
PF0311

MOS FET Power Amplifier Module for VHF Band

HITACHI

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

Application

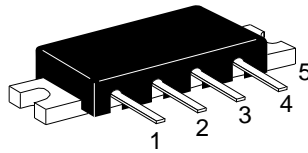
VHF Band 150 to 174 MHz

Features

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

Pin Arrangement

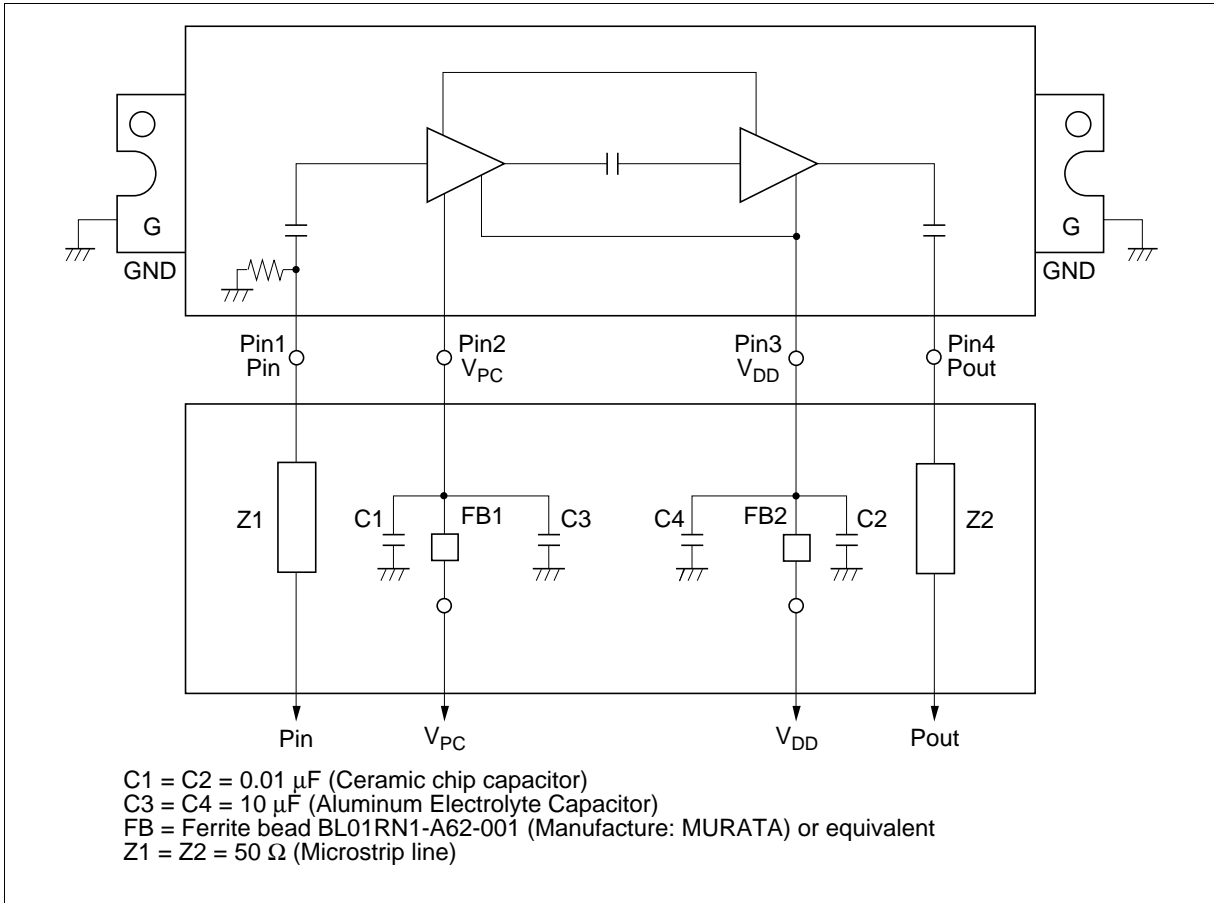
• RF-J



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

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Internal Diagram and External Circuit



