

MSA-0786

## 6V fixed gain amp

### Description



Lifecycle status: **Active**



### Features

The MSA-07 is a general purpose 6V cascadable 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: 6V, 22mA;  $f_{3dB} = 2.5\text{GHz}$ ;  $G = 13.5\text{dB}$ ;  $NF = 4.5\text{dB}$ ;  $P_{1dB} = 5.5\text{dBm}$ ;  $IP3i = 2\text{dBm}$

# MSA-0786

## Cascadable Silicon Bipolar MMIC Amplifier



### Data Sheet

#### Description

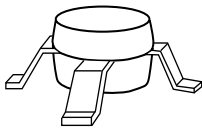
The MSA-0786 is a high performance silicon bipolar Monolithic Microwave Integrated Circuit (MMIC) housed in a low cost, surface mount plastic package. This MMIC is designed for use as a general purpose 50Ω gain block. Applications include narrow and broad band IF and RF amplifiers in commercial and industrial 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.

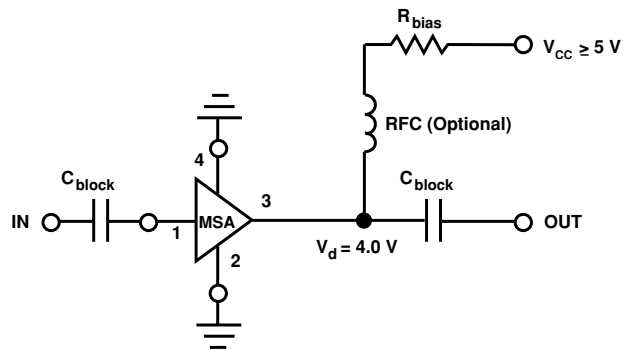
#### Features

- Cascadable 50Ω Gain Block
- Low Operating Voltage:  
4.0 V Typical  $V_d$
- 3 dB Bandwidth:  
DC to 2.0 GHz
- 12.5 dB Typical Gain at 1.0 GHz
- Unconditionally Stable ( $k > 1$ )
- Surface Mount Plastic Package
- Tape-and-Reel Packaging Option Available
- Lead-free Option Available

#### 86 Plastic Package



#### Typical Biasing Configuration



### MSA-0786 Absolute Maximum Ratings

Parameter	Absolute Maximum <sup>[1]</sup>
Device Current	60 mA
Power Dissipation <sup>[2,3]</sup>	275 mW
RF Input Power	+13 dBm
Junction Temperature	150°C
Storage Temperature	-65 to 150°C

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

$$\theta_{jc} = 120^{\circ}\text{C}/\text{W}$$

#### Notes:

1. Permanent damage may occur if any of these limits are exceeded.
2.  $T_{\text{CASE}} = 25^{\circ}\text{C}$ .
3. Derate at  $8.3 \text{ mW}/^{\circ}\text{C}$  for  $T_{\text{C}} > 117^{\circ}\text{C}$ .

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

Symbol	Parameters and Test Conditions: $I_{\text{d}} = 22 \text{ mA}$ , $Z_{\text{o}} = 50 \Omega$	Units	Min.	Typ.	Max.
$G_{\text{P}}$	Power Gain ( $ S_{21} ^2$ ) $f = 0.1 \text{ GHz}$ $f = 1.0 \text{ GHz}$	dB	10.5	13.5 12.5	
$\Delta G_{\text{P}}$	Gain Flatness $f = 0.1 \text{ to } 1.3 \text{ GHz}$	dB		$\pm 0.7$	
$f_{3 \text{ dB}}$	3 dB Bandwidth	GHz		2.0	
VSWR	Input VSWR $f = 0.1 \text{ to } 2.5 \text{ GHz}$			1.7:1	
	Output VSWR $f = 0.1 \text{ to } 2.5 \text{ GHz}$			1.7:1	
NF	50 $\Omega$ Noise Figure $f = 1.0 \text{ GHz}$	dB		5.0	
$P_{1 \text{ dB}}$	Output Power at 1 dB Gain Compression $f = 1.0 \text{ GHz}$	dBm		5.5	
$\text{IP}_3$	Third Order Intercept Point $f = 1.0 \text{ GHz}$	dBm		19.0	
$t_{\text{D}}$	Group Delay $f = 1.0 \text{ GHz}$	psec		150	
$V_{\text{d}}$	Device Voltage	V	3.2	4.0	4.8
$dV/dT$	Device Voltage Temperature Coefficient	$\text{mV}/^{\circ}\text{C}$		-7.0	

#### Note:

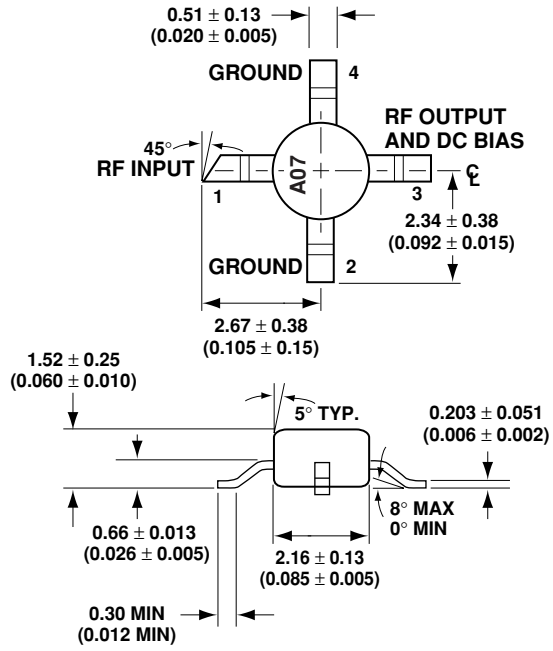
1. The recommended operating current range for this device is 15 to 40 mA. Typical performance as a function of current is on the following page.

### Ordering Information

Part Numbers	No. of Devices	Comments
MSA-0786-BLK	100	Bulk
MSA-0786-BLKG	100	Bulk
MSA-0786-TR1	1000	7" Reel
MSA-0786-TR1G	1000	7" Reel

**Note:** Order part number with a "G" suffix if lead-free option is desired.

## 86 Plastic Package Dimensions



DIMENSIONS ARE IN MILLIMETERS (INCHES)