FORDAHL-FOQ GROUP FREQUENCY CONTROL PRODUCTS

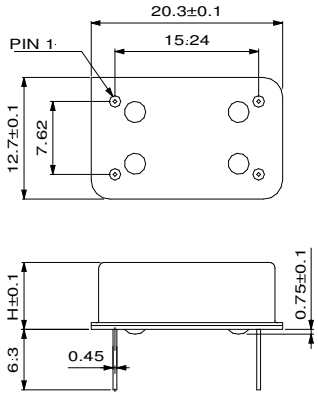
TTL OR HCMOS PRECISION OSCILLATORS

DFN 14-K & DFN 114-K

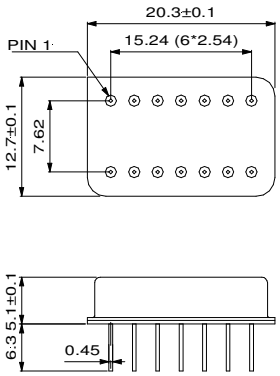
KEY FEATURES
1 to 70 MHz
± 15 ppm overall stability available
Encapsulated crystal
APPLICATIONS
Sonet/SDH/Avionics/High rel. clocks

Function	DFN 14	DFN 114
NC/Trim/Enable	1	1
GND	7	7
Output	8	8
Vcc	14	14
NC		others

DFN 14



DFN 114



H = 5.10 mm

TYPE	DFN 14-KH & DFN 114-KH	DFN 14-KT & DFN 114-KT
Frequency Range	1 to 70 MHz	1 to 70 MHz

ELECTRICAL SPECIFICATIONS			
supply voltage		5 V ± 10 %	5 V ± 10 %
supply current (no load)	≤ 25 MHz	≤ 10 mA (KH), 20 mA (KHZ)	≤ 20 mA
	> 25 MHz	≤ 40 mA (KH), 50 mA (KHZ)	≤ 50 mA
output load		HCMOS 50 pF up to 25 MHz, 15 pF above	10 TTL
duty cycle		40/60 ...60/40 % @ 50% level	40/60...60/40 % @ 1.4 V
rise/fall times (HCMOS @ 15 pF load)		10 to 90 % ≤ 10 ns up to 25 MHz or ≤ 5 ns > 25 MHz	0.4 to 2.4 V ≤ 5 ns up to 25 MHz or ≤ 3 ns > 25MHz
high/low levels		≥ 4.5 V/ ≤ 0.5 V	≥ 2.4 V/ ≤ 0.4 V
start up		≤ 10 ms @ 4.5 V	≤ 10 ms @ 4.5 V

FREQUENCY STABILITY		stability [ppm] and temperature code					
types	temperature range	stability	code	stability	code	stability	code
all types	0 to 70°C	≤ ± 15	XB15	≤ ± 25	XB25	≤ ± 50	XB50
	-40 to 85°C	≤ ± 25	XE25	≤ ± 50	XE50	≤ ± 100	XE100
	-55 to 125°C	≤ ± 50	XH50	≤ ± 75	XH75	≤ ± 100	XH100
remark		includes calibration at 25°C, temperature, ageing, Vcc and load changes 1st year					

OPTIONS	CODE		
tight symmetry (f ≤ 50 MHz)	R	45/55...55/45 %	45/55...55/45 %
tri-state control (higher current)	Z	high or open = enable, low = high Z	high or open = enable, low = high Z

ORDERING CODE	type + option code + frequency + temperature code	
Example	DFN 14-KH 49.152 MHz XB15	DFN 114-KTR 32.000 MHz XH50

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GENERIC ORDERING CODES

SOME EXAMPLES													
TYPE	**1**	**2**	**3**		**4**	**5**	**6**	**FREQUENCY**	**7**	**8**	**9**	**10**	**11**
PXO	DFN	1	14	-	K	H	Z	68.736 MHz		X	H	100	
VCXO	DFV		14	-	K	H		32.768 MHz	100	A	B	25	
TCXO	DFA		S7	-	K	O	A	16.384 MHz			C	1	
VC-TCXO	DFAV		36	-	M	H		10.000 MHz	40		C	2	/12

1. TYPE CODE	**2. VERSION**	**3. PACKAGE CODE**			**4. INTERNAL CODE**	**5. OUTPUT CODE**
		Through hole	**Surface mount**			
DFN = CXO/PXO	model no.	14 = DIL 14	S1 = epoxy	14 x 9 mm	not for	T = TTL
DFV = VCXO	not for	4 = DIL 8	S2 = epoxy	7 x 5 mm	customer use	H = HCMOS
DFA = TCXO	customer use	20 = 20 x 20 mm	S3 = epoxy	9 x 7 mm		B = TTL & HCMOS
DFO = OCXO		36 = 36 x 27 mm	S4 = epoxy	24 x 22 mm		E = Negative ECL 10KH
DFAV = VC-TCXO			S5 = plastic	14 x 9 mm		EC = Pos. ECL 10KH/100K
DFT = FCXO			S7 = epoxy	20 x 12 mm		LEC = LVPECL 100K
			S8 = epoxy	20 x 12 mm		L = LVDS
			S10 = ceramic	14 x 9 mm		O = Clipped square wave
			S11 = ceramic	7 x 5 mm		S = Sine wave
			S13 = epoxy	11 x 9 mm		
			S15 = ceramic	5 x 3.2 mm		
			S16 = ceramic	3.2 x 2.5 mm		
			S17 = ceramic	2.5 x 2 mm		

