

Radiation Hardened 2.5V Reference



The Star*Power Radiation Hardened IS-1009RH is a 2.5V shunt regulator diode designed to provide a stable 2.5V reference over a wide current range.

The device is exceptionally stable over a wide current range and is designed to maintain stability over the full military temperature range and over time. It operates and is specified at a lower minimum current than other 1009 types. The 0.2% reference tolerance is achieved by on-chip trimming.

An adjustment terminal is provided to allow for the calibration of system errors. The use of this terminal to adjust the reference voltage does not effect the temperature coefficient.

Constructed with the Intersil dielectrically isolated EBHF process, these devices are immune to Single Event Latch-up and have been specifically designed to provide highly reliable performance in harsh radiation environments.

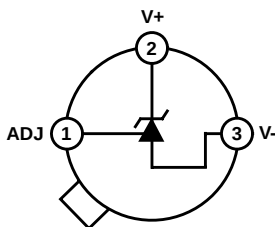
Specifications for Rad Hard QML devices are controlled by the Defense Supply Center in Columbus (DSCC). The SMD numbers listed here must be used when ordering.

Detailed Electrical Specifications for these devices are contained in SMD 5962-00523. A "hot-link" is provided on our homepage for downloading.

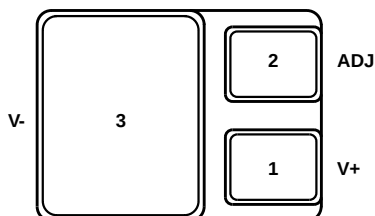
www.intersil.com/spacedefense/space.htm

Pinouts

IS2-1009RH (TO-206AB CAN)
BOTTOM VIEW



ISYE-1009RH (SMD.5)
BOTTOM VIEW



Features

- Electrically Screened to SMD # 5962-00523
- QML Qualified per MIL-PRF-38535 Requirements
- Radiation Environment
 - Total Dose 300 krad(Si) (Max)
 - Latch-up Immune Dielectrically Isolated
- Lower I_{MIN} than Other 1009 Types 100 μ A
- Reverse Breakdown Voltage (V_Z) 2.5V
- V_Z vs. Change in Current (100 μ A to 10mA) 6mV
- V_Z vs. Temp (-55 $^{\circ}$ C to 125 $^{\circ}$ C) 15mV
- Max Reverse Breakdown Current 20mA
- Interchangeable with 1009 and 136 Industry Types

Applications

- Power Supply Monitoring
- Reference for 5V Systems
- A/D and D/A Reference

Ordering Information

ORDERING NUMBER	INTERNAL MKT. NUMBER	TEMP. RANGE ($^{\circ}$ C)
5962F0052301VXC	IS2-1009RH-Q	-55 to 125
5962F0052301QXC	IS2-1009RH-8	-55 to 125
5962F0052301VYC	ISYE-1009RH-Q	-55 to 125
5962F0052301QYC	ISYE-1009RH-8	-55 to 125
IS2-1009RH/Proto	IS2-1009RH/Proto	-55 to 125
ISYE-1009RH/Proto	ISYE-1009RH/Proto	-55 to 125

Die Characteristics

DIE DIMENSIONS

1270 μ m x 1778 μ m (50 mils x 70 mils)
Thickness: 483 μ m $\pm$ 25.4 μ m (19 mils $\pm$ 1 mil)

INTERFACE MATERIALS

Glassivation

Type: Nitride (Si₃N₄) over Silox (SiO₂)
Nitride Thickness: 4.0k $\text{\AA}$ $\pm$ 1.0k $\text{\AA}$
Silox Thickness: 12.0k $\text{\AA}$ $\pm$ 4.0k $\text{\AA}$

Top Metallization

Type: AlSiCu
Thickness: 16.0k $\text{\AA}$ $\pm$ 2k $\text{\AA}$

Substrate

EBHF, Dielectric Isolation

Backside Finish

Silicon

ASSEMBLY RELATED INFORMATION

Substrate Potential

Unbiased (DI)

ADDITIONAL INFORMATION

Worst Case Current Density

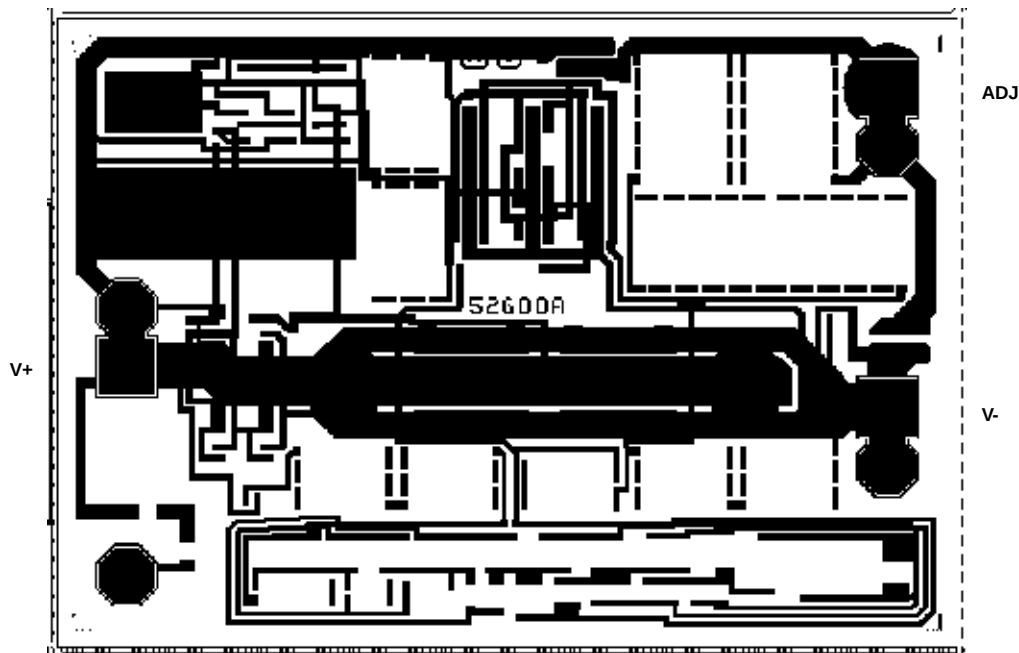
$<1.0 \times 10^5 \text{ A/cm}^2$

Transistor Count

26

Metallization Mask Layout

IS-1009RH



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