Crystal Oscillators

TOYOCOM

SMO-L CMOS 787DH Series

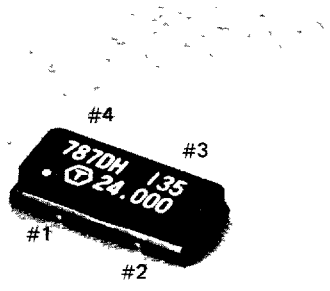
Features

- CMOS logic output
- Ceramic package (No bump or with bump)
- Space savings
- Available on 24 mm Tape & Reel
- Enable/Disable feature
- Tight symmetry (45 to 55%) "R" version available

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	−0.5 to +7.0	V
Input voltage	V_{IN}	−0.5 to V_{CC} +0.5	V
Output voltage	V_O	−0.5 to V_{CC} +0.5	V
Input current	I_{IN}	±10	mA
Output current	I_O	±25	mA
Storage temperature	T_{stg}	−55 to +125	°C
Soldering condition	T_{sol} T	260/230 20/180	°C sec

Model TCO-787DH TCO-787DHB



SMO-LN

Dimensions
12.1x5.8x2.5 max. [LN] or 2.7 max. [LB] (mm)
.476x.228x.098 max. [LN] or .106 max. [LB] (inch)

Pin Connections
#4 V_{CC} #3 OUTPUT
#1 E/D #2 GND

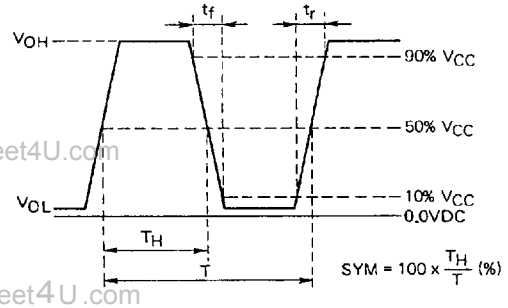
Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Frequency range	F_O	1.5	–	70	MHz	
Frequency stability	$\Delta F/F_O$	−100	–	100	ppm	*1
Operating temperature	T_{opr}	0	25	70	°C	
Operating voltage	V_{CC}	4.5	5.0	5.5	V	DC
Operating current	I_{CC}	–	–	*3	mA	V_{CC} = 5.5V
Input voltage	V_{IH} V_{IL}	3.5 –	– –	– 1.5	V V	#1: V_{IH} or OPEN → Enable #1: V_{IL} or GND → Disable
Output voltage	V_{OH} V_{OL}	V_{CC}−0.4 –	– –	– 0.4	V V	I_{OH} = −4 mA I_{OL} = 4 mA
Symmetry	SYM	40	50	60	%	at 50% V_{CC}
Rise/Fall time	tr, tf	–	–	*3	ns	at 10% V_{CC} to 90% V_{CC}/at 90% V_{CC} to 10% V_{CC}
Load capacitance	C_L	– – –	15 15 –	50 30 15	pF pF pF	1.5 to 26 MHz 26+ to 46 MHz 46+ to 70 MHz
Start-up time	t_{st}	– –	– –	4 10	ms ms	1.5 to 26 MHz *2 26+ to 70 MHz *2

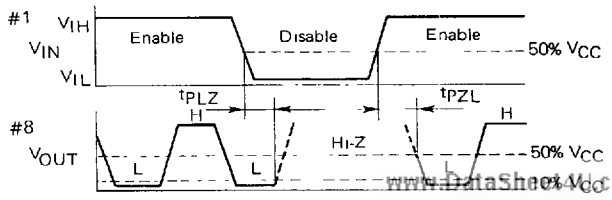
*1 Inclusive of calibration tolerance at 25°C, operating temperature, operating voltage range, load change, aging, shock and vibration.
*2 Rise time (0 to 4.5V) of $V_{CC} > 150\ \mu s$
*3

Freq.	1.5 to 10	10+ to 26	26+ to 46	46+ to 70	MHz
I_{CC}	10	15	35	50	mA
t_r, t_f	12	12	10	5	ns

Output waveform



Enable/Disable (t_{PLZ}, $t_{PZL} \leqq 100$ ns)



#1: V_{IN} = V_{IH} or Open → Enable/F_{OUT}
#1: V_{IN} = V_{IL} or GND → Disable/Hi-Z

Test circuit

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