MOS FET Power Amplifier Module for E-GSM Handy Phone

# HITACHI

ADE-208-477B (Z) 3rd Edition February 1, 1997

#### Application

- For GSM class4 890 to 915 MHz
- For 5.5V nominal DC/DC converter use

#### Features

- High gain 3stage amplifier : 0 dBm input
- Lead less thin & Small package : 2 mm Max, 0.2cc
- High efficiency : 45% Typ at 3.8 W
- Wide gain control range : 90 dB Typ

#### **Pin Arrangement**



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

Item	Symbol	Rating	Unit
Supply voltage	V <sub>DD</sub>	10	V
Supply current	I <sub>DD</sub>	3	А
V <sub>APC</sub> voltage	V <sub>APC</sub>	4	V
Input power	Pin	10	mW
Operating case temperature	Тс (ор)	-30 to +100	°C
Storage temperature	Tstg	-30 to +100	°C
Output power	Pout	6	W

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

ltem	Symbol	Min	Тур	Max	Unit	Test Condition
Frequency range	f	890	_	915	MHz	
Control voltage range	V <sub>APC</sub>	0.5	_	3.0	V	
Drain cutoff current	I <sub>DS</sub>			100	μA	$V_{DD} = 10 \text{ V},  V_{APC} = 0 \text{ V}$
Total efficiency	$\eta_{\tau}$	40	45		%	$Pin = 1 \text{ mW}, V_{DD} = 5.5 \text{ V},$
2nd harmonic distortion	2nd H.D.		-45	-35	dBc	Pout = 3.8 W, Vapc = controlled
3rd harmonic distortion	3rd H.D.	_	-45	-35	dBc	$R_{L} = Rg = 50 \Omega$ , $Tc = 25^{\circ}C$
Input VSWR	VSWR (in)		1.5	3		
Output power (1)	Pout (1)	3.8	4.5		W	Pin = 1 mW, $V_{DD}$ = 5.5 V, $V_{APC}$ = 3.0 V, $R_L$ = Rg = 50 Ω, Tc = 25°C
Output power (2)	Pout (2)	2.5	3.2	_	W	Pin = 1 mW, V <sub>DD</sub> = 5.0 V, V <sub>APC</sub> = 3.0 V, R <sub>L</sub> = Rg = 50 Ω, Tc = 80°C
Isolation	_		-50	-40	dBm	Pin = 1 mW, $V_{DD}$ = 5.5 V, $V_{APC}$ = 0.5 V, $R_{L}$ = Rg = 50 Ω, Tc = 25°C
Switching time	tr, tf		1	2	μs	Pin = 1 mW, $V_{DD}$ = 5.5 V, Pout = 3.8 W, $R_L$ = Rg = 50 Ω, Tc = 25°C
Stability & Load VSWR tolerance	_	No parasitic oscillation & No degradation			$\begin{array}{l} \mbox{Pin}=1 \mbox{ mW, } V_{\mbox{\tiny DD}} = 5 \mbox{ to } 6 \mbox{ V,} \\ \mbox{Pout} \leq 3.8 \mbox{ W,} \\ \mbox{Vapc} \leq 3 \mbox{ V GSM pulse.} \\ \mbox{Rg} = 50 \ \Omega, \mbox{ t} = 20 \mbox{ sec., } \mbox{Tc} = 25^{\circ}\mbox{C,} \\ \mbox{Output VSWR} = 6 : 1 \mbox{ All phases} \end{array}$	

#### **Package Dimensions**



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# HITACHI

#### Hitachi, Ltd.

Semiconductor & IC Div. Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100, Japan Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

#### For further information write to:

Hitachi America, Ltd. Semiconductor & IC Div. 2000 Sierra Point Parkway Brisbane, CA. 94005-1835 U S A Tel: 415-589-8300 Fax: 415-583-4207 Hitachi Europe GmbH Electronic Components Group Continental Europe Dornacher Stra§e 3 D-85622 Feldkirchen M nchen Tel: 089-9 91 80-0 Fax: 089-9 29 30 00 Hitachi Europe Ltd. Electronic Components Div. Northern Europe Headquarters Whitebrook Park Lower Cookham Road Maidenhead Berkshire SL6 8YA United Kingdom Tel: 0628-585000 Fax: 0628-778322 Hitachi Asia Pte. Ltd. 16 Collyer Quay #20-00 Hitachi Tower Singapore 0104 Tel: 535-2100 Fax: 535-1533

Hitachi Asia (Hong Kong) Ltd. Unit 706, North Tower, World Finance Centre, Harbour City, Canton Road Tsim Sha Tsui, Kowloon Hong Kong Tel: 27359218 Fax: 27306071

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