

# CERAMIC SMD CRYSTAL CLOCK OSCILLATOR WITH VOLTAGE CONTROL



7.0 x 5.0 x 1.8 mm

ALVD



## FEATURES:

- Based on a proprietary digital multiplier
- Tri-State Output
- Low Phase Jitter
- 3.3V +/- 5% operation
- Ceramic SMD, low profile package

## APPLICATIONS:

- SONET, xDSL
- SDH, CPE
- STB

## STANDARD SPECIFICATIONS:

PARAMETERS	
ABRACON P/N:	ALVD Series
Frequency range:	750 KHz to 800 MHz
Operating temperature:	0°C to +70°C (see options)
Storage temperature:	-55°C to +125°C
Overall frequency stability:	±50 ppm max. (see options)
Supply voltage ( $V_{dd}$ ):	3.3V ± 10%
Voltage control ( $V_c$ ):	0.3VDC min, 1.65VDC typ, 3.0 VDC max.
Symmetry at 1/2 Vdd:	40/60% max.
Output Level:	See options (PECL, CMOS, or LVDS)
Pullability:	± 50ppm (see option)
Tristate Function:	"1" ( $V_{IH} \geq 0.7 * V_{dd}$ ) or open: Oscillation "0" ( $V_{IL} < 0.3 * V_{dd}$ ) : Hi Z
Aging per year:	±5 ppm max.
RMS Phase Jitter:	3ps typical, 5ps max. (12KHz~20MHz)
Period Jitter (peak to peak):	35 ps typical
Phase Noise:	-112 dBc/Hz @ 1kHz Offset from 155.52MHz -125 dBc/Hz @ 10kHz Offset from 155.52MHz -123 dBc/Hz @ 100KHz Offset from 155.52MHz -109 dBc/Hz @ 1kHz Offset from 622.08MHz -110 dBc/Hz @ 10kHz Offset from 622.08MHz -109 dBc/Hz @ 100KHz Offset from 622.08MHz
<p><b>PECL:</b> Supply current (<math>I_{DD}</math>): 25mA max (for <math>F_o &lt; 24\text{MHz}</math>), 65mA max (for <math>24\text{MHz} &lt; F_o &lt; 96\text{MHz}</math>), 100mA max (<math>96\text{MHz} &lt; F_o &lt; 800\text{MHz}</math>) Output Logic High: <math>V_{dd} - 1.025\text{V}</math> min, <math>V_{dd} - 0.880\text{V}</math> max. Output Logic Low: <math>V_{dd} - 1.810\text{V}</math> min, <math>V_{dd} - 1.620\text{V}</math> max. Symmetry (Duty Cycle): 45% min, 50% typ, 55% max, Rise time: 0.6nSec typ, 1.5nS max Fall time: 0.6nSec typ, 1.5nS max</p>	
<p><b>CMOS:</b> Supply current (<math>I_{DD}</math>): 15 mA max (for <math>F_o &lt; 24\text{MHz}</math>), 30mA max (for <math>24\text{MHz} &lt; F_o &lt; 96\text{MHz}</math>), 40mA max (<math>96\text{MHz} &lt; F_o &lt; 800\text{MHz}</math>) Output Clock Rise/ Fall Time [10%~90% VDD with 10pF load]: 1.2ns typ, 1.6ns max. Output Clock Duty Cycle [Measured @ 50% VDD]: 45% min, 50% typical, 55% max</p>	
<p><b>LVDS:</b> Supply current (<math>I_{DD}</math>): 25mA max (for <math>F_o &lt; 24\text{MHz}</math>), 45mA max (for <math>24\text{MHz} &lt; F_o &lt; 96\text{MHz}</math>), 80mA max (<math>96\text{MHz} &lt; F_o &lt; 800\text{MHz}</math>) Output Clock Duty Cycle @ 1.25V: 45% min, 50% typical, 55% max Output Differential Voltage (<math>V_{OD}</math>): 247mV min, 355mV typical, 454mV max VDD Magnitude Change (<math>\Delta V_{OD}</math>): -50mV min, 50mV max Output High Voltage : <math>V_{OH} = 1.4\text{V}</math> typical, 1.6V max. Output Low Voltage: <math>V_{OL} = 0.9\text{V}</math> min, 1.1V typical Offset Voltage [<math>R_L = 100 \Omega</math>]: <math>V_{OS} = 1.125\text{V}</math> min, 1.2V typical, 1.375V max Offset Magnitude Change [<math>R_L = 100 \Omega</math>]: <math>\Delta V_{OS} = 0\text{mV}</math> min, 3mV typical, 25mV max Power-off Leakage (<math>I_{OxD}</math>) [<math>V_{out} = V_{DD}</math> or GND, <math>V_{DD} = 0\text{V}</math>] = ±1 <math>\mu\text{A}</math> typical, ±10 <math>\mu\text{A}</math> max. Differential Clock Rise Time (<math>t_r</math>) [<math>R_L = 100 \Omega</math>, <math>CL = 10\text{pF}</math>]: 0.2nS min, 0.7nS typical, 1.0nS,max Differential Clock Fall Time (<math>t_f</math>) [<math>R_L = 100 \Omega</math>, <math>CL = 10\text{pF}</math>]: 0.2nS min, 0.7nS typical, 1.0nS max</p>	

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## PIN ASSIGNMENTS

PIN #	Name	DESCRIPTION
1	Vc	Voltage Control
2	Tristate	Tristate
3	GND	Ground
4	Q	PECL, LVDS, or CMOS Output.
5	Q	Complimentary PECL, LVDS, or NC.
6	V <sub>DD</sub>	VDD Connection.