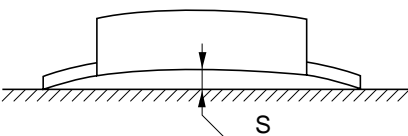
Absolute Maximum Ratings ($T_c = 25^\circ\text{C}$)

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	$^\circ\text{C}$

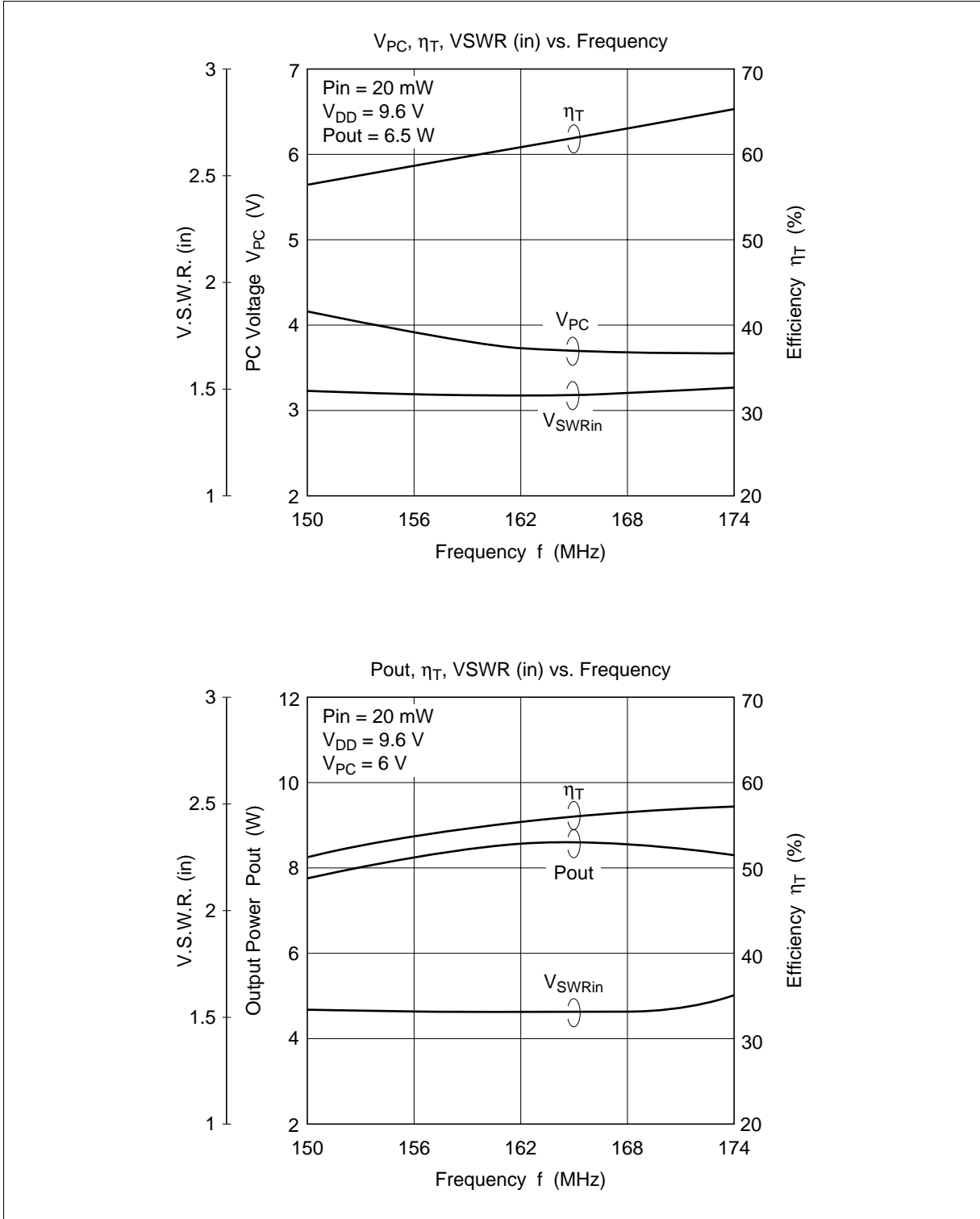
Electrical Characteristics ($T_c = 25^\circ\text{C}$)

