

# PF0414B

## MOS FET Power Amplifier Module for DCS 1800 Handy Phone

# HITACHI

ADE-208-432C (Z)  
4th Edition  
December 1997

### Application

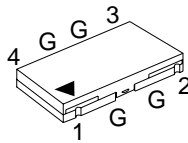
For DCS 1800 class1 1710 to 1785 MHz.

### Features

- 3stage amplifier : 0 dBm input
- Lead less thin & small package : 2 mm Max & 0.2cc
- High efficiency : 40% Typ at 32.5 dBm
- Wide gain control range : 70 dB Typ
- Low voltage operation : 3.5 V

### Pin Arrangement

• RF-K



1: Pin  
2: Vapc  
3: Vdd  
4: Pout  
G: GND

### Absolute Maximum Ratings (Tc = 25°C)

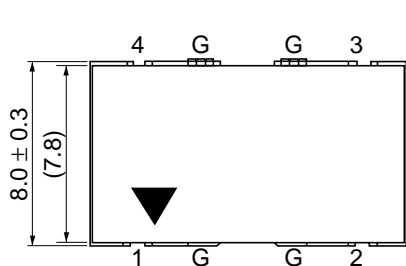
Item	Symbol	Rating	Unit
Supply voltage	V <sub>DD</sub>	8	V
Supply current	I <sub>DD</sub>	2	A
V <sub>APC</sub> voltage	V <sub>APC</sub>	4	V
Input power	Pin	10	mW
Operating case temperature	Tc (op)	-30 to +100	°C
Storage temperature	Tstg	-30 to +100	°C
Output power	Pout	3	W

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

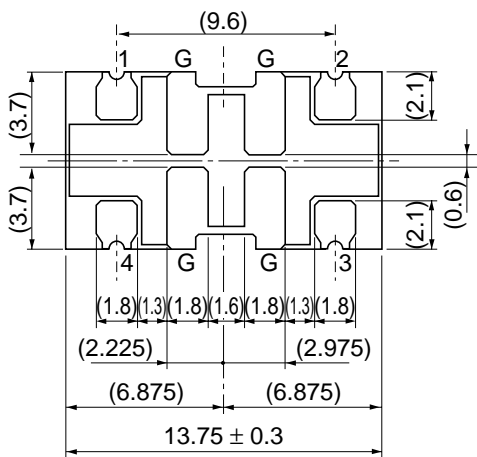
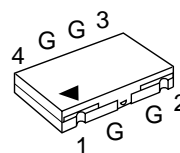
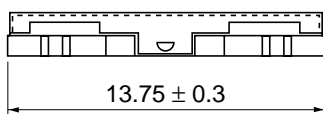
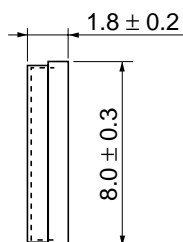
Item	Symbol	Min	Typ	Max	Unit	Test Condition
Frequency range	f	1710	—	1785	MHz	
Control voltage range	$V_{APC}$	0.5	—	2.2	V	
Drain cutoff current	$I_{DS}$	—	—	100	$\mu\text{A}$	$V_{DD} = 8\text{ V}, V_{APC} = 0\text{ V}$
Total efficiency	$\eta_T$	35	40	—	%	$P_{in} = 0\text{ dBm}, V_{DD} = 3.5\text{ V},$
2nd harmonic distortion	2nd H.D.	—	-45	-35	dBc	$P_{out} = 32.5\text{ dBm}$ (at APC controlled),
3rd harmonic distortion	3rd H.D.	—	-45	-35	dBc	$R_L = R_g = 50\ \Omega, T_c = 25^\circ\text{C}$
Input VSWR	VSWR (in)	—	1.5	3	—	
Output power (1)	$P_{out}$ (1)	32.5	33.0	—	dBm	$P_{in} = 0\text{ dBm}, V_{DD} = 3.5\text{ V},$ $V_{APC} = 2.2\text{ V}, R_L = R_g = 50\ \Omega,$ $T_c = 25^\circ\text{C}$
Output power (2)	$P_{out}$ (2)	31	31.5	—	dBm	$P_{in} = 0\text{ dBm}, V_{DD} = 3.0\text{ V},$ $V_{APC} = 2.2\text{ V}, R_L = R_g = 50\ \Omega,$ $T_c = 85^\circ\text{C}$
Isolation	—	—	-36	-33	dBm	$P_{in} = 0\text{ dBm}, V_{DD} = 3.5\text{ V},$ $V_{APC} = 0.5\text{ V}, R_L = R_g = 50\ \Omega,$ $T_c = 25^\circ\text{C}$
Switching time	$t_r, t_f$	—	1	2	$\mu\text{s}$	$P_{in} = 0\text{ dBm}, V_{DD} = 3.5\text{ V},$ $P_{out} = 32.5\text{ dBm}, R_L = R_g = 50\ \Omega,$ $T_c = 25^\circ\text{C}$
Stability	—	No parasitic oscillation			—	$P_{in} = 0\text{ dBm}, V_{DD} = 3\text{ to }5.1\text{ V},$ $P_{out} \leq 32.5\text{ dBm}$ (at APC controlled), $R_g = 50\ \Omega, t = 20\text{ sec.}, T_c = 25^\circ\text{C},$ Output VSWR = 6 : 1 All phases

Package Dimensions

Unit: mm



(Upper side)



(Bottom side)

Remark:  
Coplanarity of bottom side of terminals  
are less than  $0 \pm 0.1$ mm.

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

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