

## OVEN CONTROLLED CRYSTAL OSCILLATOR UNIT IN METAL CAN THD PACKAGE, SIZE 36 X 27MM.

# OCO360

### PRODUCT FEATURES

- THD PACKAGE SIZE 36 X 27 X 12MM WITH 5 PINS.
- EXCELLENT LOW AGING RATES AND LOW PHASE NOISE.
- OPTIONAL CONTROL VOLTAGE AND REFERENCE VOLTAGE FUNCTIONS.
- LOW COST VERSION USING AT-CUT CRYSTAL IS AVAILABLE.

### APPLICATIONS

- BASE STATIONS
- TEST EQUIPMENT
- SATELLITE COMMUNICATION
- SYNTHESIZERS



### PRODUCT SPECIFICATIONS

PARAMETER	SYMBOL	PARAMETER VALUES / LIMITS	CONDITIONS / REMARKS
NOMINAL FREQUENCY	$F_N$	<b>5.0 ~ 100MHZ</b>	SEE NOTE 1
SUPPLY VOLTAGES	$V_{DD}$	3.3V OR 5.0V OR 12.0V	±5%, PLEASE CHOOSE
POWER CONSUMPTION WARM-UP AT STEADY STATE	$P_{WUP}$	<3.0W	—
	$P_{OP}$	<1.2W	@+25°C
WARM UP TIME	$t_{WUP}$	<180S	TO 5PPB FOR SC-CUT, TO 50PPB FOR AT-CUT
OPERATING TEMPERATURE RANGE	$T_{OP}$	-20~+70°C / -30~+75°C / -40~85°C	OTHER OPTIONS POSSIBLE
OUTPUT WAVEFORM LVTTLL	$V_{OH}/V_{OL}$	≥2.4V <sub>DC</sub> / ≤0.4V <sub>DC</sub>	@ OUTPUT LOAD 5 TTL INPUTS
OUTPUT WAVEFORM HCMOS	$V_{OH}/V_{OL}$	≥90%V <sub>DD</sub> / ≤10%V <sub>DD</sub>	@ OUTPUT LOAD CL = 15PF
OUTPUT WAVEFORM SINEWAVE	$V_{P-P}$	6dBm MIN / 10dBm MAX	@ OUTPUT LOAD RL = 50Ω

NOTE 1: TYPICAL AVAILABLE FREQUENCIES ARE: 10MHZ, 12.8MHZ, 15.36MHZ, 16.384MHZ, 19.2MHZ, 19.44MHZ, 20MHZ, 25MHZ, 26MHZ, 38.88MHZ, 50MHZ

### FREQUENCY CHARACTERISTICS

PARAMETER	SYMBOL	SC-CUT CRYSTAL	AT-CUT CRYSTAL
FREQUENCY STABILITY OVER $T_{OP}$	$\Delta f/F_N$	±3PPB / ±5PPB / ±10PPB	±30PPB / ±50PPB / ±100PPB
SHORT TERM STABILITY	$(\Delta f/F_N)/S$	±0.01PPB/S	±0.1PPB/S
AGING RATE	DAILY	±0.3ppb / ±0.5ppb / ±1.0ppb	±3ppb / ±5ppb / ±10ppb
	ANNUALLY	$(\Delta f/F_N)/Y$	±30ppb / ±50ppb / ±100ppb
VOLTAGE STABILITY ( $V_{DD} \pm 5\%$ )	$(\Delta f/F_N)/V$	±0.5PPB	±5PPB
FREQUENCY ADJUSTMENT (NOTE 2)	$(\Delta f/F_N)/V_C$	±0.5 ~ 1.0PPM	±5 ~ 10PPM
PHASE NOISE TYPICAL EXAMPLE FOR 10MHZ UNIT	@1HZ	$j_{RMS}$	-98DBC/HZ
	@10HZ		-128DBC/HZ
	@100HZ		-150DBC/HZ
	@1KHZ		-158DBC/HZ
	@10KHZ		-164DBC/HZ
	@100KHZ		-165DBC/HZ

NOTE 1: FREQUENCY STABILITY IS THE DEVIATIONS OVER OPERATING TEMPERATURE RANGE  $T_{OP}$  IN REFERENCE TO FREQUENCY READING @+25°C.