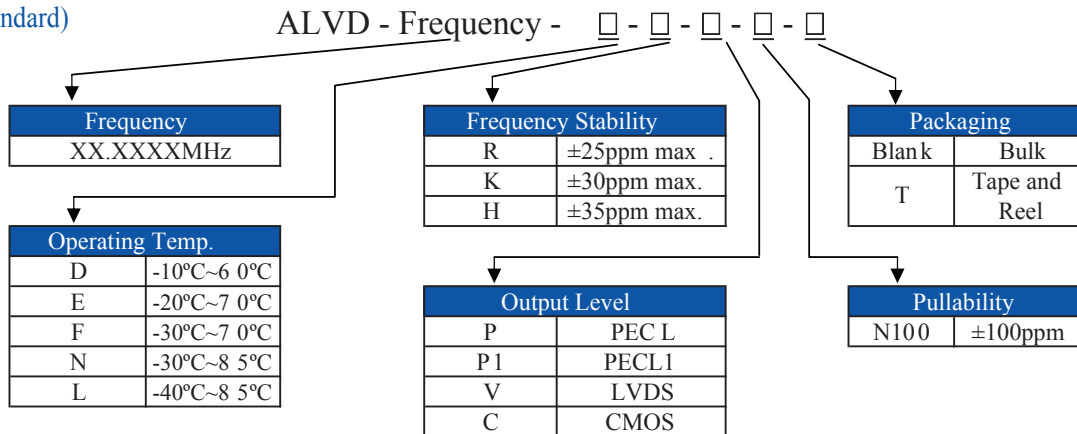
## TRI-STATE PIN OPERATION:

OUTPUT TYPE OPTION	PIN 2 logic level*	Output State (Tri-state)
P PECL	0 (Default)	Enabled
	1	Disabled
P1 PECL1	0	Disabled
	1	Enabled
V LVDS	0	Disabled
	1 (Default)	Enabled
C CMOS	0	Disabled
	1 (Default)	Enabled

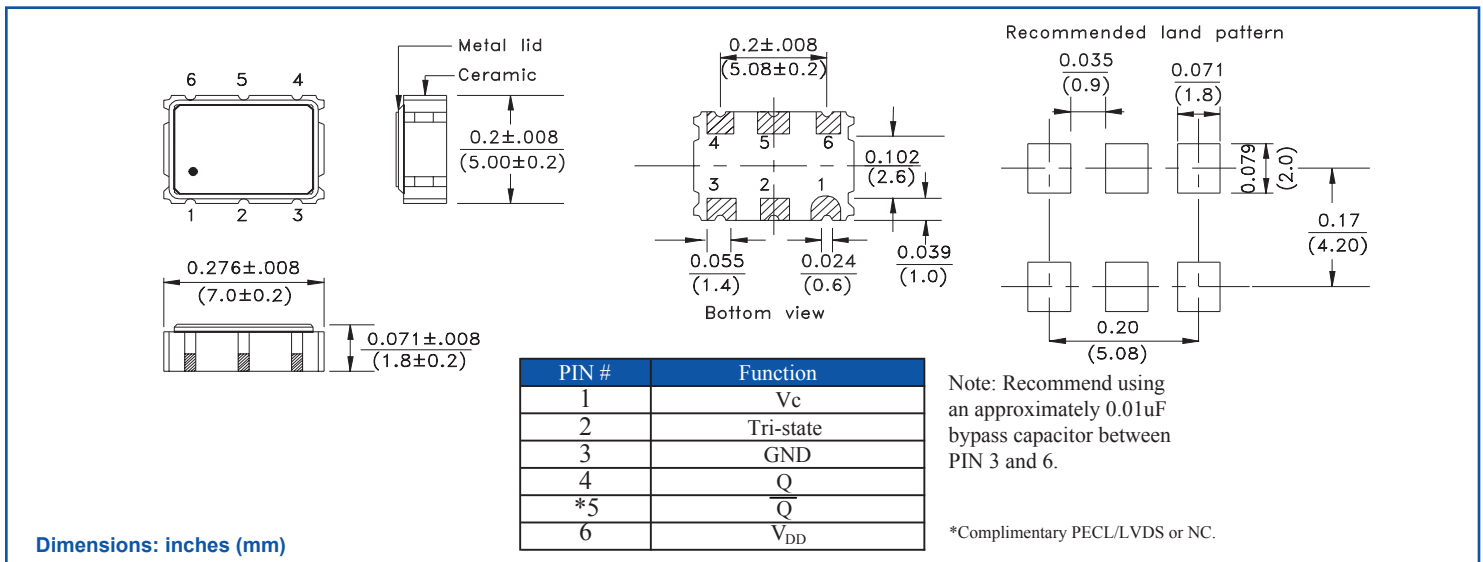
\*Connect to VDD for logic level "1", connect to ground for logic level "0".

