

Coaxial Amplifier

ZX60-2510MA+

50Ω High Isolation 500 to 2500 MHz

Features

- from 2.8V to 5V operation
- wide bandwidth, 500 to 2500 MHz
- high active directivity
- output power, 18 dBm typ. at 2 GHz and 5V
- protected by US patent 6,790,049

Applications

- buffer amplifier
- LO amplifiers for mixers
- cellular
- PCN



CASE STYLE: GC957

| Connectors | Model |
|------------|----------------|
| SMA | ZX60-2510MA-S+ |

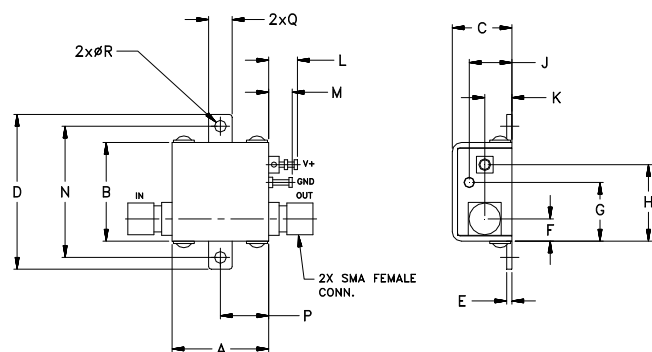
+RoHS Compliant

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

Electrical Specifications at 25°C

| Parameter | Condition (MHz) | 2.8V | | | 5.0V | | | Units |
|-------------------------------------|-----------------|------|------|------|------|------|------|-------|
| | | Min. | Typ. | Max. | Min. | Typ. | Max. | |
| Frequency | | 500 | | 2500 | 500 | | 2500 | MHz |
| Gain | 500 | — | 12.6 | — | — | 14.3 | — | dB |
| | 1000 | — | 13.1 | — | — | 15 | — | |
| | 1500 | — | 13.1 | — | — | 15.2 | — | |
| | 2000 | — | 12.8 | — | 13.5 | 15 | — | |
| | 2500 | — | 12.2 | — | — | 14.6 | — | |
| Output Power at 1dB compression | 500 | — | 11.0 | — | — | 20.0 | — | dBm |
| | 2500 | — | 12.0 | — | — | 18.0 | — | |
| Noise Figure | 1000 | — | 5.4 | — | — | 5.3 | — | dB |
| Output third order intercept point | 1000 | — | 24.0 | — | — | 32.0 | — | dBm |
| | 2000 | — | 24.0 | — | — | 31.0 | — | |
| Input VSWR | 1100-2500 | — | 1.4 | — | — | 1.4 | — | :1 |
| Output VSWR | 1100-2500 | — | 1.4 | — | — | 1.4 | — | :1 |
| Active Directivity (Isolation-Gain) | 500 | — | 36 | — | — | 32 | — | dB |
| | 2500 | — | 20 | — | — | 19 | — | |
| Supply Current | | — | 79 | — | — | 84 | 104 | mA |

Outline Drawing



NOTE: When soldering the DC connections, caution must be used to avoid overheating the DC terminal. See Application Note, [AN-40-010](#).

Outline Dimensions (inch/mm)

