

# ISG56527

## 5 TO 65 MHz SILICON CATV 27 dB HYBRID AMPLIFIER



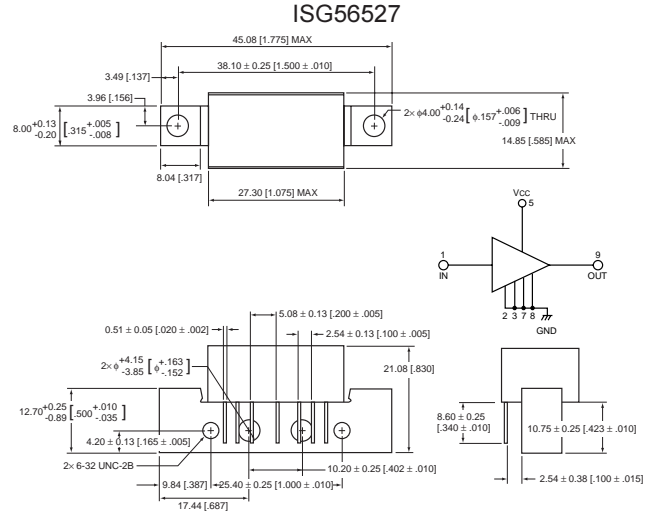
### FEATURES

- FLAT GAIN RESPONSE FROM 5 TO 65 MHz:  $f = \pm 0.2$  dB
- INPUT AND OUTPUT MATCHING TO 75 OHMS:  $R_L = > 20$  dB
- LOW DISTORTION:  $P_{1dB} = 78$  dBmV
- LOW NOISE: 3.1dB
- AUTOMATED SURFACE MOUNT CONSTRUCTION

### DESCRIPTION

The ISG56527 is a low noise, low distortion hybrid amplifier specified for use in return path HFC Cable TV applications. The ISG56527 is comprised of 100% surface mount components, including high performance silicon transistors. It features excellent noise, gain, and thermal stability across a wide range of operating conditions and frequencies. The amplifiers are manufactured to ISO9002 standards are very rugged and exhibit excellent unit to unit uniformity.

### OUTLINE DIMENSIONS (Units in mm [inches])



### ELECTRICAL CHARACTERISTICS ( $V_{CC} = 24$ V, $\pm 10\%$ $T_A = 25^\circ\text{C}$ , 75 $\Omega$ System)

| PART NUMBER       |  |  |       | ISG56527 |       |      |
|-------------------|--|--|-------|----------|-------|------|
| SYMBOLS           | PARAMETERS   | CONDITIONS   | UNITS | MIN      | TYP   | MAX  |
|                   | Frequency Range                                    | Min (f <sub>L</sub> ) to Max (f <sub>H</sub> ) +5% | MHz   | 5        |       | 65   |
| G                 | Gain @ +25°C                                       | F <sub>L</sub> to F <sub>H</sub>                   | dB    | 26.5     | 27.0  | 28.0 |
| G                 | Gain @ -20°C to +100°C                             | F <sub>L</sub> to F <sub>H</sub>                   | dB    | 26.0     | 26.5  | 28.0 |
| G <sub>F</sub>    | Gain Flatness                                      | F <sub>L</sub> to F <sub>H</sub>                   | dB    |          | ±0.15 | ±0.2 |
| R <sub>LIN</sub>  | Input Return Loss                                  | F <sub>L</sub> to F <sub>H</sub>                   | dB    | 20.0     | 21.0  |      |
| R <sub>LOUT</sub> | Output Return Loss                                 | F <sub>L</sub> to F <sub>H</sub>                   | dB    | 20.0     | 21.0  |      |
| NF                | Noise Figure                                       | 5-65 MHz   | dB    |          | 3.1   | 3.4  |
| CTB               | Composite Triple Beat                              | See Note 1   | dBc   |          | -77   | -70  |
| XM                | Cross Modulation                                   | See Note 1   | dBc   |          | -62   | -60  |
| CSO               | Composite 2nd Order Distortion                     | See Note 1   | dBc   |          | -75   | -72  |
|                   | RF <sub>IN</sub> to DC and DC to RF <sub>OUT</sub> | 0.3 MHz-5 MHz                                      | dB    |          |       | -10  |
| P <sub>1dB</sub>  | Output Level at 1 dB Gain Compression              | F <sub>L</sub> to F <sub>H</sub>                   | dBmV  |          | 78    |      |
| V <sub>CC</sub>   | Supply Voltage                                     |  | V     |          | 24    |      |
| I <sub>OP</sub>   | Operating Current at +25°C                         |  | mA    | 180      | 192   | 205  |
|                   | at -20°C to +100°C                                 |  |       |          | 216   | 225  |
| Ω                 | Input & Output Impedance                           |  | ohms  |          | 75    |      |

Note:

1. Composite Triple Beat, Cross Modulation, 2nd Order Distortion are all measured with 7 channels (T7 through T13) at 50 dBmV/ch output and at 25°C.

