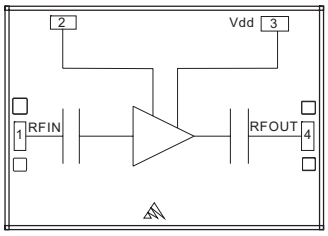
EC MICROWAVE
The door to the RF world

GaAs monolithic integrated power amplifier O243

Features

- Working frequency: 1.2 ~ 1.4GHz
- Saturated output power: 26dBm @ PIN = 4dBm
- Power added efficiency: 36% @ PIN = 4dBm
- Small signal gain: 26dB @ Vdd = + 5V
- Power gain: 22dB @ PIN = 4dBm
- Single Supply Operation: Vdd = + 5V, Idq = 240mA
- Input / output impedance: 50Ω
- Chip size: 2.0mmx1.325mmx0.07mm

Functional block diagram



Description

O243 is a 1.2 ~ 1.4GHz GaAs monolithic integrated power amplifier chip that provides 22dB power gain and 26dBm saturated output power at +5 V operating voltage with 36% power added efficiency.

The power amplifier chip using on-chip through-hole metallization process to ensure a good grounding, no additional grounding measures, easy to use. The back of the chip was metallized, suitable for eutectic sintering or conductive adhesive bonding process.

typical application

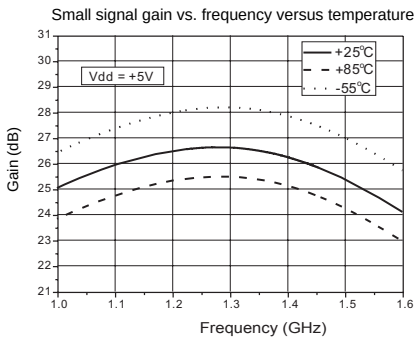
● Radar and electronic warfare ● Military and aerospace ● RF / microwave circuit ● Test measurement ● Instrumentation

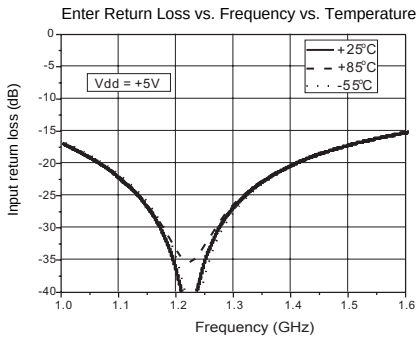
Electrical characteristics (T_A =+25℃, 50Ωsystem, Vdd=+5V, Idq=240mA)

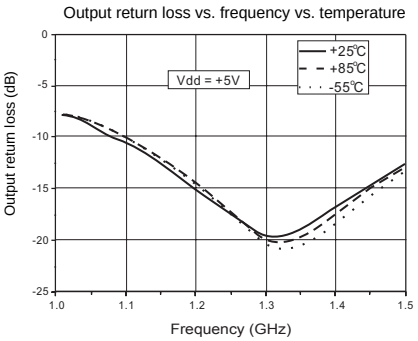
symbol	parameter	Minimum	Typical value	Maximum	unit
Frequency	working frequency	1.2	-	1.4	GHz
Gain	Small signal gain	-	26	-	dB
△G	Gain flatness		±1.5		dB
Gp	Power gain (PIN = 4dBm)	-	22	-	dB
IRL	Enter the return loss	-	20	-	dB
ORL	Output return loss	-	12	-	dB
Pout	Output power (PIN = 4dBm)	-	26	-	dBm
PAE	Power added efficiency (PIN = 4dBm)	-	36	-	%
Idd	Working current (PIN = 4dBm)	-	280	-	mA

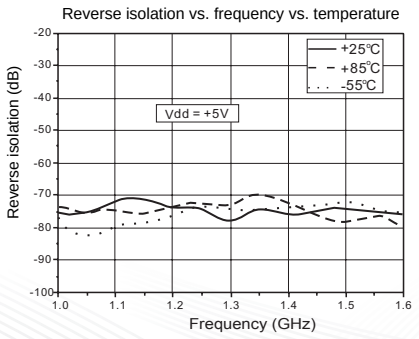
[1]The chips are subjected to 100% DC and RF testing on the chip.

