

# ISG56531

## 5 TO 65 MHz SILICON CATV 31 dB HYBRID AMPLIFIER



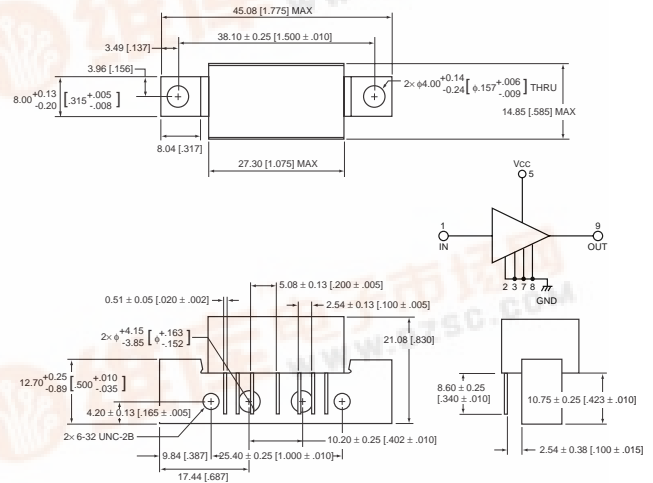
### FEATURES

- FLAT GAIN RESPONSE FROM 5 TO 65 MHz:  $f = \pm 0.2$  dB
- INPUT AND OUTPUT MATCHING TO 75 OHMS:  $R_L = > 19$  dB
- LOW DISTORTION:  $P_{1dB} = 78$  dBmV
- LOW NOISE: 3.0dB
- AUTOMATED SURFACE MOUNT CONSTRUCTION

### DESCRIPTION

The ISG56531 is a low noise, low distortion hybrid amplifier specified for use in return path HFC Cable TV applications. The ISG56531 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 and are very rugged and exhibit excellent unit to unit uniformity.

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



### ELECTRICAL CHARACTERISTICS (V<sub>CC</sub> = 24 V, ± 10% T<sub>A</sub> = 25°C, 75 Ω System)

PART NUMBER				ISG56531		
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 (S <sub>21</sub> )	F <sub>H</sub> = 65 MHz	dB	29.5	30.4	31
G <sub>F</sub>	Gain Flatness	F <sub>L</sub> to F <sub>H</sub>	dB		±0.15	±0.2
RL <sub>IN</sub>	Input Return Loss (S <sub>11</sub> )	5-10 MHz	dB	27.0	33.0	
RL <sub>IN</sub>	Input Return Loss (S <sub>11</sub> )	11-65 MHz	dB	20.0	23.0	
RL <sub>OUT</sub>	Output Return Loss	5-10 MHz	dB	25.0	27.0	
RL <sub>OUT</sub>	Output Return Loss	11-65 MHz	dB	17.5	19.0	
NF	Noise Figure	5-65 MHz NF	dB		3.0	3.3
	Reverse Isolation (S <sub>12</sub> )	RF <sub>OUT</sub> to RF <sub>IN</sub> , over F <sub>H</sub> to F <sub>L</sub>	dB		34	
CTB	Composite Triple Beat	See Note 1	dBc			-70
XM	Cross Modulation	See Note 1	dBc			-60
CSO	Composite 2nd Order Distortion	See Note 1	dBc		-76	-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	Single tone at any channel frequency	dBmV		78	
V <sub>CC</sub>	Supply Voltage		V		24	
I <sub>OP</sub>	Operating Current at +25°C at -20°C to +100°C		mA	170		200 220
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>

(Tc = 25 °C unless otherwise noted)