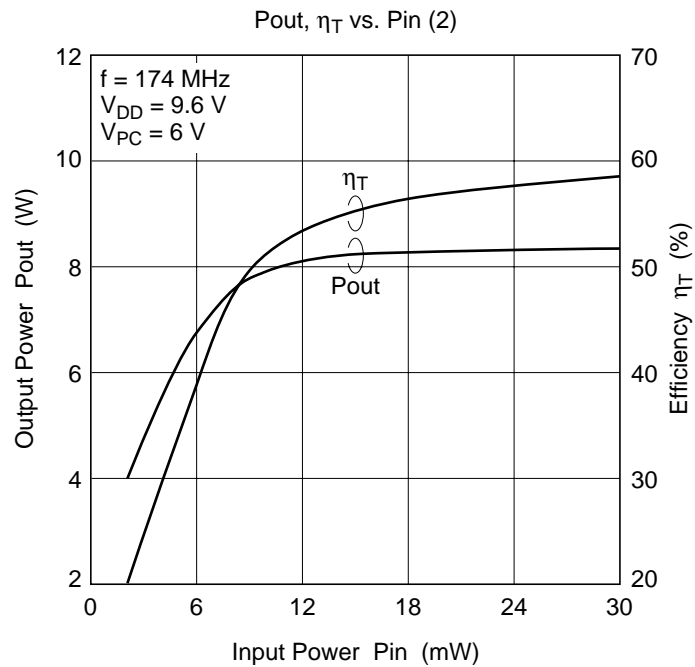
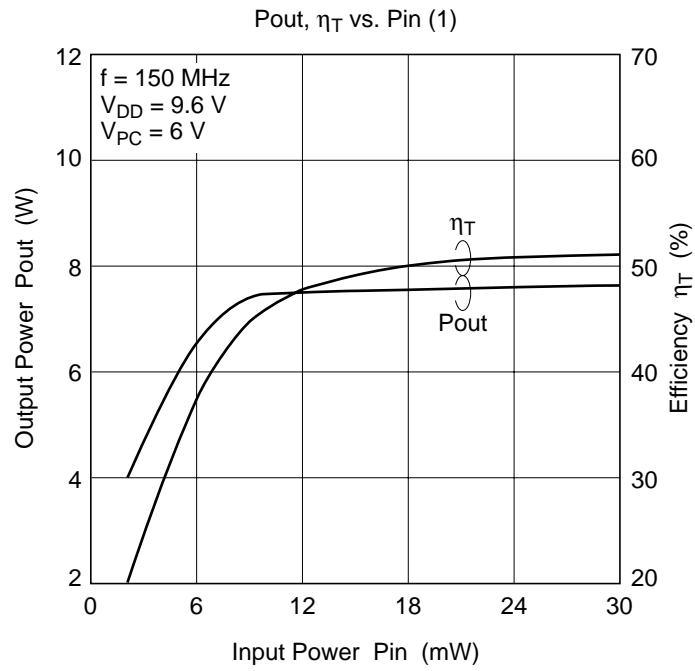
Item	Symbol	Min	Typ	Max	Unit	Test Condition
Frequency range	f	150	—	174	MHz	—
Drain cutoff current	I_{DS}	—	—	100	μA	$V_{DD} = 17\text{ V}$, $V_{PC} = 0\text{ V}$, $R_L = R_g = 50\ \Omega$,
Total efficiency	η_T	45	55	—	%	$P_{in} = 20\text{ mW}$, $V_{DD} = 9.6\text{ V}$,
2nd harmonic distortion	2nd H.D.	—	-25	-15	dBc	$P_{out} = 6.5\text{ W}$ (at V_{PC} controlled),
3rd harmonic distortion	3rd H.D.	—	-35	-25	dBc	$R_L = R_g = 50\ \Omega$, $T_c = 25^\circ\text{C}$
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,