6. OPTION CODE (IF NEEDED)	**7. PULLING RANGE CODE**	**8. INDICATION CODE**		**9. TEMPERATURE RANGE**	
		General	**VCXO**		
Z = tri-state		X = overall frequency	A= 0.5 to 4.5 V range	A = 0 to 50°C	K = -30 to 60°C
L = low power model		stability 1 year or	center @ 2.5 V	L = 0 to 60°C	R = -30 to 70°C
R = tight symmetry	value in ppm	long term ageing	(only DIL-14)	B = 0 to 70°C	N = -30 to 75°C
P = complimentary outputs		code		M = -10 to 50°C	T = -30 to 85°C
G = inverted pin-out			C= 0.5 to 10 V range	D = -10 to 60°C	F = -40 to 70°C
T = external trimmer			center @ 4.25 V	I = -10 to 70°C	E = -40 to 85°C
A = internal trimmer		void = temperature		Q = -20 to 60°C	G = -55 to 105°C
V = external control voltage		stability only	D= 0.3 to 3.0 V range	C = -20 to 70°C	H = -55 to 125°C
Y = external potentiometer			center @ 1.65 V	P = -25 to 75°C	
I = enable/disable					
			void = standard spec		

10. FREQUENCY STABILITY	**11. SUPPLY VOLTAGE / LONG TERM AGEING CODE**
frequency stability expressed in ppm, either as an overall tolerance or as temperature stability only.	indicates the supply voltage value in Volts for models offering different options of supply voltage for (VC)-TCXO indicates long term ageing for surface mount PXO

NON-STANDARD SPECIFICATIONS
Specifications that cannot be covered by the above codes will be issued a unique specification number

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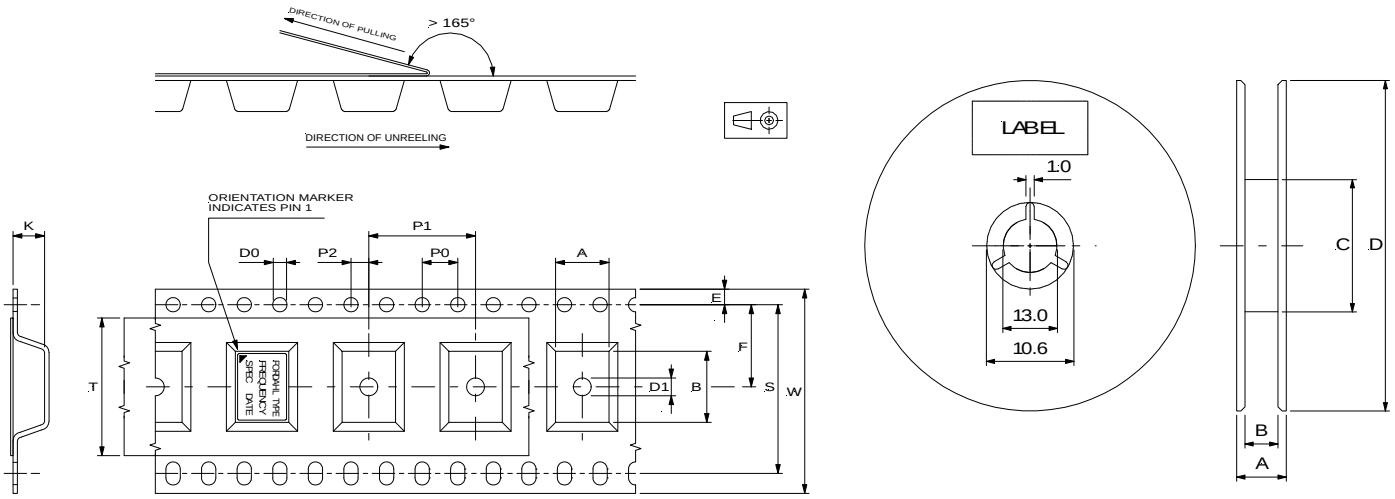
FORDAHL SMD PRODUCTS : TAPE & REEL DIMENSIONS



Materials:	Carrier tape	: conductive polycarbonate
	Cover tape	: polyester, antistatic coated
	Reel	: conductive or antistatic treated polystyrene

