

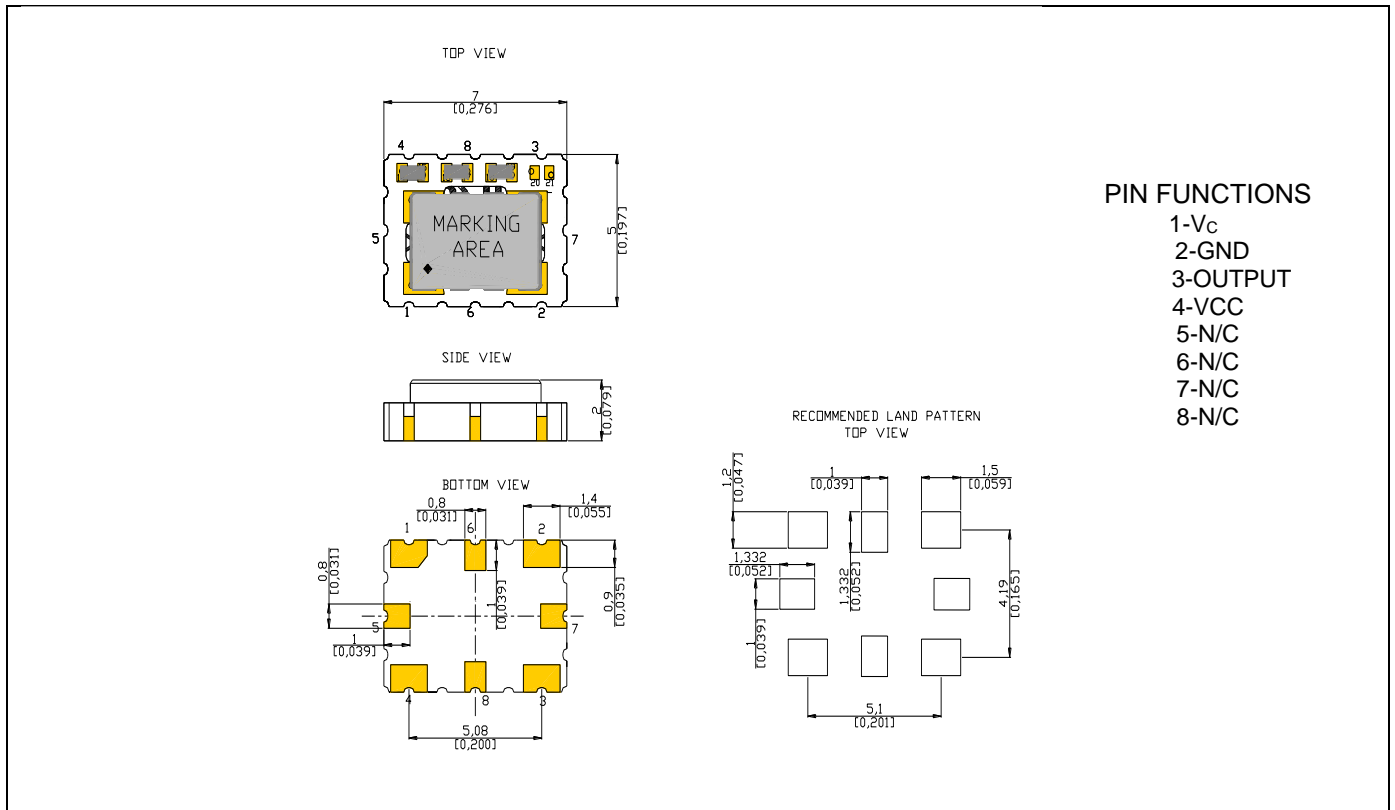
## TV257A-D3-1.0-10.000-3-TR-2



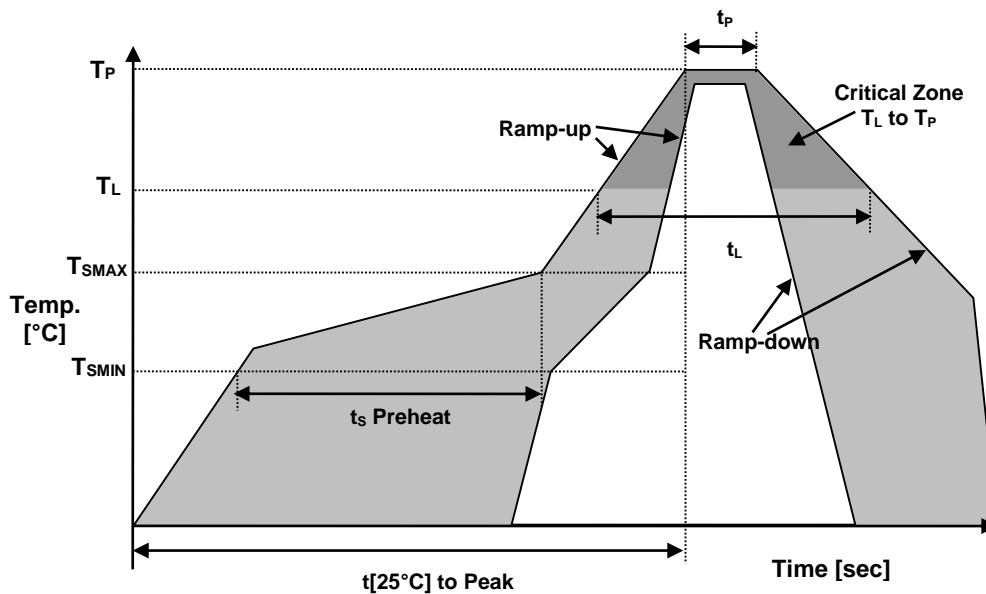
### ■ ELECTRICAL SPECIFICATION

PARAMETER	SYMBOL	CONDITIONS	VALUE	UNIT
Nominal Frequency	$f_o$	$V_{CC} \pm 5\%$	10.000	MHz
Supply voltage, nom.	$V_{CC}$	$V_{CC} \pm 5\%$	3.3	V
Supply current, max	$I_s$	$V_{CC} \pm 5\%$	6	mA
HCMOS Output Levels	$V_{OH} / V_{OL}$	min/max , 15pF load	$0.9V_{CC} / 0.1V_{CC}$	V
Duty cycle	DC	Load = 15pF	45/55	%
Rise / fall time, max.	$t_r / t_f$	10% - 90%	5	ns
Start-up time	$t_s$	Typical	3	ms
Initial Frequency Calibration	$f_c$	Measures at 25°C, $V_c = 1.5$ VDC	$\pm 1.00$	ppm
Reflow shift	$f_{cr}$	Two consecutive reflows after 1 hour recovery at 25°C	$\pm 1.0$	ppm
Stability vs. Supply Voltage change	$f_v$	$V_{CC} \pm 5\%$	$\pm 0.10$	ppm
Stability vs. Load change	$f_L$	Load $\pm 10\%$	$\pm 0.20$	ppm
Stability over operating temperature	$\Delta f/f_o(T_a)$	Referenced at 25°C, $V_c = 1.50$ VDC, 1°C per minute temperature slope	$\pm 1.0$	ppm
Frequency slope		Minimum of 1 frequency reading every 2°C	$\pm 0.1$	ppm
Static temperature hysteresis, max.	$\Delta f/f_o$	Frequency change after reciprocal temperature ramped over the temperature range, measured before and after at 25°C	$\pm 0.4$	ppm
Long term stability, ageing after 30 days of operation, max	$\Delta f/f_o(\Delta t)$	$\Delta t = 1$ year	$\pm 1.0$	ppm
Operating temperature range	$T_a$		-40 ~ +85	°C
Storage temperature	$T(stg)$	Absolute max	-40°C~ +90°C	°C
