



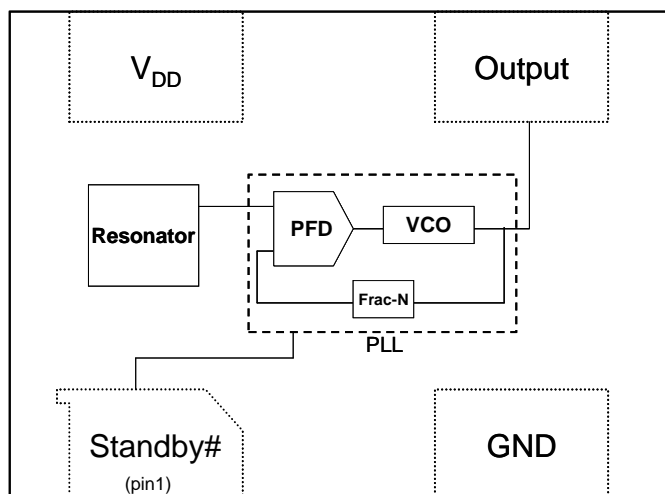
General Description

The DSC8002 is a programmable MEMS based PureSilicon™ Oscillator. Using the DragonFly™ or TimeFlash™ handheld programmer, the end user can program the DSC8002 within seconds to any frequency from 1 to 150MHz in increments of 100Hz (up to four decimal point resolution). The nominal operational range spans from 1.8 to 3.3 Volts, without any need for additional external components, providing ease of use and flexibility in multi-voltage applications.

The DSC8002 incorporates an all silicon resonator that is extremely robust and nearly immune to stress related fractures, common to crystal based oscillators. Without sacrificing the performance and stability required of today's systems, a crystal-less design allows for a higher level of reliability, making the DSC8002 ideal for rugged, industrial, and portable applications where stress, shock, and vibration can damage quartz crystal based systems.

Available in industry standard packages, the DSC8002 can be "dropped-in" to the same PCB footprint as standard crystal oscillators.

Block Diagram



Features

- Frequency Range: 1 to 150MHz
- Exceptional Stability over Temperature
 - ± 25 PPM, ± 50 PPM
- Operating voltage
 - 1.8 to 3.3V (nominal)
 - 1.65 to 3.60V (absolute max)
- Operating Temperature Range
 - Industrial -40°C to 85°C
 - Ext. Commercial -20°C to 70°C
 - Commercial 0°C to 70°C
- Low Operating and Standby Current
 - 3mA Operating (40MHz)
 - 1uA Standby
- Ultra Miniature Footprint
 - $2.5 \times 2.0 \times 0.85$ mm
 - $3.2 \times 2.5 \times 0.85$ mm
 - $5.0 \times 3.2 \times 0.85$ mm
 - $7.0 \times 5.0 \times 0.85$ mm
- Excellent shock and Vibration Resistance
- Lead Free, RoHS & Reach SVHC Compliant
- Handheld programmer available for purchase

Benefits

- Pin for pin "drop in" replacement for industry standard oscillators
- Semiconductor level reliability, significantly higher than quartz
- Frequency Resolution to 4 decimals
- Fully Programmable Operating Voltage and Frequency
- Longer Battery Life / Reduced Power
- Compact Plastic package
- Cost Effective

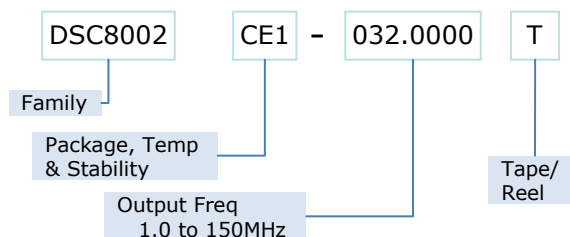
Applications

- Mobile Applications
- Consumer Electronics
- Portable Electronics
- CCD Clock for VTR Cameras
- Low Profile Applications
- Industrial

Absolute Maximum Ratings¹

Item	Min.	Max	Unit	Condition
Supply Voltage	-0.3	+4.0	V	
Input Voltage	-0.3	VDD+0.3	V	
Junction Temp	-	+150	°C	
Storage Temp	-55	+150	°C	
Soldering Temp	-	+260	°C	40 sec max.
ESD	-		V	
HBM		2000		
MM		200		
CDM		500		

