

# Amplifier

**50Ω 0.5 to 2.5 GHz**
**ZX60-2534MA+**

## Features

- From 2.8V to 5V operation
- High directivity
- Wide bandwidth, 0.5 to 2.5 GHz
- Low noise figure, 2.6 dB typ.
- Output power, up to 18 dBm typ.
- Protected by US patent 6,790,049

## Applications

- Buffer amplifier
- Cellular
- PCN
- Lab
- Instrumentation
- Test equipment



CASE STYLE: GA955

| Connectors | Model          |
|------------|----------------|
| SMA        | ZX60-2534MA-S+ |

**+RoHS Compliant**

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

## Electrical Specifications at $T_{AMB} = 25^{\circ}\text{C}$

| MODEL NO.    | FREQ. (GHz)<br>$f_L - f_U$ | DC VOLTAGE @ Pin V+ (V) | GAIN over frequency in GHz<br>Typ (dB) |      |      |      |      |               | MAXIMUM POWER (dBm)<br>Output<br>(1 dB Comp.)<br>Typ.<br>$f_L$ $f_U$ |      | DYNAMIC RANGE   |                   |      | VSWR (:1)<br>Typ. |      | ACTIVE DIRECTIVITY (dB)<br>Isolation-Gain<br>Typ.<br>$f_L$ $f_U$ |     | DC OPERATING CURRENT @ Pin V+ (mA)<br>Typ.   Max. |     |
|--------------|----------------------------|-------------------------|----------------------------------------|------|------|------|------|---------------|----------------------------------------------------------------------|------|-----------------|-------------------|------|-------------------|------|------------------------------------------------------------------|-----|---------------------------------------------------|-----|
|              |                            |                         | 0.5                                    | 1.0  | 1.5  | 2.0  | 2.5  | Min. at 2 GHz |                                                                      |      | NF (dB)<br>Typ. | IP3 (dBm)<br>Typ. | 1GHz | 1GHz              | 2GHz | In                                                               | Out |                                                   |     |
|              |                            |                         |                                        |      |      |      |      |               |                                                                      |      |                 |                   |      |                   |      |                                                                  |     |                                                   |     |
| ZX60-2534MA+ | 0.5-2.5                    | 5.0                     | 37.5                                   | 43.5 | 43.0 | 41.0 | 39.0 | 38.0          | 19.0                                                                 | 17.0 | 2.2             | 16                | 18   | 1.6               | 1.6  | 28                                                               | 16  | 170                                               | 190 |
|              |                            | 2.8                     | 33.5                                   | 38.0 | 37.5 | 35.5 | 33.5 | 32.0          | 11.0                                                                 | 12.0 | 2.6             | 13                | 18   | 1.6               | 1.3  | 34                                                               | 21  | 160                                               | 185 |

## Maximum Ratings

Operating Temperature -40°C to 80°C case

Storage Temperature -55°C to 100°C

DC Voltage 7V

Input Power (no damage) -15dBm

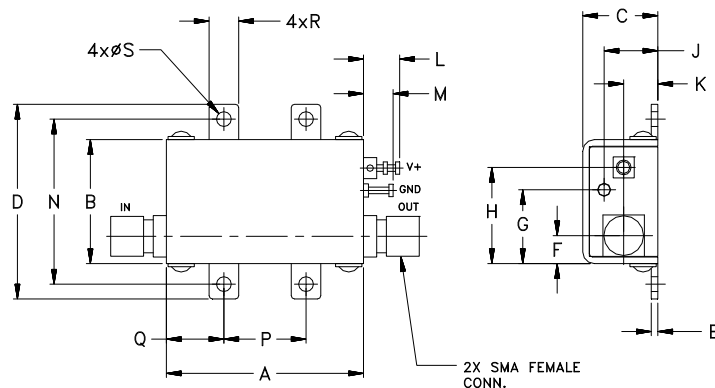
Power Dissipation 0.5W

Permanent damage may occur if any of these limits are exceeded.



NOTE: When soldering the DC connections, caution must be used to avoid overheating the DC terminals. See Application Note [AN-40-10](#).

