

**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 designed to maintain stability over the full military temperature range and over time. 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.**

**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
- Reverse Breakdown Voltage ( $V_Z$ ) . . . . . 2.5V
- Change in  $V_Z$  vs. Current (400 $\mu$ A to 10mA). . . . . 6mV
- Change in  $V_Z$  vs. Temp (-55°C to 125°C) . . . . . 15mV
- Max Reverse Breakdown Current . . . . . 20mA
- Device is tested with 10 $\mu$ F shunt capacitance connected from  $V_+$  to  $V_-$ , which provides optimum stability
- Interchangeable with 1009 and 136 Industry Types

**Applications**

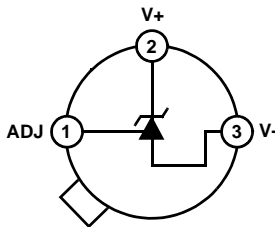
- Power Supply Monitoring
- Reference for 5V Systems
- A/D and D/A Reference

**Ordering Information**

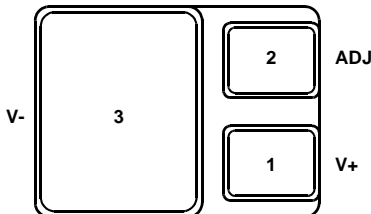
ORDERING NUMBER	INTERNAL MKT. NUMBER	PART MARKING	TEMP. RANGE (°C)
5962F0052301VXC	IS2-1009RH-Q	F00523V	-55 to 125
5962F0052301QXC	IS2-1009RH-8	F00523 01QXC Q	-55 to 125
5962F0052301VYC	ISYE-1009RH-Q	Q 5962F00 52301VYC	-55 to 125
5962F0052301QYC	ISYE-1009RH-8	Q 5962F00 52301QYC	-55 to 125
IS2-1009RH/Proto	IS2-1009RH/Proto	IS2-1009RH/Proto	-55 to 125
ISYE-1009RH/Proto	ISYE-1009RH/Proto	ISLYE-1009RH/Proto	-55 to 125

**Pinouts**

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



**ISYE-1009RH (SMD.5)  
BOTTOM VIEW**



## Die Characteristics

### DIE DIMENSIONS

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

### INTERFACE MATERIALS

#### Glassivation

Type: Nitride (Si<sub>3</sub>N<sub>4</sub>) over Silox (SiO<sub>2</sub>)  
 Nitride Thickness: 4.0k $\text{Å}$   $\pm$ 1.0k $\text{Å}$   
 Silox Thickness: 12.0k $\text{Å}$   $\pm$ 4.0k $\text{Å}$

#### Top Metallization

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

#### Substrate

EBHF, Dielectric Isolation

### Backside Finish

Silicon

### ASSEMBLY RELATED INFORMATION

#### Substrate Potential

Unbiased (DI)

### ADDITIONAL INFORMATION

#### Worst Case Current Density

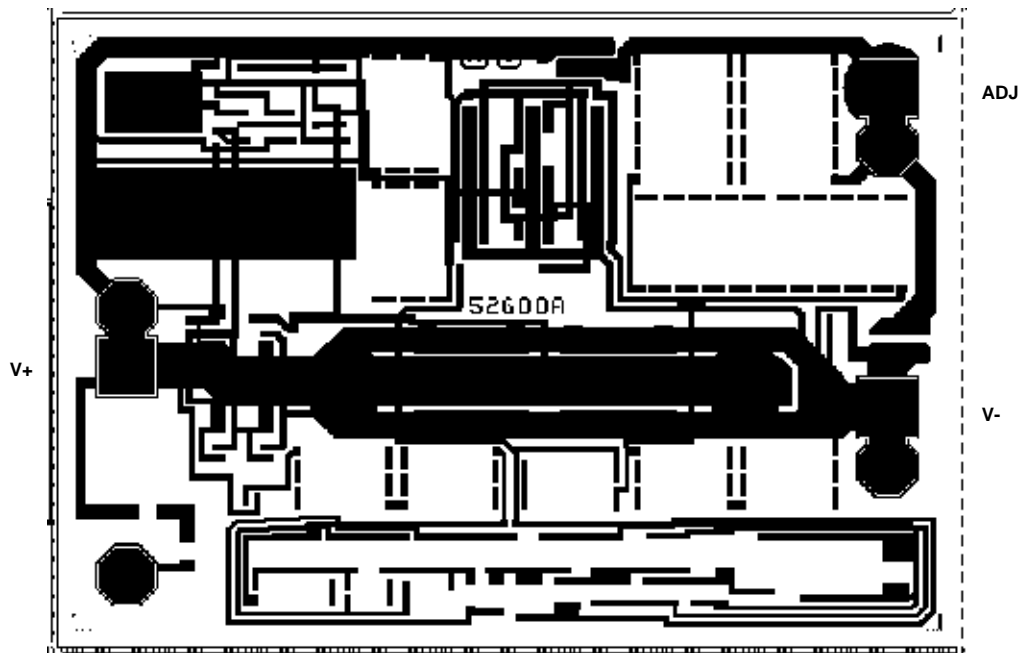
$<1.0 \times 10^5$  A/cm<sup>2</sup>

#### Transistor Count

26

## Metallization Mask Layout

IS-1009RH



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 Intersil Corporation's quality certifications can be viewed at [www.intersil.com/design/quality](http://www.intersil.com/design/quality)

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