

### **SPECIFICATION SHEET**

SPECIFICATION SHEET NO.	R0812-XH14M31818S416					
DATE	Aug. 12, 2	Aug. 12, 2024				
REVISION	A0	Updated With Most Recent Data- Official First Release				
DESCRIPTION AND  MAIN PARAMETRICS	MHz SMD Crystal, L12.5*W4.95*H4.0mm, 4 pads, XH series, Resistance Weld Metal Case, Hold Type HC-49SX, 14.31818MHz, Tolerance +/-30ppm, Load Capacitor 16pF, Frequency stability +/-50ppm; Operating Temp. Range -40° C ~+85° C, ESR 40 ohm Max, Reflow Profile Condition 260° C Max.					
	Tape/Reel, 1000pcs/Reel; RoHS/RoHS III compliant, RoHS Annex III lead  Exemption (exempt per RoHS EU 2015/863)					
CUSTOMER						
CUSTOMER PART NO.						
CROSS REF. PART NO.	YQ14M31	.818S416				
ORIGINAL MFG/PART NO.	TGS CSSX 14M31818A30-16-50-40-40 TLH					
PART CODE	XH14M31	818S416				

### **VENDOR APPROVE**

Issued/Checked/Approved







DATE: Aug. 12, 2024

CUSTOMER APPROVE					

8/12/2024

DATE:



### MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

#### **MAIN FEATURE**

- MHz SMD Crystal L12.5\*W4.95\*H4.0mm 4 Pads
- Resistance Weld Metal Case, Hold Type HC-49SX,
- · Low Profile and Short Lead time
- RoHS/RoHS III Compliant, RoHS Annex III Lead Exemption (exempt per RoHS EU 2015/863)
- Moist are Sensitivity Level (MSL) Level 1
- · Excellent Aging and Wide Frequency Range
- 4 Pad Fit EPSON 406 & 506 Footprint Surface Mount
- Replace MHz SMD Plastic Crystal, YQ/CCME series

#### **APPLICATION**

- Microcontroller Systems, Microprocessors, Communication Interfaces,
- Digital Signal Processors (DSPs), Test And Measurement Equipment







Image shown is a representation only. Exact specifications should be obtained from the product dimension.

#### **HOW TO ORDER**

Please follow up Part Code Guide and Indicate Part Code When You Order Or RFQ.

#### **PART CODE GUIDE**



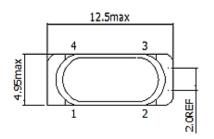
CODE	NAME	KEY SPECIFICATION OPTION
ХН	Series Code	MHz SMD Crystal L12.5*W4.95*H4.0mm 4 Pads Hold Type HC-49SX
14M31818	Frequency Range Code	14M31818: 14.31818MHz, or Customer specified Frequency Range 3.072 ~100MHz
S	Internal Control Code	Special letter A~Z , a~z or digits (1-9)
416	Parameters code	Special Parameters Code letter A~Z, a~z or digits (1-9)

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# MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

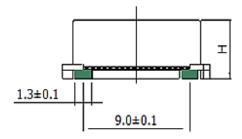
### **DIMENSION** (Unit: mm)

Top View



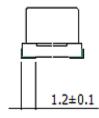


**Bottom View** 

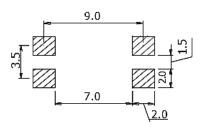


H: 4.0mm

Side View



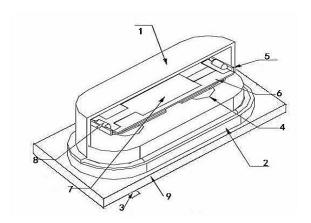
Solder Pattern





# MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

### **INSIDE STRUCTURE**



CODE	NAME			
1	Cover			
2	Base			
3	Pad			
4	Glass Insulator			
5	Clip			
6	Quartz Blank			
7	Electrode			
8	Conductive Adhesive			
9	Plastic Board			



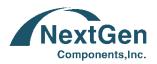
# MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