## Outline Drawing



## Outline Dimensions (inch)

| A     | B     | C     | D     | E    | F    | G     | H     | J    | K    | L    | M    | N     | P     | Q    | R    | S    | wt.   |
|-------|-------|-------|-------|------|------|-------|-------|------|------|------|------|-------|-------|------|------|------|-------|
| 1.20  | .75   | .46   | 1.18  | .04  | .17  | .45   | .59   | .33  | .21  | .22  | .18  | 1.00  | .50   | .35  | .18  | .106 | grams |
| 30.48 | 19.05 | 11.68 | 29.97 | 1.02 | 4.32 | 11.43 | 14.99 | 8.38 | 5.33 | 5.59 | 4.57 | 25.40 | 12.70 | 8.89 | 4.57 | 2.69 | 35.0  |

### Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.  
 B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.  
 C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCStore/terms.jsp](http://www.minicircuits.com/MCStore/terms.jsp)


[www.minicircuits.com](http://www.minicircuits.com) P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

# Typical Performance Data at 25°C

# ZX60-2534MA+

**V+ = 5.0V**

| FREQUENCY<br>(MHz) | GAIN<br>(dB) | DIRECTIVITY<br>(dB) | VSWR<br>IN<br>(:1) | VSWR<br>OUT<br>(:1) | POWER OUT @ 1dB<br>COMPRESSION<br>(dBm) | IP3<br>(dBm) | NF<br>(dB) |
|--------------------|--------------|---------------------|--------------------|---------------------|-----------------------------------------|--------------|------------|
| 500                | 38.64        | 37.49               | 2.78               | 1.59                | 18.90                                   | 22.42        | 2.91       |
| 550                | 39.99        | 30.55               | 2.59               | 1.47                | 19.23                                   | 21.49        | 2.86       |
| 600                | 40.93        | 29.95               | 2.41               | 1.36                | 19.09                                   | 19.75        | 2.85       |
| 650                | 41.61        | 34.75               | 2.27               | 1.27                | 19.16                                   | 18.9         | 2.70       |
| 700                | 42.10        | 28.32               | 2.14               | 1.20                | 19.33                                   | 18.54        | 2.75       |
| 800                | 42.71        | 23.14               | 1.94               | 1.13                | 19.29                                   | 17.28        | 2.39       |
| 900                | 43.16        | 30.62               | 1.81               | 1.15                | 19.33                                   | 16.96        | 2.34       |
| 1000               | 43.50        | 20.67               | 1.71               | 1.20                | 19.15                                   | 16.21        | 2.30       |
| 1100               | 43.71        | 27.26               | 1.62               | 1.24                | 18.93                                   | 15.46        | 2.06       |
| 1300               | 43.82        | 22.34               | 1.48               | 1.29                | 18.86                                   | 15.54        | 2.29       |
| 1400               | 43.67        | 16.21               | 1.41               | 1.29                | 18.65                                   | 15.19        | 2.20       |
| 1500               | 43.42        | 18.47               | 1.37               | 1.28                | 18.67                                   | 15.67        | 2.24       |
| 1600               | 43.06        | 20.52               | 1.31               | 1.25                | 18.48                                   | 15.94        | 2.25       |
| 1800               | 42.20        | 20.24               | 1.24               | 1.21                | 18.03                                   | 16.65        | 2.15       |
| 2000               | 41.30        | 20.68               | 1.18               | 1.16                | 18.11                                   | 17.83        | 2.00       |
| 2200               | 40.43        | 25.27               | 1.14               | 1.19                | 17.49                                   | 18.35        | 1.84       |
| 2300               | 40.02        | 17.35               | 1.12               | 1.23                | 17.24                                   | 18.65        | 2.05       |
| 2400               | 39.62        | 17.21               | 1.11               | 1.27                | 17.43                                   | 18.85        | 2.14       |
| 2450               | 39.42        | 16.77               | 1.11               | 1.30                | 17.07                                   | 18.99        | 2.07       |
| 2500               | 39.21        | 18.21               | 1.11               | 1.32                | 17.16                                   | 19.32        | 1.99       |

