PF0410

MOS FET Power Amplifier Module for DSC1800 Handy Phone

HITACHI

ADE-208-324B (Z)
3rd. Edition
July 1996

Application

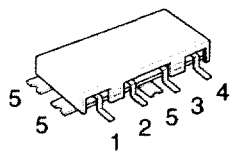
For DCS 1800 class 1: 1710 to 1785 MHz

Features

- Small package: 1 cc, 3g
- High efficiency: 35% Typ
- High speed switching: 0.9 µsec

Pin Arrangement

• RF-E



1: Pin
2: V_{APC}
3: V_{DD}
4: Pout
5: GND

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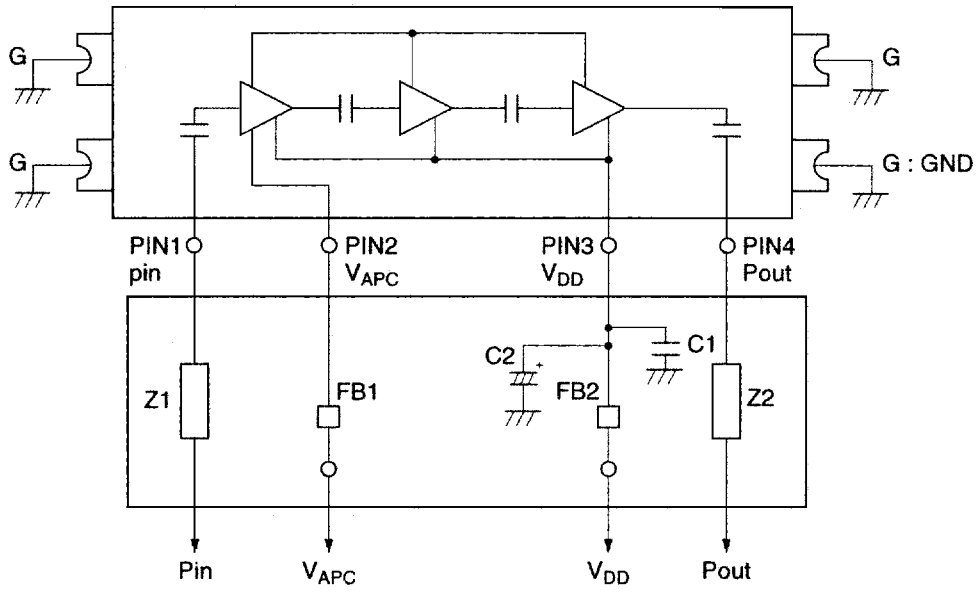
Internal Diagram and External Circuit



C1 = 0.01 µF (Ceramic chip)
C2 = 220 µF (Aluminum electrolyte)
FB = Ferrite bead BLO1RN1-A62-001 (Manufacture: MURATA) or equivalent
Z1 = Z2 = 50 Ω (Microstrip line)

Absolute Maximum Ratings (Tc = 25°C)

Item	Symbol	Rating	Unit
Supply voltage	VDD	10	V
Supply current	IDD	2	A
VAPC voltage	VAPC	6	V
Input power	Pin	20	mW
Operating case temperature	Tc (op)	–30 to +100	°C
Storage temperature	Tstg	–30 to +100	°C
Output power	Pout	3	W

Electrical Characteristics (Tc = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Frequency range	f	1710	—	1785	MHz	—
Control Voltage range	VAPC	0.5	—	4.0	V	—
Drain cutoff current	IDS	—	—	100	μA	VDD = 10 V, VAPC = 0 V
Total efficiency	ηT	30	35	—	%	Pin = 2 mW, VDD = 6 V,
2nd harmonic distortion	2nd H.D.	—	–50	–30	dBc	Pout = 1.6 W (at APC controlled),
3rd harmonic distortion	3rd H.D.	—	–50	–30	dBc	RL = Rg = 50 Ω, Tc = 25°C
Input VSWR	VSWR (in)	—	2	3	—	
Output power (1)	Pout (1)	2.0	2.5	—	W	Pin = 2 mW, VDD = 6 V, VAPC = 4 V RL = Rg = 50 Ω, Tc = 25°C
Output power (2)	Pout (2)	1.2	1.5	—	W	Pin = 2 mW, VDD = 5.4 V, VAPC = 4 V RL = Rg = 50 Ω, Tc = 80°C
Isolation	—	—	–35	–30	dBm	Pin = 2 mW, VDD = 6 V, VAPC = 0.5 V, RL = Rg = 50 Ω
Switching time	tr, tf	—	–0.9	2	μs	Pin = 2 mW, VDD = 6 V, Pout = 1.6 W, RL = Rg = 50 Ω, Tc = 25°C
Stability	—	No parasitic			—	Pin = 2 mW, VDD = 7.5 V, Pout ≤ 1.6 W, (at APC controlled), Rg = 50 Ω, Tc = 25°C Output VSWR = 10:1 All phases