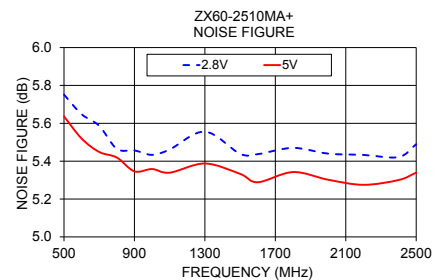
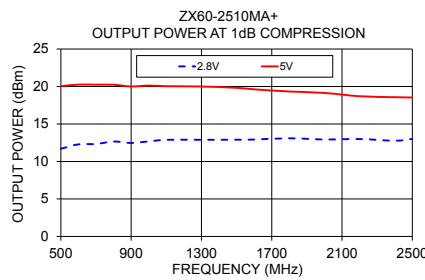
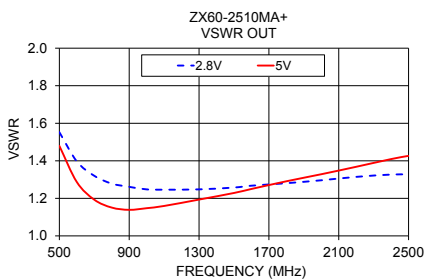
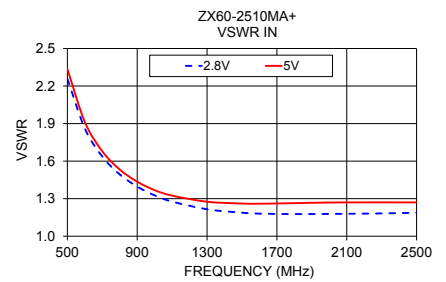
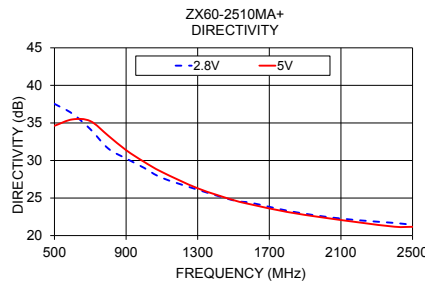
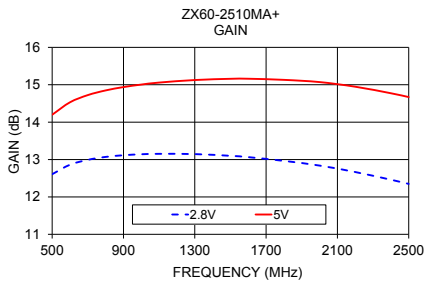
| A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | wt |
|-------|-------|-------|-------|------|------|-------|-------|------|------|------|------|-------|------|------|------|-------|
| .74 | .75 | .46 | 1.18 | .04 | .17 | .45 | .59 | .33 | .21 | .22 | .18 | 1.00 | .37 | .18 | .106 | grams |
| 18.80 | 19.05 | 11.68 | 29.97 | 1.02 | 4.32 | 11.43 | 14.99 | 8.38 | 5.33 | 5.59 | 4.57 | 25.40 | 9.40 | 4.57 | 2.69 | 23.0 |

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.
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| FREQUENCY (MHz) | GAIN (dB) | | DIRECTIVITY (dB) | | VSWR IN (:1) | | VSWR OUT (:1) | | POUT at 1 dB COMPR. (dBm) | | NOISE FIGURE (dB) | |
|-----------------|-----------|-------|------------------|-------|--------------|------|---------------|------|---------------------------|-------|-------------------|------|
| | 2.8V | 5V | 2.8V | 5V | 2.8V | 5V | 2.8V | 5V | 2.8V | 5V | 2.8V | 5V |
| 500 | 12.61 | 14.20 | 37.54 | 34.62 | 2.26 | 2.34 | 1.55 | 1.48 | 11.69 | 20.05 | 5.75 | 5.64 |
| 600 | 12.86 | 14.53 | 36.24 | 35.47 | 1.86 | 1.91 | 1.40 | 1.29 | 12.28 | 20.26 | 5.65 | 5.52 |
