

Products > RF ICs/Discretes > RF ICs > Silicon Amplifiers, Gain Blocks > MSA-0486

MSA-0486

>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-0486

Cascadable Silicon Bipolar MMIC Amplifier



Data Sheet

Description

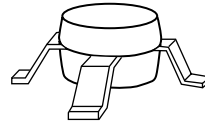
The MSA-0486 is a high performance silicon bipolar Monolithic Microwave Integrated Circuit (MMIC) housed in a low cost, surface mount plastic package. This MMIC is designed for use as a general purpose 50Ω gain block. Typical applications include narrow and broad band IF and RF amplifiers in commercial 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.

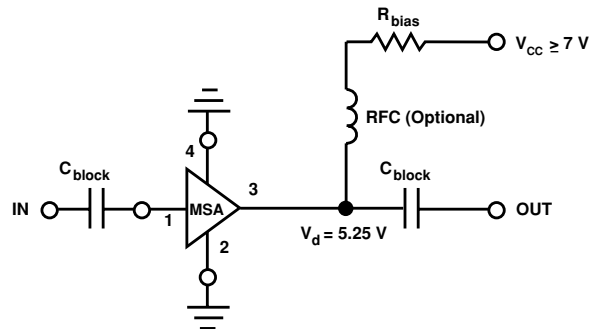
Features

- Lead-free Option Available
- Cascadable 50 Ω Gain Block
- 3 dB Bandwidth: DC to 3.2 GHz
- 8 dB Typical Gain at 1.0 GHz
- 12.5 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-0486 Absolute Maximum Ratings

Parameter	Absolute Maximum ^[1]
Device Current	85 mA
Power Dissipation ^[2,3]	500 mW
RF Input Power	+13 dBm
Junction Temperature	150°C
Storage Temperature	-65 to 150°C

Thermal Resistance^[2,4]:
 $\theta_{jc} = 100^\circ\text{C}/\text{W}$

Notes:

1. Permanent damage may occur if any of these limits are exceeded.
2. $T_{\text{CASE}} = 25^\circ\text{C}$.
3. Derate at 10 mW/°C for $T_{\text{C}} > 100^\circ\text{C}$.

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

Symbol	Parameters and Test Conditions: $I_d = 50 \text{ mA}$, $Z_o = 50 \Omega$	Units	Min.	Typ.	Max.
G_P	Power Gain ($ S_{21} ^2$) f = 0.1 GHz f = 1.0 GHz	dB	7.0	8.3 8.0	
ΔG_P	Gain Flatness f = 0.1 to 2.0 GHz	dB		± 0.6	
f_3 dB	3 dB Bandwidth	GHz		3.2	
VSWR	Input VSWR f = 0.1 to 3.0 GHz			1.5:1	
	Output VSWR f = 0.1 to 3.0 GHz			1.9:1	
NF	50 Ω Noise Figure f = 1.0 GHz	dB		7.0	
P_1 dB	Output Power at 1 dB Gain Compression f = 1.0 GHz	dBm		12.5	
IP_3	Third Order Intercept Point f = 1.0 GHz	dBm		25.5	
t_D	Group Delay f = 1.0 GHz	psec		140	
V_d	Device Voltage	V	4.2	5.25	6.3
dV/dT	Device Voltage Temperature Coefficient	mV/°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-0486-BLK	100	Bulk
MSA-0486-BLKG	100	Bulk
MSA-0486-TR1	1000	7" Reel
MSA-0486-TR1G	1000	7" Reel
MSA-0486-TR2	4000	13" Reel
MSA-0486-TR2G	4000	13" Reel

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