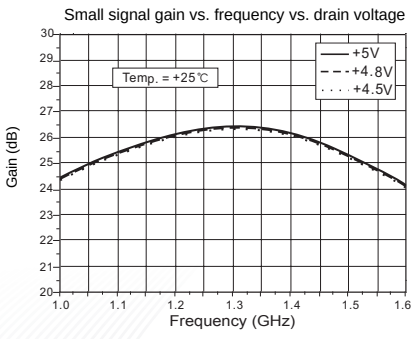
Test

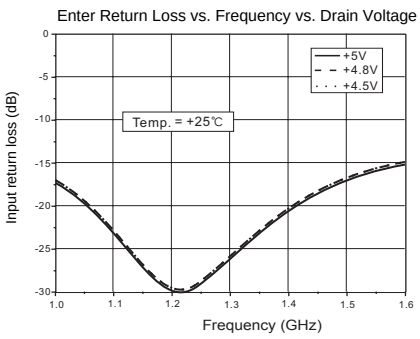




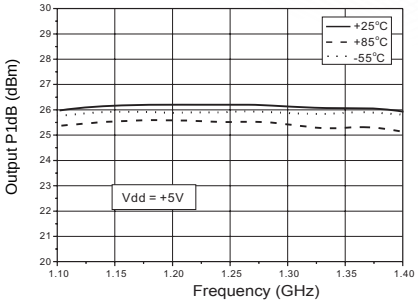




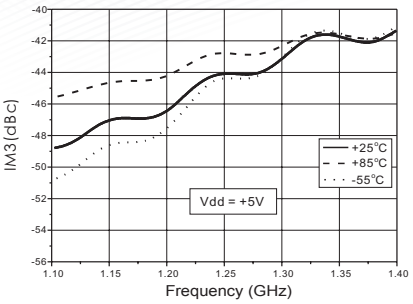




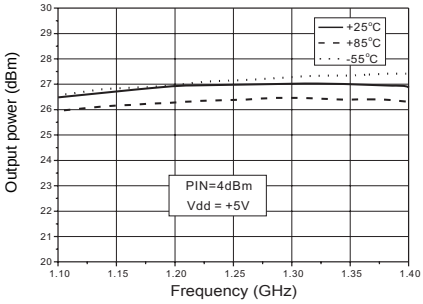
Output P1dB vs. Frequency vs. Temperature



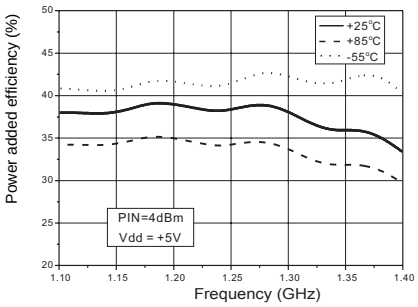
Im3 vs. frequency versus temperature



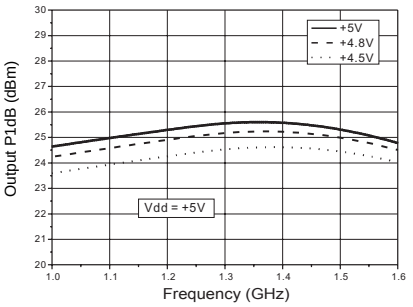
Output power vs. frequency vs. temperature



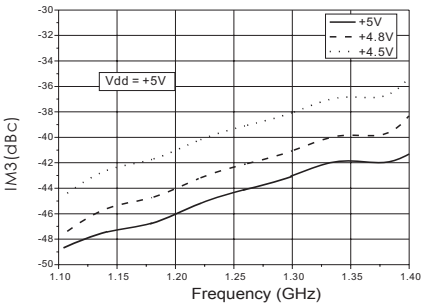
Power added efficiency versus frequency vs. temperature



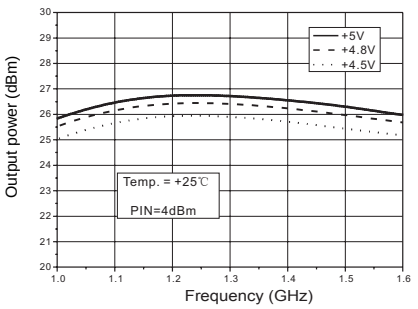
Output P1dBvs. Frequency vs. Drain Voltage



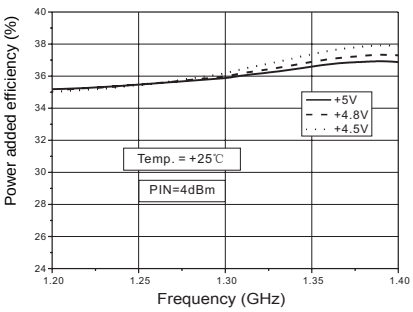
IM3 vs. Frequency vs. Drain Voltage



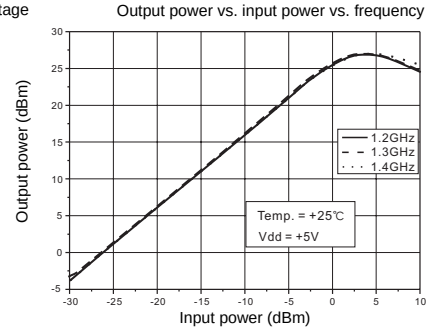
Output power vs. frequency vs. drain voltage



