Silicon Bipolar MMIC Cascadable Amplifier

MAAM41034

Features

- Cascadable 50Ω Gain Block
- 15 dB Power Gain at 0.5 GHz
- Medium Power: +13 dBm at 1 GHz
- Single Positive Supply: +3.3 to +12V
- Temperature Range: -55 to +95°C
- Low Cost, Low Inductance Plastic Surface Mount Package

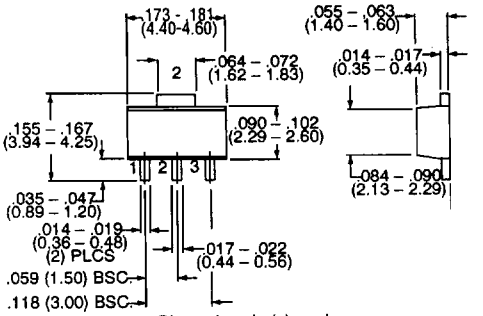
Description

M/A-COM's MAAM41034 is a high performance medium power cascadable gain block amplifier in a low inductance plastic surface mount package. The MAAM41034 is ideally suited for use where a general purpose amplifier with moderate power consumption from a low voltage supply is required. Typical applications include narrow and wide band RF and IF amplifiers in systems such as GPS receivers, fiber optic modules, cordless phones and battery powered radio receivers.

The MAAM41034 is based on the Darlington pair with internal feedback configuration. It can operate over a narrow or wide frequency range with useful power gain up to 2 GHz over the full military temperature range.

The MAAM41034 is fabricated with a monolithic chip using a mature, 12 GHz f_t silicon bipolar technology. The process features full IC passivation for increased performance and reliability.

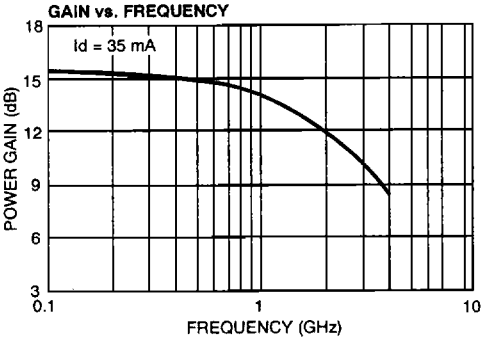
SOT-89



Dimensions in ( ) are in mm

Pin Description	
1	RF Input
2	AC/DC Ground
3	RF Output/Bias

GAIN vs. FREQUENCY



Electrical Specifications, T_A = 25°C

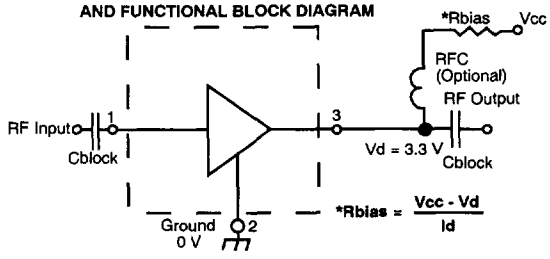
Symbol	Parameters, Test Conditions: Id = 35 mA Z_o = 50Ω		Units	Min.	Typ.	Max.
Gp	Power Gain	f = 0.1 GHz	dB	15	15.5	16.5
ΔGp	Gain Flatness	f = 0.1 GHz to 1 GHz	dB		±0.6	
F_{1dB}	1 dB Bandwidth		MHz		800	
F_{3dB}	3 dB Bandwidth		MHz		1600	
S_{12}	Reverse Isolation	f = 0.1 GHz to 1.5 GHz	dB		-18	
IP_3	Third Order Intercept Point	f = 1 GHz	dBm		+24	
P_{1dB}	Output Power @ 1 dB Gain Compression	f = 1 GHz	dBm		13	
$NF_{50Ω}$	Noise Figure measured with a 50Ω source	f = 1 GHz	dB		5.5	
VSWR	RF Input	f = 0.05 to 1.5 GHz			1.5:1	
VSWR	RF Output	f = 0.05 to 1.5 GHz			1.5:1	
t_d	Group Delay	f = 1 GHz	psec		350	
V_d	Device Voltage		Volt	2.8	3.3	3.75
dV/dT	Device Voltage to Temperature Coefficient	(Id=35 mA)	mV/°C		-5	

