

CERAMIC SMD CRYSTAL CLOCK OSCILLATOR

ABFM SERIES



RoHS
Compliant



5.0 x 7.0 x 1.8mm

FEATURES:

- Based on a proprietary analog multiplier
- Tri-State Output
- Ultra low Phase Noise
- 125MHz, 156.25MHz, 187.5MHz, and 212.5MHz applications
- 2.5V to 3.3V +/- 10% operation
- Ceramic SMD, low profile package

APPLICATIONS:

- Fiber Channel
- 12Gbit SERDES
- 10Gbit SERDES
- PCI Express

STANDARD SPECIFICATIONS:

PARAMETERS

ABRACON P/N	ABFM Series
Frequency Range	30 MHz to 280 MHz (Contact ABRACON for frequencies out of the range)
Operating Temperature	0°C to + 70°C (see options)
Storage Temperature	- 55°C to + 125°C
Frequency Stability over Operating Temp. (ref to +25°C)	± 50 ppm max. (see options)
Supply Voltage (Vdd)	3.3V or 2.5V ±10% (see options)
Jitter (12KHz - 20MHz)	RMS phase jitter = 0.5pS max. period jitter = 20pS peak to peak typical
Low Phase Noise	-130 dBc/Hz @ 1kHz Offset from 212.5 MHz -140 dBc/Hz @ 10kHz Offset from 212.5 MHz -145 dBc/Hz @ 100kHz Offset from 212.5 MHz
Aging (PPM/year)	TBD Per Crystal

PECL

Supply Current (I_{DD}) [$F_{out} = 212.50\text{MHz}$]	85mA max.
Output Clock Duty Cycle @ $V_{DD}=1.3V$	45% min, 50% typical, 55% max.
Output High Voltage (V_{OH})	$V_{DD} - 1.025V$ min
Output Low Voltage (V_{OL})	$V_{DD} - 1.620V$ max
Clock Rise time (t_r) @ 20/80%	0.2nS typ, 0.5nS max
Clock Fall time (t_f) @ 80/20%	0.2nS typ, 0.5nS max

LVDS

Supply Current (I_{DD}) [$F_{out} = 212.50\text{MHz}$]	55mA typical, 60mA max
Output Clock Duty Cycle @ 1.25V	45% min, 50% typical, 55% max
Output Differential Voltage (V_{OD})	247mV min, 355mV typical, 454mV max
VDD Magnitude Change (ΔV_{OD})	-50mV min, 50mV max
Output High Voltage (V_{OH})	1.4V typical, 1.6V max
Output Low Voltage (V_{OL})	1.1V typical, 0.9V min
Offset Voltage [$R_L = 100\Omega$]	$V_{OS} = 1.125V$ min, 1.2V typical, 1.375V max
Offset Magnitude Voltage [$R_L = 100\Omega$]	$\Delta V_{OS} = 0mV$ min, 3mV typical, 25mV max
Power-off Leakage (I_{OXD}) [$V_{out}=V_{DD}$ or GND, $V_{DD}=0V$]	±1mA typical, ±10µA max
Output Short Circuit Current (I_{OSD})	-5.7mA typ, -8mA max
Differential Clock Rise Time (t_r) [$R_L=100\Omega$, $CL=10pF$]	0.2ns min, 0.5ns typical, 0.7ns max
Differential Clock Fall Time (t_f) [$R_L=100\Omega$, $CL=10pF$]	0.2ns min, 0.5ns typical, 0.7ns max



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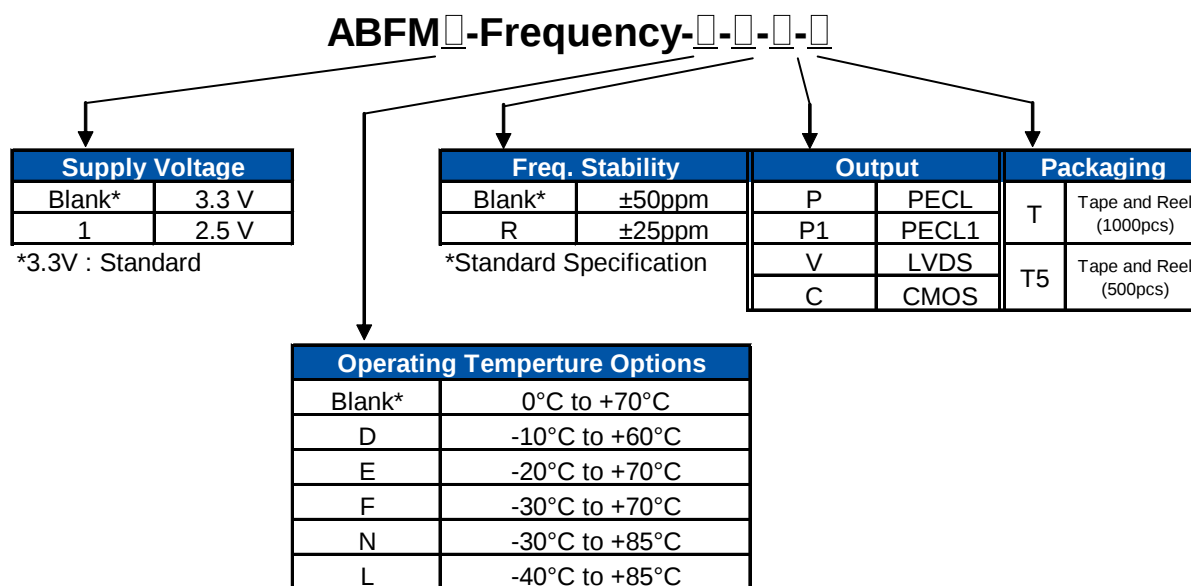


