

## Radiation Hardened High-Speed, Dual Output PWM

The Radiation Hardened HS-1825ARH Pulse Width Modulator is designed to be used in high frequency switched-mode power supplies and can be used in either current-mode or voltage-mode. It is well suited for single-ended boost converter applications.

Device features include a precision voltage reference, low power start-up circuit, high frequency oscillator, wide-band error amplifier, and fast current-limit comparator. The use of proprietary process capabilities and unique design techniques results in fast propagation delay times and high output current over a wide range of output voltages.

Constructed with the Intersil Rad Hard Silicon Gate (RSG) Dielectric Isolation BiCMOS process, the HS-1825ARH has been specifically designed to provide highly reliable performance when exposed to harsh radiation environments.

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

**Detailed Electrical Specifications for the HS-1825ARH are contained in SMD 5962-99558. That document may be easily downloaded from our website. [www.intersil.com/spacedefense/space.asp](http://www.intersil.com/spacedefense/space.asp)**

### Ordering Information

ORDERING NUMBER	INTERSIL MKT. NUMBER	TEMP. RANGE (°C)
5962F9955801VEC	HS1-1825ARH-Q	-55 to 125
5962F9955801QEC	HS1-1825ARH-8	-55 to 125
5962F9955801VXC	HS9-1825ARH-Q	-55 to 125
5962F9955801QXC	HS9-1825ARH-8	-55 to 125
HS1-1825ARH/Proto	HS1-1825ARH/Proto	-55 to 125
HS9-1825ARH/Proto	HS9-1825ARH/Proto	-55 to 125

### Features

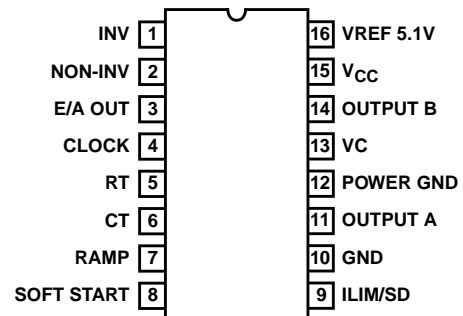
- Electrically Screened to DESC SMD # 5962-99558
- QML Qualified per MIL-PRF-38535 Requirements
- Radiation Environment
  - Maximum Total Dose . . . . .  $3 \times 10^5$  RAD(SI)
  - Vertical Architecture Provides Low Dose Rate Immunity
  - DI RSG Process Provides Latch-Up Immunity
- Low Start-Up Current . . . . . 100µA (Typ)
- Fast Propagation Delay . . . . . 80ns (Typ)
- 12V to 20V Operation
- 1A (Peak) Dual Output Drive Capability
- 5.1V Reference
- Under-Voltage Lockout
- Programmable Soft-Start
- Switching Frequencies to 500kHz
- Trimmed Oscillator Discharge Current
- Latched Overcurrent Comparator with Full Cycle Restart
- Programmable Leading Edge Blanking Circuit

### Applications

- Current or Voltage Mode Switching Power Supplies
- Motor Speed and Direction Control

### Pinout

**HS-1825ARH**  
**SBDIP (CDIP2-T16) AND FLATPACK (CDFP4-F16)**  
 TOP VIEW



**Die Characteristics**

**DIE DIMENSIONS:**

4710µm x 3570µm (185 mils x 140 mils)  
 Thickness: 483µm ±25.4µm (19 mils ±1 mil)

**INTERFACE MATERIALS:**

**Glassivation:**

Type: PSG (Phosphorous Silicon Glass)  
 Thickness: 8.0kÅ ±1.0kÅ

**Top Metallization:**

Type: ALSiCu  
 Thickness: 16.0kÅ ±2kÅ

**Substrate:**

Radiation Hardened Silicon Gate,  
 Dielectric Isolation

**Backside Finish:**

Silicon

**ASSEMBLY RELATED INFORMATION:**

**Substrate Potential:**

Unbiased (DI)

**ADDITIONAL INFORMATION:**

**Worst Case Current Density:**

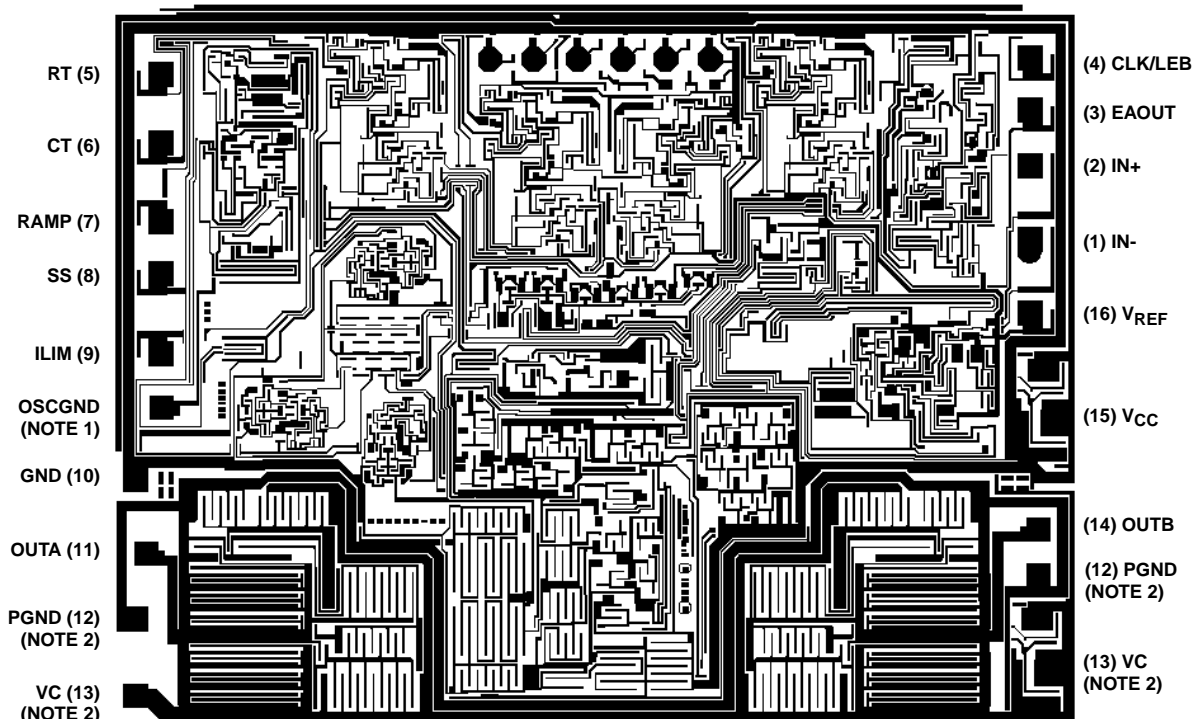
<2.0 x 10<sup>5</sup> A/cm<sup>2</sup>

**Transistor Count:**

225

**Metallization Mask Layout**

HS-1825ARH



**NOTES:**

1. This is the oscillator ground (OSCGND) bond pad and must be connected to GND.
2. PGND and VC each require two bond pad connections.

All Intersil semiconductor products are manufactured, assembled and tested under **ISO9000** quality systems certification.

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