Standard Products

UT54ACS279/UT54ACTS279

Quadruple S-R Latches

Datasheet
November 2010
www.aeroflex.com/logic

FEATURES

- 1.2µ CMOS
  - Latchup immune
- High speed
- Low power consumption
- Single 5 volt supply
- Available QML Q or V processes
- Flexible package
  - 16-pin DIP
  - 16-lead flatpack
- UT54ACS279- SMD 5962-96580
- UT54ACTS279 - SMD 5962-96581

DESCRIPTION

The UT54ACS279 and the UT54ACTS279 contain four basic $\overline{S}$-$\overline{R}$ flip-flop latches. Under conventional operation, the $\overline{S}$-$\overline{R}$ inputs are normally held high. When the $\overline{S}$ input is pulsed low, the Q output will be set high. When $\overline{R}$ is pulsed low, the Q output will be reset low. If the $\overline{S}$-$\overline{R}$ inputs are taken low simultaneously, the Q output is unpredictable.

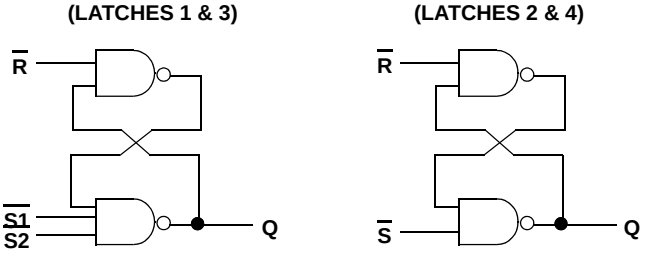
The devices are characterized over full military temperature range of -55°C to +125°C.

FUNCTION TABLE

INPUTS		OUTPUT
$\overline{S}$	$\overline{R}$	Q
H	H	Q_0
L	H	H
H	L	L
L	L	H [1]

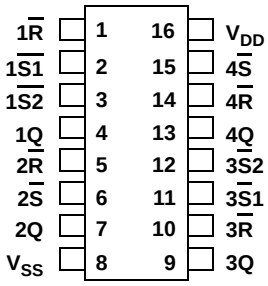
Note:
1. This configuration is nonstable. It may not persist when the $\overline{S}$ and $\overline{R}$ inputs return to their inactive (high) level.

LOGIC DIAGRAM

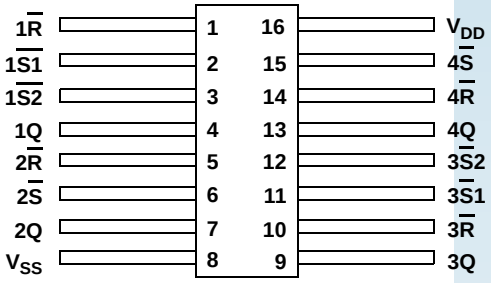


PINOUTS

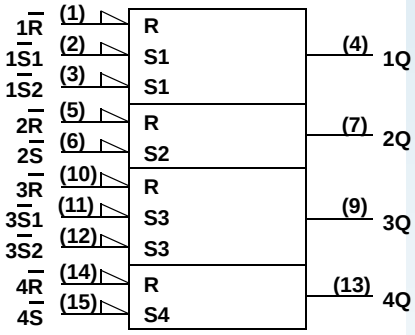
16-Pin DIP
Top View



16-Lead Flatpack
Top View



LOGIC SYMBOL



Note:
1. Logic symbol in accordance with ANSI/IEEE standard 91-1984 and IEC Publication 617-12.

OPERATIONAL ENVIRONMENT[1]

PARAMETER	LIMIT	UNITS
Total Dose	1.0E6	rads(Si)
SEU Threshold [2]	80	MeV-cm^2/mg
SEL Threshold	120	MeV-cm^2/mg
Neutron Fluence	1.0E14	n/cm^2

Notes:
1. Logic will not latchup during radiation exposure within the limits defined in the table.
2. Device storage elements are immune to SEU affects.