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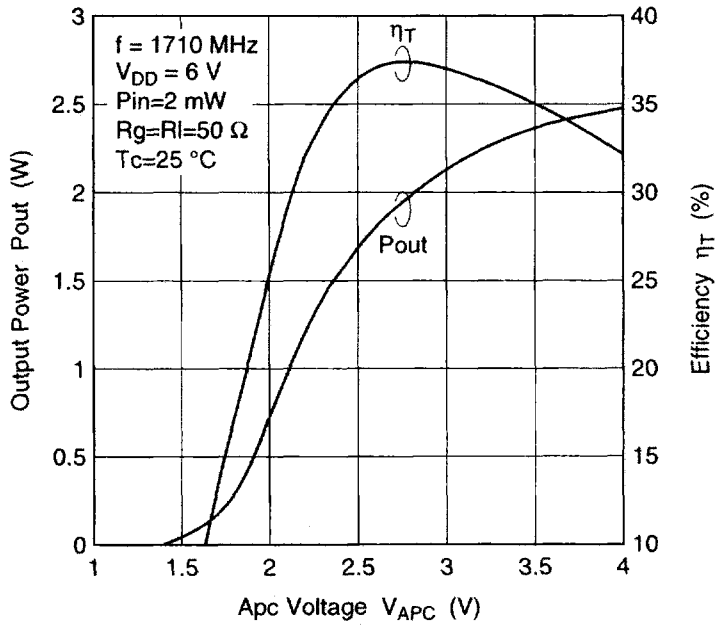
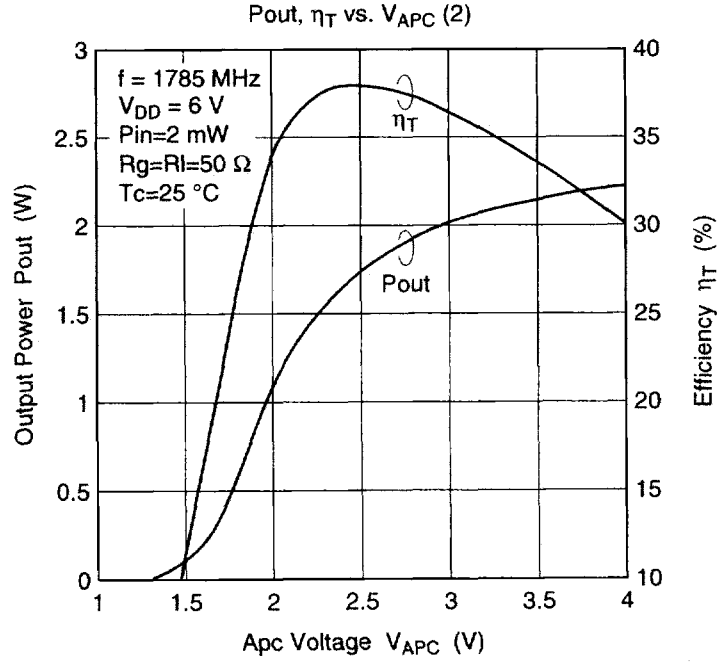
Characteristics Curve

