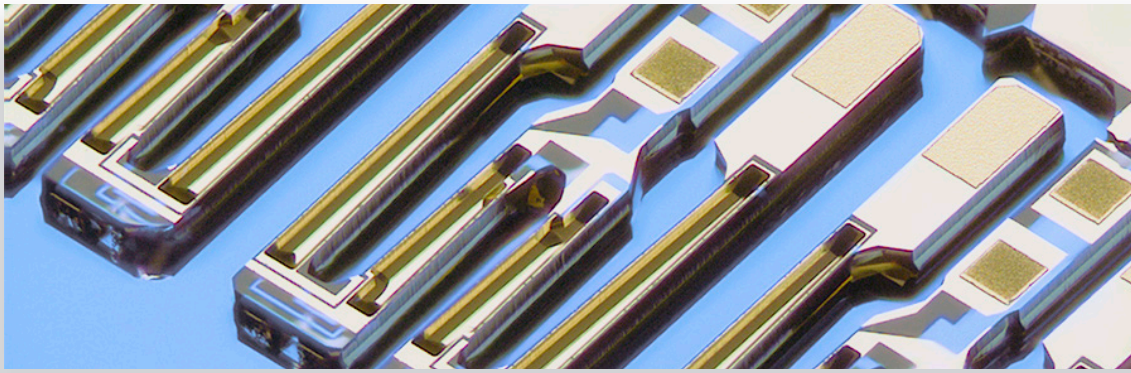
MICRO CRYSTAL SWITZERLAND

A COMPANY OF THE SWATCH GROUP

Micro Crystal



kHz Tuning Fork Crystals

MHz AT-Cut Crystals

Real-Time Clock Modules

Temperature Sensor Module

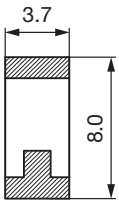
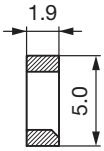
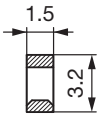
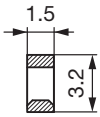
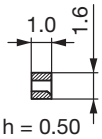
kHz Oscillators

Medical Implantable Products



Short Form Catalog Q3 2025

kHz Tuning Fork Crystals in Ceramic Packages

Crystal Type		30.0 kHz to 2'000 kHz Tuning Fork Crystals						Units
Product Type		**CC1V-T1A**	**CC4V-T1A**	**CM7V-T1A**	**CM7V-T1A low ESR**	**CM8V-T1A**	**CM9V-T1A**	
Dimensions (l × w × h)		8.0 x 3.7 x 1.75	5.0 x 1.9 x 0.90	3.2 x 1.5 x 0.65	3.2 x 1.5 x 0.65	2.0 x 1.2 x 0.60	1.6 x 1.0 x 0.50	mm
RoHS COMPLIANT, Pb lead-free, REACH COMPLIANT				 h = 0.35 on request		 h = 0.35 on request	 h = 0.35 on request	mm
3D PCB Symbol, Footprint & 3D Model available on product pages on website		 h = 1.75	 h = 0.90	 h = 0.65	 h = 0.65	 h = 0.60	 h = 0.50	mm
Lid Material		Ceramic	Ceramic	Metal	Metal	Metal	Metal	
Operating Temp. Range TA		-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	°C
Operating Temp. Range TB	1)	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	°C

Frequency	F_L	32.768	32.768	32.768	32.768	32.768	32.768	kHz
Standard Load Capacitance 2)	C_L	9 / 12.5	6 / 7 / 9 / 12.5	6 / 7 / 9 / 12.5	6 / 7 / 9 / 12.5	4 / 7 / 9 / 12.5	4 / 7 / 9 / 12.5	pF
Frequency Tolerance @ 25°C 3)	ΔF/F	±20	±20	±20	±20	±20	±20	ppm
Series Resistance typ./max.	R_S	40 / 60	50 / 65	50 / 70	40 / 50	55 / 70	60 / 75	kΩ
Motional Capacitance typ.	C_1	2.0	2.1	3.7	4.7	4.7	6.3	fF
Static Capacitance typ.	C_0	1.6	1.2	1.2	1.3	1.2	1.4	pF
Drive Level max.	P	1.0	1.0	1.0	1.0	0.5	0.5	µW
Aging max. 1st Year @ 25°C	ΔF/F	±3	±3	±3	±3	±3	±3	ppm
Turnover Temperature	T_0	25 ±5	25 ±5	25 ±5	25 ±5	25 ±5	25 ±5	°C
Frequency vs. Temperature	ΔF/F	-0.035 ppm/°C² $(T-T_0)^2$ ±10%						ppm

1) Also available in -55 to +125°C temp. range (TC).
2) Other load capacitance on request.
3) Tighter and wider frequency tolerances on request.