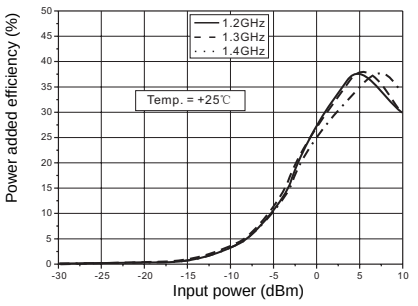
Power added efficiency versus frequency vs. drain voltage



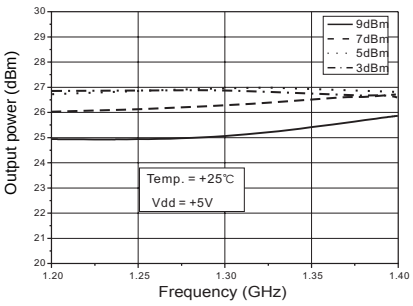
Output power vs. input power vs. frequency



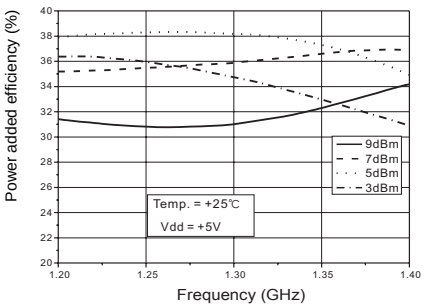
Power added efficiency versus input power vs. frequency



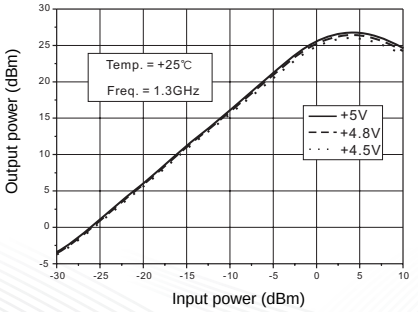
Output power vs. frequency vs. input power



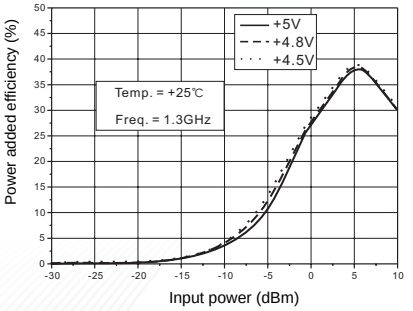
Power Additional Efficiency versus Frequency vs. Input Power



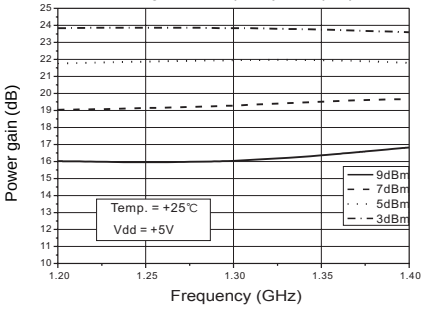
Output power vs. input power vs. drain voltage



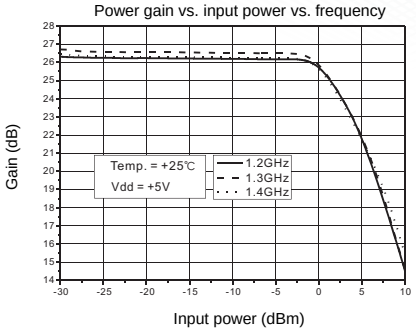
Power added efficiency vs. input power vs. drain voltage



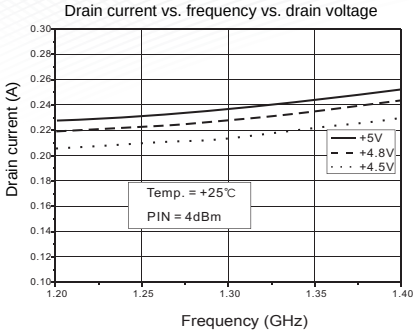
Power gain vs. frequency vs. input power



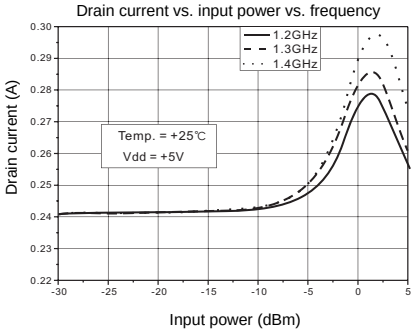
Power gain vs. input power vs. frequency



