

Products > RF ICs/Discretes > RF ICs > Silicon Amplifiers, Gain Blocks > MSA-0836

MSA-0836

>6V Fixed Gain Amp, High Gain, Minimum Feedback

Description



Lifecycle status: **Active**



Features

The MSA-08 is a high gain, minimum feedback 50ohm gain block targeted for narrow and wide bandwidth IF amplifier applications. It is offered in a wide variety of plastic and ceramic packages. Bias: 10V, 35mA; G = 23dB; NF = 3dB; P1dB = 12.5dBm; IP3i = -1dBm all at 1GHz

MSA-0836

Cascadable Silicon Bipolar MMIC Amplifier



Data Sheet

Description

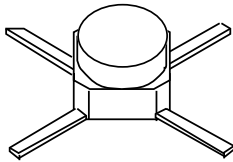
The MSA-0836 is a high performance silicon bipolar Monolithic Microwave Integrated Circuit (MMIC) housed in a cost effective, microstrip package. This MMIC is designed for use as a general purpose 50Ω gain block above 0.5 GHz and can be used as a high gain transistor below this frequency. Typical applications include narrow and moderate band IF and RF amplifiers in commercial and industrial 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.

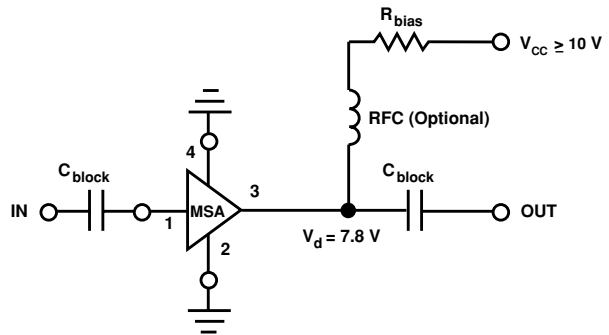
Features

- Usable Gain to 6.0 GHz
- High Gain:
 - 32.5 dB Typical at 0.1 GHz
 - 23.0 dB Typical at 1.0 GHz
- Low Noise Figure: 3.0 dB Typical at 1.0 GHz
- Cost Effective Ceramic Microstrip Package

36 micro-X Package



Typical Biasing Configuration



MSA-0836 Absolute Maximum Ratings

Parameter	Absolute Maximum ^[1]
Device Current	80 mA
Power Dissipation ^[2,3]	750 mW
RF Input Power	+13 dBm
Junction Temperature	150°C
Storage Temperature ^[4]	-65°C to 150°C

Thermal Resistance^{[2,5]:}

$$\theta_{jc} = 175^{\circ}\text{C}/\text{W}$$

Notes:

1. Permanent damage may occur if any of these limits are exceeded.
2. $T_{\text{CASE}} = 25^{\circ}\text{C}$.
3. Derate at 5.7 mW/°C for $T_{\text{C}} > 69^{\circ}\text{C}$.
4. Storage above +150°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 θ_{jc} than do alternate methods.

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

Symbol	Parameters and Test Conditions: $I_{\text{d}} = 36 \text{ mA}$, $Z_{\text{o}} = 50 \Omega$	Units	Min.	Typ.	Max.		
G _P	Power Gain ($ S_{21} ^2$)	f = 0.1 GHz	dB	22.0	32.5		
						f = 1.0 GHz	23.0
						f = 4.0 GHz	10.5
VSWR	Input VSWR	f = 1.0 to 3.0 GHz		2.0:1			
	Output VSWR	f = 1.0 to 3.0 GHz		1.5:1			
NF	50 Ω Noise Figure	f = 1.0 GHz		3.0			
P _{1 dB}	Output Power at 1 dB Gain Compression	f = 1.0 GHz		12.5			
IP ₃	Third Order Intercept Point	f = 1.0 GHz		27.0			
t _D	Group Delay	f = 1.0 GHz		125			
V _d	Device Voltage		V	7.0	7.8		
dV/dT	Device Voltage Temperature Coefficient		mV/°C	-17.0			

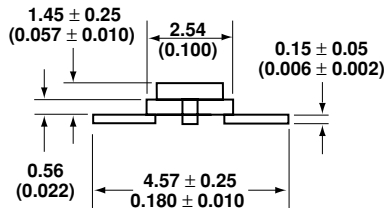
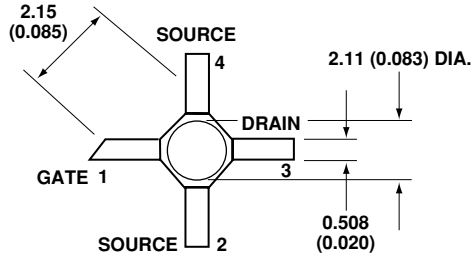
Note:

1. The recommended operating current range for this device is 20 to 40 mA. Typical performance as a function of current is on the following page.

Ordering Information

Part Numbers	No. of Devices	Comments
MSA-0836-BLKG	100	Bulk
MSA-0836-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