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MSA-0386

>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-0386

Cascadable Silicon Bipolar MMIC Amplifier



Data Sheet

Description

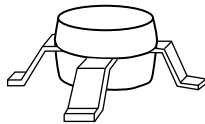
The MSA-0386 is a high performance silicon bipolar Monolithic Microwave Integrated Circuit (MMIC) housed in a low cost, surface mount plastic package. This MMIC is designed for use as a general purpose 50Ω gain block. Typical applications include narrow and broad band IF and RF amplifiers in commercial 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.

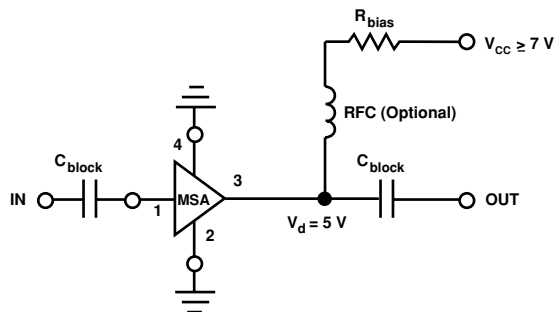
Features

- Lead-free Option Available
- Cascadable 50Ω Gain Block
- 3 dB Bandwidth: DC to 2.4 GHz
- 12.0 dB Typical Gain at 1.0 GHz
- 10.0 dBm Typical $P_{1\text{ dB}}$ at 1.0 GHz
- Unconditionally Stable ($k > 1$)
- Surface Mount Plastic Package
- Tape-and-Reel Packaging Option Available

86 Plastic Package



Typical Biasing Configuration



MSA-0386 Absolute Maximum Ratings

Parameter	Absolute Maximum ^[1]
Device Current	70 mA
Power Dissipation ^[2,3]	400 mW
RF Input Power	+13 dBm
Junction Temperature	150°C
Storage Temperature	-65 to 150°C

Thermal Resistance^{[2]:}

$$\theta_{jc} = 115^{\circ}\text{C}/\text{W}$$

Notes:

1. Permanent damage may occur if any of these limits are exceeded.
2. $T_{\text{CASE}} = 25^{\circ}\text{C}$.
3. Derate at $9.5 \text{ mW}/^{\circ}\text{C}$ for $T_{\text{C}} > 116^{\circ}\text{C}$.

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

Symbol	Parameters and Test Conditions: $I_{\text{d}} = 35 \text{ mA}$, $Z_{\text{O}} = 50 \Omega$	Units	Min.	Typ.	Max.
G_{P}	Power Gain ($ S_{21} ^2$) $f = 0.1 \text{ GHz}$ $f = 1.0 \text{ GHz}$	dB	10.0	12.5 12.0	
ΔG_{P}	Gain Flatness $f = 0.1 \text{ to } 1.6 \text{ GHz}$	dB		± 0.7	
$f_{\text{3 dB}}$	3 dB Bandwidth	GHz		2.4	
VSWR	Input VSWR $f = 0.1 \text{ to } 3.0 \text{ GHz}$			1.5:1	
	Output VSWR $f = 0.1 \text{ to } 3.0 \text{ GHz}$			1.7:1	
NF	50 Ω 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	
IP_3	Third Order Intercept Point $f = 1.0 \text{ GHz}$	dBm		23.0	
t_{D}	Group Delay $f = 1.0 \text{ GHz}$	psec		140	
V_{d}	Device Voltage	V	4.0	5.0	6.0
dV/dT	Device Voltage Temperature Coefficient	$\text{mV}/^{\circ}\text{C}$		-8.0	

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-0386-BLK	100	Bulk
MSA-0386-BLKG	100	Bulk
MSA-0386-TR1	1000	7" Reel
MSA-0386-TR1G	1000	7" Reel
MSA-0386-TR2	4000	13" Reel
MSA-0386-TR2G	4000	13" Reel

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

86 Plastic Package Dimensions