Ordering Code



* See Ordering Information for details

Recommended Operating Conditions

Parameter	Symbol	Range
Supply Voltage	V _{DD}	1.65 – 3.60V
Output Load	Z _L	R>10KΩ, C≤15pF
Operating Temperature	T	
Option 1		-40 – +85 °C
Option 2		-20 – +70 °C
Option 3		0 – +70 °C

Specifications

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Frequency	f ₀	Single Frequency	1		150	MHz
Frequency Tolerance						ppm
Option 1		-40°C to +85°C			±25,±50	
Option 2		-20°C to +70°C			±25,±50	
Option 3		0°C to +70°C			±25,±50	
Supply Current, no load	I _{DD}	C _L =0p R _L =∞ T=25°C	1 to 40MHz 40 to 80MHz 80 to 125MHz 125 to 150MHz	3 4 5 6	10	mA
Supply Current, standby	I _{DD}	T=25°C			1.0	uA
Output Logic Levels						
Output logic high	V _{OH}	C _L =15pF	0.8*V _{DD}		-	Volts
Output logic low	V _{OL}		-		0.2*V _{DD}	
Output Transition time						
Rise Time	t _R	C _L =15pF; T=25°C		1.3	2	ns
Fall Time	t _F	20%/80%*V _{DD}		1.3	2	
Output Startup Time ²	t _{SU}	T=25°C		3	10	ms
Output Disable Time	t _{DA}			20	100	ns
Output Duty Cycle	SYM		45		55	%
Input Logic Levels						
Input logic high	V _{IH}		0.75*V _{DD}		-	Volts
Input logic low	V _{IL}		-		0.25*V _{DD}	
Jitter, Cycle to Cycle	J _{CC}	F = 100MHz ³		95		ps

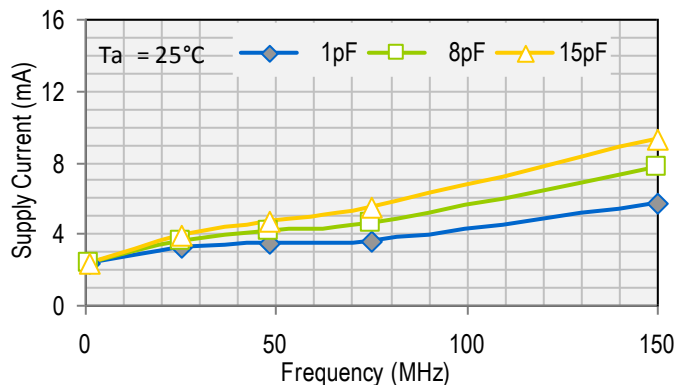
Notes:

1. Absolute maximum ratings are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated beyond these limits.
2. Output frequency to within 100ppm of final stable output frequency.
3. See typical cycle to cycle jitter graph for frequency dependence.

