

Radiation Hardened Ultra High Frequency NPN Transistor Array

The HS-6254RH is a Radiation Hardened array of five NPN transistors on a common substrate. One of our bonded wafer, dielectrically isolated fabrication processes provides an immunity to Single Event Latch-up and the capability of highly reliable performance in any radiation environment.

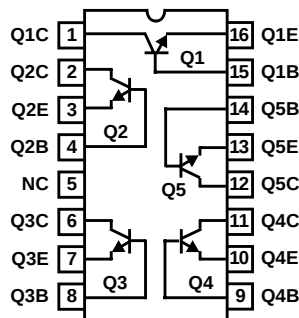
The high F_T (8GHz) and low noise figure (3.5dB) of these transistors make them ideal for use in high frequency amplifier and mixer applications. Monolithic construction of the five transistors provides the closest electrical and thermal matching possible. Access is provided to each terminal of the transistors for maximum application flexibility.

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.

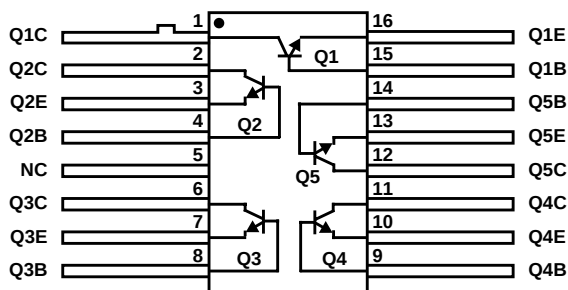
Detailed Electrical Specifications for these devices are contained in SMD 5962-97641. A "hot-link" is provided on our homepage for downloading.
www.intersil.com/spacedefense/space.asp

Pinouts

**HS1-6254RH (CERDIP) GDIP1-T16 OR
HS1-6254RH (SBDIP) CDIP2-T16
TOP VIEW**



**HS9-6254RH (FLATPACK) CDFP4-F16
TOP VIEW**



Features

- Electrically Screened to SMD # 5962-97641
- QML Qualified per MIL-PRF-38535 Requirements
- Radiation Environment
 - Gamma Dose (γ) 3×10^5 RAD(Si)
 - SEL Immune Bonded Wafer Dielectric Isolation
- Gain Bandwidth Product (F_T) 8GHz (Typ)
- Current Gain (h_{FE}) 70 (Typ)
- Early Voltage (V_A) 50V (Typ)
- Noise Figure (50 Ω) at 1GHz 3.5dB (Typ)
- Collector-to-Collector Leakage <1pA (Typ)

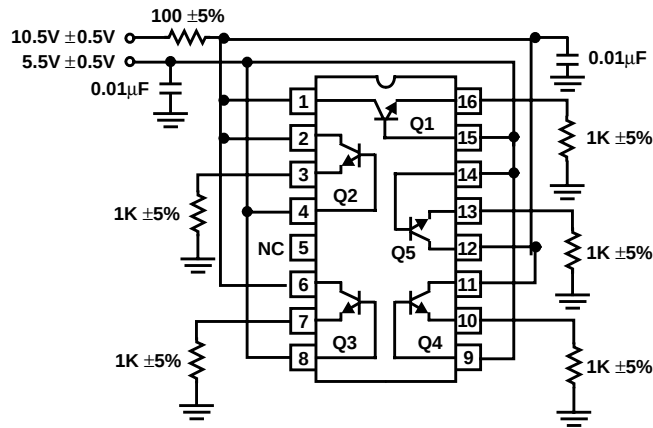
Applications

- High Frequency Amplifiers and Mixers
 - Refer to Application Note 9315
- High Frequency Converters
- Synchronous Detectors