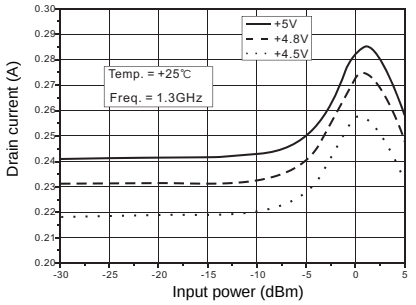
Drain current vs. frequency vs. drain voltage



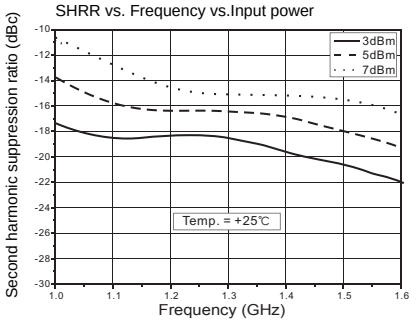
Drain current vs. input power vs. frequency



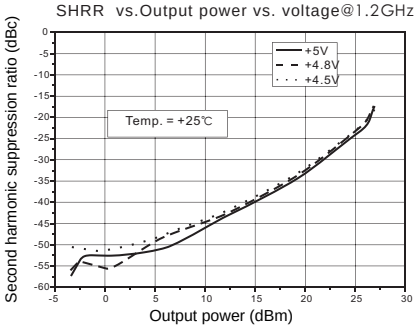
Drain current vs. input power vs. drain voltage



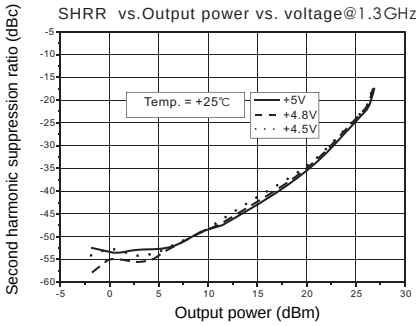
SHRR vs. Frequency vs.Input power



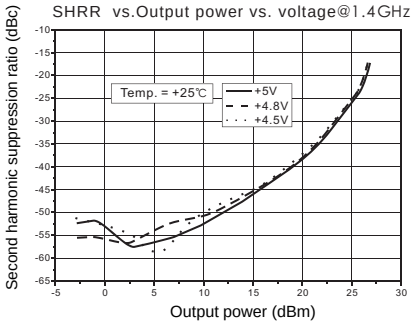
SHRR vs.Output power vs. voltage@1.2GHz



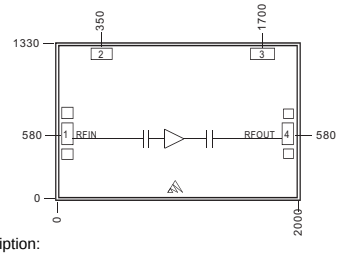
SHRR vs.Output power vs. voltage@1.3GHz



SHRR vs.Output power vs. voltage@1.4GHz



Dimensions



Description:
1. Unit: micron 2. Gold on the back of the chip
3. The back of the chip is grounded
4. Bonding pressure gilded pressure point size: 2: 170umx100um, 1、4: 150umx100um，3: 190umx100um
5. Can not be bonded on the through-hole 6. Dimensions Tolerance: ± 50um

Limit parameters

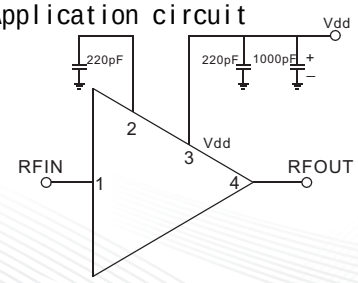
parameter	Value
Input power PIN, pulse, 50Ω	+15dBm
Drain voltage Vdd	+5.5V
Thermal resistance Rth	25℃/W
Channel temperature TCH	175℃
Storage temperature	-65 ~ +150℃
Operating temperature	-55 ~ +85℃

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Definition of bonding pressure point

Pin.NO	Pin Name	Description	Equivalent Circuit
1	RF IN	RF signal input, external 50 ohm system, external DC blocking capacitor	RF IN
2	-	Amplifier drain, need external 220pF bypass capacitor	
3	Vdd	Amplifier drain bias requires external 220pF bypass capacitor with 1000pF	Vdd
4	RF OUT	RF signal output, external 50-ohm system, without blocking capacitors	RF OUT
Back	GND	The bottom of the chip is RF and DC ground	GND

Application circuit



Assembly diagram