**V+ = 2.8V**

| FREQUENCY<br>(MHz) | GAIN<br>(dB) | DIRECTIVITY<br>(dB) | VSWR<br>IN<br>(:1) | VSWR<br>OUT<br>(:1) | POWER OUT @ 1dB<br>COMPRESSION<br>(dBm) | IP3<br>(dBm) | NF<br>(dB) |
|--------------------|--------------|---------------------|--------------------|---------------------|-----------------------------------------|--------------|------------|
| 500                | 34.90        | 22.62               | 2.69               | 1.68                | 10.88                                   | 17.11        | 3.10       |
| 550                | 36.06        | 30.26               | 2.45               | 1.59                | 11.18                                   | 16.05        | 3.07       |
| 600                | 36.86        | 29.20               | 2.26               | 1.55                | 11.43                                   | 14.81        | 2.96       |
| 650                | 37.44        | 23.29               | 2.11               | 1.51                | 11.59                                   | 14.12        | 2.97       |
| 700                | 37.86        | 29.44               | 2.01               | 1.52                | 11.61                                   | 13.81        | 2.96       |
| 800                | 38.35        | 24.24               | 1.82               | 1.56                | 12.08                                   | 13.49        | 2.74       |
| 900                | 38.65        | 34.71               | 1.71               | 1.62                | 12.07                                   | 13.4         | 2.67       |
| 1000               | 38.81        | 33.39               | 1.61               | 1.68                | 12.09                                   | 13.19        | 2.65       |
| 1100               | 38.83        | 27.76               | 1.54               | 1.73                | 12.27                                   | 13.38        | 2.65       |
| 1300               | 38.62        | 24.19               | 1.41               | 1.79                | 12.21                                   | 13.91        | 2.66       |
| 1400               | 38.38        | 23.03               | 1.36               | 1.78                | 12.36                                   | 14.31        | 2.60       |
| 1500               | 38.09        | 21.15               | 1.31               | 1.77                | 12.27                                   | 14.63        | 2.53       |
| 1600               | 37.74        | 20.35               | 1.27               | 1.74                | 12.41                                   | 15.22        | 2.68       |
| 1800               | 36.95        | 21.22               | 1.20               | 1.67                | 12.45                                   | 16.62        | 2.69       |
| 2000               | 36.13        | 23.63               | 1.17               | 1.60                | 12.68                                   | 17.74        | 2.59       |
| 2200               | 35.31        | 24.45               | 1.16               | 1.54                | 12.59                                   | 18.83        | 2.56       |
| 2300               | 34.90        | 20.27               | 1.15               | 1.53                | 12.42                                   | 19.23        | 2.68       |
| 2400               | 34.50        | 20.65               | 1.16               | 1.51                | 12.49                                   | 19.46        | 2.77       |
| 2450               | 34.30        | 20.80               | 1.17               | 1.51                | 12.44                                   | 19.88        | 2.73       |
| 2500               | 34.09        | 25.56               | 1.17               | 1.50                | 12.28                                   | 20.04        | 2.71       |