Applications

- IoT
- Computing
- Automotive
- Wireless Units
- Smart Metering
- Industrial Control
- Embedded Modules
- GPS and Navigation
- Tablets, Smart Phones
- Security and Access Control
- Wearables, Portable Devices
- Remote Keyless Entry Systems
- High Temperature Range Designs
- Ultra Small Size Devices, Smart Cards
- Healthcare, Medical and Medical Implantable

Ordering Information

C M 7 V - T 1 A 0.3 32.768 kHz 12.5 pF ±20 ppm TA QC

Ceramic package

Package lid
C = Ceramic lid
M = Metal lid

Package size
1 = 8.0 x 3.7 x 1.75 mm
4 = 5.0 x 1.9 x 0.90 mm
5 = 4.1 x 1.5 x 0.90 mm
7 = 3.2 x 1.5 x 0.35 / 0.65 mm
8 = 2.0 x 1.2 x 0.35 / 0.60 mm
9 = 1.6 x 1.0 x 0.35 / 0.50 mm

Tuning fork

SMD package

Au flashed pads

2 pads

Frequency F_L

Load capacitance C_L

Frequency tolerance

Temperature range
TA = -40 to +85°C (Standard)
TB = -40 to +125°C

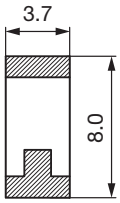
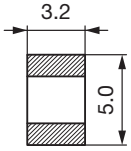
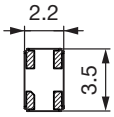
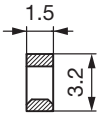
Qualification
QC = Commercial Grade (Standard)
QA = Automotive Grade AEC-Q200
QM = Medical Grade (see page 6)

Special feature
0.3 = Lowest profile, 0.35 mm
Low ESR = 50 kΩ max.



Micro Crystal: kHz Quartz Crystals

MHz AT-Cut Crystals in Ceramic Packages

Crystal Type	MHz AT-Cut Crystals					
Product Type	**CC1A/F**	**CC2A**	**CC6A/F**	**CC7A**	**CC8A**	**CM8A**
Dimensions (l × w × h) mm	8.0 x 3.7 x 1.75	5.0 x 3.2 x 1.20	3.5 x 2.2 x 1.00/0.80	3.2 x 1.5 x 0.75	2.0 x 1.2 x 0.60	2.0 x 1.2 x 0.60
			 4 or 2 pads			
PCB Symbol, Footprint & 3D Model available on product pages on website	 h = 1.75	 h = 1.20	 h = 1.00/0.80	 h = 0.75	 h = 0.60	 h = 0.60

Standard (Fundamental Mode)								
Product Type	**Number of pads**	**Frequency MHz**	**Widest Temp. Range °C**	**Frequency Tol. @ 25°C ± ppm** [1]	**Stability Options ΔF/F₀ ± ppm** [2]	**R_S typ. in Ω @ Fmin - Fmax**	**C_1 typ. in fF @ Fmin - Fmax**	**C_0 typ. in pF @ Fmin - Fmax**
CC1A-T1A	2	8 - 30	-55 to +125	50	50/80/100	60 - 30	4 - 11	2.0 - 4.0
CC1F-T1A	2	30 - 250	-55 to +125	50	30/80/100	35 - 15	4 - 7	2.0 - 4.0
CC2A-T1A	2	12 - 70	-55 to +125	50	50/80/100	60 - 10	3 - 12	2.0 - 5.0
CC6A-T1D	4	16 - 70	-55 to +125	50	50/80/100	60 - 20	2 - 5	1.5 - 3.0
CC6F-T1A	2	70 - 250	-55 to +125	50	30/80/100	30 - 15	5 - 6	2.4 - 3.2
CC7A-T1A	2	20 - 50	-55 to +125	50	50/80/100	40 - 25	2 - 2	0.7 - 0.7
CC8A-T1A	2	24 - 50	-55 to +125	50	50/80/100	40 - 20	1 - 1	0.7 - 0.7
CM8A-T1D	4	24 - 50	-55 to +125	50	50/80/100	40 - 20	1 - 1	0.7 - 0.7
High Temperature / Harsh Environment (Fundamental Mode)								
CC1A-T1A H	2	8 - 24	-55 to +200	50	100/150/250	100 - 50	4 - 9	2.0 - 3.2
CC2A-T1A H	2	14 - 40	-55 to +200	50	100/150/250	70 - 40	5 - 10	2.5 - 4.0
CC6A-T1D H	4	16 - 40	-55 to +200	50	100/150/250	80 - 50	2 - 4	1.5 - 2.5

