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# PF01411B

## MOS FET Power Amplifier Module for E-GSM Handy Phone

# HITACHI

ADE-208-434B (Z)  
3rd Edition  
November 1, 1997

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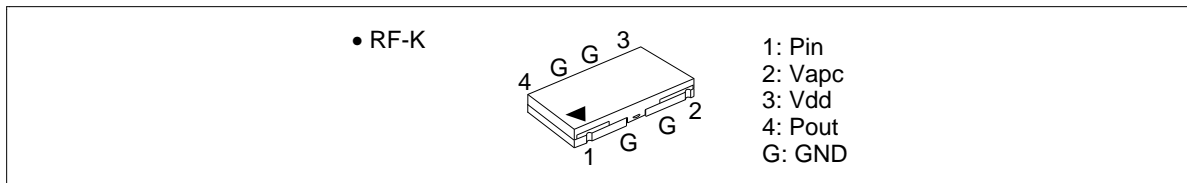
### Application

- For E-GSM class4 880 to 915 MHz
- For 3.5 V nominal battery use

### Features

- High gain 3stage amplifier : 0 dBm input
- Lead less thin & Small package : 2 mm Max, 0.2cc
- High efficiency : 45% Typ at 35.5 dBm
- Wide gain control range : 70 dB Typ

### Pin Arrangement



### Absolute Maximum Ratings (T<sub>c</sub> = 25°C)

| Item                       | Symbol              | Rating      | Unit |
|----------------------------|---------------------|-------------|------|
| Supply voltage             | V <sub>DD</sub>     | 8           | V    |
| Supply current             | I <sub>DD</sub>     | 3           | A    |
| V <sub>APC</sub> voltage   | V <sub>APC</sub>    | 4           | V    |
| Input power                | P <sub>in</sub>     | 10          | mW   |
| Operating case temperature | T <sub>c</sub> (op) | -30 to +100 | °C   |
| Storage temperature        | T <sub>stg</sub>    | -30 to +100 | °C   |
| Output power               | P <sub>out</sub>    | 5           | W    |

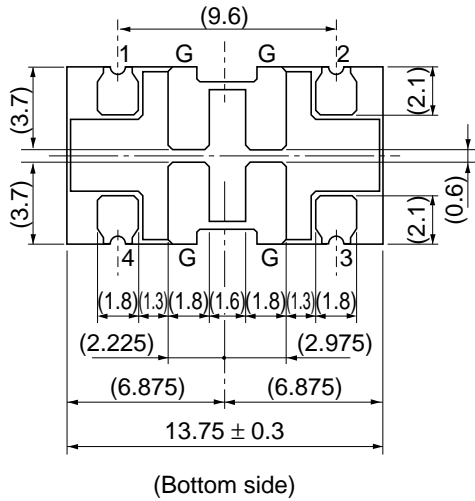
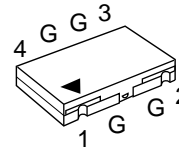
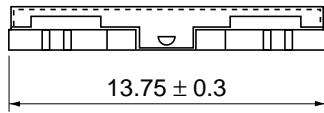
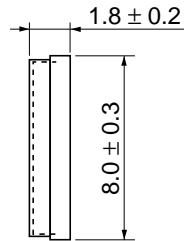
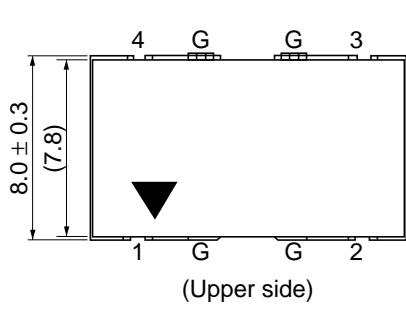
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### Electrical Characteristics (Tc = 25°C)

| Item                    | Symbol           | Min                      | Typ  | Max | Unit | Test Condition   |
|-------------------------|------------------|--------------------------|------|-----|------|--|
| Frequency range         | f                | 880                      | —    | 915 | MHz  |  |
| Control voltage range   | V <sub>APC</sub> | 0.5                      | —    | 2.2 | V    |  |
| Drain cutoff current    | I <sub>DS</sub>  | —                        | —    | 100 | μA   | V <sub>DD</sub> = 8 V, V <sub>APC</sub> = 0 V  |
| Total efficiency        | η <sub>T</sub>   | 40                       | 45   | —   | %    | Pin = 0 dBm, V <sub>DD</sub> = 3.5 V,  |
| 2nd harmonic distortion | 2nd H.D.         | —                        | -45  | -35 | dBc  | Pout = 35.5 dBm,   |
| 3rd harmonic distortion | 3rd H.D.         | —                        | -45  | -35 | dBc  | Vapc = controlled,   |
| Input VSWR              | VSWR (in)        | —                        | 1.5  | 3   | —    | R <sub>L</sub> = R <sub>g</sub> = 50 Ω, Tc = 25°C  |
| Output power (1)        | Pout (1)         | 35.5                     | 36.0 | —   | dBm  | Pin = 0 dBm, V <sub>DD</sub> = 3.5 V,<br>V <sub>APC</sub> = 2.2 V, R <sub>L</sub> = R <sub>g</sub> = 50 Ω,<br>Tc = 25°C  |
| Output power (2)        | Pout (2)         | 33.5                     | 34.2 | —   | dBm  | Pin = 0 dBm, V <sub>DD</sub> = 3.0 V,<br>V <sub>APC</sub> = 2.2 V, R <sub>L</sub> = R <sub>g</sub> = 50 Ω,<br>Tc = 85°C  |
| Isolation               | —                | —                        | -40  | -36 | dBm  | Pin = 0 dBm, V <sub>DD</sub> = 3.5 V,<br>V <sub>APC</sub> = 0.5 V, R <sub>L</sub> = R <sub>g</sub> = 50 Ω,<br>Tc = 25°C  |
| Switching time          | tr, tf           | —                        | 1    | 2   | μs   | Pin = 0 dBm, V <sub>DD</sub> = 3.5 V,<br>Pout = 0 to 35.5 dBm,<br>R <sub>L</sub> = R <sub>g</sub> = 50 Ω, Tc = 25°C  |
| Stability               | —                | No parasitic oscillation |      |     | —    | Pin = 0 dBm, V <sub>DD</sub> = 3 to 5.1 V,<br>Pout ≤ 35.5 dBm,<br>Vapc ≤ 2.2 V GSM pulse.<br>R <sub>g</sub> = 50 Ω, Tc = 25°C,<br>Output VSWR = 6 : 1 All phases               |
| Load VSWR tolerance     | —                | No degradation           |      |     | —    | Pin = 0 dBm, V <sub>DD</sub> = 3 to 5.1 V,<br>Pout ≤ 35.5 dBm,<br>Vapc ≤ 2.2 V GSM pulse.<br>R <sub>g</sub> = 50 Ω, t = 20 sec., Tc = 25°C,<br>Output VSWR = 10 : 1 All phases |

Package Dimensions

Unit: mm



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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