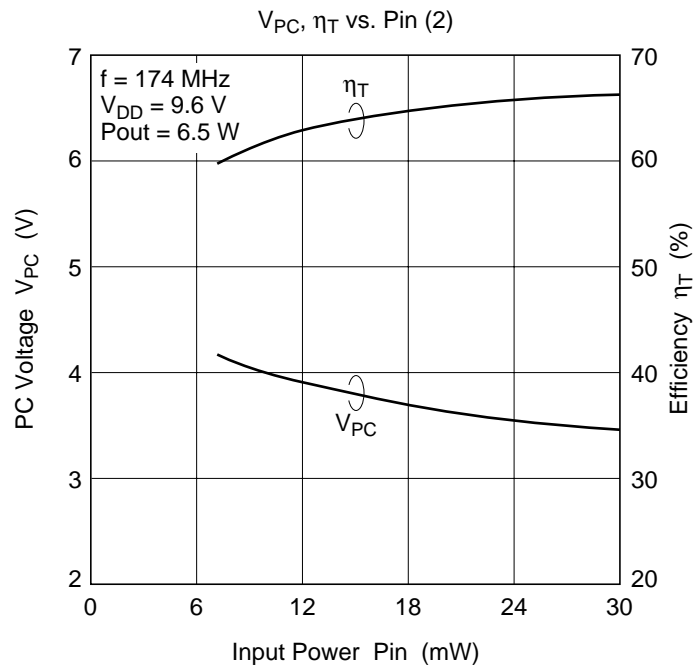
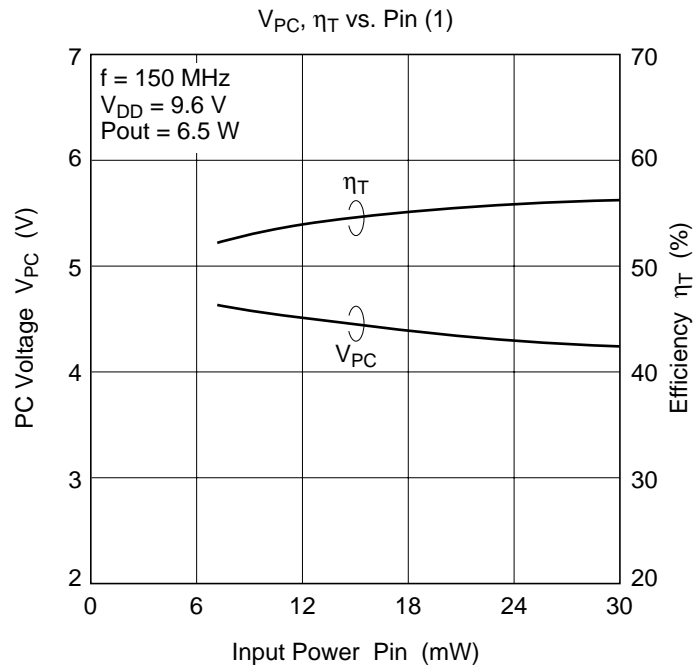
Mechanical Characteristics