1) Tighter frequency tolerances on request.
2) Tighter thermal stability on request.

Applications

Customer-specific applications such as:

- Filters
- Industrial
- Telemetry
- Animal Tracking
- Optical Network
- Avionics / Aerospace
- Radio Communication
- Geothermal Equipment
- TCXO, VCTCXO, VCXO
- Downhole and Well Drilling
- Healthcare, Medical and Medical Implantable

Ordering Information

C C 6 A - T 1 D H 24.000 MHz 20.0 pF ±50 ppm TC QI

Ceramic package

Package lid
C = Ceramic lid
M = Metal lid

Package size
1 = 8.0 x 3.7 x 1.75 mm
2 = 5.0 x 3.2 x 1.20 mm
6 = 3.5 x 2.2 x 1.00 / 0.80 mm
7 = 3.2 x 1.5 x 0.75 mm
8 = 2.0 x 1.2 x 0.60 mm

Quartz blank
A = AT-Cut
F = AT-Cut inverted mesa

SMD package

Au flashed pads

Number of pads
A = 2 pads
D = 4 pads

Frequency F_L

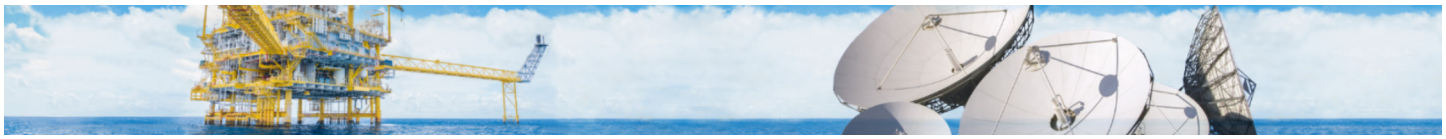
Load capacitance C_L

Frequency tolerance

Temperature range
TA = -40 to +85°C (Standard)
TB = -40 to +125°C
TC = -55 to +125°C
TD = -55 to +175°C
TG = -55 to +200°C
TX = Custom

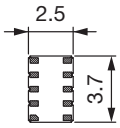
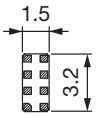
Qualification
QI = Industrial Grade (Standard)
QM = Medical Grade (see page 6)
QS = Custom Specification

Special feature
H = Harsh environment



Micro Crystal: MHz Quartz Crystals

RTC Modules in Ceramic Packages

Product Type	RV-xxxx-C3	RV-xxxx-C7	RV-xxxx-C8
Dimensions (l × w × h) mm	3.7 x 2.5 x 0.90	3.2 x 1.5 x 0.80	2.0 x 1.2 x 0.60 / 0.70
			
PCB Symbol, Footprint & 3D Model available on product pages on website	 h = 0.90	 h = 0.80	RV-3028-C8: h = 0.60 RV-8x63-C8: h = 0.70  h = 0.60 / 0.70
Lid Material	Metal	Metal	Metal

Standard RTC Modules

Product Type	Interface	Special Feature	Time Accuracy ppm @ 25°C	Time Accuracy ppm -40 to +85°C	Supply V_{DD} V	Current I_{DD} nA	T_{OPR} °C	Offset Comp.	Backup Switch	Trickle Charge	Event Input	RAM Bytes	EEPROM Bytes
RV-3028-C8	I²C	Ultra-Small	±1		1.1 to 5.5	70	-40 to +85	✓	✓	✓	✓	2	43
RV-8263-C8	I²C	Ultra-Small	±20		0.9 to 5.5	190	-40 to +85	✓				1	
RV-3028-C7	I²C	Lowest Power	±1		1.1 to 5.5	45	-40 to +85	✓	✓	✓	✓	2	43
RV-4162-C7	I²C	Small Package	±20		1.0 to 4.4	350	-40 to +85	✓					
RV-8263-C7	I²C	Low Power	±20		0.9 to 5.5	190	-40 to +85	✓				1	
RV-8564-C3	I²C		±20		1.2 to 5.5	250	-40 to +85						
RV-8523-C3	I²C	Low Power	±20		1.2 to 5.5	130	-40 to +85	✓	✓				
RV-3032-C7	I²C	Highest Accuracy 12-bit T-Sensor		±2.5	1.3 to 5.5	160	-40 to +105	✓	✓	✓	✓	16	32
RV-8803-C7	I²C	Highest Accuracy		±3.0	1.5 to 5.5	240	-40 to +105	✓			✓	1	
RV-3129-C3	I²C	Highest Accuracy 8-bit T-Sensor		Opt. A: ±6 Opt. B: ±25	1.3 to 5.5	800	-40 to +125		✓	✓		8	2
RV-8063-C8	SPI	Ultra-Small	±20		0.9 to 5.5	190	-40 to +85	✓				1	
RV-8063-C7	SPI	Low Power	±20		0.9 to 5.5	190	-40 to +85	✓				1	
RV-3149-C3	SPI	Highest Accuracy 8-bit T-Sensor		Opt. A: ±6 Opt. B: ±25	1.3 to 5.5	800	-40 to +125		✓	✓		8	2

Applications

System power consumption can be greatly reduced by using Micro Crystal's small, high-accuracy and low-power RTC Modules for:

- IoT
- Telemetry
- Smart Metering
- POS, SPS Control
- Energy Harvesting Solutions
- Battery Management Systems
- Automotive, GPS and Drive Recorders
- IP Cameras, Alarm and Building Control
- Door Lock and Access Control Systems
- Industrial, Computing, Embedded Systems
- Wearables, Activity Bands, Fitness Trackers
- Healthcare, Medical and Medical Implantable

Ordering Information

RV - 3129 - C3 Option A TA QC

RTC Module

Product type

Package size
C3 = 3.7 x 2.5 x 0.90 mm
C7 = 3.2 x 1.5 x 0.80 mm
C8 = 2.0 x 1.2 x 0.60 / 0.70 mm

Time accuracy
Option A = ±6 ppm @ -40°C to +85°C
Option B = ±25 ppm @ -40°C to +85°C

Qualification
QC = Commercial Grade (Standard)
QA = Automotive Grade AEC-Q200
QM = Medical Grade (see page 6)

Temperature range
TA = -40 to +85°C (Standard)
TB = -40 to +125°C

Linux Drivers available

Demo Boards available



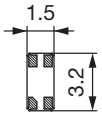
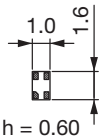
Micro Crystal: RTC Modules

Temperature Sensor Module in Ceramic Package

12-bit Temperature Sensor Module with RTC										
Product Type	**Dimensions (l × w × h) mm**	**Accuracy -40 to 85°C**	**Readable Resolution**	**Supply V_{DD} V**	**Current I_{DD} nA**	**T_{OPR} °C**	**T-Threshold Alarms**	**Time Stamps**	**RTC Time -40 to 85°C**	**Interface**
TS-3032-C7 [1]	3.2 x 1.5 x 0.80	±1°C	0.0625°C	1.3 to 5.5	160	-40 to +105	✓	✓	±2.5 ppm	I²C

1) For RTC functionality, see RV-3032-C7 on page 4.

kHz Oscillators in Ceramic Packages

Product Type	**OM-xxxx-C7**	**OM-xxxx-C8**	**OM-xxxx-C9**
Dimensions (l × w × h) mm	3.2 x 1.5 x 0.70	2.0 x 1.2 x 0.70	1.6 x 1.0 x 0.60
RoHS COMPLIANT, lead-free, REACH			
3D PCB Symbol, Footprint & 3D Model available on product pages on website	 h = 0.70	 h = 0.70	 h = 0.60
Lid Material	Metal	Metal	Metal

Standard kHz Oscillators										
Product Type	**Dimensions (l × w × h) mm**	**Frequency kHz**	**ΔF/F @ 25°C ppm**	**Supply V_{DD} V**	**Current I_{DD} nA**	**T_{OPR} °C**	**Duty Cycle %**	**CLKOE Input**	**Δf/V ppm/V**	**Aging 1Y @ 25°C ppm**
OM-7604-C7	3.2 x 1.5 x 0.70	32.768	±20 [1]	1.2 to 5.5	300	-40 to +125	40 to 60	✓	±1.5	±3.0
OM-7605-C8	2.0 x 1.2 x 0.70	32.768	±20 [1]	1.6 to 5.5	450	-40 to +125	40 to 60	✓	±3.0	±3.0
OM-7605-C9	1.6 x 1.0 x 0.60	32.768	±20 [1]	1.6 to 5.5	450	-40 to +125	40 to 60	✓	±3.0	±3.0
OM-0100-C7	3.2 x 1.5 x 0.70	100.000	±20 [1]	1.2 to 5.5	650	-40 to +85	40 to 60	✓	±1.5	±3.0
OM-0100-C8	2.0 x 1.2 x 0.70	100.000	±20 [1]	1.6 to 5.5	550	-40 to +85	40 to 60	✓	±3.0	±3.0

1) Tighter and wider frequency tolerances on request.

Applications

Lowest current, smallest package and high accuracy make Micro Crystal's oscillators ideal for:

- IoT
- Smart Pens
- Industrial Computing
- Wearables and Activity Bands
- Automotive, Driver Assistance
- Driving Recorders, Camera Systems
- Navigation and Emergency Call Systems
- Bluetooth Low Energy (BLE) Applications
- Tire Pressure Monitoring Systems (TPMS)
- Healthcare, Medical and Medical Implantable

Ordering Information

O M - 7604 - C7 ±20 ppm TA QC

Product
O = Oscillator

Package lid
M = Metal lid
V = Ceramic lid (see page 6)

Frequency
0100 = 100.000 kHz
7604 = 32.768 kHz
7605 = 32.768 kHz

Package size
C7 = 3.2 x 1.5 x 0.70 mm
C8 = 2.0 x 1.2 x 0.70 mm
C9 = 1.6 x 1.0 x 0.60 mm

Frequency tolerance[1]

Temperature range
TA = -40 to +85°C (Standard)
TB = -40 to +125°C

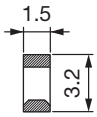
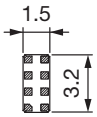
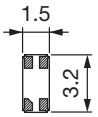
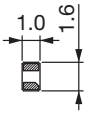
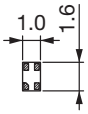
Qualification
QC = Commercial Grade (Standard)
QA = Automotive Grade AEC-Q200
QM = Medical Grade (see page 6)



Micro Crystal: T-Sensor Module

Micro Crystal: kHz Oscillators

Medical Implantable Products

Product Type	CC7	RV-xxxx-C7	OV-xxxx-C7	CC8	OV-xxxx-C8	CC9	OV-xxxx-C9
Dimensions (l x w) mm	3.2 x 1.5			2.0 x 1.2		1.6 x 1.0	
							
Full Ceramic Packages PCB Symbol, Footprint & 3D Model available on product pages on website	 Crystal	 RTC	 Oscillator	 Crystal	 Oscillator	 Crystal	 Oscillator

kHz Tuning Fork Crystals

Product Type	Height mm	Frequency kHz	Frequency Tol. @ 25°C
CC7V-T1A Medical	0.90	32 - 100	±20 ppm
CC8V-T1A Medical	0.67	32 - 102.4	±20 ppm
CC8V-T1A Thin Medical	0.48	32.768	±20 ppm
CC9V-T1A Medical	0.55	32.768	±20 ppm

MHz AT-Cut Crystals

Product Type	Height mm	Frequency MHz	Frequency Tol. @ 25°C
CC7A-T1A Medical	0.75	14 - 50	±30 ppm
CC8A-T1A Medical	0.60	24 - 50	±30 ppm
CC9A-T1A Medical [1]	0.50	32 - 50	±30 ppm

1) In qualification.

Low Frequency Clock Oscillators

Product Type	Height mm	Frequency kHz	Supply V_{DD} V	Current I_{DD} nA
OV-7604-C7 Medical	1.00	32.768	1.2 to 5.5	300
OV-7605-C8 Medical	0.80	32.768	1.6 to 5.5	450
OV-7605-C9 Medical	0.65	32.768	1.6 to 5.5	450
OV-0100-C8 Medical	0.80	100.000	1.6 to 5.5	550

Real-Time Clock Module

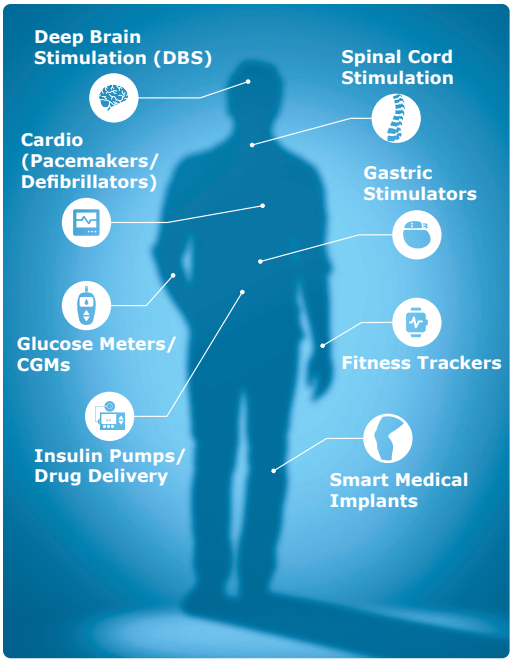
Product Type	Height mm	Time Acc. @ 25°C	Supply V_{DD} V	Current I_{DD} nA
RV-5028-C7 Medical	1.00	±1 ppm	1.1 to 5.5	45

Key Features

- Hermetic full ceramic package
- Non-magnetic
- Safe for Helium environment
- Proprietary manufacturing and testing processes
- Full traceability records retained

Applications

- Pacemakers
- Defibrillators
- Infusion Pumps
- Neurostimulators
- Cochlear Implants
- Smart Orthopedic Implants
- Life Sustaining Applications
- Cardiac Monitoring Devices
- Implantable Drug Delivery Pumps





Micro Crystal: Medical Implantable

Micro Crystal – The Art of Timing

Company

Micro Crystal AG is a company of the Swatch Group Inc. Switzerland, the world's leading watchmaker. Micro Crystal applies high-tech Swiss MEMS technology for the manufacture of ultra-high precision Quartz Crystal Resonators, Oscillators and Real-Time Clock Modules. Focused on mass production of high-quality components, Micro Crystal supports not only large volume consumer applications, but also high-reliability automotive and medical implantable components. Using its manufacturing facilities in Switzerland and Thailand, the company produces the smallest available Quartz Crystal Resonators, Oscillators and Real-Time Clock Modules. Micro Crystal timing devices, offering the world's lowest power consumption, are perfectly suited for today's IoT and wearables applications. Most of its products are AEC-Q200 qualified. Micro Crystal's production facilities are ISO 9001, ISO 14001 and IATF 16949 certified; and comply with all social and environmental regulations.

Micro Crystal, a leading player in this market, offers cost competitive products through its worldwide distribution and customer support networks.

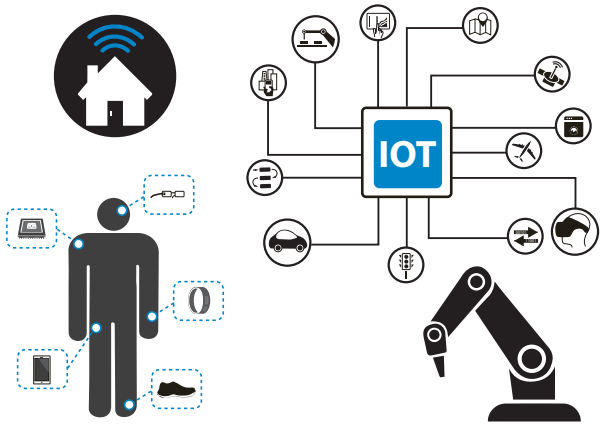
RoHS COMPLIANT · lead-free · REACH COMPLIANT

Applications and Markets

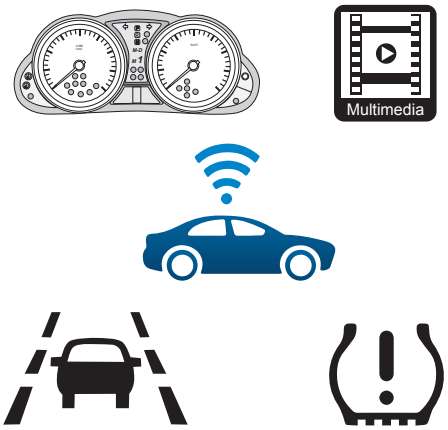
Telecommunications and Industrial



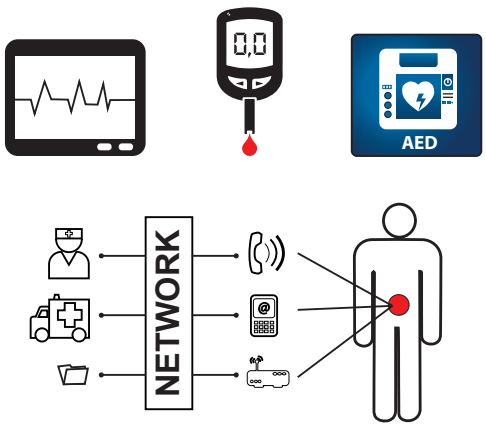
Wearables and IoT



Automotive



Healthcare and Medical Implantable



Micro Crystal: Company

Micro Crystal: Applications

Europe

Headquarters Switzerland
Micro Crystal AG
Muehlestrasse 14
CH-2540 Grenchen
Switzerland
Phone +41 32 655 82 82
sales@microcrystal.com
www.microcrystal.com

Central and Southern Europe
Micro Crystal
Swatch Group (Deutschland) GmbH
Wagenbacher Weg 11
74924 Neckarbischofsheim
Germany
Phone +49 72 68 91 12 53
sales.germany@microcrystal.com

Northern Europe
Micro Crystal
The Swatch Group (UK) Ltd.
Building 1000
The Royals Business Park
Dockside Road
London, United Kingdom E16 2QU
Phone +44 7483 449 531
sales.nordic@microcrystal.com

America

Western US
Micro Crystal
The Swatch Group (U.S.) Inc.
Fremont, CA
USA
Phone +1 510 767 8539
sales.us@microcrystal.com

Southern US
Micro Crystal
The Swatch Group (U.S.) Inc.
Spring Hill, TN
USA
Phone +1 949 231 0972
sales.us@microcrystal.com

Northeastern US
Micro Crystal
The Swatch Group (U.S.) Inc.
Pepperell, MA
USA
Phone +1 978 302 3135
sales.us@microcrystal.com

Asia

China (Shanghai)
Micro Crystal
The Swatch Group (China) Ltd.
20/F, THREE itc Tower A
No. 183 Hongqiao Road
Shanghai 200030
China
Phone +86 21 2412 5280
sales.shanghai@microcrystal.com

China (Shenzhen)
Micro Crystal
The Swatch Group (China) Ltd.
6F, Hubei Baofeng Building
No. 1054 Baoan South Road, Luohu
District, Shenzhen 518001
China
Phone +86 755 8832 0687
sales.shenzhen@microcrystal.com

Korea
Micro Crystal
The Swatch Group (Korea) Ltd.
10F, National Pension Service Building
36 Chungjeongno
Seodaemun-gu, Seoul 03741
Korea
Phone +82 2 3149 8290
sales.korea@microcrystal.com

Taiwan / ASEAN
Micro Crystal
The Swatch Group (Taiwan) Ltd.
14F, No. 8, Sec. 7, Civic Blvd.,
Nangang Dist. Taipei (115)
Taiwan
Phone +886 2 2652 3689
sales.taiwan@microcrystal.com



Micro Crystal: Contacts

Version 25.3/06.2025 / All specification and drawings subject to change without notice