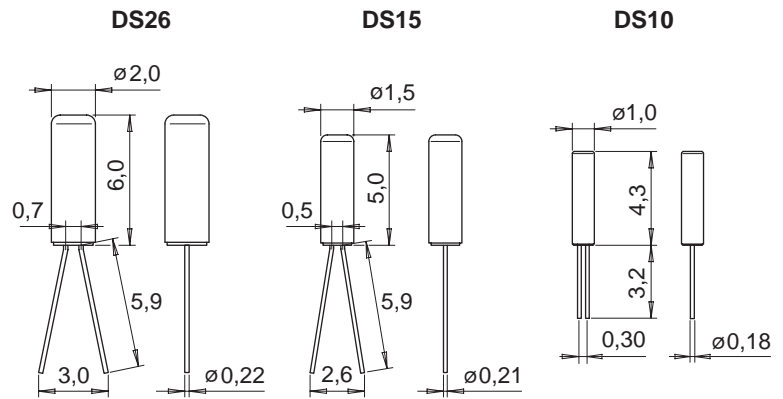




DIMENSIONS



All dimensions in mm typical

APPLICATIONS

IoT
Watches
Industrial
Consumer Electronics
Timers and Clock Sources

DESCRIPTION

The DS – Series are low frequency through-hole technology Watch Quartz Crystal Units which incorporate a tuning fork Quartz Crystal Resonator. They operate under vacuum in a hermetically sealed tubular metal can package.

FEATURES

High stability is guaranteed by the hermetic sealed package.
High shock and vibration resistant.
Smallest available tubular package DS10 with Ø 1.0 mm.
Very price competitive product.
RoHS-compliant. 100% Pb-free available.

ELECTRICAL CHARACTERISTICS AT 25°C

Package Size		DS26	DS15	DS10	
Standard frequency	F_L	32.768			kHz
Load capacitance	C_L	7.0 / 8.2 / 9.0 / 12.5			pF
Frequency tolerance	$\Delta F/F$	±20			ppm
	$\Delta F/F$	±30			ppm
	$\Delta F/F$	±100			ppm
Series resistance typ./max.	R_S	30 / 42	35 / 50	40 / 60	kΩ
Motional capacitance typ.	C_1	2.25	2.25	2.4	fF
Static capacitance typ.	C_0	0.9			pF
Drive level max.	P	1.0			μW
Insulation resistance min.	R_i	500			MΩ
Aging first year max.	$\Delta F/F$	±3			ppm
Turnover temperature	T_0	25 ±5			°C
Frequency vs. temperature	$\Delta F/F_0$	-0.035 ppm/°C² (T - T ₀)² ±10%			ppm

1) Other load capacitances on request.

2) Tighter and wider frequency tolerances on request.



STANDARD FREQUENCIES

Frequency
32.768 kHz

ENVIRONMENTAL CHARACTERISTICS

		Conditions	Max. Dev.
Storage temperature range		-20 to +70°C	
TA Operating temperature range		-10 to +60°C	
Shock resistance	ΔF/F	5000 g, 0.3 ms, ½ sine	±5 ppm
Vibration resistance	ΔF/F	20 g / 10–2000 Hz	±5 ppm

TERMINATIONS AND PROCESSING

Type	Termination	Processing
DS26-L3N	Can: Ni plated Leads: Straight leads SnCu plated	For through-hole mounting Wave or hand soldering Max. 230°C / 5 sec. leads only 
DS15-L3N		
DS10-L3N		
DS15-T1N	Can: Ni plated Leads: Straight leads Au flashed	For through-hole mounting Wave or hand soldering Max. 230°C / 5 sec. leads only 
DS10-T1N		

ORDERING INFORMATION

DS10-L3N 32.768 kHz 8.2 pF ±30 ppm TA

<p>Watch crystal ———</p> <p>Package size ——— 26 = Ø 2.0 x 6.0 mm 15 = Ø 1.5 x 5.0 mm 10 = Ø 1.0 x 4.3 mm</p> <p>Package type ——— L3 = SnCu plated leads (Pb-free) T1 = Au flashed leads</p> <p>Straight leads ———</p>	<p>Frequency F_L ———</p> <p>Load capacitance C_L ——— 7.0 pF 8.2 pF 9.0 pF 12.5 pF Other C_L on request</p> <p>Frequency tolerance ——— ±20 ppm ±30 ppm ±100 ppm Tighter and wider freq. tolerances on request</p> <p>Temperature range ——— TA = -10 to +60°C</p>
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A unique part number will be generated for each product specification, i.e:	
20xxxx-BA01	1'000 pcs (in plastic bag)

All specifications subject to change without notice.