ABSOLUTE MAXIMUM RATINGS

SYMBOL	PARAMETER	LIMIT	UNITS
V_{DD}	Supply voltage	-0.3 to 7.0	V
$V_{I/O}$	Voltage any pin	-.3 to V_{DD} +.3	V
T_{STG}	Storage Temperature range	-65 to +150	°C
T_J	Maximum junction temperature	+175	°C
T_{LS}	Lead temperature (soldering 5 seconds)	+300	°C
Θ_{JC}	Thermal resistance junction to case	20	°C/W
I_I	DC input current	±10	mA
P_D	Maximum power dissipation	1	W

Note:
1. Stresses outside the listed absolute maximum ratings may cause permanent damage to the device. This is a stress rating only, functional operation of the device at these or any other conditions beyond limits indicated in the operational sections is not recommended. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	LIMIT	UNITS
V_{DD}	Supply voltage	4.5 to 5.5	V
V_{IN}	Input voltage any pin	0 to V_{DD}	V
T_C	Temperature range	-55 to + 125	°C

DC ELECTRICAL CHARACTERISTICS [7]

(V_{DD} = 5.0V ±10%; V_{SS} = 0V [6], -55°C < T_C < +125°C); Unless otherwise noted, Tc is per the temperature range ordered.

SYMBOL	PARAMETER	CONDITION	MIN	MAX	UNIT
V_{IL}	Low-level input voltage [1] ACTS ACS			0.8 $.3V_{DD}$	V
V_{IH}	High-level input voltage [1] ACTS ACS		 $.5V_{DD}$ $.7V_{DD}$		V
I_{IN}	Input leakage current ACTS/ACS	V_{IN} = V_{DD} or V_{SS}	-1	1	µA
V_{OL}	Low-level output voltage [3] ACTS ACS	 I_{OL} = 12.0mA I_{OL} = 100µA		 0.40 0.25	V
V_{OH}	High-level output voltage [3] ACTS ACS	 I_{OH} = -12.0mA I_{OH} = -100µA	 $.7V_{DD}$ V_{DD} - 0.25		V
I_{OS}	Short-circuit output current [2,4] ACTS/ACS	V_O = V_{DD} and V_{SS}	-300	300	mA
I_{OL}	Output current[10] (Sink)	V_{IN} = V_{DD} or V_{SS} V_{OL} = 0.4V	12		mA
I_{OH}	Output current[10] (Source)	V_{IN} = V_{DD} or V_{SS} V_{OH} = V_{DD} - 0.4V	-12		mA
P_{total}	Power dissipation [2, 8, 9]	C_L = 50pF		2.1	mW/ MHz
I_{DDQ}	Quiescent Supply Current	V_{DD} = 5.5V		10	µA
ΔI_{DDQ}	Quiescent Supply Current Delta ACTS	For input under test V_{IN} = V_{DD} - 2.1V For all other inputs V_{IN} = V_{DD} or V_{SS} V_{DD} = 5.5V		1.6	mA
C_{IN}	Input capacitance [5]	*f* = 1MHz @ 0V		15	pF
C_{OUT}	Output capacitance [5]	*f* = 1MHz @ 0V		15	pF

Notes:

1. Functional tests are conducted in accordance with MIL-STD-883 with the following input test conditions: $V_{IH} = V_{IH}(min) + 20\%, - 0\%$; $V_{IL} = V_{IL}(max) + 0\%, - 50\%$, as specified herein, for TTL, CMOS, or Schmitt compatible inputs. Devices may be tested using any input voltage within the above specified range, but are guaranteed to $V_{IH}(min)$ and $V_{IL}(max)$.
2. Supplied as a design limit but not guaranteed or tested.
3. Per MIL-PRF-38535, for current density ≤ 5.0E5 amps/cm^2, the maximum product of load capacitance (per output buffer) times frequency should not exceed 3,765 pF/MHz.
4. Not more than one output may be shorted at a time for maximum duration of one second.
5. Capacitance measured for initial qualification and when design changes may affect the value. Capacitance is measured between the designated terminal and V_{SS} at frequency of 1MHz and a signal amplitude of 50mV rms maximum.
6. Maximum allowable relative shift equals 50mV.
7. All specifications valid for radiation dose ≤ 1E6 rads(Si).
8. Power does not include power contribution of any TTL output sink current.
9. Power dissipation specified per switching output.
10. This value is guaranteed based on characterization data, but not tested.

