VSY SERIES: VCXO OSCILLATOR, HCMOS, +2.5 VDC, 7x5mm Package

DESCRIPTION: A crystal controlled, high frequency, highly stable, voltage controlled oscillator, adhering to HCMOS Standards. The output can be Tri-stated to facilitate testing or combined multiple clocks. The device is contained in a sub-miniature, very low profile, leadless ceramic SMD package with 6 gold contact pads. This miniature oscillator is ideal for today's automated assembly environments.

APPLICATIONS AND FEATURES:

- **Common Frequencies: 16.384 MHz; 19.44 MHz; 27 MHz; 38.88 MHz; 51.84 MHz; 77.76MHz; 123.6MHz**
- **+2.5 VDC HCMOS**
- **Frequency Range from 16 to 130 MHz**
- **Miniature Ceramic SMD Package Available on Tape and Reel**
- **Lead Free and ROHS Compliant**

■ ABSOLUTE MAXIMUM RATINGS:

PARAMETER	SYMBOL	VALUE	UNIT
Operating temperature range	Ta	-40…+85	°C
Storage temperature range	T(stg)	-55…+90	°C
Supply voltage range	Vcc	-0.5…+4.6	VDC
Maximum Control Voltage	Vc	-0.5…Vcc+0.5	VDC
Maximum Output Voltage	Vo	-0.5…Vcc+0.5	VDC

■ ELECTRICAL PARAMETERS:

PARAMETER	SYMBOL	TEST CONDITIONS[*1]		VALUE	UNIT
Nominal Frequency	fo			16.000 ~ 130.000	MHz
Supply Voltage	Vcc			+2.5 ±10%	VDC
Supply Current	Is	Nominal Vcc, Nominal Load, +25 ±3°C	Fo=27MHz Fo=35MHz Fo=78MHz Fo=126MHz	4.0 MAX, 2.8 TYP 6.0 MAX, 4.2 TYP 9.0 MAX, 7.2 TYP 12 MAX 10 TYP	mA
Power supply rejection	PsRR	Frequency Change with Vcc varied ±10%		±1 MAX	ppm
Output Logic Type				HCMOS	
Load		Connected from output to ground		15	pF
Output Voltage Levels	Voh Vol			0.9•Vcc MIN 0.1•Vcc MAX	VDC VDC
Duty Cycle	DC	Measured at 50% of Vcc		40/60 to 60/40 or 45/55 to 55/45	%
Rise / Fall Time[*2]	tr / tf	Measured at 20/80% and 80/20% Vcc Levels	Fo<27MHz Fo>35MHz	3.0 MAX 2.4 TYP 2.5 MAX 2 TYP	ns
Jitter	J	RMS Period Jitter 1sigma 1000 samples[*4]		2.5 TYP	ps
Phase Jitter	Jp	RMS Phase Jitter integrated from 12KHz to 20MHz[*6]		0.6 TYP	ps
Phase Noise	£ (Δf)	Typical measured at 100MHz[*5]	Δf =100Hz Offset Δf =1KHz Offset Δf =10KHz Offset Δf =100KHz Offset Δf =1MHz Offset	-80 -110 -130 -138 -145	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz
Control Voltage Range	VC	Positive slope; 10% linearity MAX		0 to +2.5	VDC
Control Voltage sensitivity	Δf/fc(ΔVc)			100 TYP	ppm/V
Absolute Pull Range	APR	Minimum guaranteed freq. pull over Δf/fc		See Part Numbering [*3]	ppm
Settability	Vfo			+1.25 ± 0.25	VDC
Input Impedance	Zin	DC to 1KHz		2 MIN	MΩ
Modulation Bandwidth	BW	-3 dB		45 MIN	kHz
ESD protection		Human Body Model		2000 MIN	VDC
Pin 2 Output Enabled Output Disabled	En Dis	High Voltage or No Connect Ground		0.7•Vcc MIN 0.3•Vcc MAX	VDC VDC

*1 Test Conditions Unless Stated Otherwise: Nominal Vcc, Nominal Load, +25 ±3°C
*2 Frequency Dependent
*3 Not All APR's Available With All Temperature Ranges—Consult Factory For Availability
* 4 Measured with Wavecrest SIA-3000A no filtering
* 5 Measured with Agilent 5500
6 Calculated from Agilent 5500 phase noise measurements

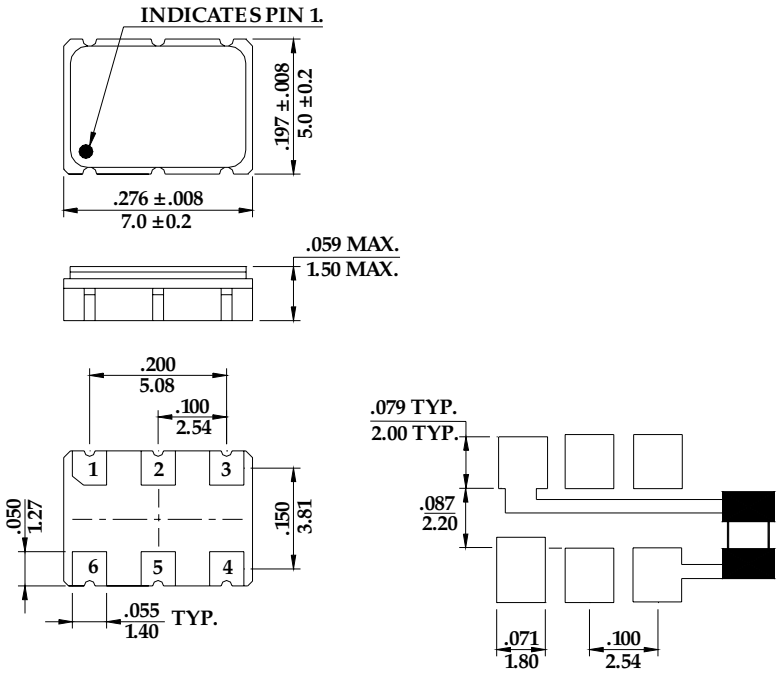
■ PART NUMBERING SYSTEM:

SERIES	SYMMETRY	TEMPERATURE RANGE (°C)	APR (ppm)	FREQUENCY (MHz)
VSY: VCXO with HCMOS Output	A: 40/60 to 60/40% T: 45/55 to 55/45%	R: 0…+50 S: 0…+70 U: -20…+70 V: -40…+85	F: ±32 ppm H: ±50 ppm	16.000…130.000

EXAMPLE: VSYASH-38.880

VCXO Oscillator, 7x5mm Package, +2.5 VDC Supply Voltage, HCMOS Output, 40/60% Symmetry, 0…+70°C Operating Temperature Range, ±50 ppm APR, 38.880 MHz, Enable High on Pin 2
Consult the factory for any custom requirements.

■ MECHANICAL PARAMETERS:



SOLDER PATTERN

OUTLINE TOLERANCE:
±0.006" / 0.15mm
(Unless otherwise specified)

PIN FUNCTIONS:
[1] VOLTAGE CONTROL
[2] ENABLE/DISABLE
[3] CASE GROUND
[4] OUTPUT
[5] NO CONNECT
[6] SUPPLY VOLTAGE

TYP. MARKING:
VSYASH
38.88
RAL D/C

***0.01µF external by-pass filter is recommended as shown on solder pattern**

■ **REFLOW PROFILE**