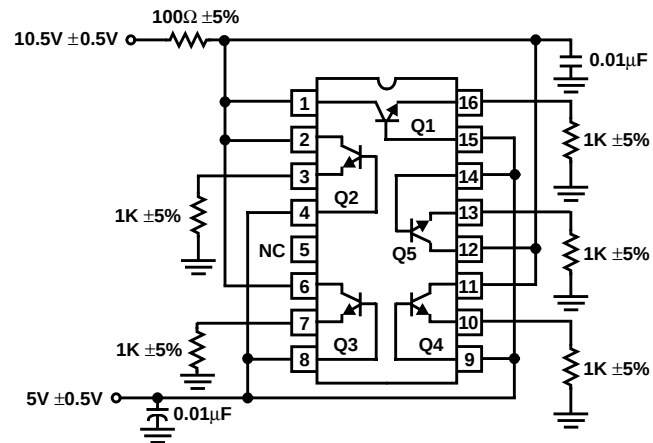
Ordering Information

ORDERING NUMBER	INTERNAL MKT. NUMBER	TEMP. RANGE (°C)
HS0-6254RH-Q	HS0-6254RH-Q	25
5962F9764101VEA	HS1-6254RH-Q	-55 to 125
5962F9764101VEC	HS1B-6254RH-Q	-55 to 125
5962F9764101VXC	HS9-6254RH-Q	-55 to 125
HS1-6254RH/SAMPLE	HS1-6254RH/SAMPLE	-55 to 125

Burn-In Circuit



Irradiation Circuit



Die Characteristics

DIE DIMENSIONS:

52 mils x 52.8 mils x 15 mils ± 1 mil
 1320 μ m x 1340 μ m x 381 μ m $\pm 25.4\mu$ m

INTERFACE MATERIALS:

Glassivation:

Type: Nitride
 Thickness: 4k $\text{\AA}$ $\pm 0.5\text{k}\text{\AA}$

Top Metallization:

Type: Metal 1: AlCu (2%)/TiW
 Thickness: Metal 1: 8k $\text{\AA}$ $\pm 0.5\text{k}\text{\AA}$
 Type: Metal 2: AlCu (2%)
 Thickness: Metal 2: 16k $\text{\AA}$ $\pm 0.8\text{k}\text{\AA}$

Substrate:

UHF-1X Bonded Wafer, DI

Backside Finish:

Silicon

ASSEMBLY RELATED INFORMATION:

Substrate Potential:

Floating

ADDITIONAL INFORMATION:

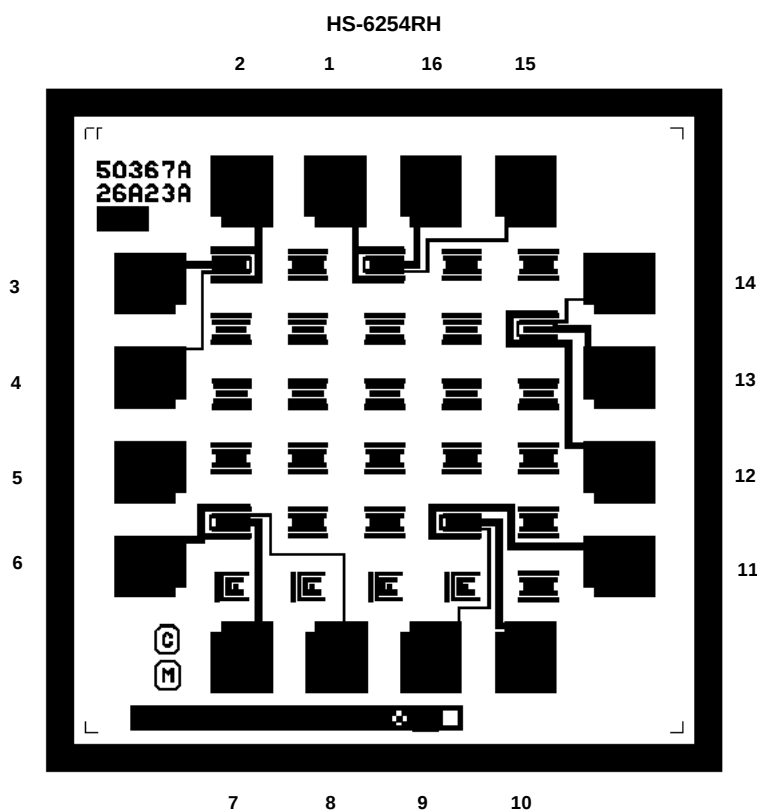
Worst Case Current Density:

$3.04 \times 10^5 \text{ A/cm}^2$

Transistor Count:

5

Metallization Mask Layout



NOTE: Pad numbers correspond to the 16 lead pinout.

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