Product type	Oscil.	Tape [mm]													MOQ	Reel [mm]			
		A	B	E	F	K	S	T	W	D0	D1	P0	P1	P2	[pcs]	A	B	C	D
S1	PXO VCXO TCXO	9.4	15	1.75	11.5	6.25	-	21.3	24	1.55	2.0	4.0	12	2.0	**250**	27.8	24.7	60	180
															1000	30.5	26.1	100	330
S2	PXO VCXO TCXO	5.5	8.7		7.5	3.6	-	13.3	16		1.5		8		**500**	19.8	16.7	60	180
															2000	21.4	17.0	100	330
S4	TCXO	26.5	26.5		20.2	7.5	40.4	37.5	44		1.0		32		**250**	49.6	45.2	100	330
S7	VCXO	13.2	20.2		14.2	9.5	28.4	25.3	32		2.0		24		**250**	39.6	35.2	100	330
	TCXO					8.0							20		**450**				
S8	PXO	13.2	20.2		14.2	5.3	28.4	25.3	32		2.0		20		**600**	39.6	35.2	100	330
															250				

Please consult factory for details on S5, S11, S15, S16 and S17

NOTICE

1. Storage

Please store the products in room where temperature / humidity is stable. Conditions should be:
Temperature : 5 to 35°C
Humidity : 30 to 60% RH
If products are stored for more than a year, solderability may be degraded. Please confirm it regularly.

2. Transportation

If you transport the products, please pack them so that the package will not be damaged by mechanical vibration / shock and please educate and guide a carrier to prevent rough handling.

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RoHS SMD PRODUCTS SOLDERING GUIDELINES

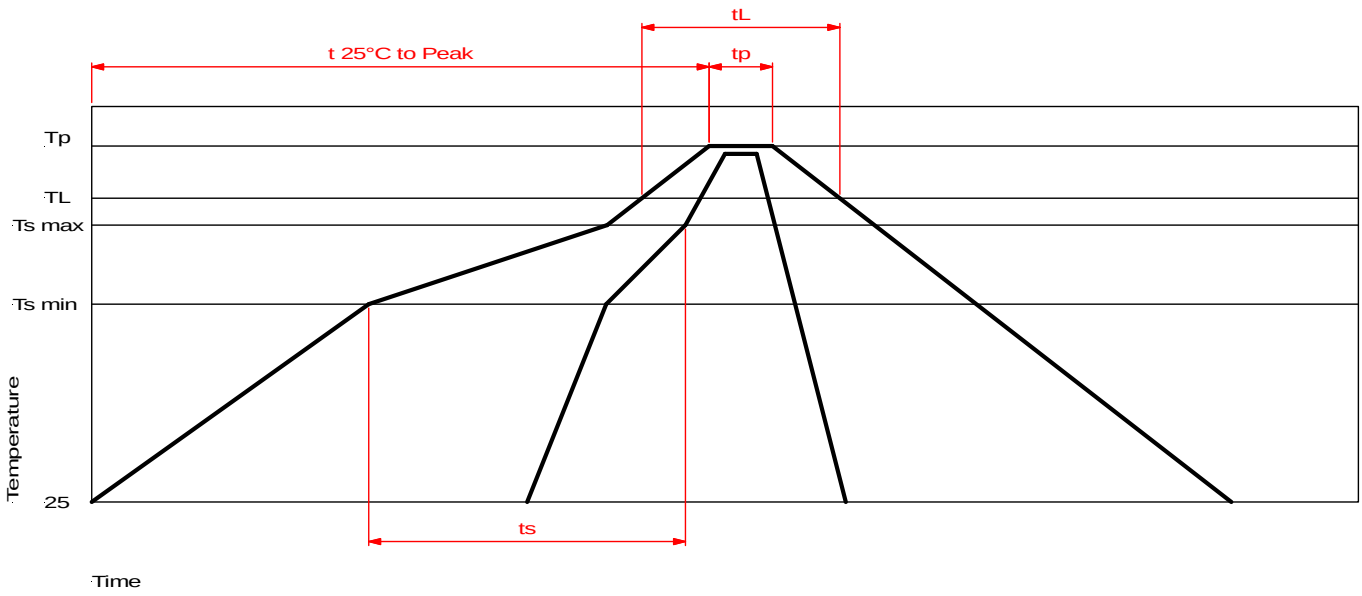
1. WASHING CONDITIONS

Our non hermetic SMD products are strictly non-washable as liquid cleaning solutions could penetrate the base to cap seal.

No-washing type flux with no washing is highly recommended. Please consult factory for any other process.

2. REFLOW SOLDERING CONDITIONS

Reflow profile:



PROFILE DATA		
Minimum preheat temperature	Ts min	150°C
Maximum preheat temperature	Ts max	200°C
Preheat time	Ts min to TS max	90 - 180 seconds
Average ramp-up rate	Ts max to Tp	3°C/second max.
Reflow temperature	TL	217°C
Reflow time	tL	60 - 150 seconds
Peak temperature	TP	According to Jedec J-STD-020C
Peak time	tp	20 - 40 seconds
Average down ramp rate		6°C/seconds max.
Time 25°C to peak temperature		8 min max.

This profile is applicable for the following packages: S1, S2, S3, S4, S5, S7, S8, S11, S13, and S15

Additional recommendations:

- do not vibrate during reflow soldering
- do not reflow solder on back side
- Only one reflow is allowed
- solder adhesion may vary depending on the motherboard's thermal capacity and other factors

Hand soldering (not recommended):

Maximum temperature: 300°C/5 sec, fine tipped soldering iron