| 700 | 12.99 | 14.72 | 34.17 | 35.25 | 1.64 | 1.68 | 1.32 | 1.19 | 12.33 | 20.24 | 5.59 | 5.45 |
| 800 | 13.07 | 14.85 | 31.60 | 33.31 | 1.49 | 1.53 | 1.28 | 1.15 | 12.66 | 20.24 | 5.46 | 5.42 |
| 900 | 13.11 | 14.94 | 30.27 | 31.38 | 1.40 | 1.44 | 1.26 | 1.14 | 12.47 | 20.01 | 5.46 | 5.35 |
| 1000 | 13.14 | 15.00 | 29.02 | 29.82 | 1.33 | 1.37 | 1.25 | 1.15 | 12.68 | 20.12 | 5.43 | 5.36 |
| 1100 | 13.15 | 15.06 | 27.69 | 28.47 | 1.28 | 1.32 | 1.25 | 1.16 | 12.89 | 20.04 | 5.46 | 5.34 |
| 1300 | 13.15 | 15.13 | 26.11 | 26.29 | 1.22 | 1.28 | 1.25 | 1.19 | 12.89 | 20.00 | 5.56 | 5.39 |
| 1500 | 13.10 | 15.16 | 24.69 | 24.72 | 1.19 | 1.26 | 1.26 | 1.23 | 12.90 | 19.82 | 5.44 | 5.33 |
| 1600 | 13.06 | 15.16 | 24.35 | 24.14 | 1.18 | 1.26 | 1.27 | 1.25 | 12.92 | 19.62 | 5.44 | 5.29 |
| 1800 | 12.96 | 15.13 | 23.32 | 23.14 | 1.18 | 1.26 | 1.28 | 1.29 | 13.09 | 19.33 | 5.47 | 5.34 |
| 2000 | 12.84 | 15.07 | 22.55 | 22.41 | 1.18 | 1.27 | 1.30 | 1.33 | 12.94 | 19.14 | 5.44 | 5.30 |
| 2200 | 12.67 | 14.95 | 22.04 | 21.76 | 1.18 | 1.27 | 1.31 | 1.37 | 12.99 | 18.70 | 5.43 | 5.28 |
| 2400 | 12.46 | 14.77 | 21.68 | 21.18 | 1.18 | 1.27 | 1.33 | 1.41 | 12.77 | 18.57 | 5.42 | 5.30 |
| 2500 | 12.35 | 14.67 | 21.42 | 21.17 | 1.19 | 1.27 | 1.33 | 1.43 | 13.00 | 18.53 | 5.49 | 5.34 |



