
PF0311

MOS FET Power Amplifier Module for VHF Band

HITACHI

ADE-208-104B (Z)

3rd. Edition

July 1996

Application

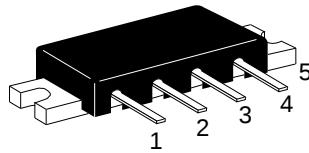
VHF Band 150 to 174 MHz

Features

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

Pin Arrangement

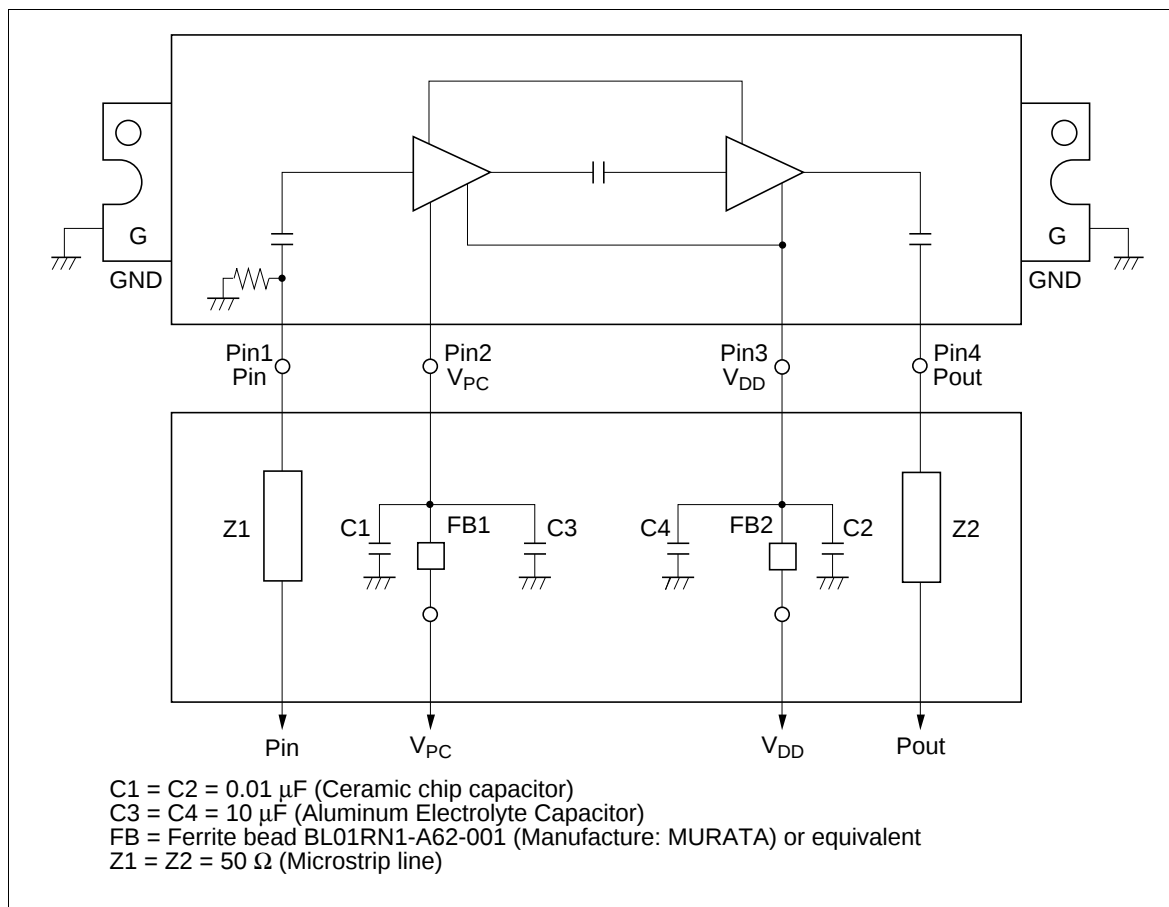
• RF-J



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

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Internal Diagram and External Circuit



