

PIN DESCRIPTIONS

Number	Name	I/O	Configuration	Description
1	VIN	Input		Frequency control input.
2	CLK_EN	Input	Internal pull-up resistor ¹	Clock Enable Logic 1 enables normal operation. Logic 0 stops the output clock; nFOUT is held high, FOUT is held low.
3	GND	Ground		Power supply ground connection.
4	FOUT	Output	No internal terminator	Clock output pair. Differential LVPECL.
5	nFOUT			
6	VCC	Power		Power supply connection, connect to +3.3V.

Table 2: Pin Descriptions

Note 1: See "Clock Enable Pull-up" in Table 5 (DC Characteristics for M675S02 on pg. 3).

ABSOLUTE MAXIMUM RATINGS¹

Symbol	Parameter	Rating	Unit
V_I	Inputs	-0.5 to $V_{CC} + 0.5$	V
V_O	Outputs	-0.5 to $V_{CC} + 0.5$	V
V_{CC}	Power Supply Voltage	4.0	V
T_S	Storage Temperature	-55 to +125	°C

Table 3: Absolute Maximum Ratings

Note 1: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These ratings are stress specifications only. Functional operation of product at these conditions or any conditions beyond those listed in Recommended Conditions of Operation, DC Characteristics, or AC Characteristics is not implied. Exposure to absolute maximum rating conditions for extended periods may affect product reliability.

RECOMMENDED CONDITIONS OF OPERATION

Symbol	Parameter	Min	Typ	Max	Unit
V_{CC}	Positive Supply Voltage	2.97	3.3	3.63	V
T_A	Ambient Operating Temperature	-40		+85	°C

Table 4: Recommended Conditions of Operation

ELECTRICAL SPECIFICATIONS

DC Characteristics for M675S02

Unless stated otherwise, $V_{CC} = 3.3 \text{ Volts} \pm 10\%$, $T_{CASE} = -40 \text{ to } 85^\circ\text{C}$, VCSO Frequency = 622.08, Outputs terminated with 50Ω to $V_{CC}-2.0\text{V}$ ground

	Symbol	Parameter	Pin	Min	Typ	Max	Unit
Power Supply	V_{CC}	Positive Supply Voltage	VCC	2.97	3.3	3.63	V
	I_{CC}	Power Supply Current			100	120	mA
Control Voltage	V_{IN}	Input Control Voltage Range	VIN	0		3.3	V
		V_{IN} Input Impedence		20			k Ω
Clock Enable Pull-up	V_{IH}	Input High Voltage		2		$V_{CC} + 0.3$	V
	V_{IL}	Input Low Voltage		-0.3		0.8	V
	I_{IH}	Input High Current	F_SEL			70	μA
	I_{IL}	Input Low Current		-150			μA
	R_{pullup}	Internal Pull-up Resistor			51		k Ω
Differential Outputs	V_{OH}	Output High Voltage		$V_{CC} - 0.98$		$V_{CC} - 0.75$	V
	V_{OL}	Output Low Voltage		$V_{CC} - 1.95$		$V_{CC} - 1.63$	V
	V_{P-P}	Peak to Peak Output Voltage ¹	FOUT, nFOUT	0.45	0.625	0.85	V _{P-P}
	I_{OUT}	Output Current				20	mA

Note 1: Single-ended measurement. See Figure 3, Output Rise and Fall Time, on pg. 4.

Table 5: DC Characteristics for M675S02

AC Characteristics for M675S02

Unless stated otherwise, $V_{CC} = 3.3 \text{ Volts} \pm 10\%$, $T_{CASE} = -40 \text{ to } 85^\circ\text{C}$, VCSO Frequency = 622.08, Outputs terminated with 50Ω to $V_{CC}-2.0\text{V}$ ground

	Symbol	Parameter		Min	Typ	Max	Unit	Notes
Control Voltage	V_{IN}	Modulation Bandwidth	VIN		600		kHz	
Output	F_{OUT}	Output Center Frequency Range		500		1000	MHz	
	APR	Absolute (Guaranteed) Pull-Range ¹		± 120			ppm	
	f_{STAB}	Frequency Stability			± 120		ppm p-p	At any given V_{IN}
	L_{IN}	Tuning Linearity			± 10		%	$V_{IN} = 0.3 \text{ to } 3.0\text{V}$
	K_{VCO}	VCO Gain	@622.08MHz		330		ppm/V	$V_{IN} = 0.3 \text{ to } 3.0\text{V}$
		Non-harmonic Spurious				-60	dBc	
	Φ_n	100Hz Offset			-55		dBc/Hz	
	SSB (single sideband) Phase	1kHz Offset			-85		dBc/Hz	
	Noise, offset from carrier	10kHz Offset			-110		dBc/Hz	
	@622.08MHz	100kHz Offset			-130		dBc/Hz	
		1MHz Offset			-143		dBc/Hz	
		10MHz Offset			-147		dBc/Hz	
	J(t)	Jitter (rms)	12kHz to 20MHz		0.155		ps rms	
		@622.08MHz	50kHz to 80MHz		0.170		ps rms	
	odc	Output Duty Cycle ²		45		55	%	
	t_R	Output Rise Time ² for FOUT, nFOUT			200	300	ps	20% to 80%
	t_F	Output Fall Time ² for FOUT, nFOUT			200	300	ps	20% to 80%

Note 1: Also fully meets ± 50 ppm minimum pull-range specification that is commonly required.
 Note 2: See Parameter Measurement Information on pg. 4.