Freq. pulling range, min.	$\Delta f/f_c(V_c)$	$V_c = +0.5V$ to $+2.5V$	$\pm 7.0$	ppm
Port input impedance, min.			100	k $\Omega$
Phase noise @ freq. offset, typical.	$\mathcal{E}(\Delta f)$	$\Delta f = 10\text{Hz}$	-92	dBc/Hz
	$\mathcal{E}(\Delta f)$	$\Delta f = 100\text{Hz}$	-118	dBc/Hz
	$\mathcal{E}(\Delta f)$	$\Delta f = 1\text{kHz}$	-141	dBc/Hz
	$\mathcal{E}(\Delta f)$	$\Delta f = 10\text{kHz}$	-155	dBc/Hz
	$\mathcal{E}(\Delta f)$	$\Delta f \geq 100\text{kHz}$	-155	dBc/Hz
Shock		Half sine wave acceleration of 100G peak amplitude for 6ms, 3 cycles each plane. IEC 60068-2-27		
Thermal Shock		Exposed at -40°C for 30 minutes then to 85°C for 30 minutes constantly for 5 days		
Humidity		After 48hours at 85°C $\pm$ 2°C 85% humidity, frequency shift less than 1.0ppm		
Vibration		10G RMS from 30Hz to 1500Hz random in each of 3 axes for 4 hours, total 12 hours		

## MECHANICAL SPECIFICATION



## REFLOW PROFILE



Reflow profile IPC/JEDEC J-STD-020 REV. C		
Temperature Min Preheat	$T_{SMIN}$	150°C
Temperature Max Preheat	$T_{SMAX}$	200°C
Time ( $T_{SMIN}$ to $T_{SMAX}$ )	$t_S$	60-180 sec.
Temperature	$T_L$	217°C
Peak Temperature	$T_P$	260°C
Ramp-up rate	$R_{UP}$	3°C/sec max.
Ramp-down rate	$R_{DOWN}$	6°C/sec max.
Time within 5°C of Peak Temperature	$t_P$	20 sec.
Time $t_{[25^\circ C]}$ to Peak Temperature	$t_{[25^\circ C]}$ to Peak	480 sec.
Time	$t_L$	60-150 sec.

## ■ APPROVALS

RALTRON		
Eng. approval, date:	SP	06.1.2016
Created by, date:	SP	06.1.2016
Revision:		