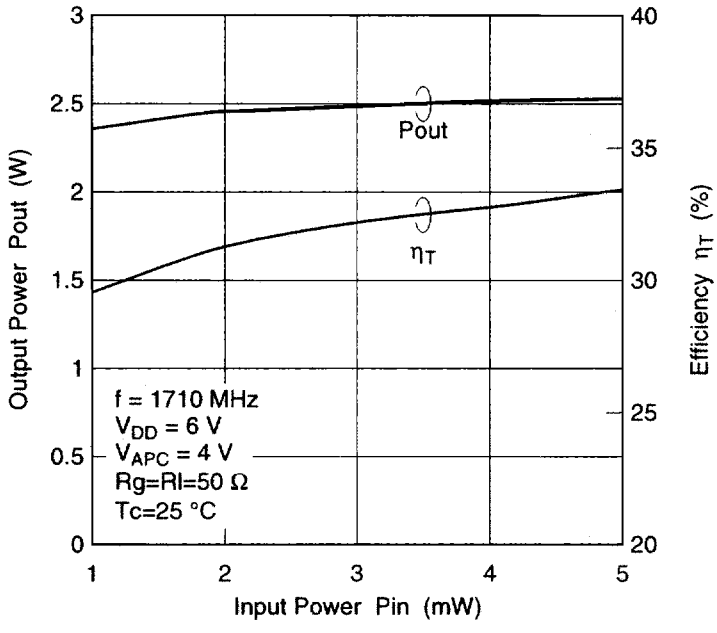
Pout, η_T vs. V_{APC} (1)



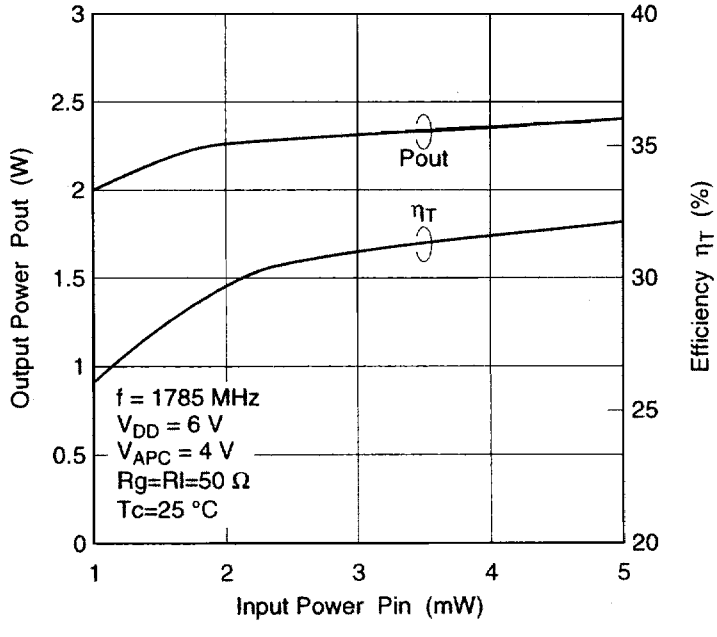
Pout, η_T vs. V_{APC} (2)



Pout, η_T vs. Pin (1)



Pout, η_T vs. Pin (2)



