

Radiation Hardened Dual J-K Flip-Flop with Set and Reset

The Radiation Hardened ACS109MS is a Dual J-K Flip-Flop with Set and Reset. These Flip-Flops have independent J, \bar{K} , Set, Reset, and Clock inputs and Q and \bar{Q} outputs. The outputs change state on the positive-going transition of the clock. Set and Reset are accomplished asynchronously by Low-level inputs. All inputs are buffered and the outputs are designed for balanced propagation delay and transition times.

The ACS109MS is fabricated on a CMOS Silicon on Sapphire (SOS) process, which provides an immunity to Single Event Latch-up and the capability of highly reliable performance in any radiation environment. These devices offer significant power reduction and faster performance when compared to ALSTTL types.

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 ACS109MS are contained in SMD 5962-98632. A "hot-link" is provided on our homepage for downloading.

<http://www.intersil.com/spacedefense/spaceselect.htm>

Features

- QML Qualified Per MIL-PRF-38535 Requirements
- 1.25 Micron Radiation Hardened SOS CMOS
- Radiation Environment
 - Latch-Up Free Under Any Conditions
 - Total Dose (Max.) 3×10^5 RAD(Si)
 - SEU Immunity $<1 \times 10^{-10}$ Errors/Bit/Day
 - SEU LET Threshold $>100\text{MeV}/(\text{mg}/\text{cm}^2)$
- Input Logic Levels. $V_{IL} = (0.3)(V_{CC}), V_{IH} = (0.7)(V_{CC})$
- Output Current $\pm 12\text{mA}$ (Min)
- Quiescent Supply Current $10\mu\text{A}$ (Max)
- Propagation Delay $.25\text{ns}$ (Max)

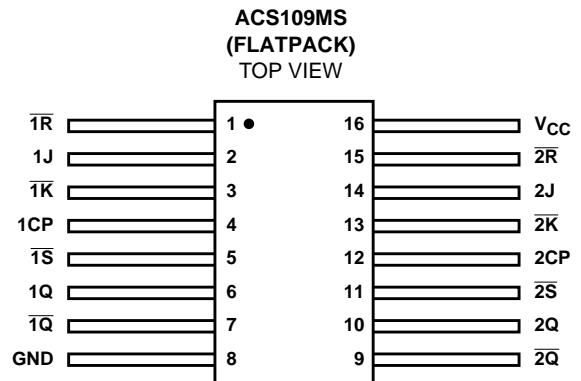
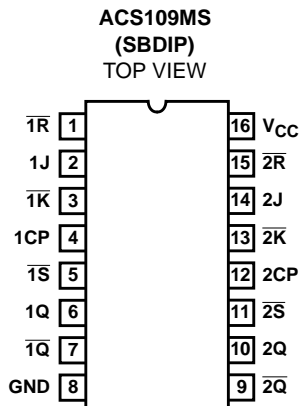
Applications

- High Speed Control Circuits
- Sensor Monitoring
- Low Power Designs

Ordering Information

ORDERING NUMBER	INTERNAL MARKETING NUMBER	TEMP. RANGE (°C)	PACKAGE	DESIGNATOR
5962F9863201VCC	ACS109DMSR-03	-55 to 125	16 Ld SBDIP	CDIP2-T16
ACS109D/SAMPLE-03	ACS109D/SAMPLE-03	25	16 Ld SBDIP	CDIP2-T16
5962F9863201VXC	ACS109KMSR-03	-55 to 125	16 Ld Flatpack	CDFP4-F16
ACS109K/SAMPLE-03	ACS109K/SAMPLE-03	25	16 Ld Flatpack	CDFP4-F16
5962F9863201V9A	ACS109HMSR-03	25	Die	NA

Pinouts



Die Characteristics

DIE DIMENSIONS:

Size: 2390µm x 2390µm (94 mils x 94 mils)
 Thickness: 525µm ±25µm (20.6 mils ±1 mil)
 Bond Pad: 110µm x 110µm (4.3 x 4.3 mils)