AC ELECTRICAL CHARACTERISTICS [2]

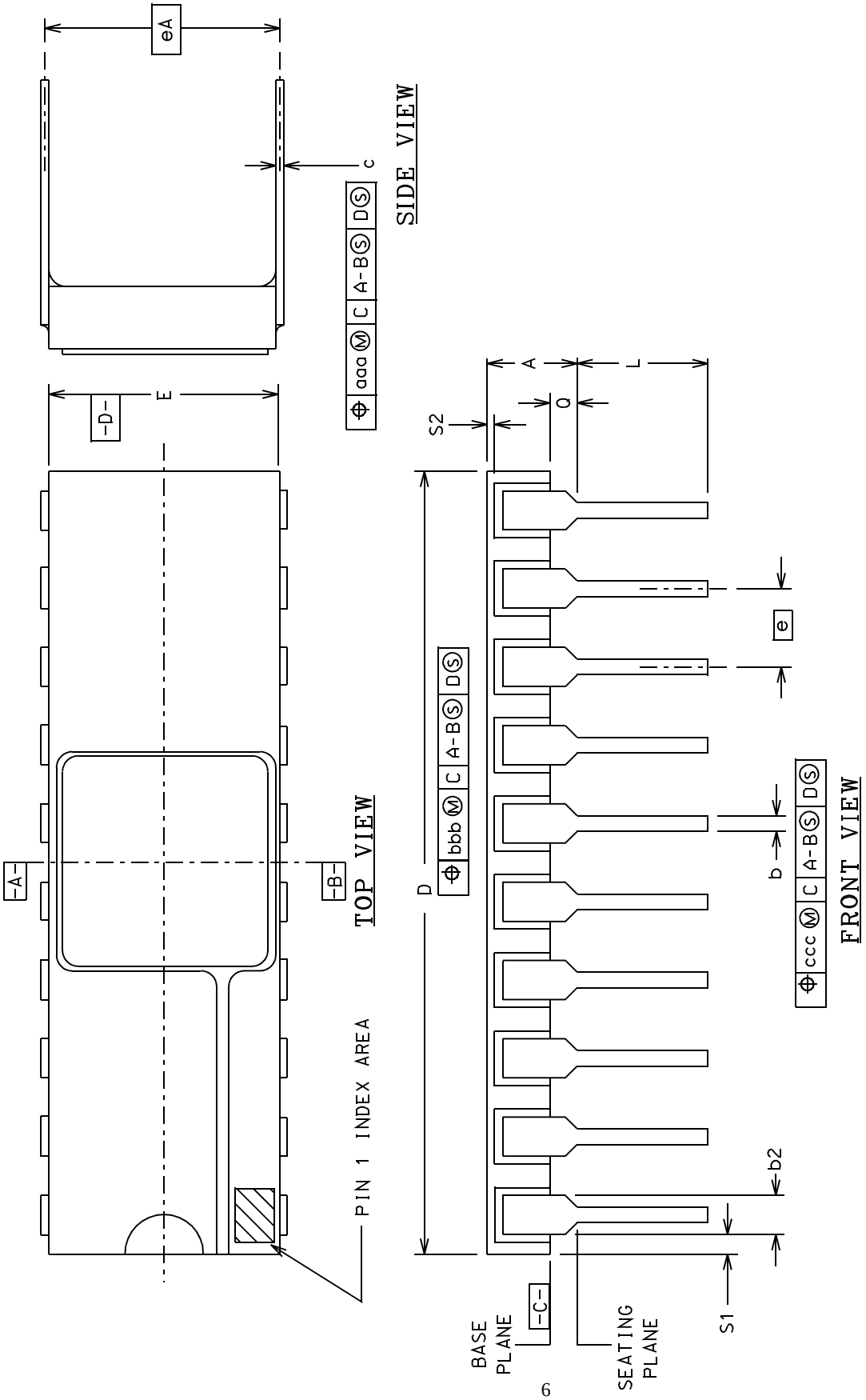
(V_{DD} = 5.0V ±10%; V_{SS} = 0V [1], -55°C < T_C < +125°C); Unless otherwise noted, Tc is per the temperature range ordered.

