

Data Sheet

Radiation Hardened Uncompensated, High Slew Rate Operational Amplifier

62D9568501VGA供应商

The HS-2520RH is a radiation hardened monolithic operational amplifier which delivers an unsurpassed combination of specifications for slew rate, bandwidth and settling time. This dielectrically isolated amplifier is designed for closed loop gains of 3 or greater without external compensation. In addition, this high performance component also provides low offset current and high input impedance.

The 100V/µs (Min) slew rate and fast settling time of this amplifier makes it an ideal component for pulse amplification and data acquisition designs. To insure compliance with slew rate and transient response specifications, all devices are 100% tested for AC performance characteristics over full temperature. This device is a valuable component for RF and video circuitry requiring wideband operation. For accurate signal conditioning designs, the HS-2520RH superior dynamic specifications are complemented by 25nA (Max) offset current and offset voltage trim capability.

Specifications for Rad Hard QML devices are controlled by the Defense Supply Center in Columbus (DSCC). The SMD numbers listed here must be used when ordering.

Detailed Electrical Specifications for these devices are contained in SMD 5962-95685. A "hot-link" is provided on our homepage for downloading. www.intersil.com/spacedefense/space.asp

Features

- Electrically Screened to SMD # 5962-95685
- QML Qualified per MIL-PRF-38535 Requirements
- Wide Power Bandwidth 1.5MHz (Min)
- Wide Gain Bandwidth 10MHz Min, 20MHz (Typ)
- High Input Impedance $\dots \dots \dots 50M\Omega$ Min, $100M\Omega$ (Typ)
- Low Offset Current 25nA Min, 10nA (Typ)
- Fast Settling (0.1% of 10V Step) 200ns (Typ)
- Low Quiescent Supply Current. 6mA (Max)

Applications

- · Data Acquisition Systems
- RF Amplifiers
- Video Amplifiers
- Signal Generators
- Pulse Amplifiers

Ordering Information

ORDERING NUMBER	INTERNAL MKT. NUMBER	TEMP. RANGE (^O C)
HS0-2520RH-Q	HS0-2520RH-Q	25
5962D9568501VGA	HS2-2520RH-Q	-55 to 125
5962D9568501VPA	HS7-2520RH-Q	-55 to 125
5962D9568501VPC	HS7B-2520RH-Q	-55 to 125

Pinouts



HS2-2520RH (CAN) MACY1-X8 TOP VIEW



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Timing Waveforms







FIGURE 2. SLEW RATE WAVEFORM



NOTE: Measured on both positive and negative transitions. Capacitance at Compensation pin should be minimized.

Typical Performance Curves $T_A = 25^{\circ}C$, VSUPPLY = ±15V, Unless Otherwise Specified





100 **10K SOURCE RESISTANCE** 10 **0 SOURCE RESISTANCE**



FIGURE 5. EQUIVALENT INPUT NOISE vs BANDWIDTH

Typical Performance Curves T_A = 25°C, VSUPPLY = ±15V, Unless Otherwise Specified (Continued)



















FIGURE 9. OPEN-LOOP FREQUENCY RESPONSE FOR VARIOUS VALUES OF CAPACITORS FROM BANDWIDTH CONTROL PIN TO GROUND





Typical Performance Curves $T_A = 25^{\circ}C$, VSUPPLY = ±15V, Unless Otherwise Specified (Continued)



FIGURE 12. POWER SUPPLY CURRENT vs TEMPERATURE



FIGURE 14. POWER SUPPLY REJECTION RATIO vs FREQUENCY







FIGURE 13. VOLTAGE FOLLOWER PULSE RESPONSE



FIGURE 15. INPUT NOISE DENSITY vs FREQUENCY





Burn-In Circuits

HS7-2520 CERDIP



NOTES:

- 1. R1 = 1M Ω , ±5%, 1/4W (Min)
- 2. C1 = C2 = 0.01μ F/Socket (Min) or 0.1μ F/Row (Min)
- 3. C3 = $0.01\mu F (\pm 10\%)/Socket$
- 4. D1 = D2 = 1N4002 or equivalent (per board)
- 5. |(V+) (V-)| = 31V

Irradiation Circuits

HS2-2520 METAL CAN



NOTES:

- 6. R1 = 1M Ω , ±5%, 1/4W (Min)
- 7. C1 = C2 = 0.01μ F/Socket (Min) or 0.1μ F/Row (Min)
- 8. C3 = 0.01 μ F (±10%)/Socket
- 9. D1 = D2 = 1N4002 or equivalent (per board)
- 10. |(V+) (V-)| = 31V



IRRADIATION CIRCUIT

NOTES:

- 11. V1 = +15V ±10%
- 12. V2 = -15V $\pm 10\%$
- 13. C = $0.1 \mu F \pm 10\%$

Schematic Diagram



Die Characteristics

DIE DIMENSIONS:

65 mils x 50 mils x 19 mils (1660μm x 1270μm x 483μm)

INTERFACE MATERIALS:

Glassivation:

Type: Nitride Thickness: 7kÅ ±0.7kÅ

Top Metallization:

Type: Aluminum Thickness: 16kÅ ±2kÅ

Substrate:

Linear Bipolar, DI

Backside Finish:

Silicon

Metallization Mask Layout

ASSEMBLY RELATED INFORMATION:

Substrate Potential (Powered Up): Unbiased

ADDITIONAL INFORMATION:

Worst Case Current Density: $<2 \times 10^5 \text{ A/cm}^2$

Transistor Count:

40





COMP

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