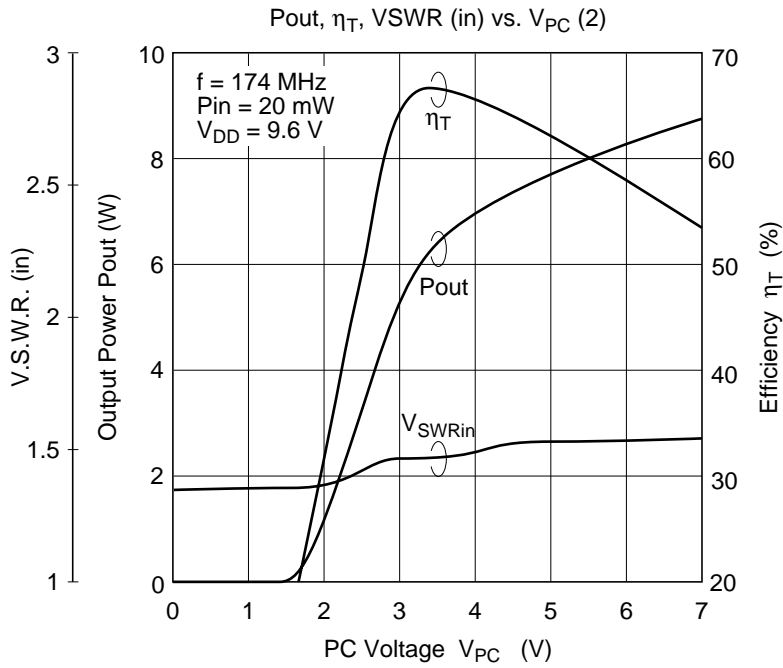
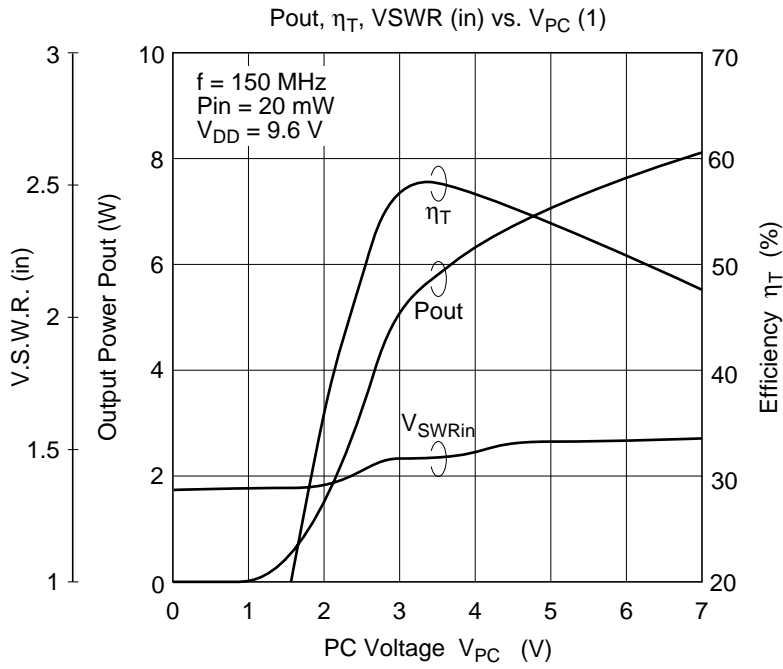
Characteristics Curve