Notes

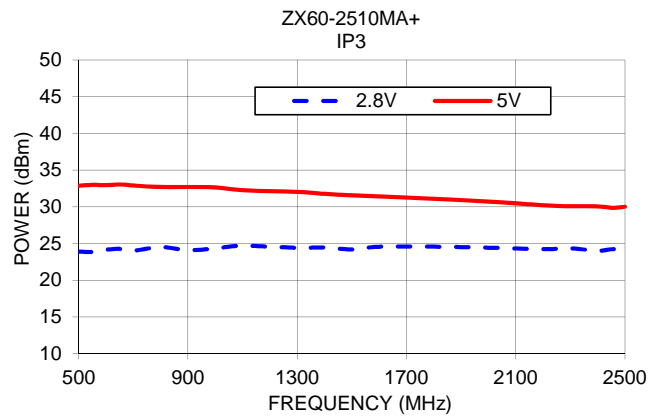
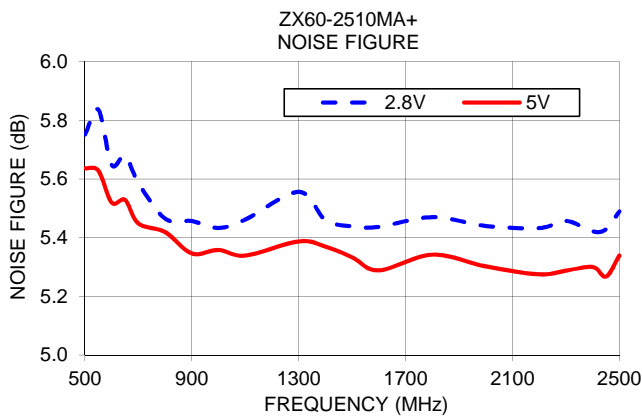
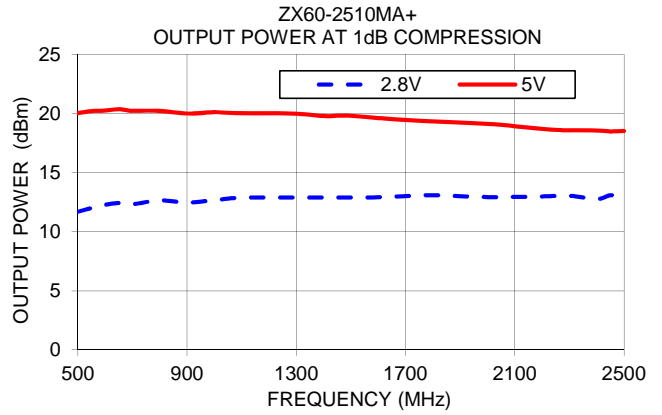
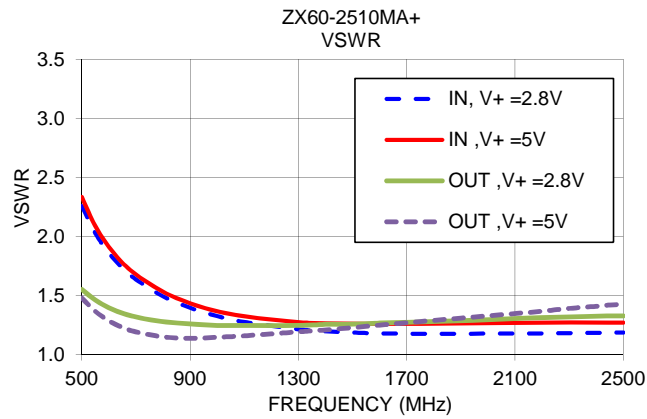
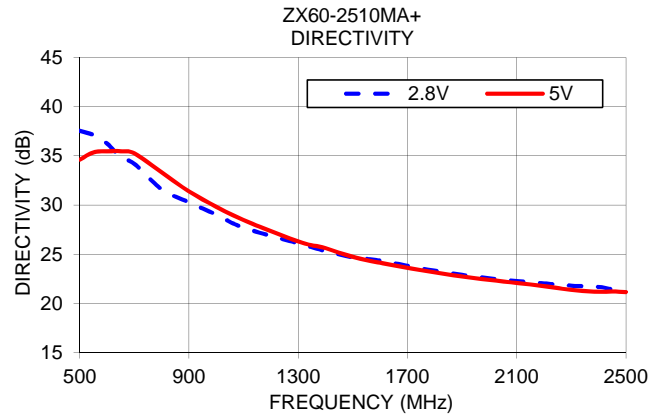
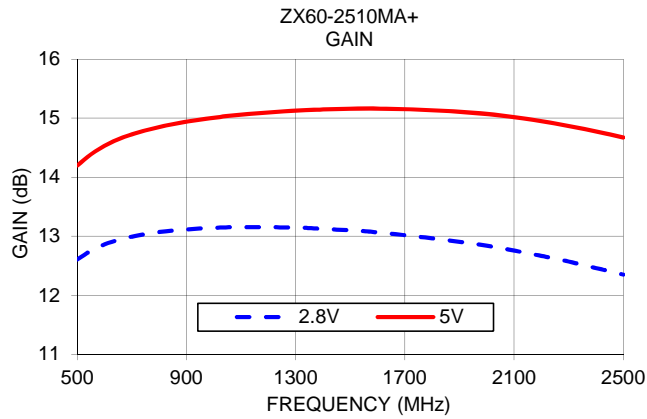
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Typical Performance Data