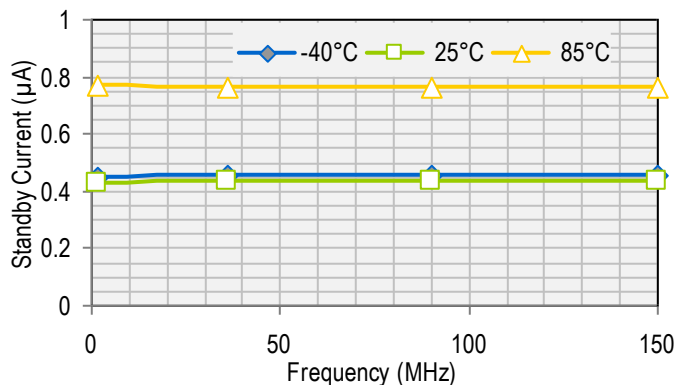
Nominal Performance Characteristics

1.8V Characteristics

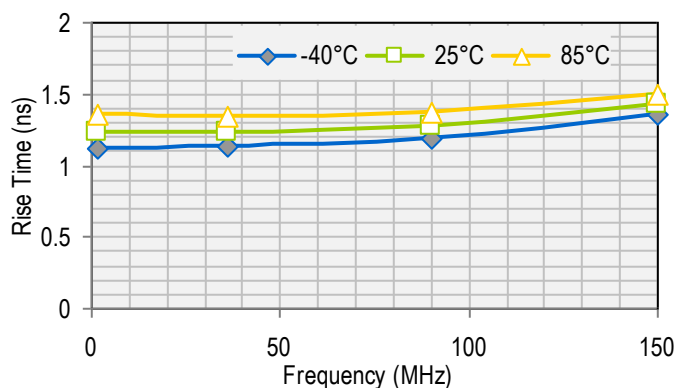
Supply Current



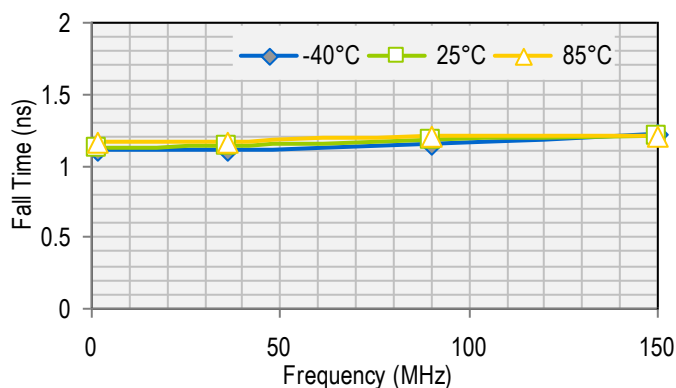
Standby Current



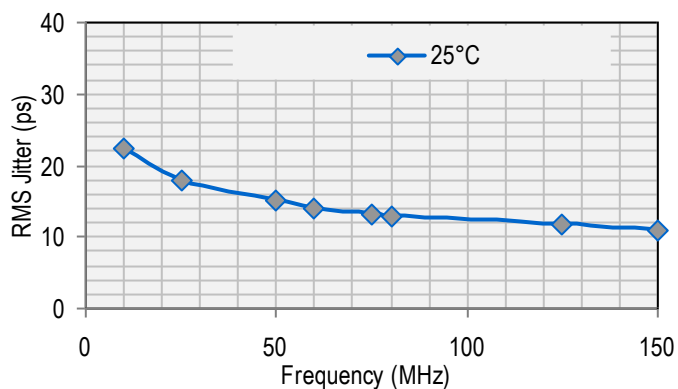
Rise Time



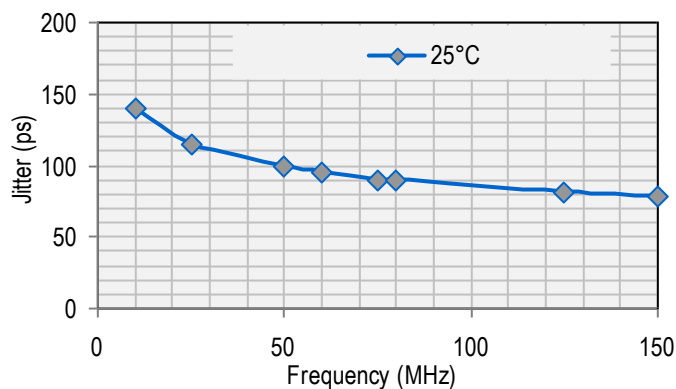
Fall Time



Period Jitter

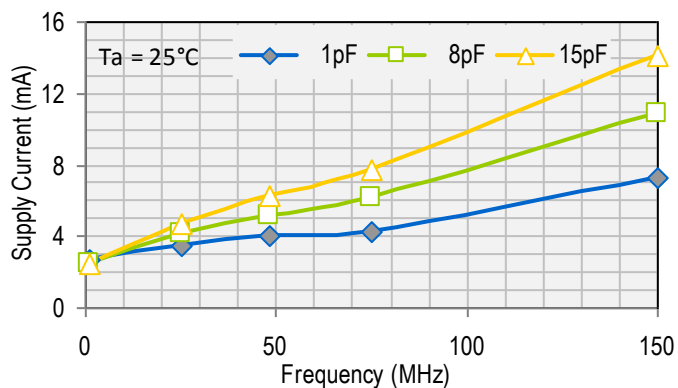


Cycle to Cycle Jitter

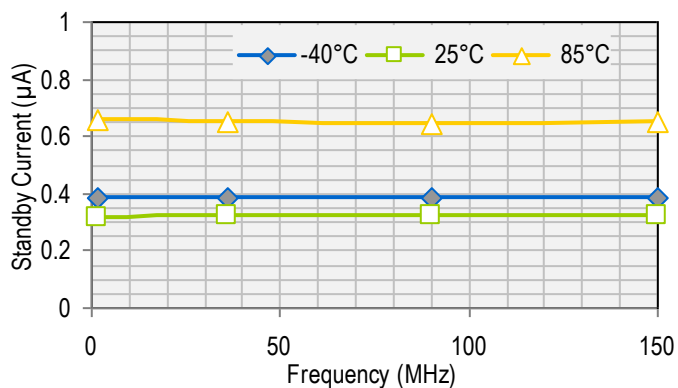


3.3V Characteristics