5.0 x 7.0 x 1.8mm

STANDARD SPECIFICATIONS:

CMOS	
Supply Current (I_{DD}) [at 100MHz, load 15pF]	16mA typ, 20mA max
Output Clock Duty Cycle @ 50% V_{DD}	45% min, 50% typical, 55% max
Output High Voltage (V_{OH}) [$I_{OH} = -8.5mA$]	2.4V min
Output Low Voltage (V_{OL}) [$I_{OL} = 8.5mA$]	0.4V max
Output Drive Current (I_{OSD}) [$V_{OL} = 0.4V$, $V_{OH} = 2.4V$]	8.5mA typ
Output Clock Rise/Fall time [10% ~ 90% V_{DD} w/10pF load]	1.2nS typical, 1.6nS max
Output Clock Duty cycle [Measured @ 50% V_{DD}]	45% min, 50% typical, 55% max

OPTIONS AND PART IDENTIFICATION (Left blank if standard):



*Standard Specification
Contact ABRACON for extended temperatures.

PIN ASSIGNMENTS:

PIN #	NAME	DESCRIPTION
1	Tri-state	Tri-state
2	NC	No Connect
3	GND	Ground
4	Q	PECL, LVDS
5	$\overline{Q}$	Complimentary PECL, LVDS
6	V_{DD}	VDD Connection

TRI-STATE PIN OUT DESCRIPTION:

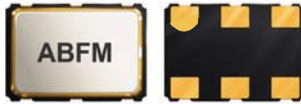
OUTPUT TYPE OPTION		PIN 1 LOGIC LEVEL*	OUTPUT STATE
P	PECL	1	Tri-state
		0 (Default)	Enabled
P1	PECL1	0	Tri-state
		1	Enabled
V	LVDS	0	Tri-state
		1 (Default)	Enabled
C	CMOS	0	Tri-state
		1 (Default)	Enabled

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



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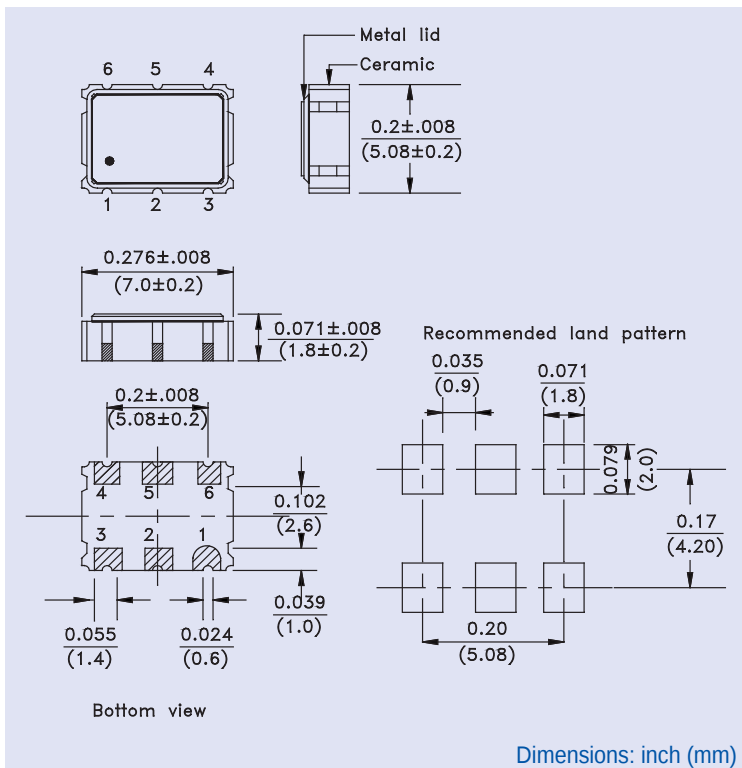


