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MSA-0436

>6V Fixed Gain, 12 dBm General Purpose Amplifier

Description



Lifecycle status: **Active**



Features

The MSA-04 is a general purpose cascadable 50ohm 12dBm gain block targeted for narrow and wide bandwidth IF amplifier applications. It is offered in a wide variety of plastic and ceramic packages. Bias: 7V, 50mA; f3dB = 3.8GHz; G = 8dB; NF = 7dB; P1dB = 11.5dBm; IP3i = 13.5dBm

MSA-0436

Cascadable Silicon Bipolar MMIC Amplifiers



Data Sheet

Description

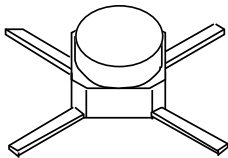
The MSA-0436 is a high performance silicon bipolar Monolithic Microwave Integrated Circuit (MMIC) housed in a cost effective, microstrip package. This MMIC is designed for use as a general purpose 50Ω gain block. Typical applications include narrow and broad band IF and RF amplifiers in industrial and military applications.

The MSA-series is fabricated using Avago's 10 GHz f_T , 25 GHz f_{MAX} , silicon bipolar MMIC process which uses nitride self-alignment, ion implantation, and gold metallization to achieve excellent performance, uniformity and reliability. The use of an external bias resistor for temperature and current stability also allows bias flexibility.

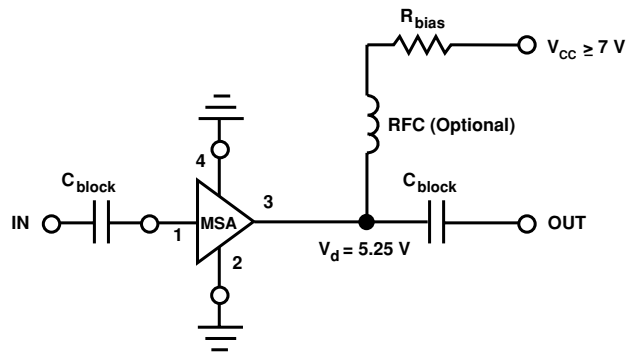
Features

- Cascadable 50Ω Gain Block
- 3 dB Bandwidth: DC to 3.8 GHz
- 12.5 dBm Typical P_{1dB} at 1.0 GHz
- 8.5 dB Typical Gain at 1.0 GHz
- Unconditionally Stable ($k > 1$)
- Cost Effective Ceramic Microstrip Package

36 micro-X Package



Typical Biasing Configuration



MSA-0436 Absolute Maximum Ratings

Parameter	Absolute Maximum ^[1]
Device Current	100 mA
Power Dissipation ^[2,3]	650 mW
RF Input Power	+13 dBm
Junction Temperature	150°C
Storage Temperature ^[4]	-65 to 150°C

Thermal Resistance^{[2,5]:}

$$\theta_{jc} = 140^{\circ}\text{C}/\text{W}$$

Notes:

1. Permanent damage may occur if any of these limits are exceeded.
2. $T_{\text{CASE}} = 25^{\circ}\text{C}$.
3. Derate at $7.1 \text{ mW}/^{\circ}\text{C}$ for $T_{\text{C}} > 109^{\circ}\text{C}$.
4. Storage above $+150^{\circ}\text{C}$ may tarnish the leads of this package making it difficult to solder into a circuit.
5. The small spot size of this technique results in a higher, though more accurate determination of q_{jc} than do alternate methods.

Electrical Specifications^[1], $T_{\text{A}} = 25^{\circ}\text{C}$

Symbol	Parameters and Test Conditions: $I_{\text{d}} = 50 \text{ mA}$, $Z_{\text{O}} = 50 \Omega$	Units	Min.	Typ.	Max.
G_{P}	Power Gain ($ S_{21} ^2$)	dB	7.5	8.5	9.5
ΔG_{P}	Gain Flatness	dB		± 0.6	± 1.0
$f_{\text{3 dB}}$	3 dB Bandwidth	GHz		3.8	
VSWR	Input VSWR			1.4:1	
	Output VSWR			1.9:1	
NF	50 Ω Noise Figure	dB		6.5	
$P_{1 \text{ dB}}$	Output Power at 1 dB Gain Compression	dBm		12.5	
IP_3	Third Order Intercept Point	dBm		25.5	
t_{D}	Group Delay	psec		125	
V_{d}	Device Voltage	V	4.75	5.25	5.75
dV/dT	Device Voltage Temperature Coefficient	mV/ $^{\circ}\text{C}$		-8.0	

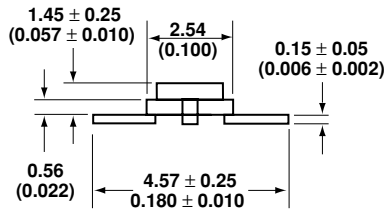
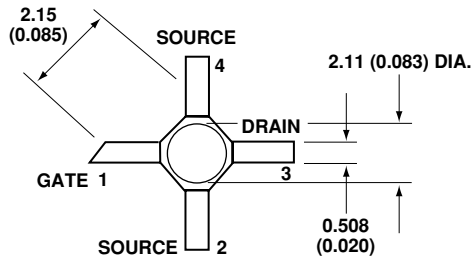
Note:

1. The recommended operating current range for this device is 30 to 70 mA. Typical performance as a function of current is on the following page.

Ordering Information

Part Numbers	No. of Devices	Comments
MSA-0436-BLKG	100	Bulk
MSA-0436-TR1G	1000	7" Reel

36 micro-X Package Dimensions



Notes:

1. Dimensions are in millimeters (inches)
2. Tolerances: in .xxx = ± 0.005
mm .xx = ± 0.13