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### ABSOLUTE MAXIMUM RATINGS<sup>1</sup>

(T<sub>c</sub> = 25 °C unless otherwise noted)

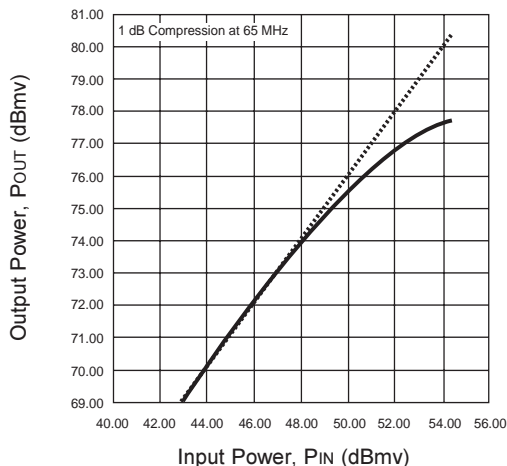
| SYMBOLS          | PARAMETERS                       | UNITS           | RATINGS     |
|------------------|----------------------------------|-----------------|-------------|
| V <sub>CC</sub>  | DC Supply                        | V <sub>DC</sub> | +28         |
| V <sub>IN</sub>  | RF Input Voltage (Single Tone)   | dBmV            | +65         |
| T <sub>c</sub>   | Operating Case Temperature Range | °C              | -20 to +100 |
| T <sub>STG</sub> | Storage Temperature Range        | °C              | -40 to +100 |

Note:

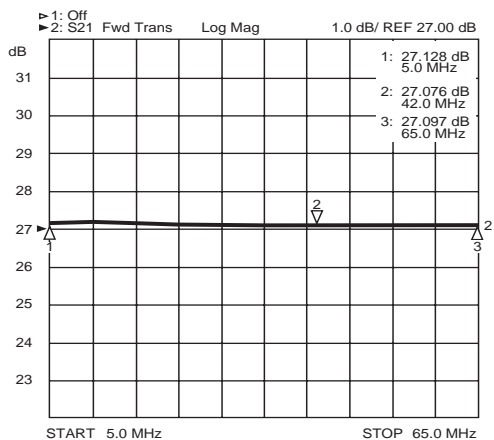
1. Operation in excess of any one of these parameters may result in permanent damage.

### TYPICAL PERFORMANCE CURVES (T<sub>A</sub> = 25°C)

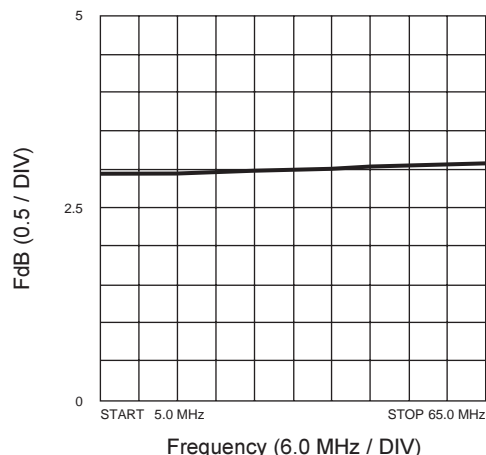
power in vs power out @ 65 MHz



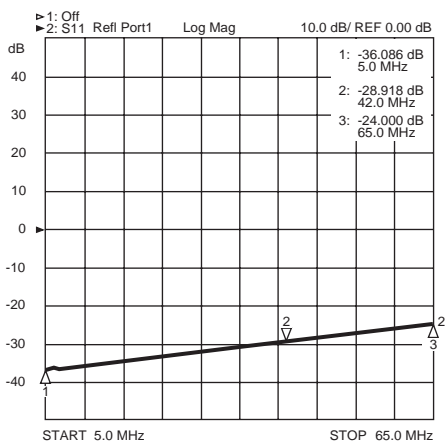
GAIN vs. FREQUENCY



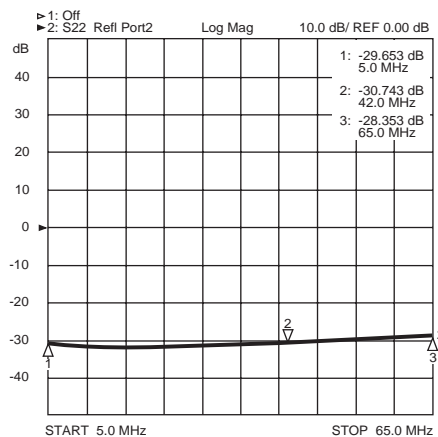
NOISE FIGURE



INPUT RETURN LOSS



OUTPUT RETURN LOSS



DATA SUBJECT TO CHANGE WITHOUT NOTICE