

MSA-0886 Cascadable Silicon Bipolar MMIC Amplifier

Data Sheet

Description

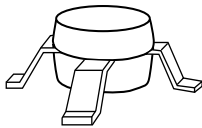
The MSA-0886 is a high performance silicon bipolar Monolithic Microwave Integrated Circuit (MMIC) housed in a low cost, surface mount plastic package. This MMIC is designed for use as a general purpose 50Ω gain block above 0.5 GHz and can be used as a high gain transistor below this frequency. Typical 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.

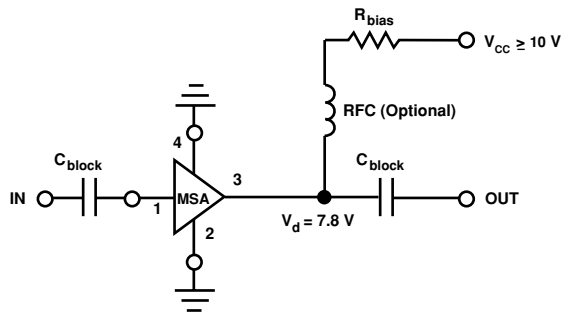
Features

- Lead-free Option Available
- Usable Gain to 5.5 GHz
- High Gain:
 - 32.5 dB Typical at 0.1 GHz
 - 22.5 dB Typical at 1.0 GHz
- Low Noise Figure:
 - 3.3 dB Typical at 1.0 GHz
- Surface Mount Plastic Package
- Tape-and-Reel Packaging Option Available
- Lead-free Option Available

86 Plastic Package



Typical Biasing Configuration



MSA-0886 Absolute Maximum Ratings

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

Thermal Resistance^{[2]:}

$$\theta_{jc} = 140^{\circ}\text{C}/\text{W}$$

Notes:

1. Permanent damage may occur if any of these limits are exceeded.
2. $T_{\text{CASE}} = 25^{\circ}\text{C}$.
3. Derate at $7.1 \text{ mW}/^{\circ}\text{C}$ for $T_{\text{C}} > 80^{\circ}\text{C}$.

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

Symbol	Parameters and Test Conditions: $I_{\text{d}} = 36 \text{ mA}$, $Z_0 = 50 \Omega$	Units	Min.	Typ.	Max.
G_{P}	Power Gain ($ S_{21} ^2$) f = 0.1 GHz f = 1.0 GHz	dB	20.5	32.5 22.5	
VSWR	Input VSWR f = 0.1 to 3.0 GHz			2.1:1	
	Output VSWR f = 0.1 to 3.0 GHz			1.9:1	
NF	50 Ω Noise Figure f = 1.0 GHz	dB		3.3	
$P_{1 \text{ dB}}$	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		27.0	
t_{D}	Group Delay f = 1.0 GHz	psec		140	
V_{d}	Device Voltage	V	6.2	7.8	9.4
dV/dT	Device Voltage Temperature Coefficient	$\text{mV}/^{\circ}\text{C}$		-17.0	

Note:

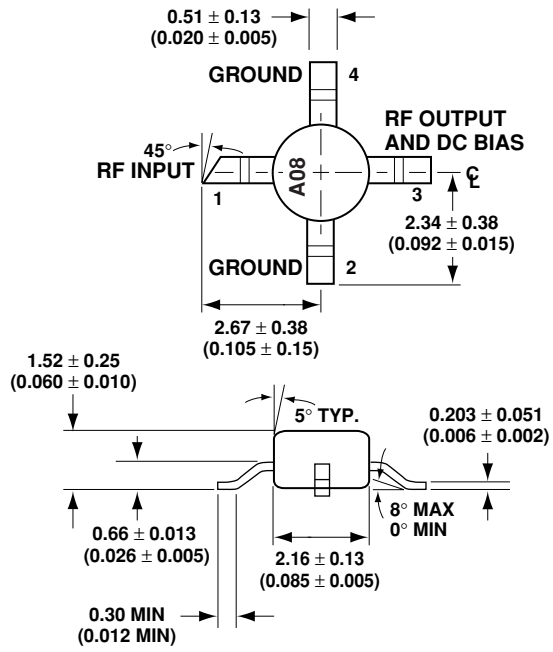
1. The recommended operating current range for this device is 20 to 40 mA. Typical performance as a function of current is on the following page.

Ordering Information

Part Numbers	No. of Devices	Comments
MSA-0886-BLK	100	Bulk
MSA-0886-BLKG	100	Bulk
MSA-0886-TR1	1000	7" Reel
MSA-0886-TR1G	1000	7" Reel
MSA-0886-TR2	4000	13" Reel
MSA-0886-TR2G	4000	13" Reel

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

86 Plastic Package Dimensions



DIMENSIONS ARE IN MILLIMETERS (INCHES)