METALLIZATION: Al

Metal 1 Thickness: 0.7µm ±0.1µm
 Metal 2 Thickness: 1.0µm ±0.1µm

SUBSTRATE POTENTIAL

Unbiased Insulator

PASSIVATION:

Type: Phosphorous Silicon Glass (PSG)
 Thickness: 1.30µm ±0.15µm

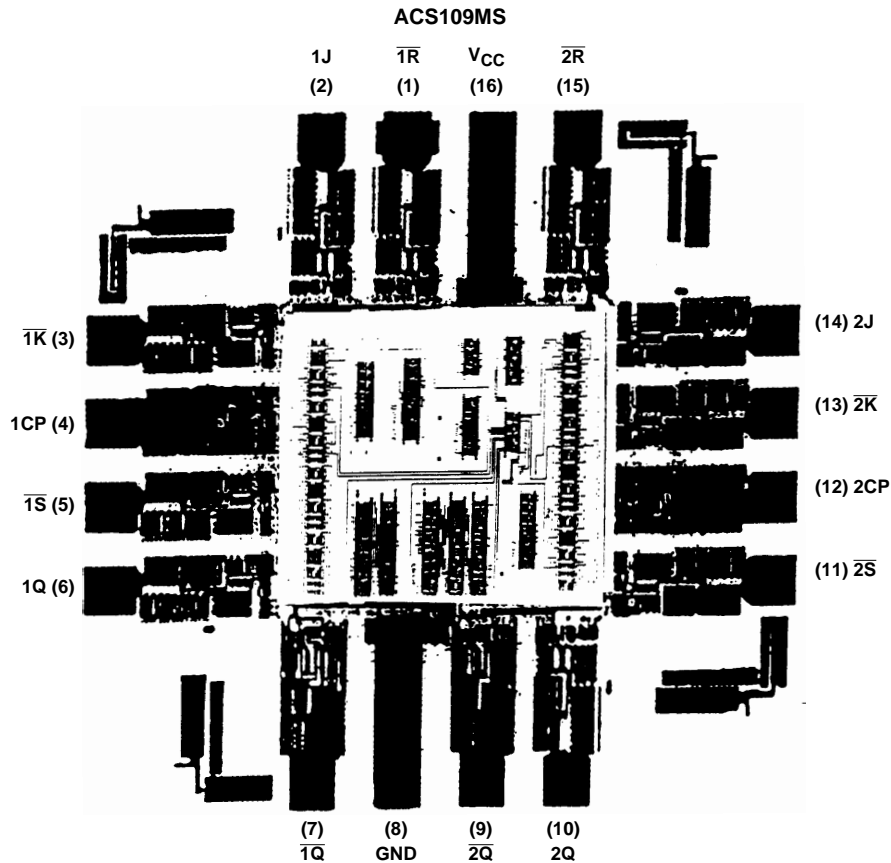
SPECIAL INSTRUCTIONS

Bond V_{CC} First

ADDITIONAL INFORMATION:

Worst Case Current Density: <2.0 x 10⁵ A/cm²
 Transistor Count: 236

Metallization Mask Layout



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Sales Office Headquarters

NORTH AMERICA

Intersil Corporation
 P. O. Box 883, Mail Stop 53-204
 Melbourne, FL 32902
 TEL: (321) 724-7000
 FAX: (321) 724-7240

EUROPE

Intersil SA
 Mercure Center
 100, Rue de la Fusee
 1130 Brussels, Belgium
 TEL: (32) 2.724.2111
 FAX: (32) 2.724.22.05

ASIA

Intersil (Taiwan) Ltd.
 7F-6, No. 101 Fu Hsing North Road
 Taipei, Taiwan
 Republic of China
 TEL: (886) 2 2716 9310
 FAX: (886) 2 2715 3029