

# LOW VOLTAGE HCMOS SURFACE-MOUNT CRYSTAL CLOCK OSCILLATOR



ASD

2.5 X 2.0 X 0.95 mm

ASD SERIES



RoHS  
Compliant

## FEATURES:

- Low height 0.95mm max
- Low current consumption
- Tri-state function
- Suitable for RoHS compliant reflow
- Tight stability option
- Seam sealed package assures high reliability

## APPLICATIONS:

- CCD clock for VTR Camera
- Equipment connected to PC or PC cards
- Thin equipment

## STANDARD SPECIFICATIONS:

Parameters	Minimum	Typical	Maximum	Units	Notes	
Frequency Range	0.750	-----	75	MHz		
Operating Temperature	-20	-----	+70	°C	STD temp. Option code E (See options)	
Storage Temperature	-55	-----	+100	°C		
Overall Frequency Stability	-100	-----	+100	ppm	See options	
Supply Voltage (Vdd)	+3.135	+3.3	+3.465	V	ASD (Standard)	
	+2.85	+3.0	+3.15		ASD1	
	+2.375	+2.5	+2.625		ASD2	
	+1.71	+1.8	+1.89		ASD3	
	+0.95	+1.0	+1.05		ASD6	
Input Current (Idd)	ASD (3.3V)	-----	2.5	5	mA	0.750~15.999 MHz
		-----	4	7		16.000~39.999 MHz
		-----	9	13		40.000~66.666 MHz
	ASD1 (3.0V)	-----	2.5	4	mA	0.750~15.999 MHz
		-----	3.5	6		16.000~39.999 MHz
		-----	8	12		40.000~66.666 MHz
	ASD2 (2.5V)	-----	2	3.5	mA	0.750~15.999 MHz
		-----	3	5		16.000~39.999 MHz
		-----	7	10		40.000~66.666 MHz
	ASD3 (1.8V)	-----	1	2.5	mA	0.750~15.999 MHz
		-----	2	4		16.000~39.999 MHz
		-----	4	7		40.000~66.666 MHz
ASD6 (1.0V)	-----	1.0	2.5	mA	25.000 MHz	
Symmetry @ 1/2Vdd	40	-----	60	%	STD (See option)	
Output Load:	-----	-----	15	pF	CMOS	
Output Voltage (VOH):	0.9* Vdd	-----	-----	V		
Output Voltage (VOL):	-----	-----	0.1* Vdd	V		

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## STANDARD SPECIFICATIONS... continued:

Parameters		Minimum	Typical	Maximum	Units	Notes	
Rise and Fall Time (Tr/Tf):	ASD (3.3V)	-----	3	7	ns	0.750~15.999 MHz	
		-----	2.5	6		16.000~39.999 MHz	
		-----	2	4		40.000~66.666 MHz	
	ASD1 (3.0V)	-----	3	7	ns	0.750~15.999 MHz	
		-----	2.5	6		16.000~39.999 MHz	
		-----	2	4		40.000~66.666 MHz	
	ASD2 (2.5V)	-----	4	8	ns	0.750~15.999 MHz	
		-----	3	7		16.000~39.999 MHz	
		-----	2.5	5		40.000~66.666 MHz	
	ASD3 (1.8V)	-----	5	10	ns	0.750~15.999 MHz	
		-----	3.5	8		16.000~39.999 MHz	
		-----	3	6		40.000~66.666 MHz	
	ASD6 (1.0V)	-----	1.9	6.0	ns	25.000 MHz	
	Start-up Time:	ASD (3.3V)	-----	6	10	ms	0.750~15.999 MHz
			-----	6	10		16.000~39.999 MHz
-----			5	10	40.000~66.666 MHz		
ASD1 (3.0V)		-----	6	10	ms	0.750~15.999 MHz	
		-----	6	10		16.000~39.999 MHz	
		-----	5	10		40.000~66.666 MHz	
ASD2 (2.5V)		-----	6	10	ms	0.750~15.999 MHz	
		-----	6	10		16.000~39.999 MHz	
		-----	5	10		40.000~66.666 MHz	
ASD3 (1.8V)		-----	6	10	ms	0.750~15.999 MHz	
		-----	6	10		16.000~39.999 MHz	
		-----	5	10		40.000~66.666 MHz	
ASD6 (1.0V)		-----	2.0	10	ms	25.000 MHz	
Tri-state function (Stand-by) :		"1" (VIH≥0.7*Vdd) or Open: Oscillation; "0" (VIH<0.3*Vdd) : No oscillation/Hi Z					
Phase Jitter (12kHz to 20MHz)		ASD (3.3V)	-----	0.4	1.0	ps	0.750~15.999 MHz
	-----		0.4	1.0	16.000~39.999 MHz		
	-----		0.3	1.0	40.000~66.666 MHz		
	ASD1 (3.0V)	-----	0.4	1.0	ps	0.750~15.999 MHz	
		-----	0.4	1.0		16.000~39.999 MHz	
		-----	0.3	1.0		40.000~66.666 MHz	
	ASD2 (2.5V)	-----	0.5	1.0	ps	0.750~15.999 MHz	
		-----	0.5	1.0		16.000~39.999 MHz	
		-----	0.5	1.0		40.000~66.666 MHz	
	ASD3 (1.8V)	-----	0.5	1.0	ps	0.750~15.999 MHz	
		-----	0.5	1.0		16.000~39.999 MHz	
		-----	0.5	1.0		40.000~66.666 MHz	
	ASD6 (1.0V)	-----	0.3	1.0	ps	25.000 MHz	
	Period Jitter RMS	ASD (3.3V)	-----	3.0	5.0	ps	0.750~15.999 MHz
			-----	3.0	5.0		16.000~39.999 MHz
-----			3.0	5.0	40.000~66.666 MHz		
ASD1 (3.0V)		-----	3.0	5.0	ps	0.750~15.999 MHz	
		-----	3.0	5.0		16.000~39.999 MHz	
		-----	3.0	5.0		40.000~66.666 MHz	
ASD2 (2.5V)		-----	3.0	5.0	ps	0.750~15.999 MHz	
		-----	3.0	5.0		16.000~39.999 MHz	
		-----	3.0	5.0		40.000~66.666 MHz	
ASD3 (1.8V)		-----	3.0	5.0	ps	0.750~15.999 MHz	
		-----	3.0	5.0		16.000~39.999 MHz	
		-----	3.0	5.0		40.000~66.666 MHz	
ASD6 (1.0V)		-----	4.8	6.0	ps	25.000 MHz	
Aging at 25°C/year		-5	-----	+5	ppm		
Disable Current:		-----	-----	10	µA		