| FREQ. (MHz) | GAIN | | DIRECTIVITY | | VSWR IN | | VSWR OUT | | POWER OUT @ 1dB COMPRESSION | | IP3 | | NF | |
|----------------|-------|-------|-------------|-------|---------|------|----------|------|--------------------------------|-------|-------|-------|------|------|
| | (dB) | | (dB) | | (:1) | | (:1) | | (dBm) | | (dBm) | | (dB) | |
| | 2.8V | 5V | 2.8V | 5V | 2.8V | 5V | 2.8V | 5V | 2.8V | 5V | 2.8V | 5V | 2.8V | 5V |
| 500 | 12.61 | 14.20 | 37.54 | 34.62 | 2.26 | 2.34 | 1.55 | 1.48 | 11.69 | 20.05 | 23.89 | 32.87 | 5.75 | 5.64 |
| 550 | 12.75 | 14.38 | 37.11 | 35.35 | 2.03 | 2.09 | 1.46 | 1.37 | 12.01 | 20.21 | 23.83 | 32.99 | 5.84 | 5.63 |
| 600 | 12.86 | 14.53 | 36.24 | 35.47 | 1.86 | 1.91 | 1.40 | 1.29 | 12.28 | 20.26 | 24.15 | 32.94 | 5.65 | 5.52 |
| 650 | 12.94 | 14.64 | 34.86 | 35.46 | 1.73 | 1.78 | 1.35 | 1.23 | 12.43 | 20.38 | 24.25 | 33.06 | 5.68 | 5.53 |
| 700 | 12.99 | 14.72 | 34.17 | 35.25 | 1.64 | 1.68 | 1.32 | 1.19 | 12.33 | 20.24 | 24.03 | 32.90 | 5.59 | 5.45 |
| 800 | 13.07 | 14.85 | 31.60 | 33.31 | 1.49 | 1.53 | 1.28 | 1.15 | 12.66 | 20.24 | 24.50 | 32.69 | 5.46 | 5.42 |
| 900 | 13.11 | 14.94 | 30.27 | 31.38 | 1.40 | 1.44 | 1.26 | 1.14 | 12.47 | 20.01 | 24.09 | 32.71 | 5.46 | 5.35 |
| 1000 | 13.14 | 15.00 | 29.02 | 29.82 | 1.33 | 1.37 | 1.25 | 1.15 | 12.68 | 20.12 | 24.32 | 32.63 | 5.43 | 5.36 |
| 1100 | 13.15 | 15.06 | 27.69 | 28.47 | 1.28 | 1.32 | 1.25 | 1.16 | 12.89 | 20.04 | 24.68 | 32.26 | 5.46 | 5.34 |
| 1300 | 13.15 | 15.13 | 26.11 | 26.29 | 1.22 | 1.28 | 1.25 | 1.19 | 12.89 | 20.00 | 24.41 | 32.03 | 5.56 | 5.39 |
| 1400 | 13.12 | 15.15 | 25.32 | 25.62 | 1.20 | 1.27 | 1.26 | 1.21 | 12.91 | 19.80 | 24.45 | 31.76 | 5.46 | 5.37 |
| 1500 | 13.10 | 15.16 | 24.69 | 24.72 | 1.19 | 1.26 | 1.26 | 1.23 | 12.90 | 19.82 | 24.18 | 31.56 | 5.44 | 5.33 |
| 1600 | 13.06 | 15.16 | 24.35 | 24.14 | 1.18 | 1.26 | 1.27 | 1.25 | 12.92 | 19.62 | 24.55 | 31.42 | 5.44 | 5.29 |
| 1800 | 12.96 | 15.13 | 23.32 | 23.14 | 1.18 | 1.26 | 1.28 | 1.29 | 13.09 | 19.33 | 24.56 | 31.06 | 5.47 | 5.34 |
| 2000 | 12.84 | 15.07 | 22.55 | 22.41 | 1.18 | 1.27 | 1.30 | 1.33 | 12.94 | 19.14 | 24.42 | 30.73 | 5.44 | 5.30 |
| 2200 | 12.67 | 14.95 | 22.04 | 21.76 | 1.18 | 1.27 | 1.31 | 1.37 | 12.99 | 18.70 | 24.22 | 30.21 | 5.43 | 5.28 |
| 2300 | 12.57 | 14.86 | 21.80 | 21.37 | 1.18 | 1.27 | 1.32 | 1.39 | 13.05 | 18.59 | 24.34 | 30.07 | 5.46 | 5.29 |
| 2400 | 12.46 | 14.77 | 21.68 | 21.18 | 1.18 | 1.27 | 1.33 | 1.41 | 12.77 | 18.57 | 24.00 | 30.06 | 5.42 | 5.30 |
| 2450 | 12.41 | 14.72 | 21.45 | 21.22 | 1.19 | 1.27 | 1.33 | 1.42 | 13.09 | 18.49 | 24.21 | 29.86 | 5.43 | 5.27 |
| 2500 | 12.35 | 14.67 | 21.42 | 21.17 | 1.19 | 1.27 | 1.33 | 1.43 | 13.00 | 18.53 | 24.28 | 30.01 | 5.49 | 5.34 |