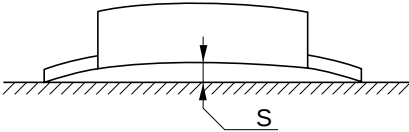
Absolute Maximum Ratings (T_c = 25°C)

Item	Symbol	Rating	Unit
Supply voltage	V _{DD}	17	V
Supply current	I _{DD}	3	A
PC voltage	V _{PC}	7	V
Input power	P _{in}	100	mW
Operating case temperature	T _c (op)	−30 to +100	°C
Storage temperature	T _{stg}	−40 to +110	°C

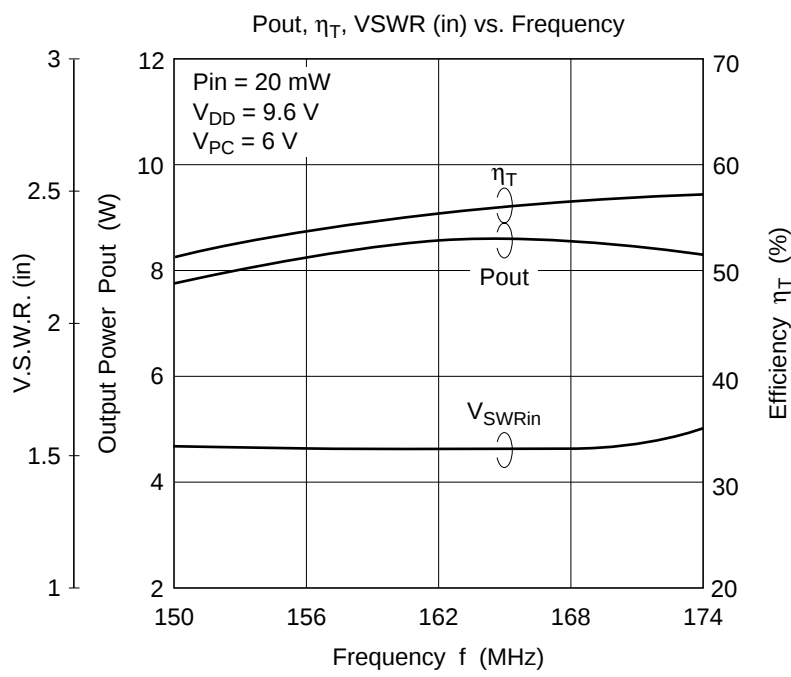
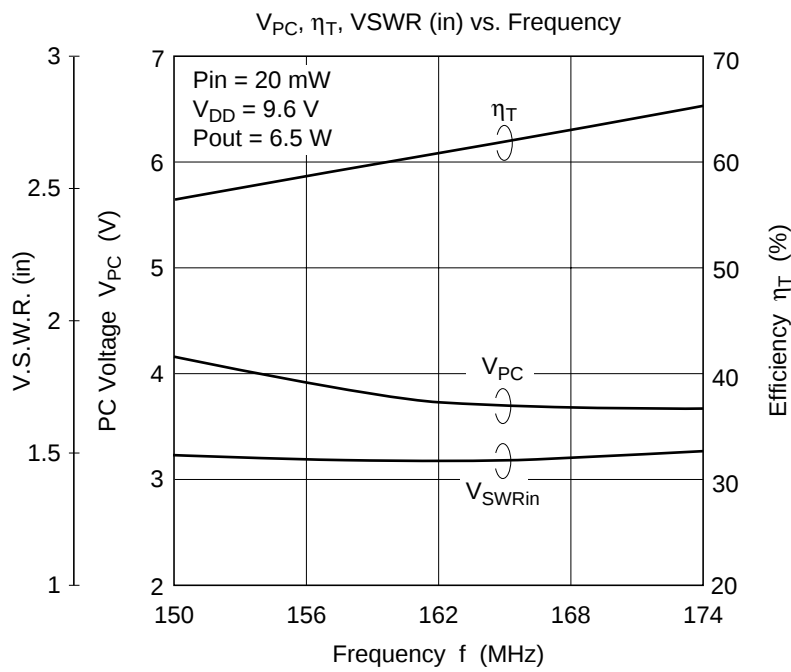
Electrical Characteristics (T_c = 25°C)