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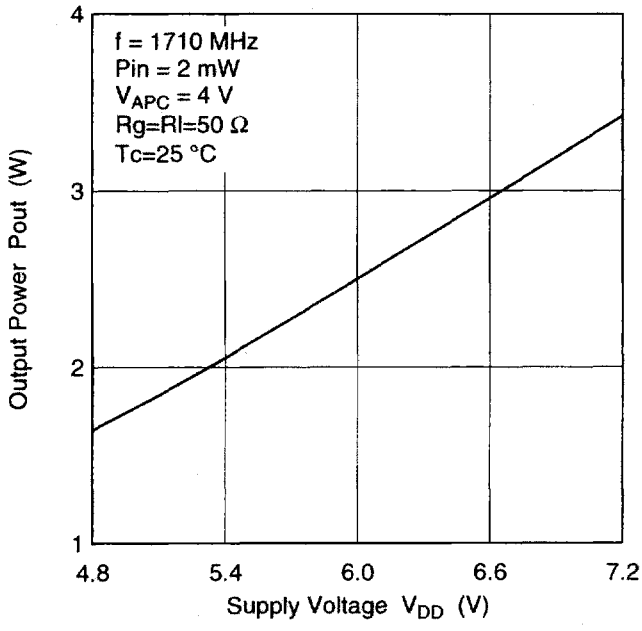
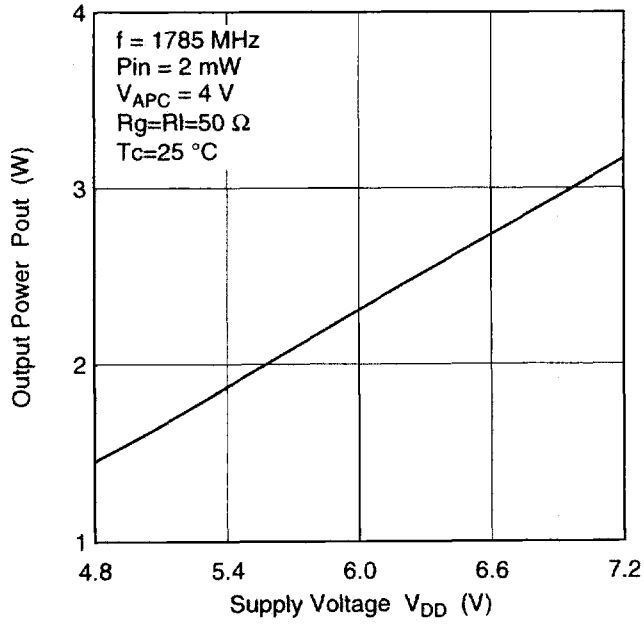
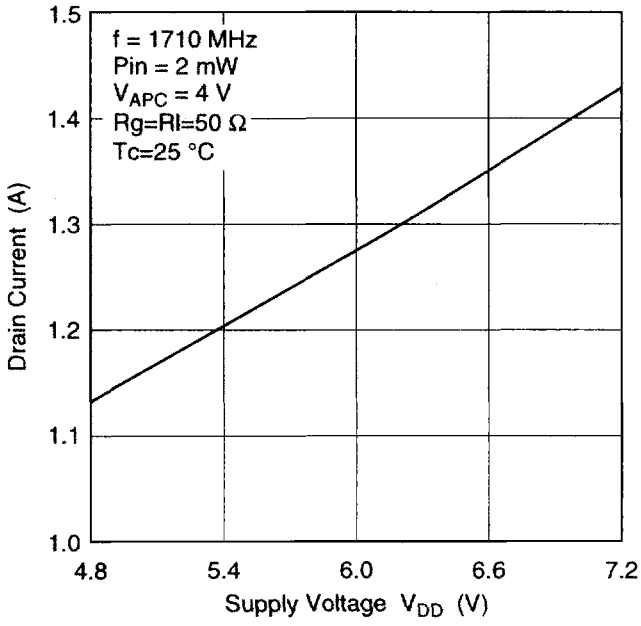
Pout vs. V_{DD} (1)



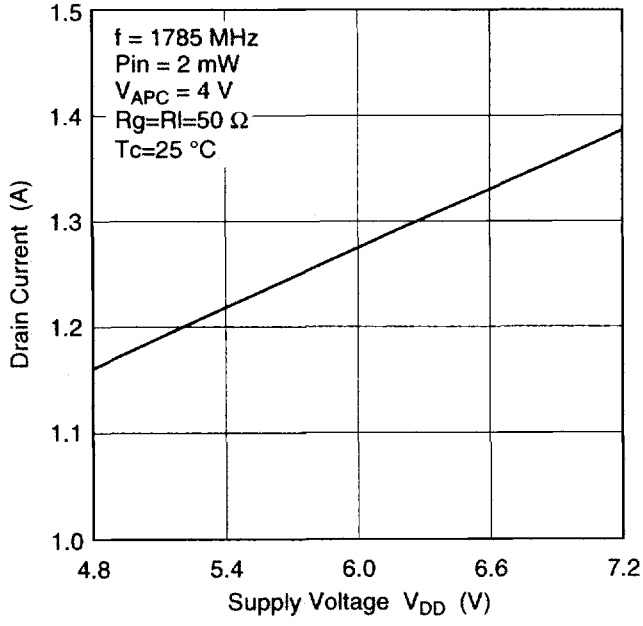
Pout vs. V_{DD} (2)



Drain Current vs. V_{DD} (1)



Drain Current vs. V_{DD} (2)