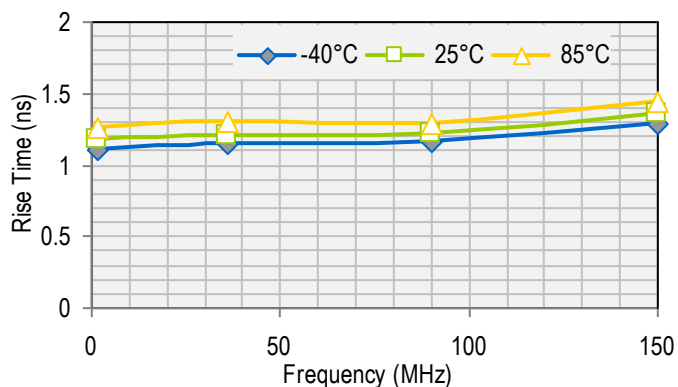
Supply Current



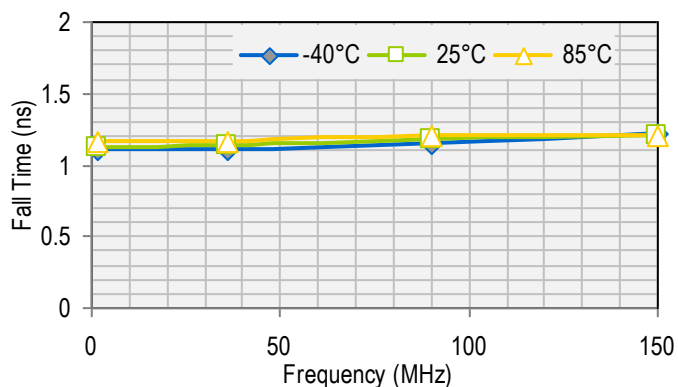
Standby Current



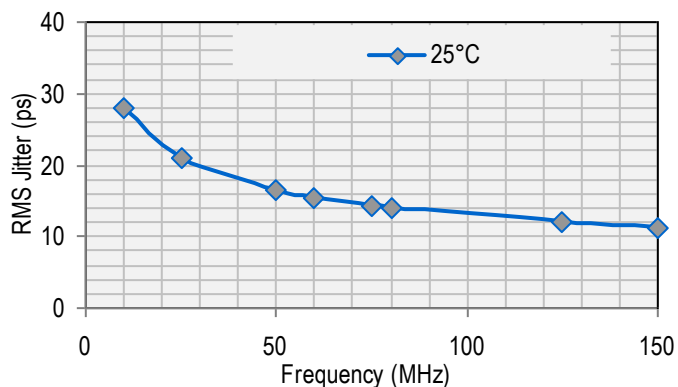
Rise Time



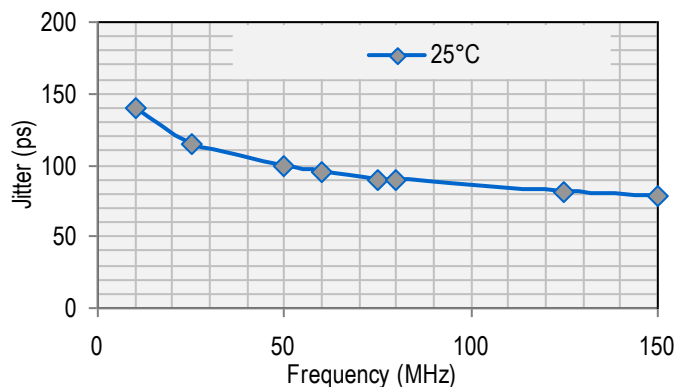
Fall Time



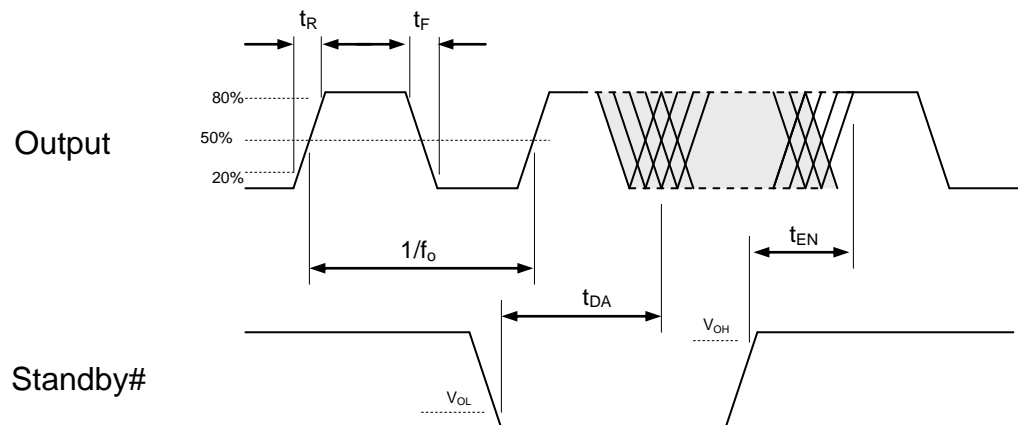
Period Jitter



Cycle to Cycle Jitter



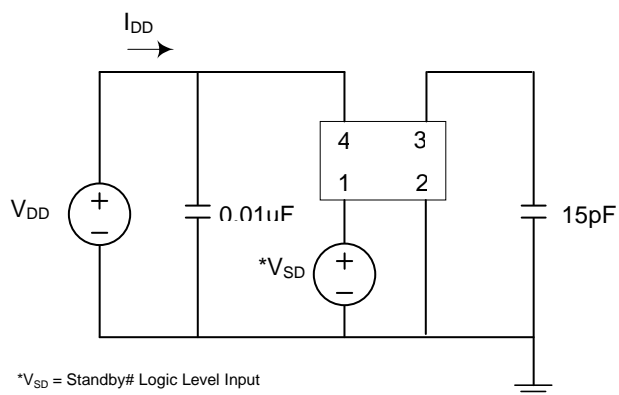
Output Waveform



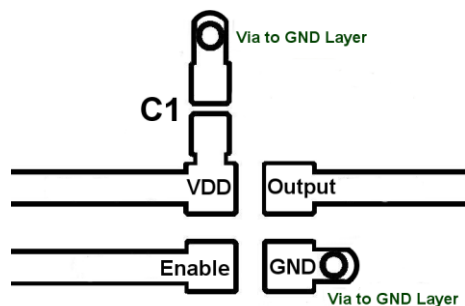
Standby Function

Standby# (pin 1)	Output (pin 3)
Hi Level	Output ON
Open (no connect)	Output ON