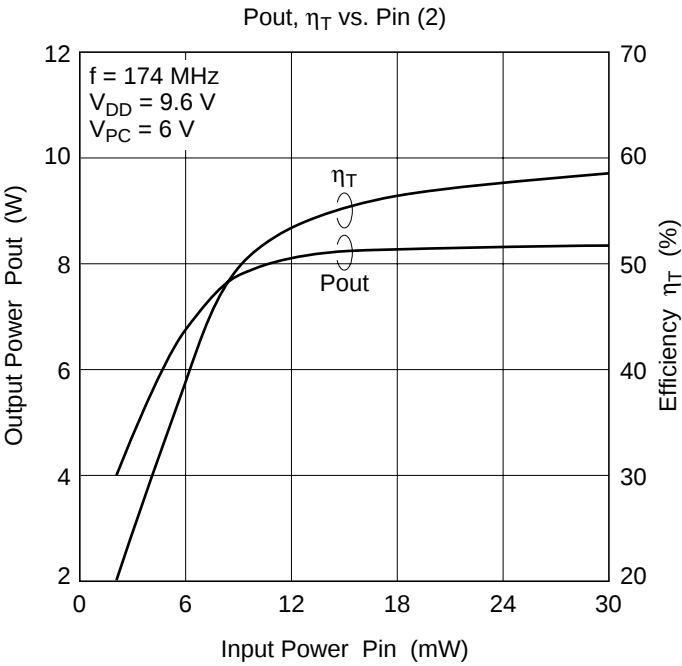
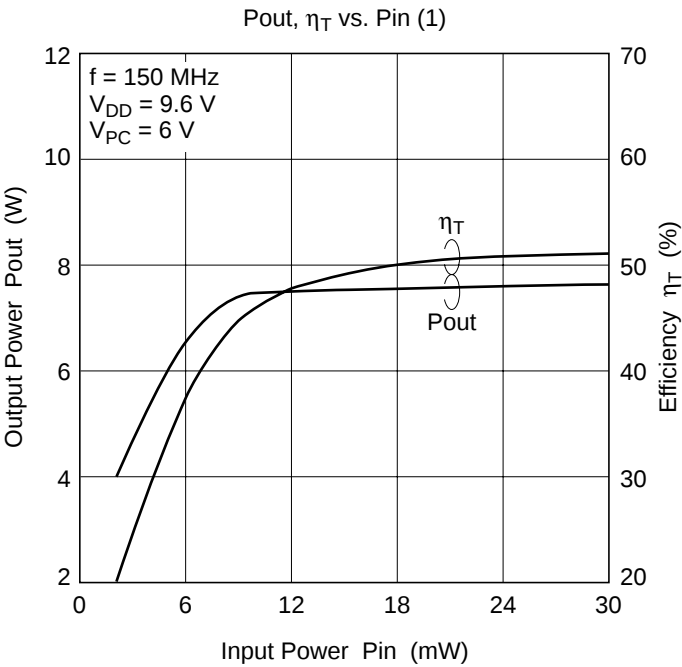
Item	Symbol	Min	Typ	Max	Unit	Test Condition
Frequency range	f	150	—	174	MHz	—
Drain cutoff current	I _{DS}	—	—	100	μA	V _{DD} = 17 V, V _{PC} = 0 V, R _L = R _g = 50 Ω,
Total efficiency	η _T	45	55	—	%	Pin = 20 mW, V _{DD} = 9.6 V,
2nd harmonic distortion	2nd H.D.	—	−25	−15	dBc	P _{out} = 6.5 W (at VPC controlled),
3rd harmonic distortion	3rd H.D.	—	−35	−25	dBc	R _L = R _g = 50 Ω, T _c = 25°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	Pin = 20 mW, V _{DD} = 9.6 V, V _{PC} = 6 V, R _L = R _g = 50 Ω
Output power (2)	P _{out} (2)	2	3	—	W	Pin = 20 mW, V _{DD} = 6 V, V _{PC} = 5.5 V, R _L = R _g = 50 Ω
Load VSWR tolerance (1)	—	No degradation			—	Pin = 20 mW, V _{DD} = 15 V, P _{out} ≤ 6.5 W, (at VPC controlled), Output VSWR = 6:1 All phases
Load VSWR tolerance (2)	—	No degradation			—	Pin = 20 mW, V _{DD} = 9.6 V, P _{out} ≤ 6.5 W, (at VPC controlled), Output VSWR = 20:1 All phases
Stability	—	No parasitic oscillation			—	Pin = 20 mW, V _{DD} = 6 to 15 V, P _{out} ≤ 6.5 W, (at VPC controlled), Output VSWR = 3:1 All phases,