SYMBOL	PARAMETER	MINIMUM	MAXIMUM	UNIT
t_{PLH}	$\overline{S}$ to Q	1	15	ns
t_{PHL}	$\overline{S}$ to Q	1	18	ns
t_{PHL}	$\overline{R}$ to Q	1	17	ns
t_W	Minimum pulse width $\overline{S}$ low $\overline{R}$ low	8		ns

Notes:
1. Maximum allowable relative shift equals 50mV.
2. All specifications valid for radiation dose ≤ 1E6 rads(Si).

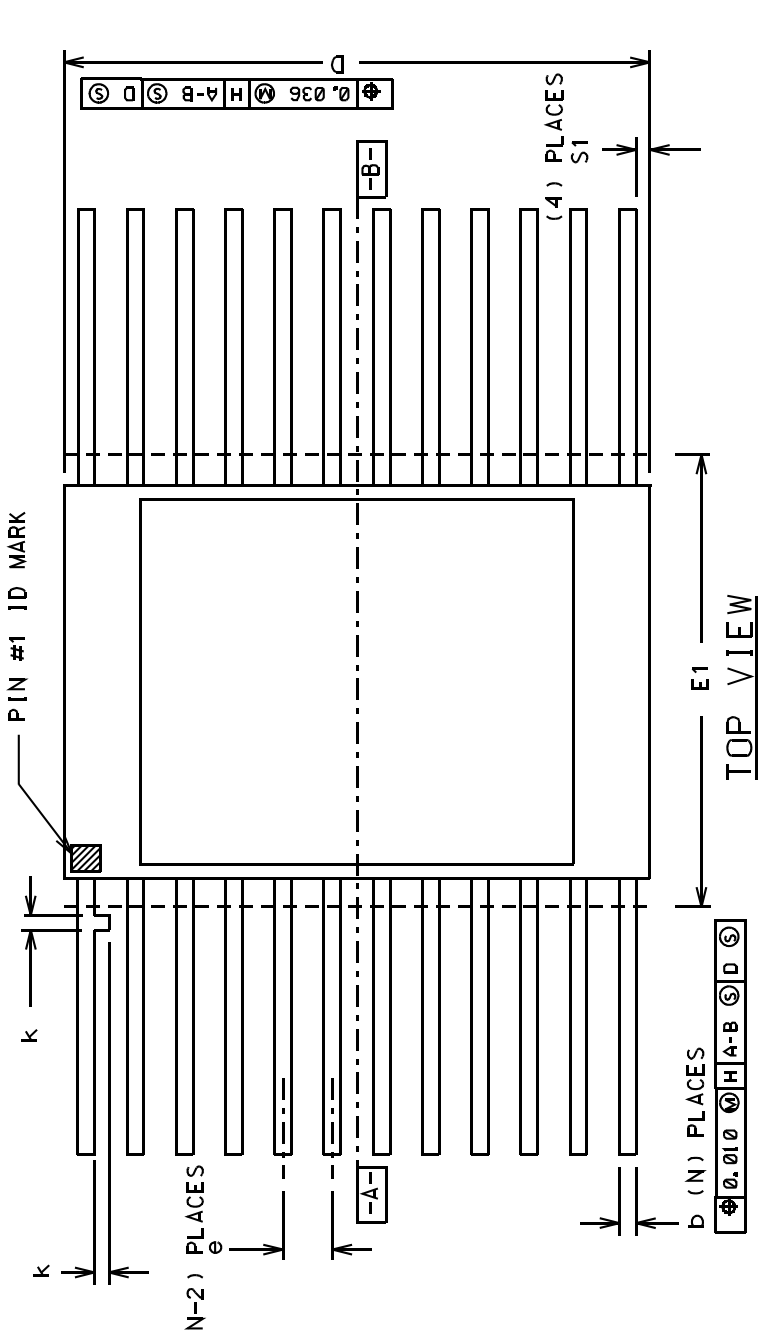
PACKAGING

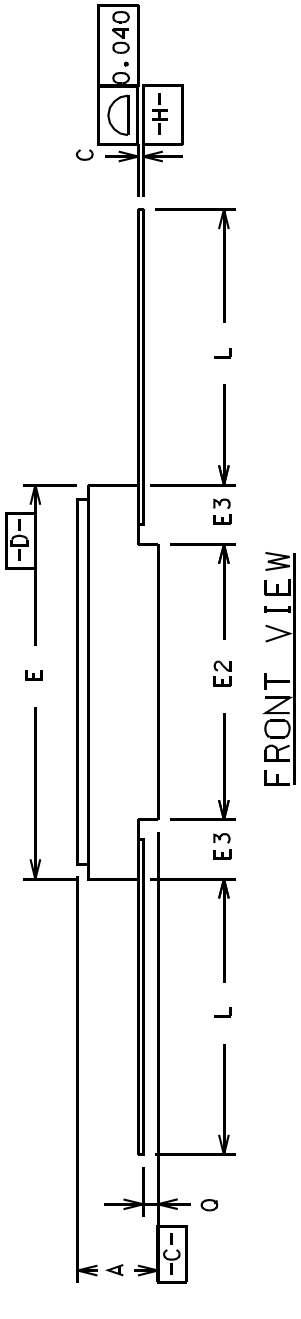
Side-Brazed Packages



PKG CONFIG	LEAD COUNT	MIL-STD-1835 DWG CONF C	DIMENSION SYMBOLS																			
			A		b		b2		c		D		E		e	eA	L		Q	S1		S2		aaa		bbb		ccc	
-01	14	D-1	0.200	-----	0.026	0.014	0.065	0.045	0.018	0.008	0.785	-----	0.310	0.220	0.100 BSC	0.300 BSC	0.200	0.125	0.060 0.015	-----	0.005	-----	0.005	0.015	-----	0.030	-----	0.010	-----
-02	16	D-2	0.200	-----	0.026	0.014	0.065	0.045	0.018	0.008	0.840	-----	0.310	0.220	0.100 BSC	0.300 BSC	0.200	0.125	0.060 0.015	-----	0.005	-----	0.005	0.015	-----	0.030	-----	0.010	-----
-03	20	D-8	0.200	-----	0.026	0.014	0.065	0.045	0.018	0.008	1.060	-----	0.310	0.220	0.100 BSC	0.300 BSC	0.200	0.125	0.070 0.015	-----	0.005	-----	0.005	0.015	-----	0.030	-----	0.010	-----