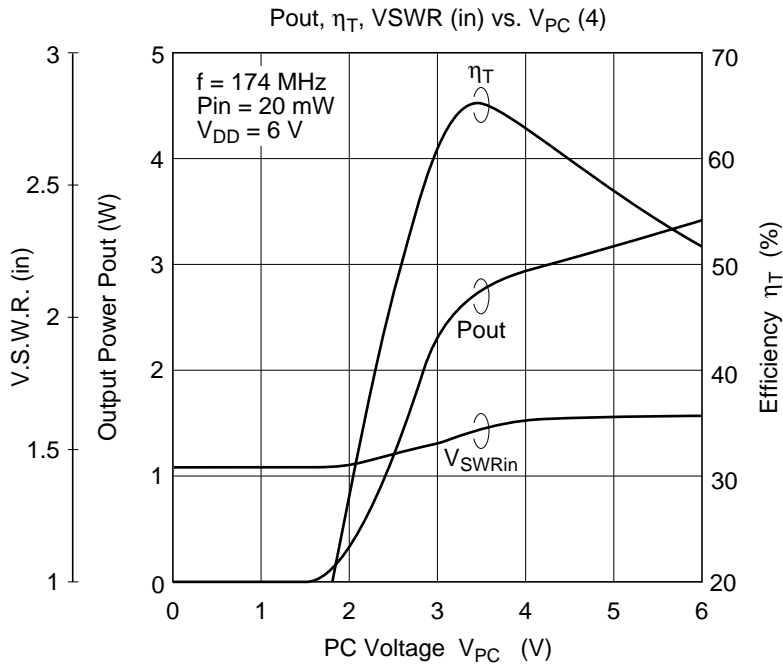
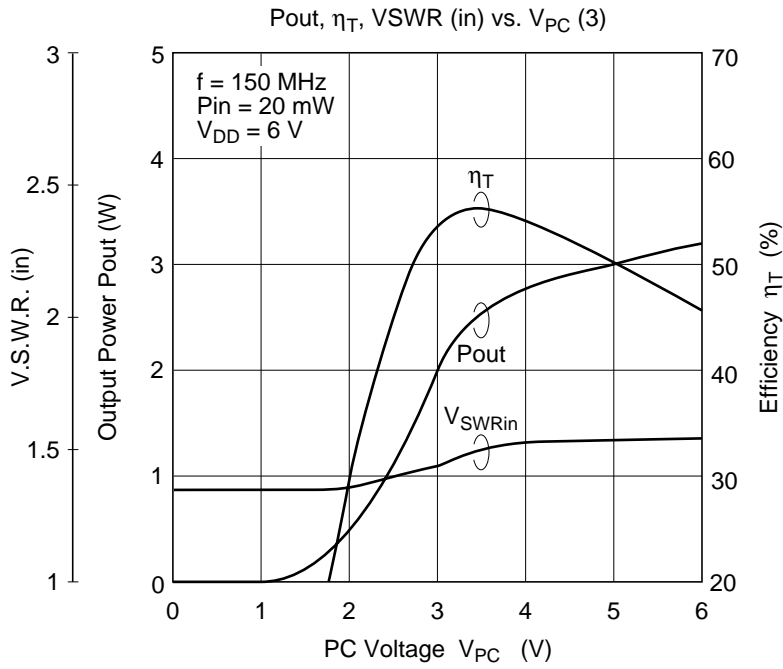








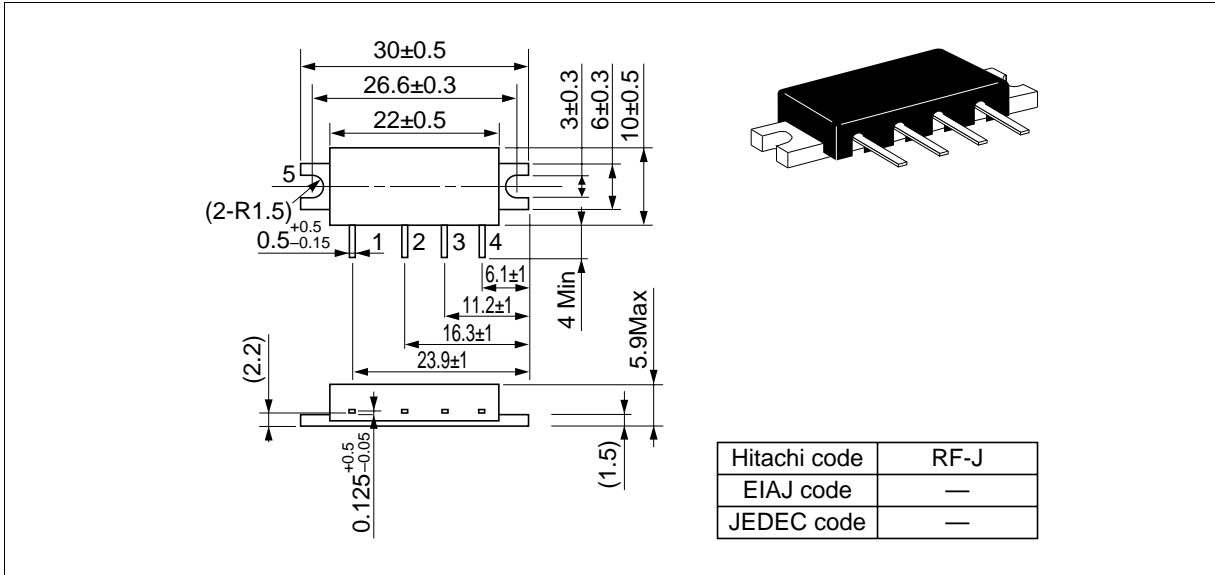




# PF0311

## Package Dimensions

Unit: mm



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