

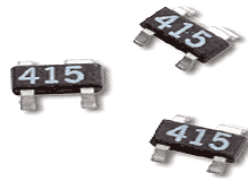
MSA-0711

6V Fixed Gain, General Purpose Amplifier

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; $f_{3dB} = 2.5\text{GHz}$; $G = 13.5\text{dB}$; $NF = 4.5\text{dB}$; $P_{1dB} = 5.5\text{dBm}$; $IP_{3i} = 2\text{dBm}$

MSA-0711

Cascadable Silicon Bipolar MMIC Amplifier



Data Sheet

Description

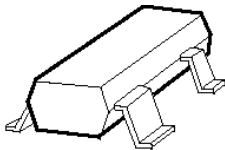
The MSA-0711 is a low cost silicon bipolar Monolithic Microwave Integrated Circuit (MMIC) housed in the surface mount plastic SOT-143 package. This MMIC is designed for use as a general purpose 50 Ω gain block. Typical applications include narrow and broad band IF and RF amplifiers in commercial and 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

- Cascadable 50 Ω Gain Block
- 3 dB Bandwidth: DC to 1.9 GHz
- 12.0 dB Typical Gain at 1.0 GHz
- Unconditionally Stable ($k > 1$)
- Low Cost Surface Mount Plastic Package
- Tape-and-Reel Packaging Option Available
- Lead-free Option Available

SOT-143 Package



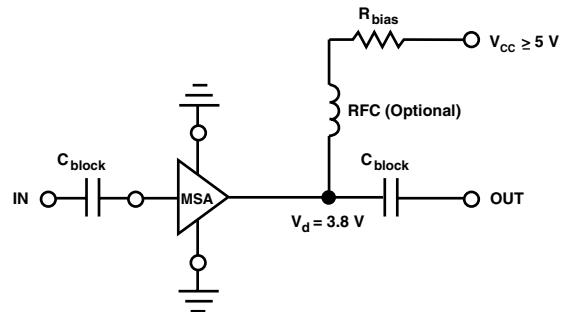
Pin Connections and Package Marking



Notes:

Top View. Package Marking provides orientation and identification.
"x" is the date code.

Typical Biasing Configuration



MSA-0711 Absolute Maximum Ratings

Parameter	Absolute Maximum ^[1]
Device Current	50 mA
Power Dissipation ^[2,3]	175 mW
RF Input Power	+13 dBm
Junction Temperature	150°C
Storage Temperature	-65 to 150°C

Thermal Resistance^[2]: $\theta_{jc} = 505^{\circ}\text{C}/\text{W}$
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Notes:

1. Permanent damage may occur if any of these limits are exceeded.
2. $T_{\text{CASE}} = 25^{\circ}\text{C}$.
3. Derate at 2.0 mW/°C for $T_{\text{C}} > 62^{\circ}\text{C}$.

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

Symbol	Parameters and Test Conditions: $I_{\text{d}} = 22 \text{ mA}$, $Z_0 = 50 \Omega$	Units	Min.	Typ.	Max.
G_{p}	Power Gain ($ S_{21} ^2$) f = 0.1 GHz f = 1.0 GHz	dB	10.0	13.0 12.0	
ΔG_{p}	Gain Flatness f = 0.1 to 1.3 GHz	dB		± 0.8	
$f_{3 \text{ dB}}$	3 dB Bandwidth	GHz		3.2	
VSWR	Input VSWR f = 0.1 to 2.0 GHz			1.5:1	
	Output VSWR f = 0.1 to 2.0 GHz			1.5:1	
NF	50 Ω Noise Figure f = 1.0 GHz	dB		5.0	
$P_{1 \text{ dB}}$	Output Power at 1 dB Gain Compression f = 1.0 GHz	dBm		5.5	
IP_3	Third Order Intercept Point f = 1.0 GHz	dBm		18.0	
t_{D}	Group Delay f = 1.0 GHz	psec		145	
V_{d}	Device Voltage $T_{\text{C}} = 25^{\circ}\text{C}$	V	3.0	3.8	4.6
dV/dT	Device Voltage Temperature Coefficient	mV/°C		-7.0	

Note:

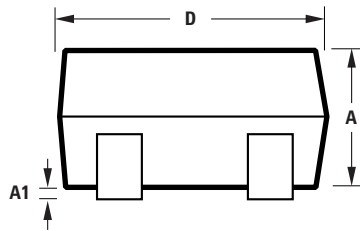
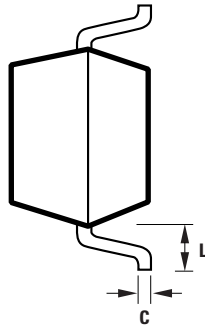
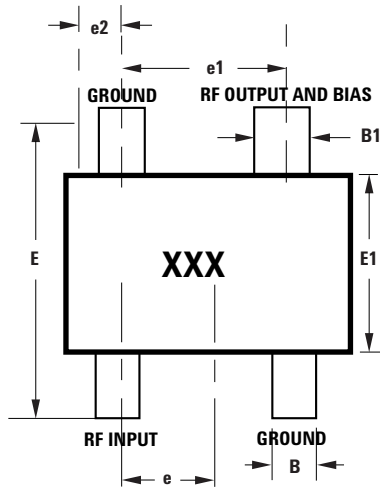
1. The recommended operating current range for this device is 15 to 30 mA. Typical performance as a function of current is on the following page.

Ordering Information

Part Numbers	No. of Devices	Comments
MSA-0711-BLK	100	Bulk
MSA-0711-BLKG	100	Bulk
MSA-0711-TR1	3000	7" Reel
MSA-0711-TR1G	3000	7" Reel
MSA-0711-TR2	10000	13" Reel
MSA-0711-TR2G	10000	13" Reel

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

SOT-143 Package Dimensions



Notes:
 XXX-package marking
 Drawings are not to scale

SYMBOL	DIMENSIONS (mm)	
	MIN.	MAX.
A	0.79	1.097
A1	0.013	0.10
B	0.36	0.54
B1	0.76	0.92
C	0.086	0.152
D	2.80	3.06
E1	1.20	1.40
e	0.89	1.02
e1	1.78	2.04
e2	0.45	0.60
E	2.10	2.65
L	0.45	0.69