NOTE 2: FREQUENCY ADJUSTMENT CAPABILITY APPLIES FOR UNITS WITH THE OPTION OF CONTROL VOLTAGE  $V_C$  FUNCTION (REFER TO BELOW TABLE).

NOTE 3: FOR THE PARAMETERS IN ABOVE TABLE IS THE BEST PERFORMANCE SHOWN, OTHER OPTIONS ARE AVAILABLE, SOME DESIGNS MAY REQUIRE WIDER TOLERANCES.

### OPTIONS FOR 3.3V AND 5.0V SUPPLY VOLTAGES (FOR 12V SEE NOTE 1)

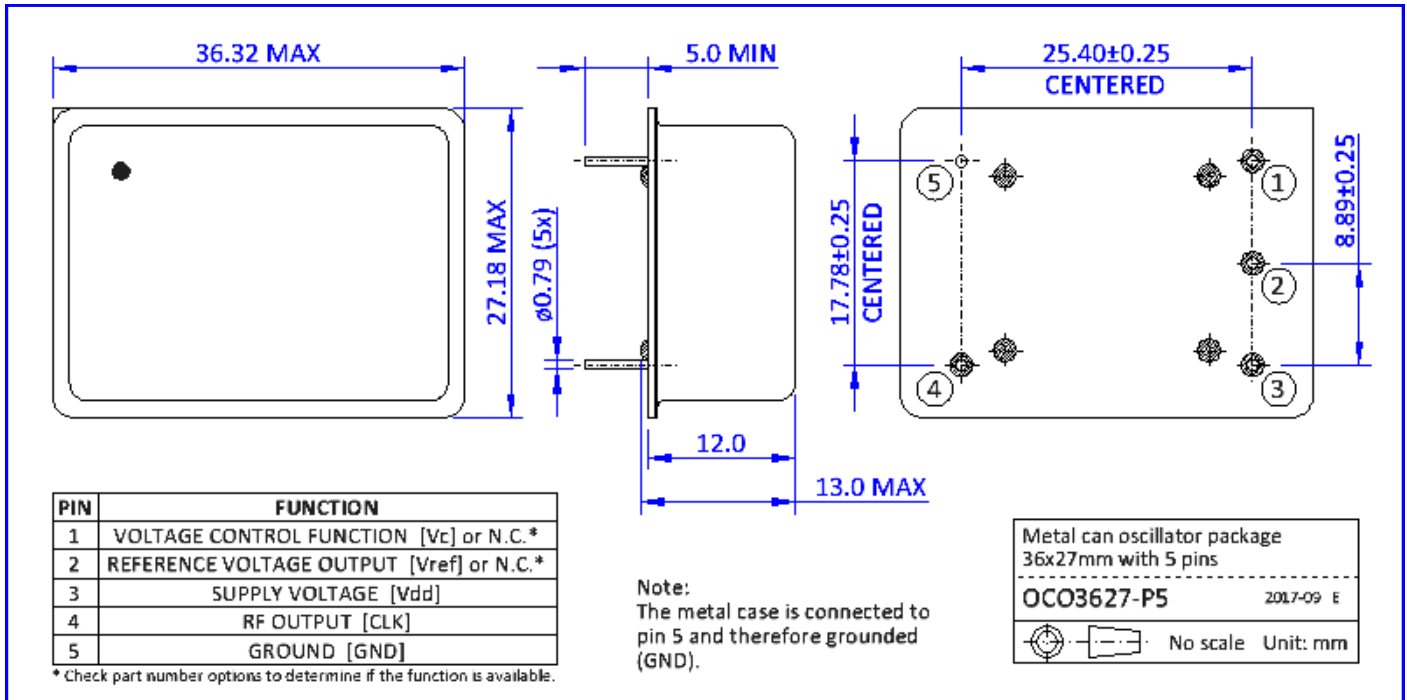
PARAMETER	SYMBOL	FOR 3.3V		FOR 5.0V	
CONTROL VOLTAGE RANGE	$V_C$	0 ~ 2.8V <sub>DC</sub>	0 ~ 3.3V <sub>DC</sub>	0 ~ 4.0V <sub>DC</sub>	0 ~ 5.0V <sub>DC</sub>
CONTROL CENTER VOLTAGE	$V_{CEN}$	1.4V <sub>DC</sub>	1.65V <sub>DC</sub>	2.0V <sub>DC</sub>	2.5V <sub>DC</sub>
REFERENCE VOLTAGE OUTPUT	$V_{REF}$	2.8V <sub>DC</sub>	N/A	4.0V <sub>DC</sub>	N/A