FLATPACK PACKAGES

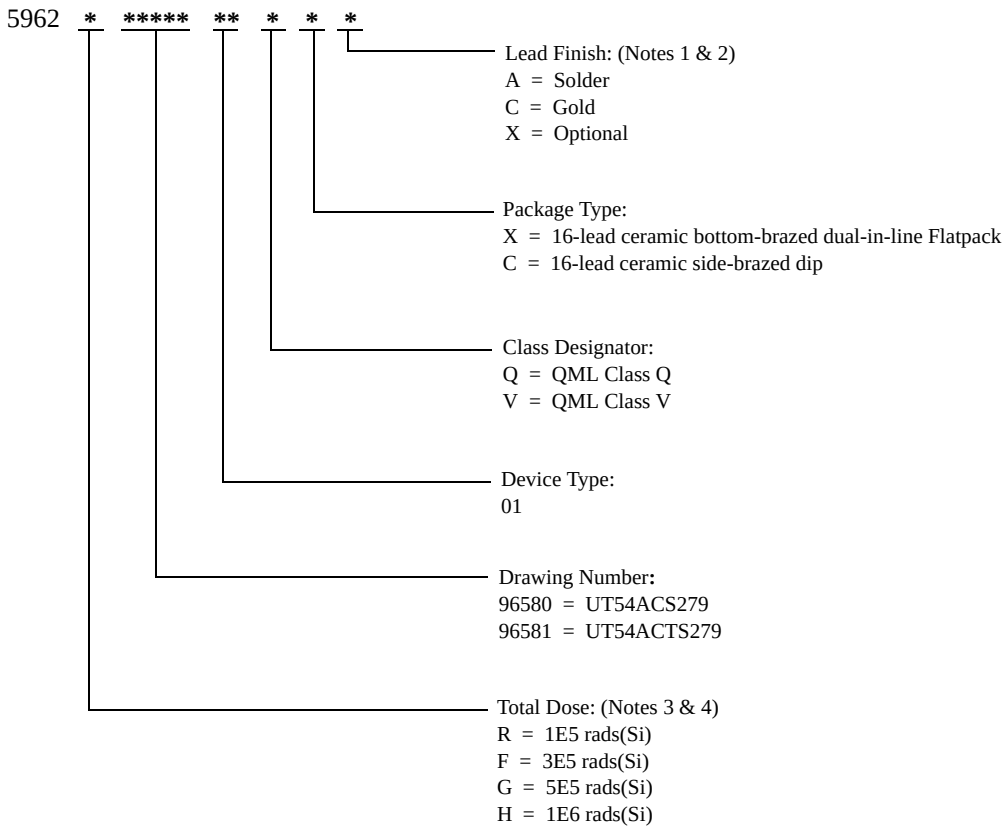




PKG CONFIG	LEAD COUNT	MIL-STD 1835 DWG CONF B	DIMENSION SYMBOLS																	
			A		b		c		D		E		E1		E2		E3		e	
			MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX		
-03	14	F-2A	0.045	0.115	0.015	0.022	0.004	0.009	-----	0.390	0.235	0.260	-----	0.290	-----	0.130	-----	0.030	0.050 BSC	
-04	16	F-5A	0.045	0.115	0.015	0.022	0.004	0.009	-----	0.440	0.245	0.285	-----	0.315	-----	0.130	-----	0.030	0.050 BSC	
-05	20	F-9A	0.045	0.115	0.015	0.022	0.004	0.009	-----	0.540	0.245	0.300	-----	0.330	-----	0.130	-----	0.030	0.050 BSC	

PKG CONFIG	LEAD COUNT	MIL-STD 1835 DWG CONF B	DIMENSION SYMBOLS																	
			k		L		Q		S1											
			MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX										
-03	14	F-2A	0.008	0.015	0.270	0.370	0.026	0.045	0.005	-----										
-04	16	F-5A	0.008	0.015	0.250	0.370	0.026	0.045	0.005	-----										
-05	20	F-9A	0.008	0.015	0.250	0.370	0.026	0.045	0.000	-----										

UT54ACS279/UT54ACTS279: SMD



Notes:

1. Lead finish (A,C, or X) must be specified.
2. If an "X" is specified when ordering, part marking will match the lead finish and will be either "A" (solder) or "C" (gold).
3. Total dose radiation must be specified when ordering. QML Q and QML V not available without radiation hardening. For prototype inquiries, contact factory.
4. Device type 02 is only offered with a TID tolerance guarantee of 3E5 rads(Si) or 1E6 rads(Si) and is tested in accordance with MIL-STD-883 Test Method 1019 Condition A and section 3.11.2. Device type 03 is only offered with a TID tolerance guarantee of 1E5 rads(Si), 3E5 rads(Si), and 5E5 rads(Si), and is tested in accordance with MIL-STD-883 Test Method 1019 Condition A.

Aeroflex Colorado Springs - Datasheet Definition

Advanced Datasheet - Product In Development

Preliminary Datasheet - Shipping Prototype

Datasheet - Shipping QML & Reduced Hi-Rel

COLORADO
Toll Free: 800-645-8862
Fax: 719-594-8468

INTERNATIONAL
Tel: 805-778-9229
Fax: 805-778-1980

NORTHEAST
Tel: 603-888-3975
Fax: 603-888-4585

SE AND MID-ATLANTIC
Tel: 321-951-4164
Fax: 321-951-4254

WEST COAST
Tel: 949-362-2260
Fax: 949-362-2266

CENTRAL
Tel: 719-594-8017
Fax: 719-594-8468

www.aeroflex.com info-ams@aeroflex.com

AEROFLEX
A passion for performance.

Aeroflex UTMC Microelectronic Systems Inc. (Aeroflex) reserves the right to make changes to any products and services herein at any time without notice. Consult Aeroflex or an authorized sales representative to verify that the information in this data sheet is current before using this product. Aeroflex does not assume any responsibility or liability arising out of the application or use of any product or service described herein, except as expressly agreed to in writing by Aeroflex; nor does the purchase, lease, or use of a product or service from Aeroflex convey a license under any patent rights, copyrights, trademark rights, or any other of the intellectual rights of Aeroflex or of third parties.

Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused