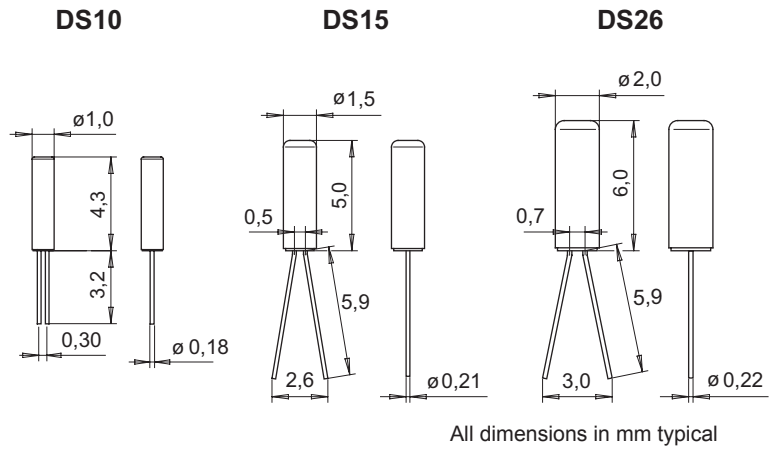




### DIMENSIONS



**Very small metal-can packages**  
**High stability**  
**Low aging**  
**Low power consumption**  
**High shock and vibration resistance**

### DESCRIPTION:

The DS-crystal-series are tubular metal-can packages in the standardized watch-crystal sizes DS26 =  $\varnothing 2 \times 6.0$  mm, DS15 =  $\varnothing 1.5 \times 5.0$  mm and DS10 =  $\varnothing 1 \times 4.3$  mm for thru-hole applications.

Within the package is a high-quality tuning fork quartz crystal resonator, manufactured with precision high-volume photolithographic process and operating in the fundamental mode at 32.768 kHz.

Due to highly automated, large-volume production, the DS-crystal-series is very price competitive and ideal for any consumer application.

DS Products are supplied in plastic-bags (1'000 pcs.)

### ELECTRICAL CHARACTERISTICS AT 25°C:

Package Size		DS26	DS15	DS10	
Nominal frequency	$F_L$	32.768	32.768	32.768	kHz
Load capacitance	$C_L$ <sup>1)</sup>	8.2	8.2	8.2	pF
Frequency tolerance	$\Delta F/F$ <sup>2)</sup>	+/-20	+/-20	+/-20	ppm
	$\Delta F/F$	+/-30	+/-30	+/-30	ppm
	$\Delta F/F$	+/-100	+/-100	+/-100	ppm
Series resistance typ./max.	$R_s$	30 / 42	35 / 50	45 / 60	k $\Omega$
Motional capacitance typ.	$C_1$	2.1	2.1	2.4	fF
Static capacitance typ.	$C_0$	0.9	0.9	0.9	pF
Drive level max.	P	1.0	1.0	1.0	$\mu$ W
Insulation resistance min.	$R_i$	500	500	500	M $\Omega$
Aging first year max.	$\Delta F/F$	+/-3	+/-3	+/-3	ppm
Turnover temperature	$T_0$	25 +/-5	25 +/-5	25 +/-5	$^{\circ}$ C
Frequency vs. temperature	$\Delta F/F_0$	$-0.035 \text{ ppm}/^{\circ}\text{C}^2 (T - T_0)^2$			+/-10% ppm

1) Other load capacitances on request.

2) Tighter and wider frequency tolerances on request.

**ENVIRONMENTAL  
CHARACTERISTICS:**

		Conditions	Max. Dev.
Storage temperature range		-20 to +70°C	
Operating temperature range		-10 to +60°C	
Shock resistance	ΔF/F	5000 g, 0.3 ms, 1/2 sine	+/-5 ppm
Vibration resistance	ΔF/F	20 g / 10-2000 Hz	+/-5 ppm

**TERMINATIONS AND  
PROCESSING:**

Type	Termination	Processing
DS26-T1N	Can: Ni plated Leads: Straight leads Au flashed	Thru-hole mounting Wave or hand soldering Max. 280°C / 5 sec. leads only
DS15-T1N	Can: Ni plated Leads: Straight leads Au flashed	Thru-hole mounting Wave or hand soldering Max. 280°C / 5 sec. leads only
DS10-T1N	Can: Ni plated Leads: Straight leads Au flashed	Thru-hole mounting Wave or hand soldering Max. 280°C / 5 sec. leads only

**PRODUCT DESCRIPTION AND  
ORDERING INFORMATION:**

**DS26 – T1N**  
**DS15 – T1N**  
**DS10 – T1N**

**32.768kHz 8.2 pF +/-30ppm**

**Frequency  $F_L$**  \_\_\_\_\_  
 **$C_L$  Load Capacitance** \_\_\_\_\_  
**8.2 pF**  
**9.0 pF**  
**12.5 pF**  
**Frequency tolerance** \_\_\_\_\_  
**+/- 20 ppm**  
**+/- 30 ppm**  
**+/- 100 ppm**

A unique part number will be generated for each product specification, i.e:  
20xxxx-BA01 1'000 pcs (in plastic-bag)

Please contact us.

All specifications subject to change without notice.



Micro Crystal AG  
Mühlestrasse 14  
CH-2540 Grenchen  
Switzerland

Tel. +41 32 655 82 82  
Fax +41 32 655 82 83  
sales@microcrystal.com  
www.microcrystal.com