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2.5 X 2.0 X 0.8mm

ASD SERIES



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## OPTIONS AND PART IDENTIFICATION:

(Left blank if standard)

ASD  -  MHz -  -  -  -

P/N and Vdd (V)
Blank: 3.3±5%
1: 3.0±5%
2: 2.5±5%
3: 1.8±5%
6: 1.0±5%

Packaging
Blank: Bulk
T: 1000pcs/Reel
T2: 250pcs/Reel
T3: 3000pcs/Reel

Frequency in MHz
e.g. 24.576MHz
14.31818MHz
26.000MHz

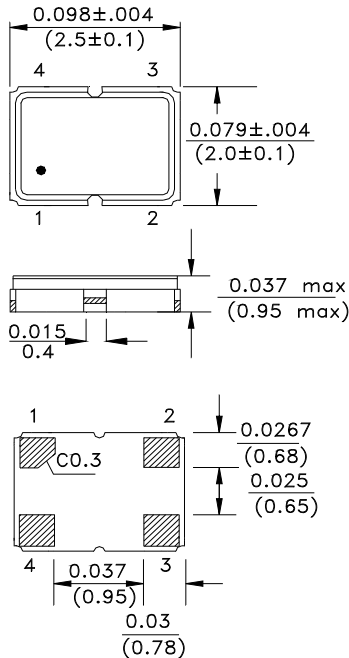
Operating Temp.
E: -20°C ~ +70°C (STD)
F: -30°C ~ +70°C
N: -30°C ~ +85°C
L: -40°C ~ +85°C
M(***) : -40°C ~ +105°C
V(***) : -40°C ~ +125°C

Overall Freq. Stability
J(*): ±20ppm
R(**): ±25ppm
K: ±30ppm
H: ±35ppm
C: ±50ppm

Duty Cycle
Blank : 40/60% @ 1/2Vdd
S: 45/55% @ 1/2Vdd

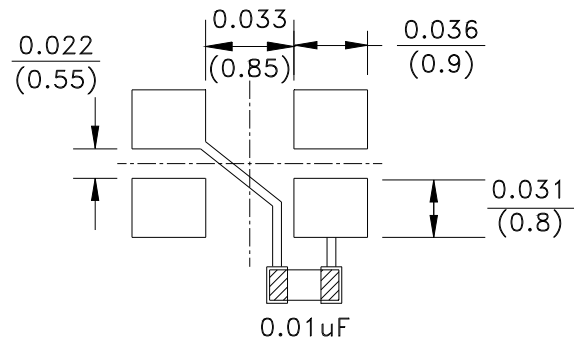
\*: Standard only  
 \*\*: E, F, N, and L only  
 \*\*\*: ± 100 ppm only