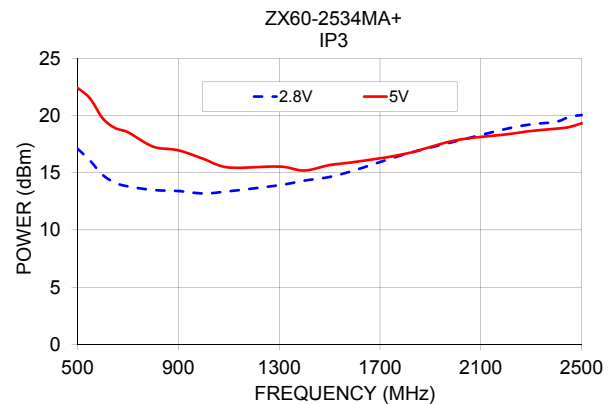
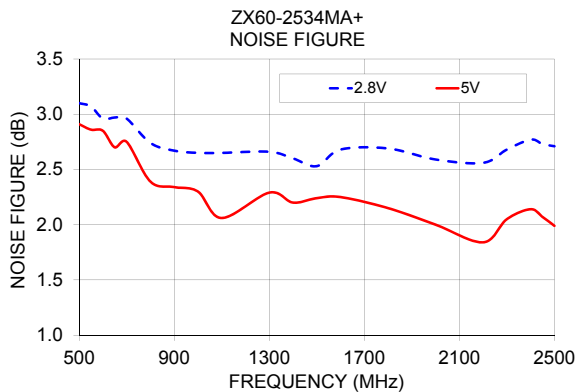
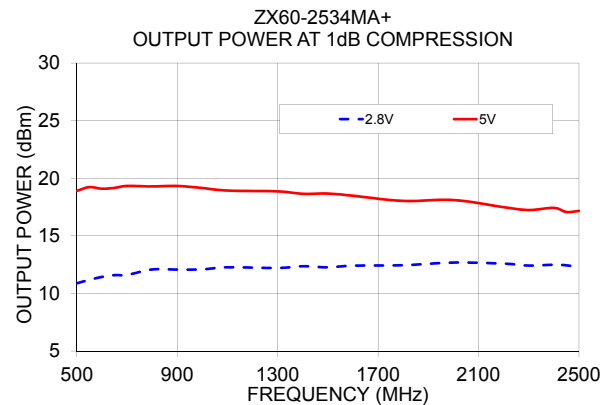
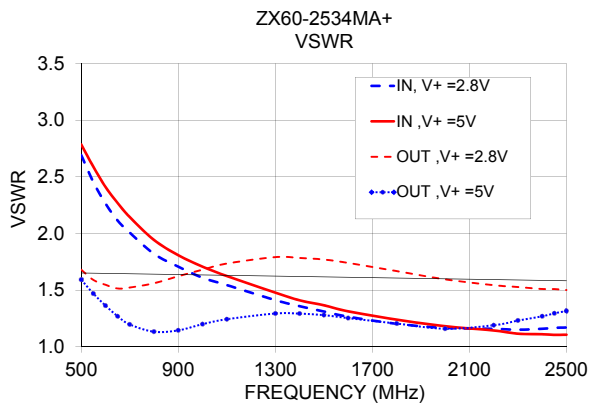
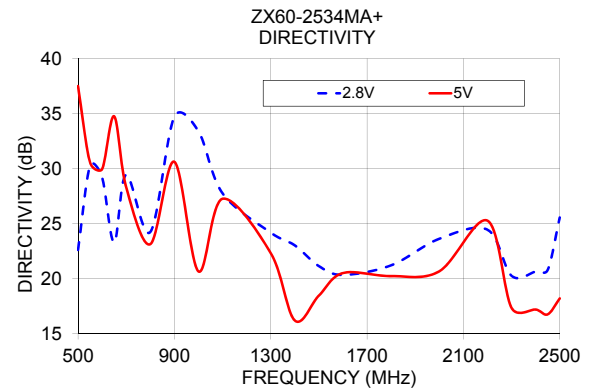
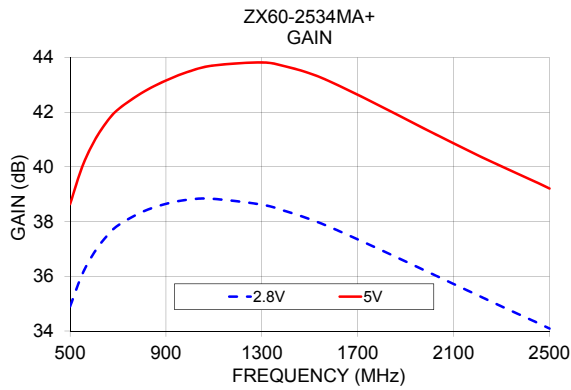
## Notes

- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)



# Typical Performance Curves at 25 °C

## ZX60-2534MA+



### Notes

- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCStore/terms.jsp](http://www.minicircuits.com/MCStore/terms.jsp)



# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Mini-Circuits:](#)

[ZX60-2534MA-S+](#)