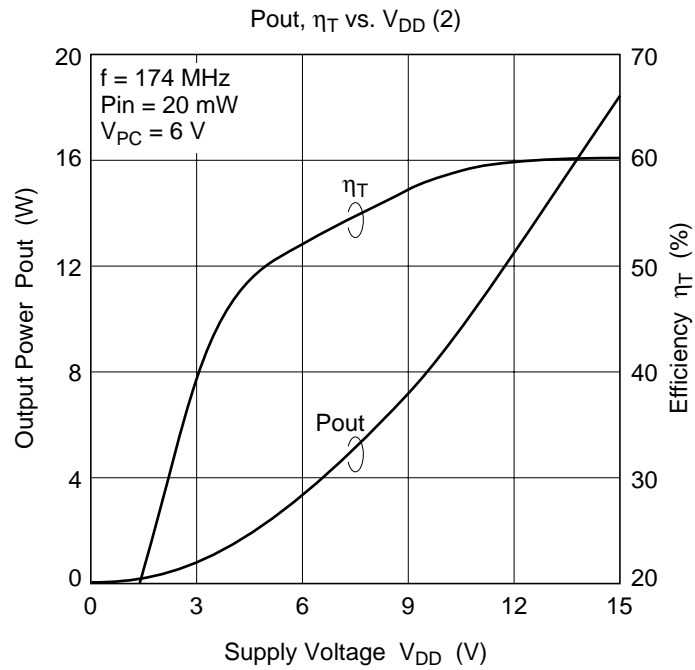
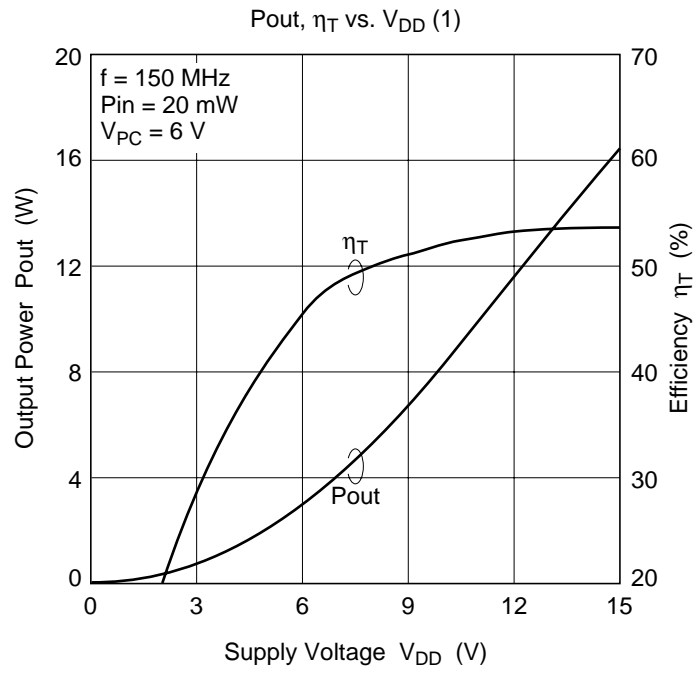
Item	Measuring Conditions	Spec
Torque for screw up the heatsink flange	M2.6 Screw Bolts	1.5 to 3.5 kg \cdot cm
Warp size of the heatsink flange: S		$S = 0$ $+0.1/-0\text{ mm}$