## OUTLINE DRAWING:



Bottom view

Recommended land pattern



PIN	FUNCTION
1	Tri-State (STBY)
2	GND/Case
3	Output
4	Vdd

**Note1:** Recommend using an approximately 0.01uF bypass capacitor between PIN 2 and 4.

Dimensions: inches (mm)

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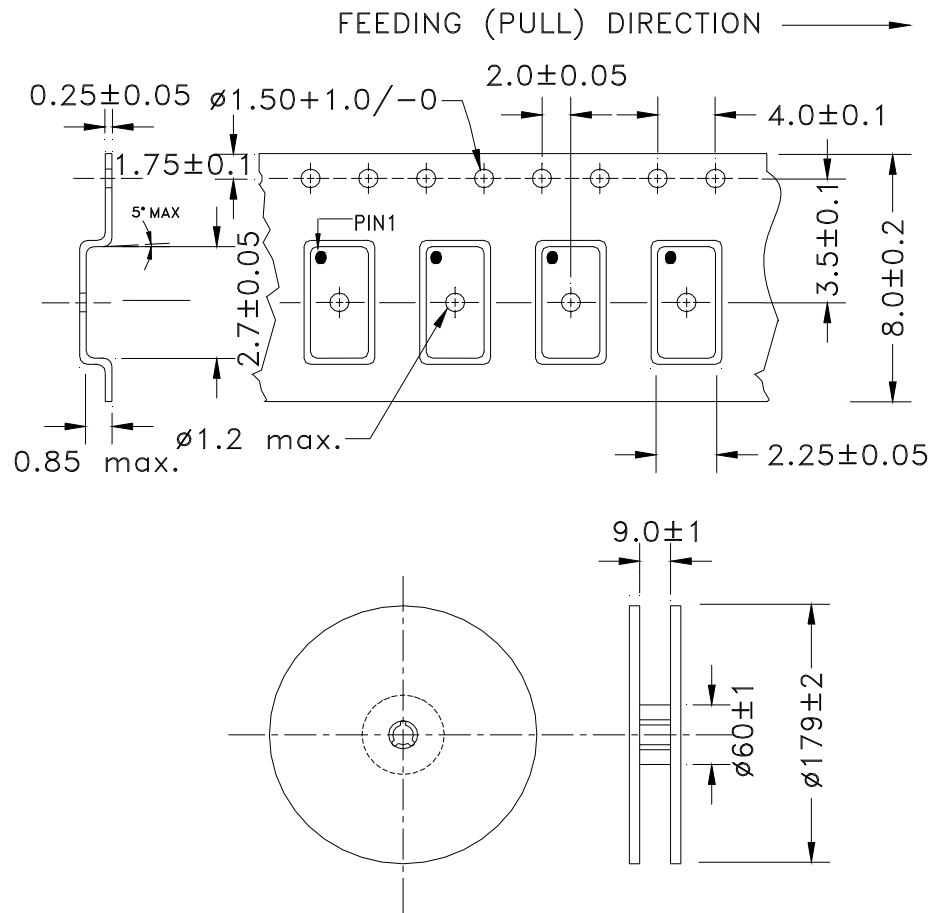
2.5 X 2.0 X 0.8mm

ASD SERIES



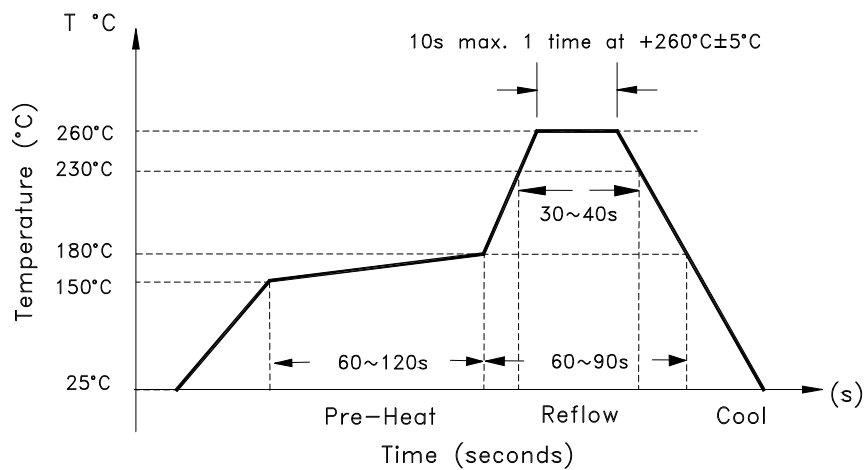
## TAPE & REEL:

T: 1000pcs/reel  
T2: 250pcs/reel  
T3: 3000pcs/reel



Dimensions: mm

## REFLOW PROFILE:



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