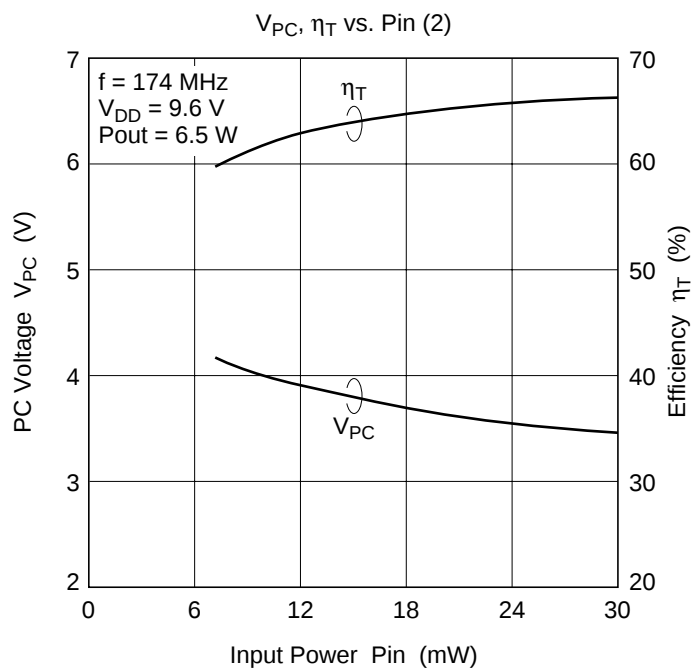
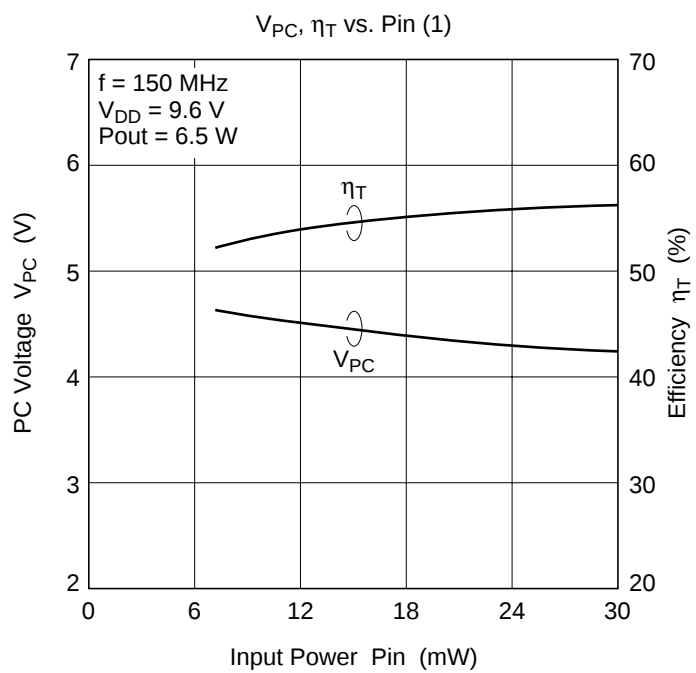
Mechanical Characteristics

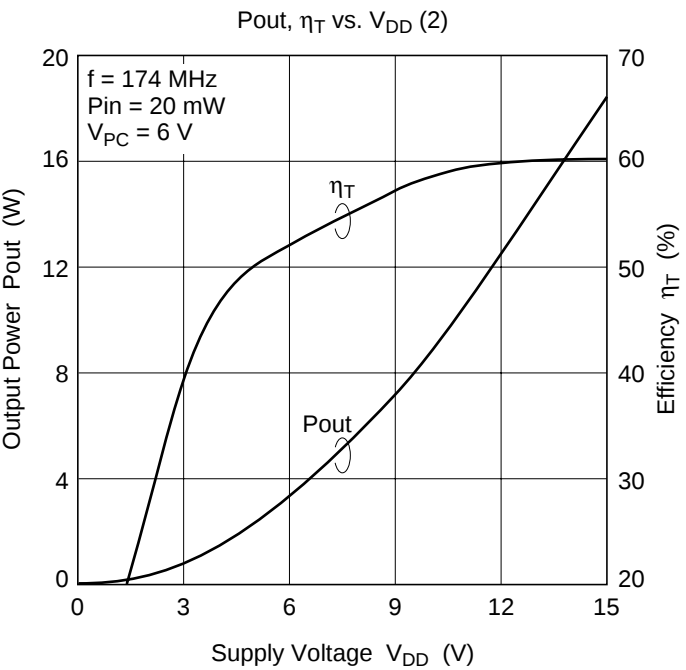
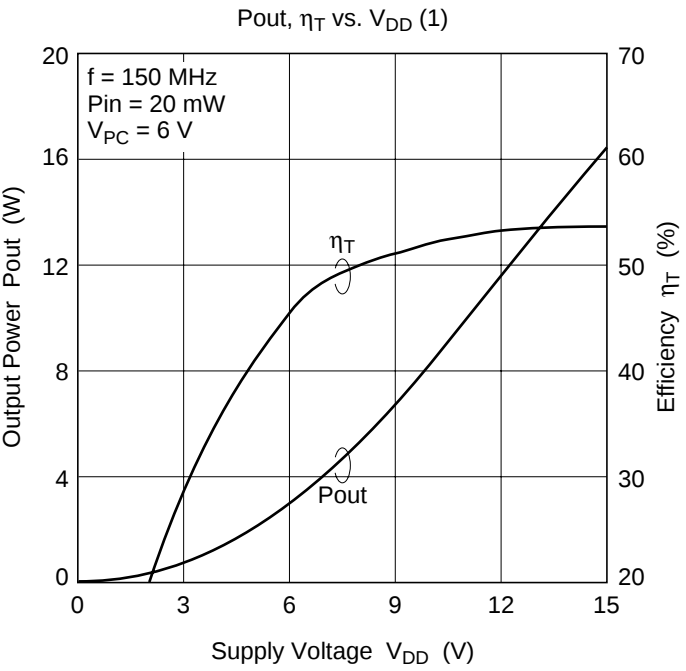
Item	Measuring Conditions	Spec
Torque for screw up the heatsink flange	M2.6 Screw Bolts	1.5 to 3.5 kg•cm
Warp size of the heatsink flange: S		S = 0 +0.1/−0 mm

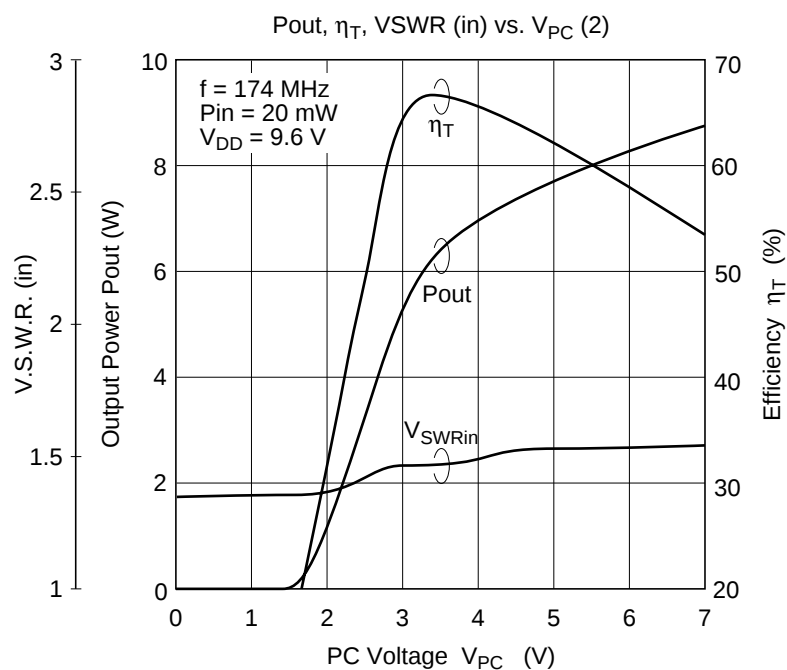
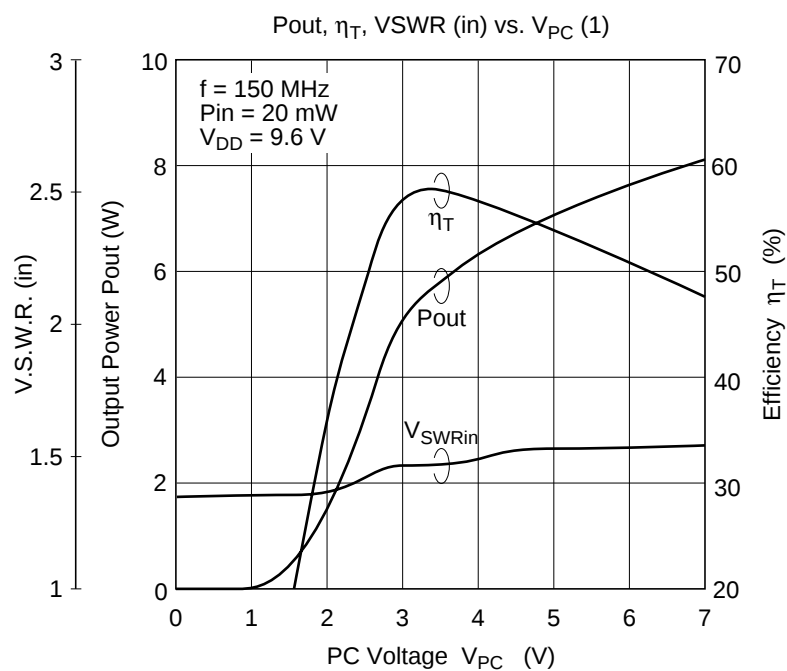
Characteristics Curve

