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MSA-0336

## >6V Fixed Gain, 10 dBm General Purpose Amplifier

### Description



Lifecycle status: **Active**



### Features

The MSA-03 is a general purpose cascadable 50ohm 10dBm 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, 35mA; f3dB = 2.8GHz; G = 12.5dB; NF = 6dB; P1dB = 10dBm; IP3i = 7.5dBm

# MSA-0336

## Cascadable Silicon Bipolar MMIC Amplifier



### Data Sheet

#### Description

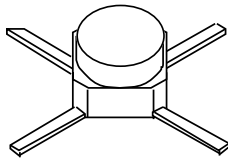
The MSA-0336 is a high performance silicon bipolar Monolithic Microwave Integrated Circuit (MMIC) housed in a cost effective, microstrip package. This MMIC is designed for use as a general purpose 50  $\Omega$  gain block. Typical applications include narrow and broad band IF and RF amplifiers in industrial 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.

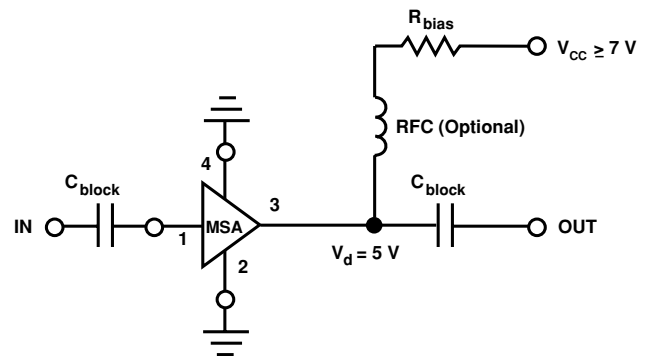
#### Features

- Cascadable 50  $\Omega$  Gain Block
- 3 dB Bandwidth: DC to 2.7 GHz
- 12.0 dB Typical Gain at 1.0 GHz
- 10.0 dBm Typical  $P_{1dB}$  at 1.0 GHz
- Unconditionally Stable ( $k > 1$ )
- Cost Effective Ceramic Microstrip Package

#### 36 micro-X Package



#### Typical Biasing Configuration



### MSA-0336 Absolute Maximum Ratings

Parameter	Absolute Maximum <sup>[1]</sup>
Device Current	80 mA
Power Dissipation <sup>[2,3]</sup>	425 mW
RF Input Power	+13 dBm
Junction Temperature	150°C
Storage Temperature <sup>[4]</sup>	-65 to 150°C

### Thermal Resistance<sup>[2,5]:</sup>

$$\theta_{jc} = 150^{\circ}\text{C}/\text{W}$$

#### Notes:

1. Permanent damage may occur if any of these limits are exceeded.
2.  $T_{\text{CASE}} = 25^{\circ}\text{C}$ .
3. Derate at 6.7 mW/°C for  $T_{\text{C}} > 136^{\circ}\text{C}$ .
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  $\theta_{jc}$  than do alternate methods.

### Electrical Specifications<sup>[1]</sup>, $T_{\text{A}} = 25^{\circ}\text{C}$

Symbol	Parameters and Test Conditions: $I_{\text{d}} = 35 \text{ mA}$ , $Z_{\text{o}} = 50 \Omega$	Units	Min.	Typ.	Max.
$G_{\text{P}}$	Power Gain ( $ S_{21} ^2$ ) $f = 0.1 \text{ GHz}$	dB	11.5	12.5	13.5
$\Delta G_{\text{P}}$	Gain Flatness $f = 0.1 \text{ to } 1.6 \text{ GHz}$	dB		$\pm 0.6$	$\pm 1.0$
$f_{3 \text{ dB}}$	3 dB Bandwidth	GHz		2.7	
VSWR	Input VSWR $f = 0.1 \text{ to } 3.0 \text{ GHz}$			1.6:1	
	Output VSWR $f = 0.1 \text{ to } 3.0 \text{ GHz}$			1.7:1	
NF	50 $\Omega$ Noise Figure $f = 1.0 \text{ GHz}$	dB		6.0	
$P_{1 \text{ dB}}$	Output Power at 1 dB Gain Compression $f = 1.0 \text{ GHz}$	dBm		10.0	
$\text{IP}_3$	Third Order Intercept Point $f = 1.0 \text{ GHz}$	dBm		23.0	
$t_{\text{D}}$	Group Delay $f = 1.0 \text{ GHz}$	psec		125	
$V_{\text{d}}$	Device Voltage	V	4.5	5.0	5.5
$\text{dV}/\text{dT}$	Device Voltage Temperature Coefficient	mV/°C		-8.0	

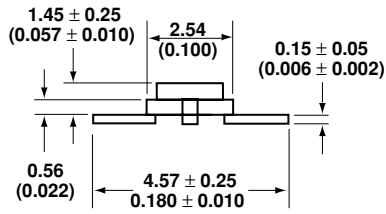
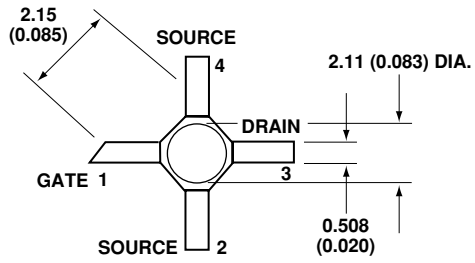
#### Notes:

1. The recommended operating current range for this device is 20 to 50 mA. Typical performance as a function of current is on the following page.

### Ordering Information

Part Numbers	No. of Devices	Comments
MSA-0336-BLKG	100	Bulk
MSA-0336-TR1G	1000	7" Reel

### 36 micro-X Package Dimensions



**Notes:**

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