Typical Performance Curves

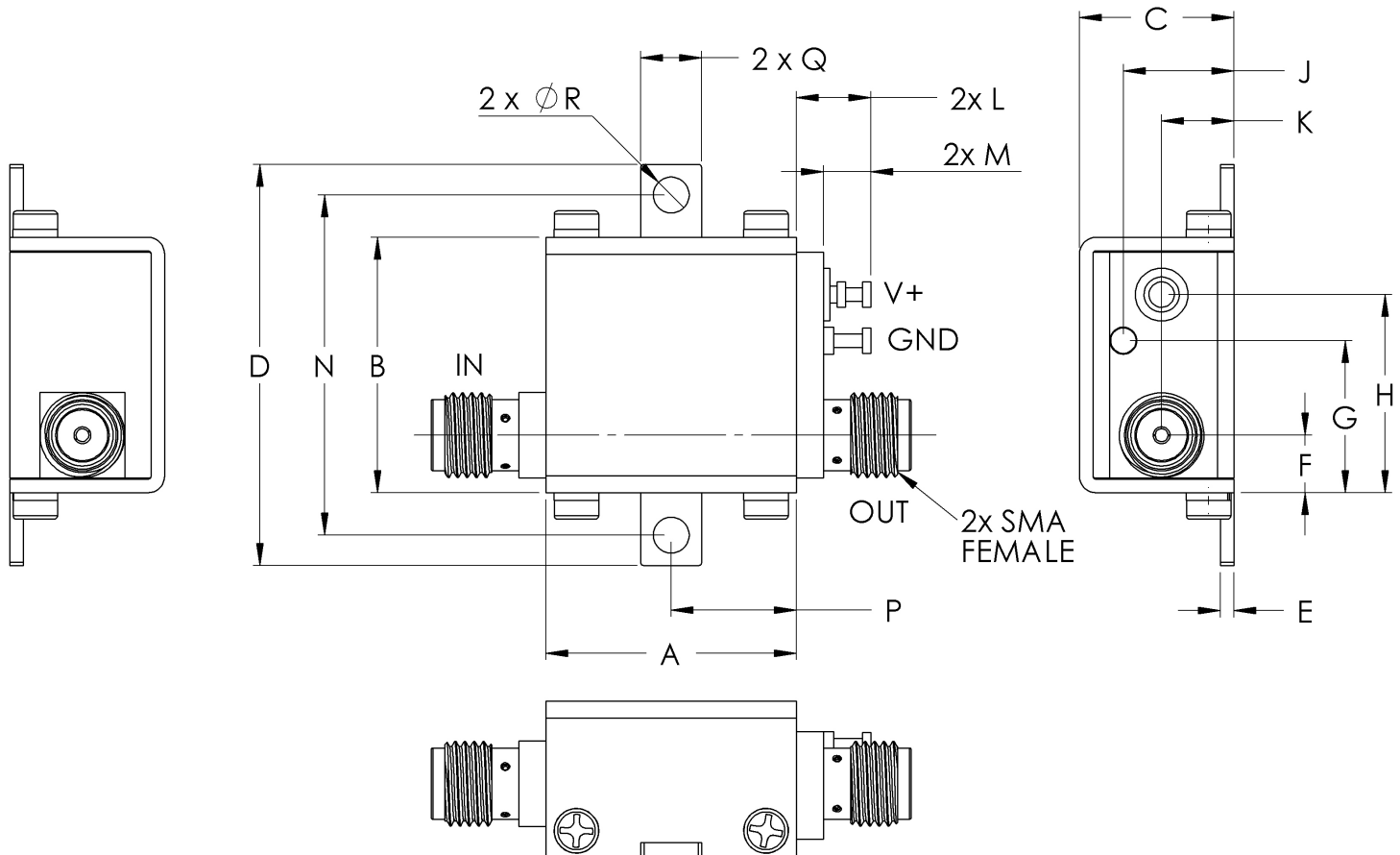


Case Style

GC

Outline Dimensions

GC957



| CASE #. | A | B | C | D | E | F | G | H | J | K | L | M | N |
|---------|----------------|----------------|----------------|-----------------|---------------|---------------|----------------|----------------|---------------|---------------|---------------|---------------|----------------|
| GC957 | .74 (18.80) | .75 (19.15) | .46 (11.61) | 1.18 (30.07) | .04 (1.02) | .17 (4.32) | .45 (11.40) | .59 (14.86) | .33 (8.31) | .21 (5.44) | .22 (5.59) | .14 (3.56) | 1.00 (25.4) |

| CASE #. | P | Q | R | WT GRAMS |
|---------|---------------|---------------|----------------|----------|
| GC957 | .37 (9.40) | .18 (4.57) | .106 (2.69) | 23.0 |

Dimensions are in inches (mm). Tolerances: 2Pl. $\pm .03$; 3Pl. $\pm .015$
Tolerance on hole size and interaxes dimensions to be $\pm .005$.

Note:

1. Case material: Brass
2. Case finish: Nickel plate

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| Specification | Test/Inspection Condition | Reference/Spec |
|---------------------------|---------------------------------------|----------------------------------------------------|
| Operating Temperature | -40° to 85° C Case Temperature | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C Ambient Environment | Individual Model Data Sheet |
| Stabilization Bake | (non-operating) 125°C, 24 hours | - - - |
| Burn-in at Elevated Temp. | (DC on) 160 hours at 85° C | MIL-STD-202, Method 108 |
| Thermal Shock | -55° to 100°C, 5 cycles | MIL-STD-202, Method 107, Condition A, except 100°C |