## OPTIONS & PART IDENTIFICATION:

(Left blank if standard)



## OUTLINE DRAWING:



# CERAMIC SMD CRYSTAL CLOCK OSCILLATOR WITH VOLTAGE CONTROL

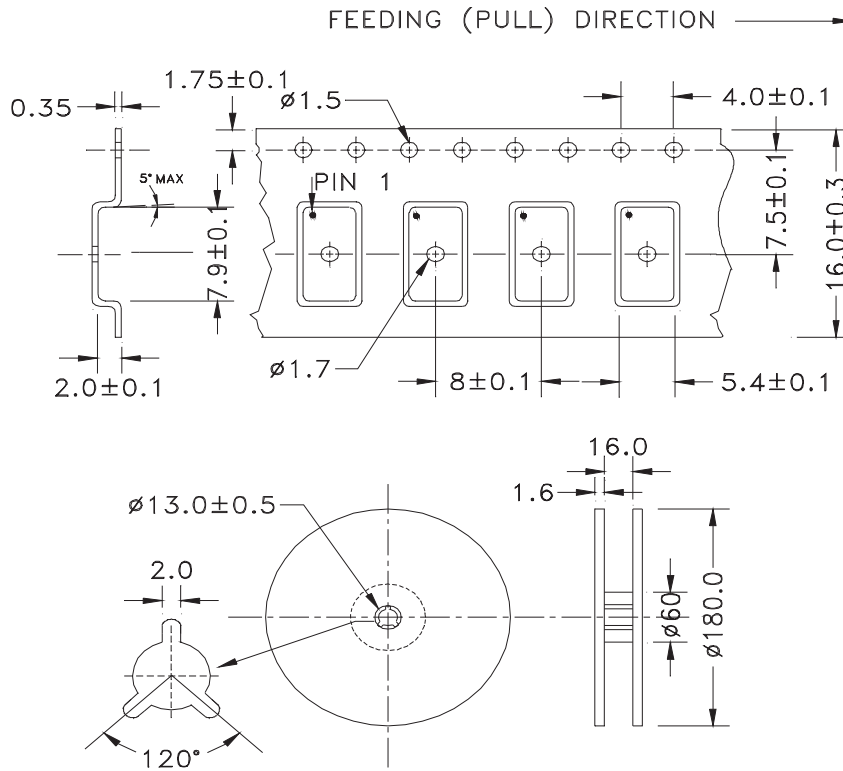


7.0 x 5.0 x 1.8mm

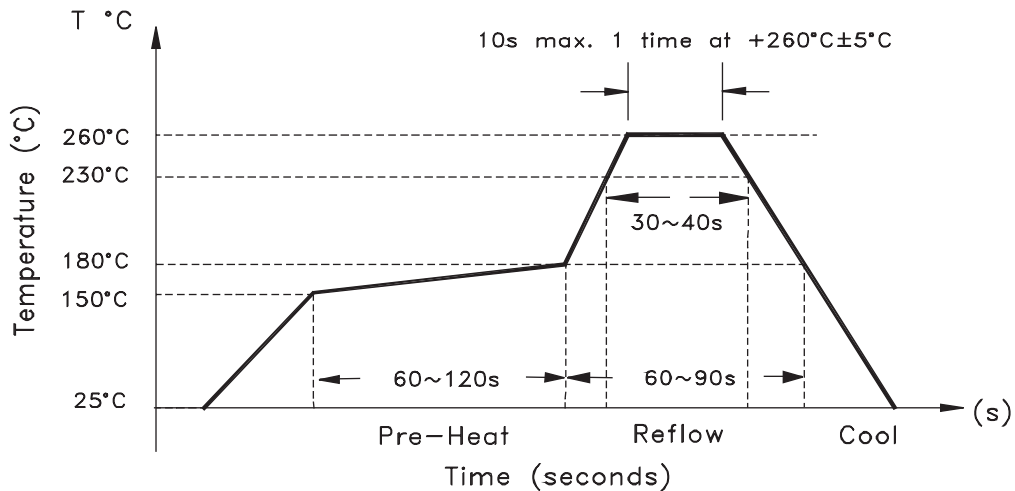
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## TAPE & REEL: Tape and reel (1,000pcs/reel)



## REFLOW PROFILE:



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