5.0 x 7.0 x 1.8mm

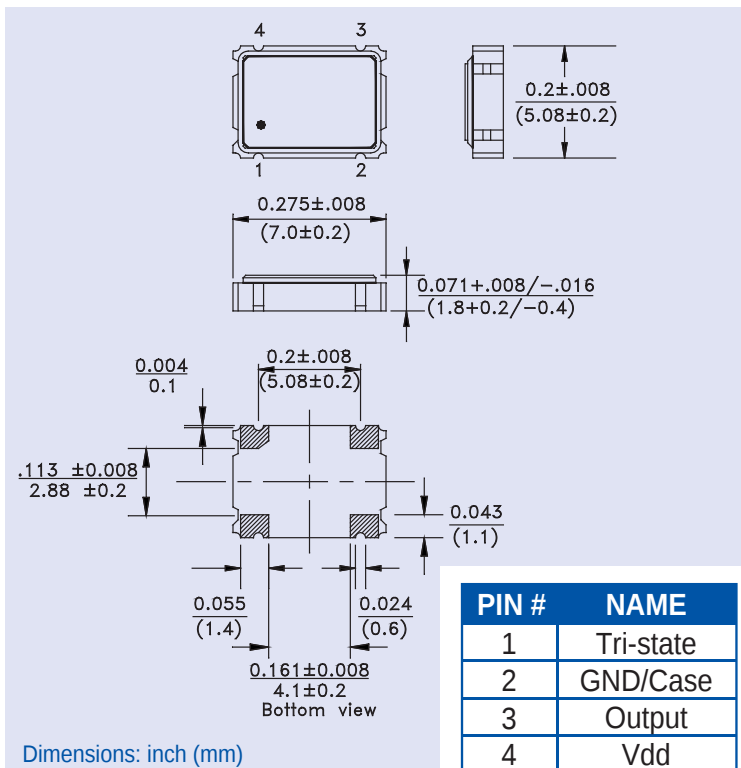


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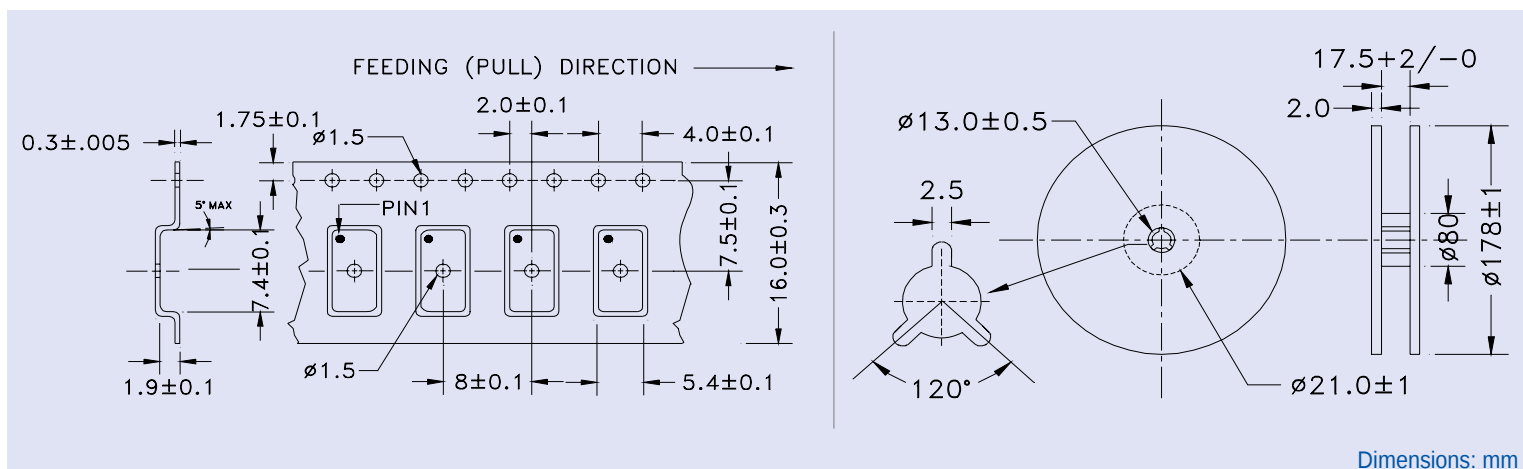
▶ PECL & LVDS DRAWING:



CMOS DRAWING:



TAPE & REEL:



ABRACON IS
ISO 9001 / QS 9000
CERTIFIED



ABRACON CORPORATION

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