Low Level	High Impedance

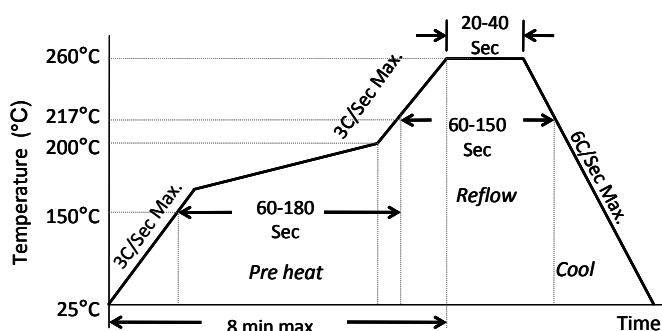
Test Circuit



Board Layout (recommended)



Solder Reflow Profile



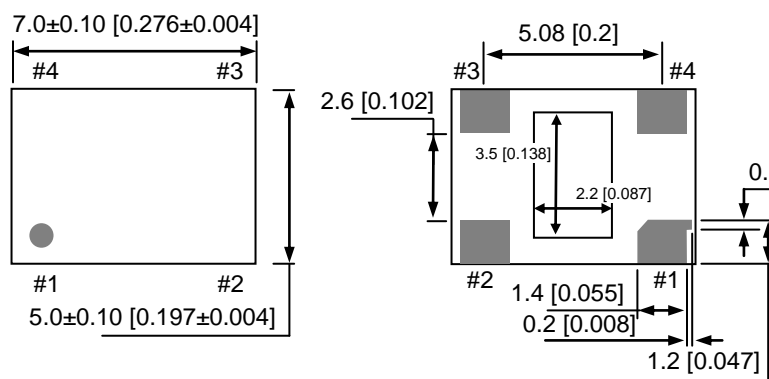
MSL 1 @ 260°C refer to JSTD-020C

Ramp-Up Rate (200°C to Peak Temp)	3°C/Sec Max.
Preheat Time 150°C to 200°C	60-180 Sec
Time maintained above 217°C	60-150 Sec
Peak Temperature	255-260°C
Time within 5°C of actual Peak	20-40 Sec
Ramp-Down Rate	6°C/Sec Max.
Time 25°C to Peak Temperature	8 min Max.

