Data Sheet | December 2001 | FN4703.4

Radiation Hardened Power-Up/Down Microprocessor Reset Circuit

The Radiation Hardened IS-705RH is a monolithic device that monitors the power supply voltage used by satellite control units and provides a reset output pulse during power-up and power-down. The reset threshold is 4.65V (Typ) and the reset pulse width is set at 200ms (Typ). A watchdog circuit is incorporated for easy interfacing with microprocessors and controllers. If the watchdog input has not been toggled within a preset 1.6s (Typ) time period, an output signal is generated, which can be used as an interupt. The power function input (PFI) may be used to monitor other voltage levels. The circuit has a 1.25V (Typ) threshold and provides a $\overline{PFO}$ output when low voltage is detected. An active-low manual reset input in also provided for direct control of the reset function.

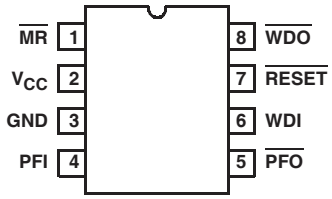
Constructed with the Intersil UHF2X-CMOS process, these devices have been specifically designed to provide highly reliable performance in harsh radiation environments. This process has been tested for single event latch-up and has demonstrated an immunity to 90MeV/mg/cm^2.

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 5962-00538. A "hot-link" is provided on our homepage for downloading.

Pinout

IS9-705RH
FLATPACK
TOP VIEW



Features

- Electrically Screened to SMD # 5962-00538
- QML Qualified per MIL-PRF-38535 Requirements
- Radiation Hardness
  - Total Dose . . . . . 100 krad(Si) (Max)
  - Single Event Latch-up . . . . . >90MeV/mg/cm^2
- Precision 4.65V Voltage Monitor
- Wide Operating Supply Range . . . . . 1.2V to 5.5V
- Low Supply Current . . . . . 420µA (Typ)
- 200ms (Typ) $\overline{RESET}$ Pulse Width

Applications

- Flight Computers
- Controllers
- Critical Microprocessor Power Monitoring
- Reliable Replacement of Discrete Solutions

Ordering Information

ORDERING NUMBER	INTERNAL MKT. NUMBER	TEMP. RANGE (^{o}C)
5962R0053801QXC	IS9-705RH-8	-55 to 125
5962R0053801VXC	IS9-705RH-Q	-55 to 125
5962R0053801V9A	IS0-705RH-Q	-55 to 125
IS9-705RH/Proto	IS9-705RH/Proto	-55 to 125

Die Characteristics

DIE DIMENSIONS:

1500µm x 1830µm (59 mils x 72 mils)
Thickness: 483µm ±25.4µm (19 mils ±1 mil)

INTERFACE MATERIALS

Glassivation

Type: Nitride (Si_3N_4) over Silox (SiO_2)
Nitride Thickness: 4.0kÅ ±1.0kÅ
Silox Thickness: 12.0kÅ ±4.0kÅ

Top Metallization

Top Metal 3: TiAlCu
Thickness: 0.8µm ±0.02µm
Metal 1 and 2: TiAlCu
Thickness: 0.4µm ±0.01µm

Substrate:

UHF2X-CMOS

Backside Finish:

Silicon

ASSEMBLY RELATED INFORMATION

Substrate Potential:

Backside internally connected to GND
(May be left floating or connected to GND.)

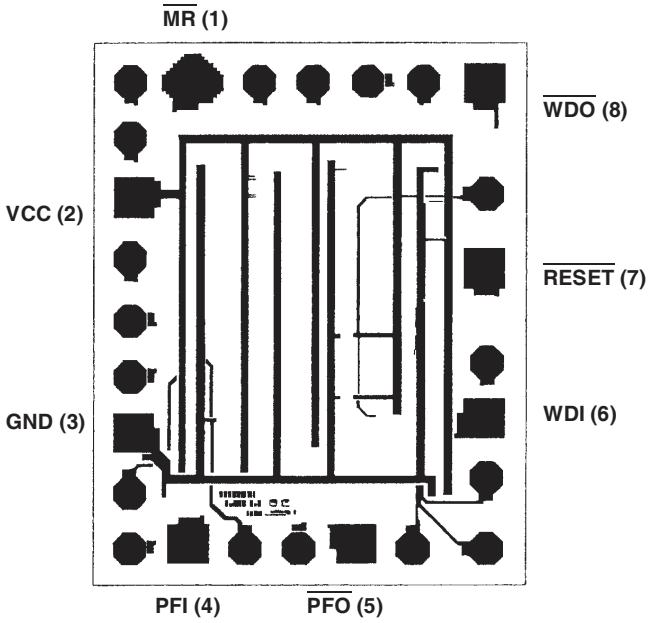
ADDITIONAL INFORMATION

Worst Case Current Density:

$<2.0 \times 10^5$ A/cm^2

Metallization Mask Layout

IS-705RH



NOTES:

1. Octagonal trim pads should be left unconnected.