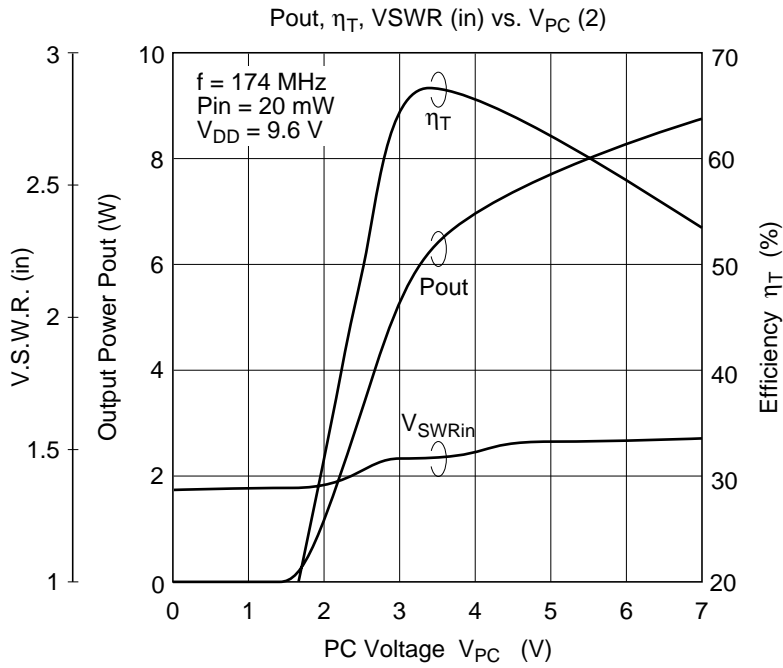
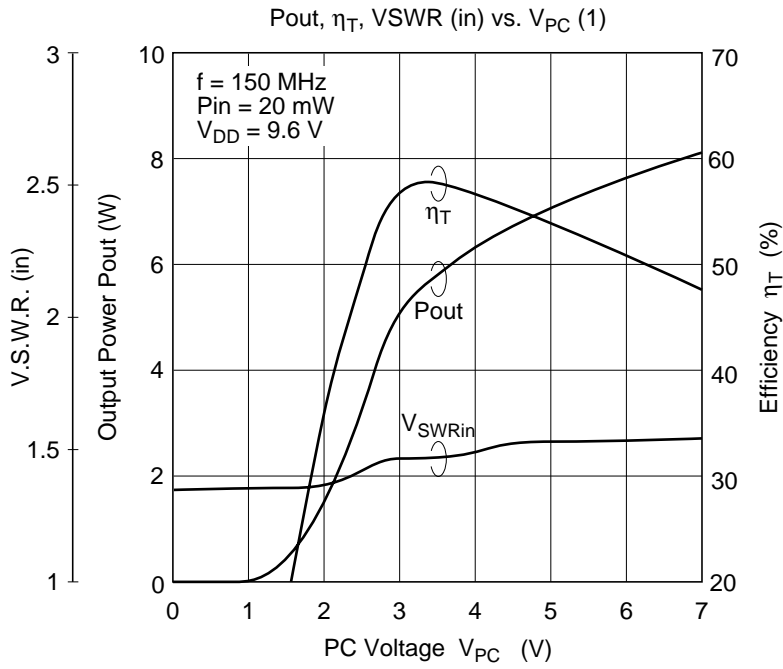
Characteristics Curve

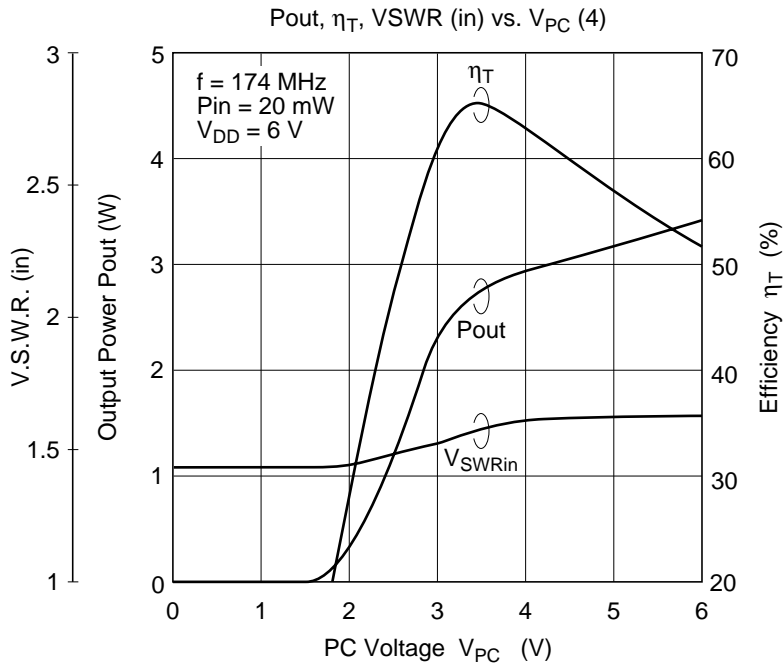
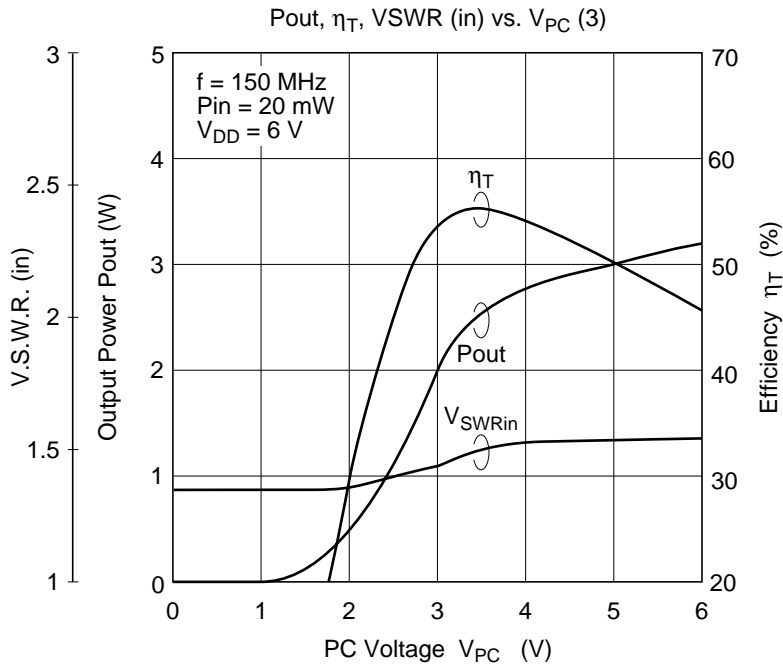