Package Dimensions

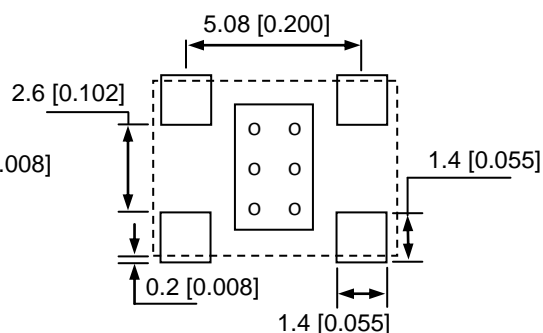
7.0 x 5.0 mm Plastic Package

External Dimensions



No.	Pin Terminal
1	Standby#
2	GND
3	Output
4	VDD

Recommended Land Pattern*

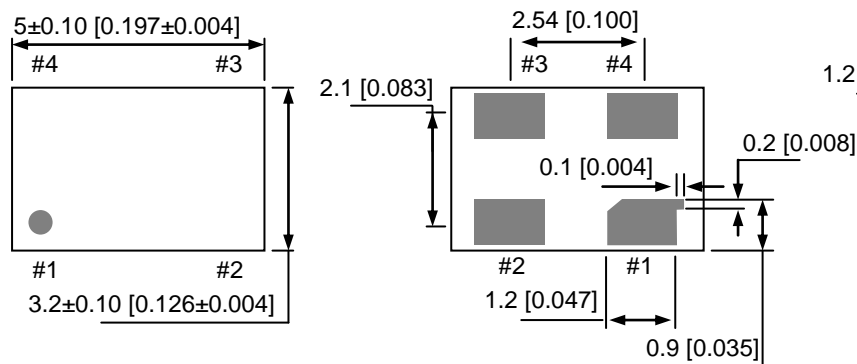


*Note: The center pad is not connected internally and should be left unconnected or tied to GND.

units: mm [inch]

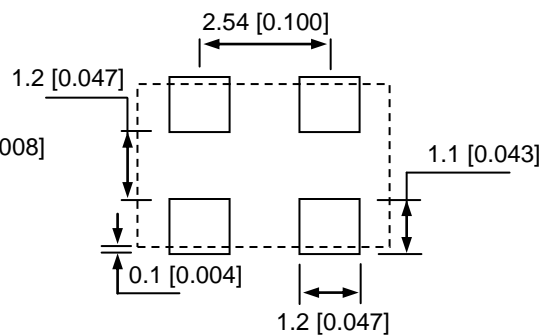
5.0 x 3.2 mm Plastic Package

External Dimensions



No.	Pin Terminal
1	Standby#
2	GND
3	Output
4	VDD

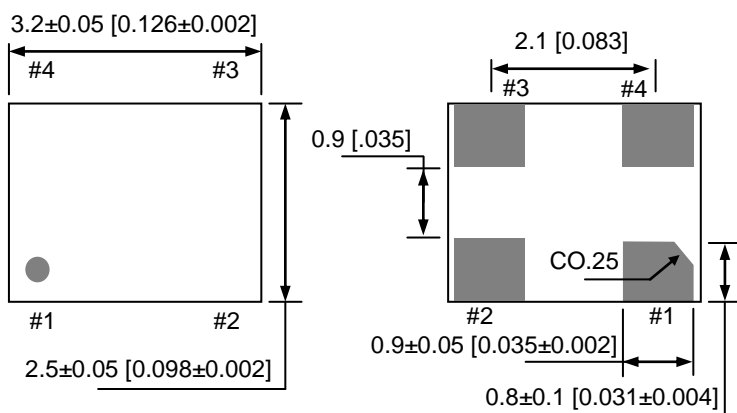
Recommended Land Pattern



units: mm [inch]