NOTE 1: THE  $V_{DD}$  12V VERSION IS AVAILABLE WITH A CONTROL VOLTAGE RANGE OF 0~5V, CENTER AT 2.5V, AND OPTIONAL REFERENCE VOLTAGE OUTPUT OF 5V.

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OCO360

MECHANICAL DIMENSIONS



ENVIRONMENTAL COMPLIANCE INFORMATION

- ROHS COMPLIANT PER (DIRECTIVE 2011/65/EC).
- COMPLIANT TO ROHS 2 (DIRECTIVE 2015/863) (ALSO CALLED ROHS 10).
- NONE-USE OF SVHCS PER REACH IS CURRENTLY GIVEN, CONTINUOUSLY MONITORED AND UPDATED AS THE COMMISSION ISSUES NEW RELEASES.
- PRODUCT DOES NOT CONTAIN PVC (POLYVINYL CHLORIDE).
- PRODUCT DOES NOT CONTAIN PFOS/PFOA NOR BEING SAME USED TO MANUFACTURE THE COMPONENTS OF THIS PRODUCT.
- NONE-USE OF CONFLICT MINERALS PER THE DODD-FRANK WALL STREET REFORM AND CONSUMER PROTECTION ACT (WALL STREET REFORM ACT).
- MOISTURE SENSITIVITY LEVEL (MSL) 1 PER J-STD-020C.

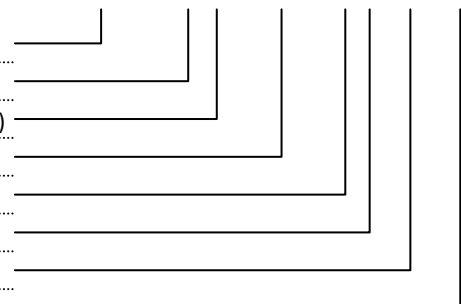
PACKAGING INFORMATION

- THE UNITS ARE PACKAGED INTO AN ESD CONFORM FOAM TRAY.
- THE FOAM TRAY FITS INTO AN APPROPRIATE CARDBOARD BOX FOR SHIPMENT IN A LARGER SHIPPING CARTON.

PART NUMBER SYNTAX

- PART NUMBER FAMILY (REPRESENTS PRODUCT MODEL AND PACKAGE SIZE)
- SUPPLY VOLTAGE NOMINATOR (I.E. 12= 12V, 50= 5.0V, 33= 3.3V)
- FREQUENCY STABILITY CODE (I.E. B=±50PPB, C=±100PPB, D=±30PPB, N=±5PPB, T=±10PPB)
- NOMINAL FREQUENCY (IN MHZ WITH AT LEAST THREE DIGITS AFTER DECIMAL POINT)
- OPERATING TEMPERATURE RANGE (I.E. E= -20~70°C, L= -30~75°C, W= -40~85°C)
- OUTPUT WAVE FORM INDICATOR (H= HCMOS, S= TRUE SINE WAVE, T= TTL OUTPUT)
- FREQUENCY MINIMUM PULLABILITY (OPTIONAL VC FUNCTION) (1.0= 1.0PPM MIN)
- REFERENCE VOLTAGE OUTPUT INDICATOR (OPTIONAL, EXTENSION ADDED IF AVAILABLE)

OCO36012B10.000EH1.0-RV



IF THERE IS A LARGE NUMBER OF CODES IN USE THE TABLE ABOVE MAY ONLY SHOW A FEW EXAMPLES.

FOR MORE INFORMATION PLEASE CONTACT US.

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