Table 6: AC Characteristics for M675S02

PARAMETER MEASUREMENT INFORMATION

Output Rise and Fall Time

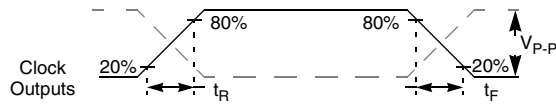


Figure 3: Output Rise and Fall Time

Output Duty Cycle

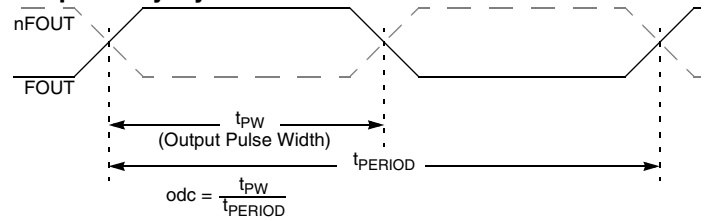


Figure 4: Output Duty Cycle

DEVICE PACKAGE - 5 x 7.5mm SMT (Surface Mount) Package

Mechanical Dimensions:

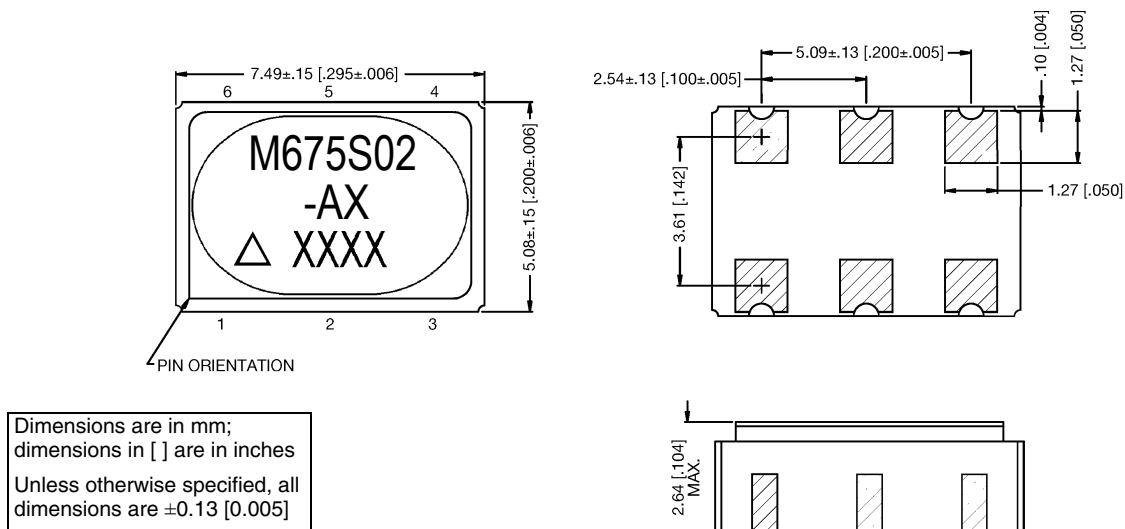


Figure 5: Device Package - 5 x 7.5mm SMT (Surface Mount) Package

ORDERING INFORMATION

Part Numbering Scheme

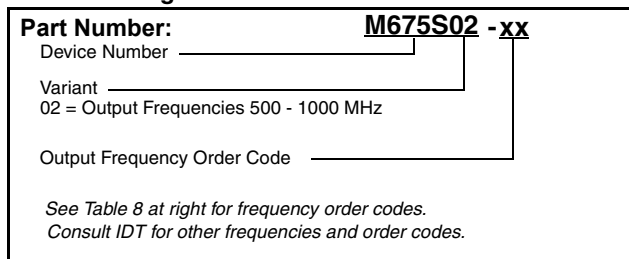


Figure 6: Part Numbering Scheme

Example Order Numbers

For Output Frequencies (MHz) <i>Frequency</i>	Order Part Number <i>M675S02-xx</i>
622.0800	M675S02-AA
625.0000	M675S02-AB

Table 7: Example Order Numbers

Consult IDT for the availability of other frequencies

M675S02 Standard Output Frequencies & Order Codes

500.0000 CA	693.4830 AL
622.0800 AA	657.4219 AM
625.0000 AB	614.4000 AO
627.3296 AC	475.0000 AP
644.5313 AD	707.3527 AQ
666.5143 AE	624.7048 AR
669.1281 AF	777.6000 AS
669.3120 AG	699.5175 AT
669.3266 AH	696.6149 AU
670.8386 AI	698.8123 AV
672.1627 AJ	873.5154 AY
690.5692 AK	873.8115 AZ

Table 8: M675S02 Standard Output Frequencies & Order Codes