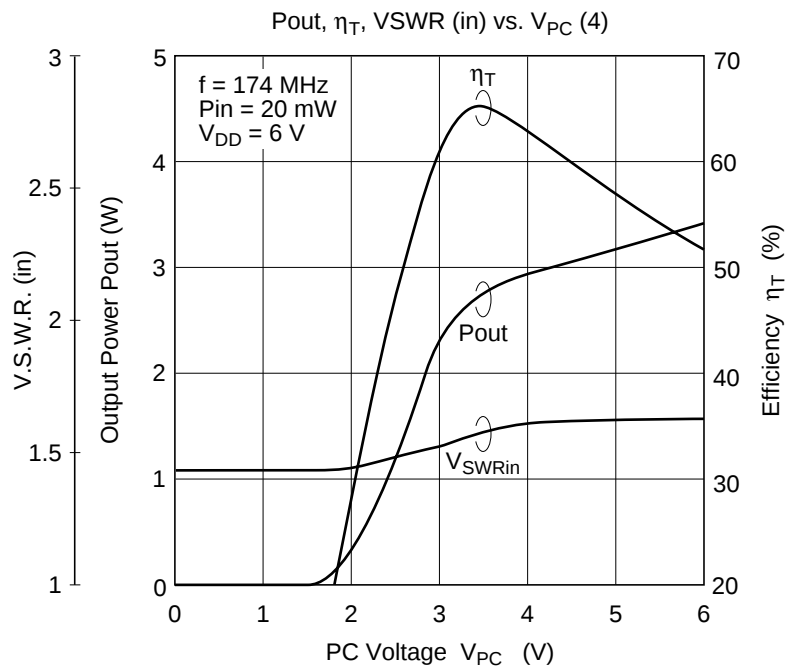
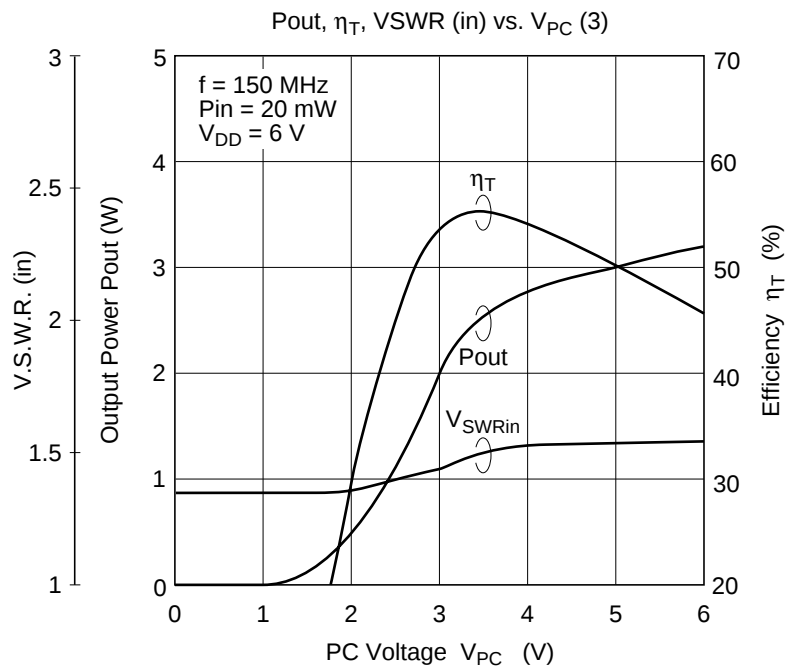








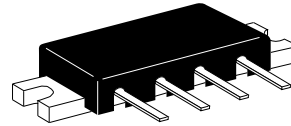
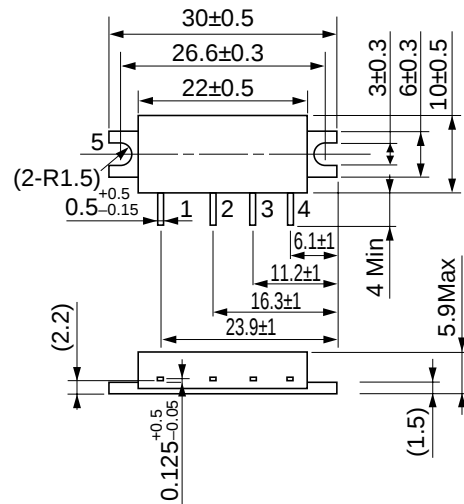




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Package Dimensions

Unit: mm



Hitachi code	RF-J
EIAJ code	—
JEDEC code	—