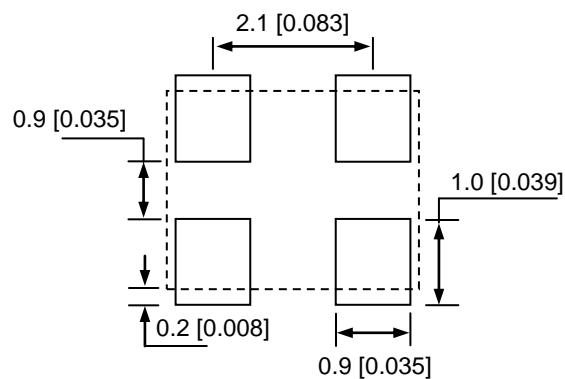
3.2 x 2.5 mm Plastic Package

External Dimensions



No.	Pin Terminal
1	Standby#
2	GND
3	Output
4	VDD

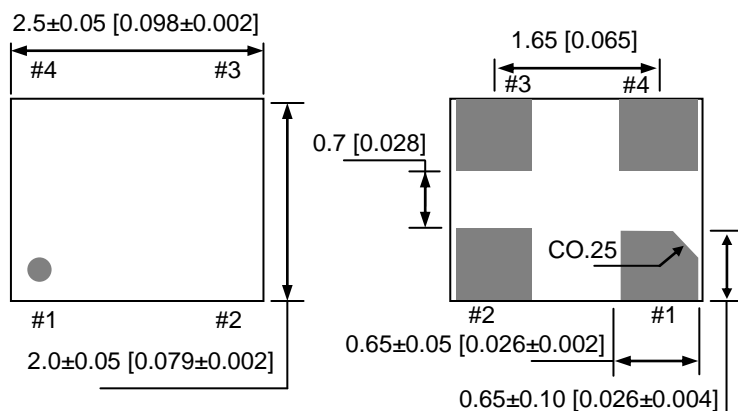
Recommended Land Pattern



units: mm [inch]

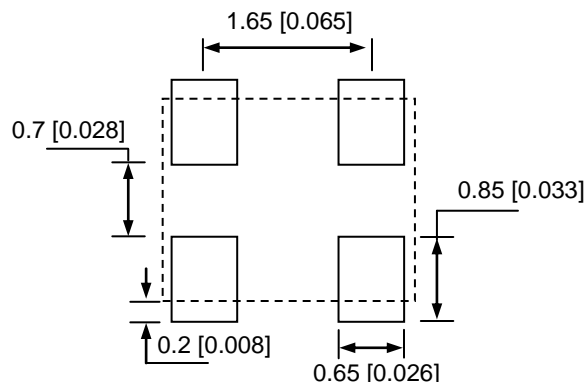
2.5 x 2.0 mm Plastic Package

External Dimensions



No	Pin Terminal
1	Standby#
2	GND
3	Output
4	VDD

Recommended Land Pattern



units: mm [inch]

Ordering Information

DSC8002 PTS – T

Package (Plastic QFN)	Temperature	Stability	Packing Option
P=A: 7.0x5.0mm P=B: 5.0x3.2mm P=C: 3.2x2.5mm P=D: 2.5x2.0mm	T=C: 0° ~ +70° C T=E: -20° ~ +70° C T=I: -40° ~ +85° C	S=1: ±50ppm S=2: ±25ppm	Blank: Tubes T: Tape & Reel

Disclaimer:

Micrel makes no representations or warranties with respect to the accuracy or completeness of the information furnished in this data sheet. This information is not intended as a warranty and Micrel does not assume responsibility for its use. Micrel reserves the right to change circuitry, specifications and descriptions at any time without notice. No license, whether express, implied, arising by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Micrel's terms and conditions of sale for such products, Micrel assumes no liability whatsoever, and Micrel disclaims any express or implied warranty relating to the sale and/or use of Micrel products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright or other intellectual property right.

MICREL, Inc.
Phone: +1 (408) 944-0800

• **2180 Fortune Drive,**
 • **Fax: +1 (408) 474-1000**

San Jose, California 95131
 • **Email: hbwhelp@micrel.com**

• **USA**
 • **www.micrel.com**



**Стандарт
Электрон
Связь**

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

Наши контакты:

Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург,
Промышленная ул, дом № 19, литера Н,
помещение 100-Н Офис 331