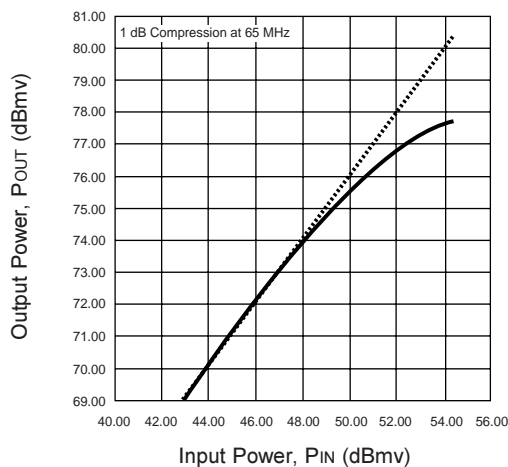
SYMBOLS	PARAMETERS	UNITS	RATINGS
VCC	DC Supply	Vdc	+28
VIN	RF Input Voltage (Single Tone)	dBmV	+65
Tc	Operating Case Temperature Range	°C	-20 to +100
TSTG	Storage Temperature Range	°C	-40 to +100

Note:

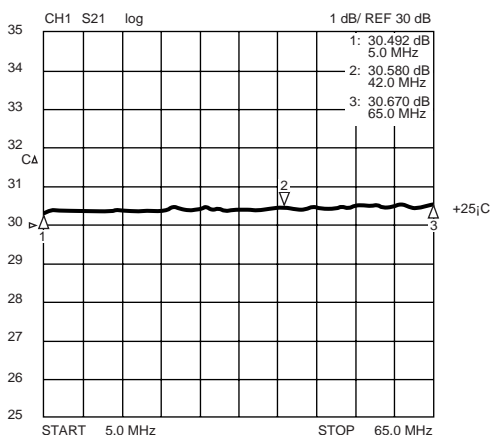
1. Operation in excess of any one of these parameters may result in permanent damage.

### TYPICAL PERFORMANCE CURVES (TA = 25°C)

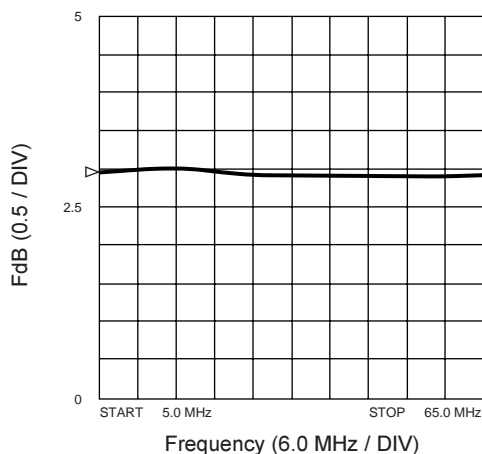
Power in vs power out @ 65 MHz



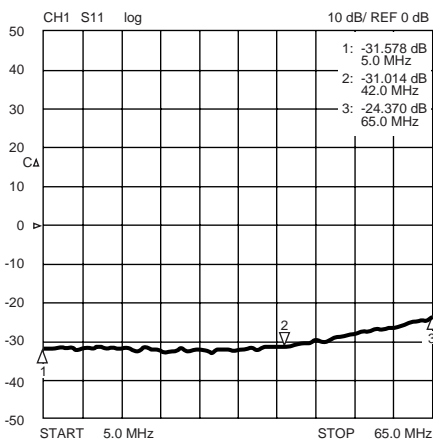
GAIN vs. FREQUENCY



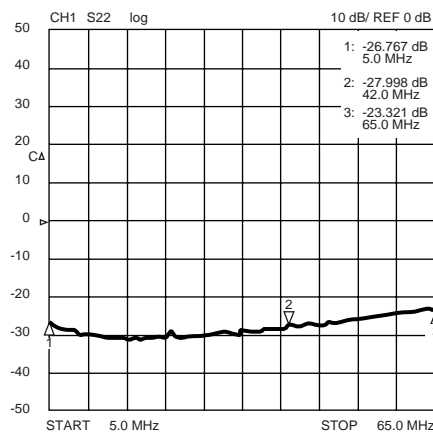
NOISE FIGURE



INPUT RETURN LOSS



OUTPUT RETURN LOSS



DATA SUBJECT TO CHANGE WITHOUT NOTICE