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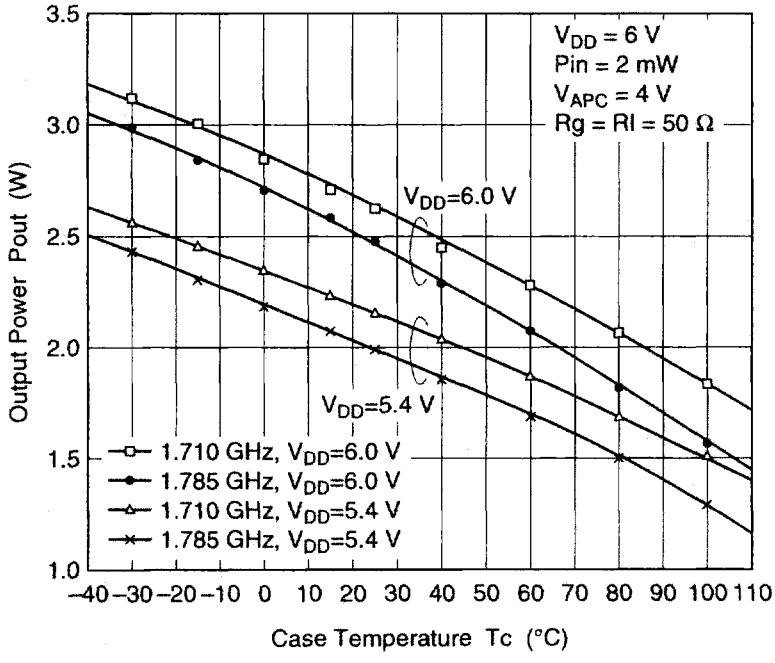
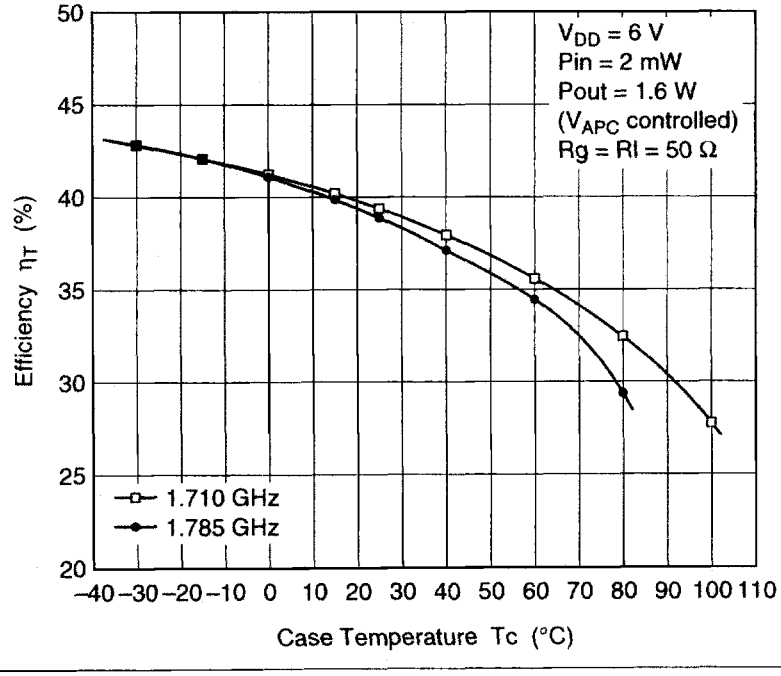
Pout vs. Tc

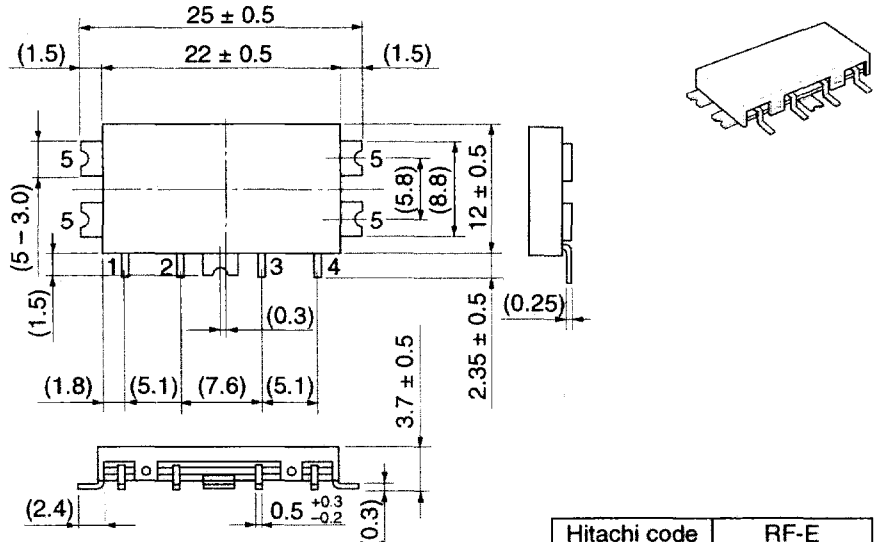


η_T vs. Tc



Package Dimensions

Unit: mm



Hitachi code	RF-E
EIAJ code	—
JEDEC code	—