Absolute Maximum Ratings

Parameter	Absolute Maximum[1]
Device Current	75 mA
Power Dissipation[2,3]	200 mW
RF Input Power	+13 dBm
Junction Temperature	150°C
Storage Temperature	-65°C to 150°C
Thermal Resistance[2]: Θ_{jc} = 55°C/W	

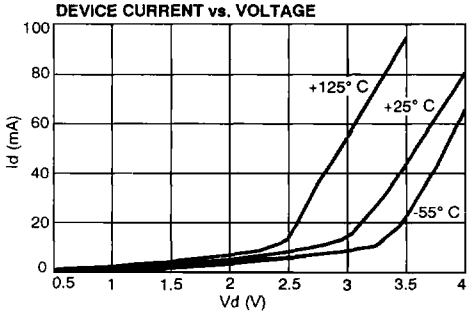
Notes:
1. Operation outside these limits may result in permanent damage.
2. T_{case} - Case temperature = 25°C (Bottom of the case)
3. Derate at 18.18 mW/°C for T_{case} > 139°C

TYPICAL BIASING CONFIGURATION AND FUNCTIONAL BLOCK DIAGRAM

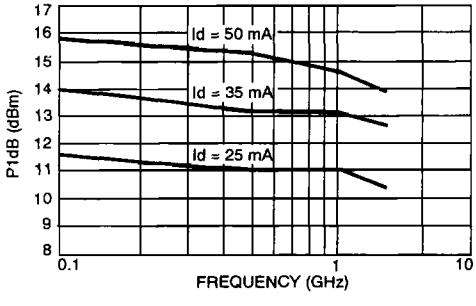


Typical Performance, T_A = 25°C (unless otherwise noted)

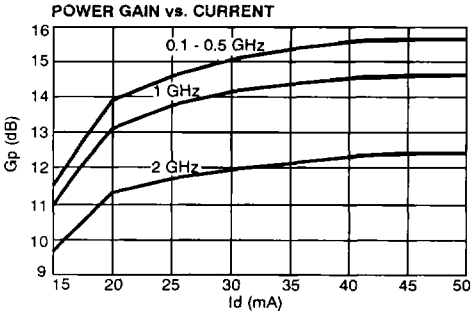
DEVICE CURRENT vs. VOLTAGE



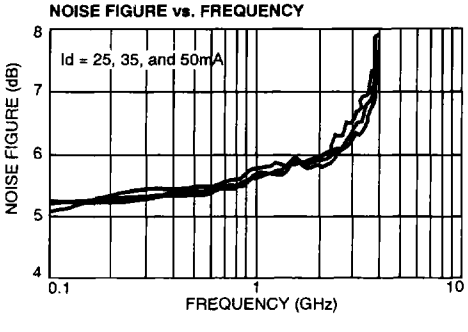
OUTPUT POWER @ 1 dB GAIN COMPRESSION vs. FREQUENCY



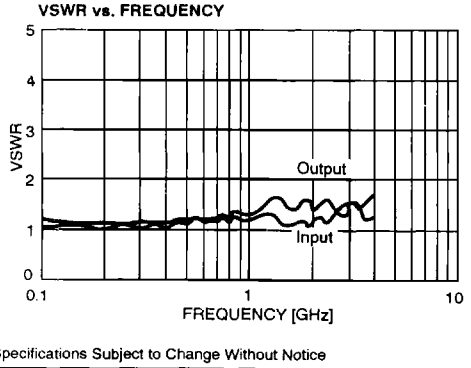
POWER GAIN vs. CURRENT



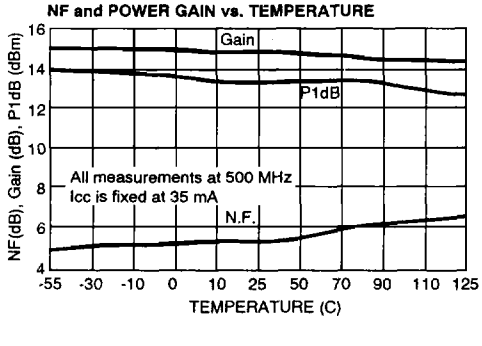
NOISE FIGURE vs. FREQUENCY



VSWR vs. FREQUENCY



OUTPUT POWER @ 1 dB GAIN COMPRESSION NF and POWER GAIN vs. TEMPERATURE



Specifications Subject to Change Without Notice