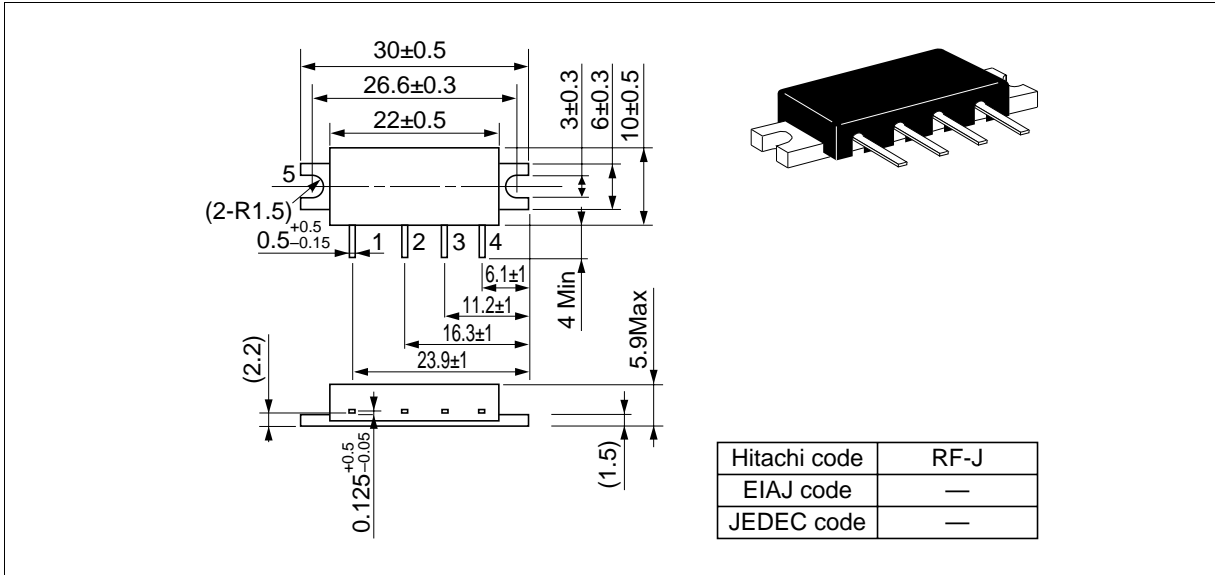




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Package Dimensions

Unit: mm



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