#### **GENERAL SPECIFICATION**

			VALUE			CONDITION	
PARAMETER	SYMBOL	MIN.	TYPE	MAX.	UNIT	CONDITION	
Frequency Range	FO	3.072	_	100.00	MHz	Customer specified	
Frequency hange	FU	3.072	_	100.00	IVITIZ	customer specified	
Mode of Vibration Code			Fundame	ental		Optional: 3rd OT Or 5th OT	
Frequency Tolerance	△F/F0	±10	±30	±30	ppm	at 25°C±3°C	
Load Capacitance	CL	6	20	Series	pF	Customer specified	
Frequency Stability	Тс	±30	±50	±50	ppm	Customer specified	
Operating Temp. Range	TOPR	-40	-	+85	°C	Standard	
Storage Temp. Range	Tstg	-40	-	+85	°C		
Equivalent Series Resistance	ESR		See Table 1		Ω	Customer specified	
Drive Level	DL	-	-	100	μW		
Insulation Resistance	IR	500	-		mΩ	At 100VDC	
Shunt Capacitance	CO	-	-	7.0	pF		
Aging per year	Fa	-5	-	+5	ppm	1st Year	

### Table 1

FREQUENCY RANGE	MODE OF VIBRATION	ESR (Ω) MAX
3.072MHz≤ F0 ≤4.000MHz	Fundamental	< 200
4.000MHz< F0 ≤6.000MHz	Fundamental	< 80
6.000MHz< F0 ≤8.000MHz	Fundamental	< 50
8.00MHz< F0 ≤16.000MHz	Fundamental	< 40
16.00MHz< F0 ≤48.00MHz	Fundamental	< 30
24.00MHz< F0 ≤40.00MHz	3rd Overtone	< 100
40.00MHz< F0 ≤80.00MHz	3rd Overtone	< 50
50.00MHz≤ F0 ≤100.00MHz	5th Overtone	< 100



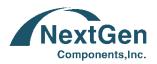
# MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

PART CODE	FREQUENCY RANGE MHz	FREQUENCY TOLERANCE	LOAD CAPACITANCE pF	FREQUENCY STABILITY ppm	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE Ω Max.
XH3M579545S416	3.579545	±30	16	±50	-40 ~ +85	200
XH3M579545S418	3.579545	±30	18	±50	-40 ~ +85	200
XH3M579545S420	3.579545	±30	20	±50	-40 ~ +85	200
XH3M686400S416	3.686400	±30	16	±50	-40 ~ +85	200
XH3M686400S418	3.686400	±30	18	±50	-40 ~ +85	200
XH3M686400S420	3.686400	±30	20	±50	-40 ~ +85	200
XH4M000000S003	4.000000	±30	10	±50	-40 ~ +85	200
XH4M000000S416	4.000000	±30	16	±50	-40 ~ +85	200
XH4M000000S418	4.000000	±30	18	±50	-40 ~ +85	200
XH4M000000S420	4.000000	±30	20	±50	-40 ~ +85	200
XH4M915200S416	4.915200	±30	16	±50	-40 ~ +85	80
XH4M915200S418	4.915200	±30	18	±50	-40 ~ +85	80
XH4M915200S420	4.915200	±30	20	±50	-40 ~ +85	80
XH6M000000S416	6.000000	±30	16	±50	-40 ~ +85	80
XH6M000000S418	6.000000	±30	18	±50	-40 ~ +85	80
XH6M000000S420	6.000000	±30	20	±50	-40 ~ +85	80
XH6M144000S418	6.144000	±30	18	±50	-40 ~ +85	50
XH7M372800S416	7.372800	±30	16	±50	-40 ~ +85	50
XH7M372800S418	7.372800	±30	18	±50	-40 ~ +85	50
XH7M372800S420	7.372800	±30	20	±50	-40 ~ +85	50



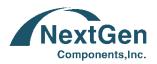
# MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

PART CODE	FREQUENCY RANGE	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE
	MHz	ppm	pF	ppm	°C	Ω Max.
XH8M000000S416	8.000000	±30	16	±50	-40 ~ +85	50
XH8M000000S418	8.000000	±30	18	±50	-40 ~ +85	50
XH8M000000S420	8.000000	±30	20	±50	-40 ~ +85	50
XH8M000000S40S	8.000000	±30	Series	±50	-40 ~ +85	50
XH8M192000S416	8.192000	±30	16	±50	-40 ~ +85	40
XH8M192000S418	8.192000	±30	18	±50	-40 ~ +85	40
XH8M192000S420	8.192000	±30	20	±50	-40 ~ +85	40
XH9M216000S416	9.216000	±30	16	±50	-40 ~ +85	40
XH9M216000S418	9.216000	±30	18	±50	-40 ~ +85	40
XH9M216000S420	9.216000	±30	20	±50	-40 ~ +85	40
XH9M830400S416	9.830400	±30	16	±50	-40 ~ +85	40
XH9M830400S418	9.830400	±30	18	±50	-40 ~ +85	40
XH9M830400S420	9.830400	±30	20	±50	-40 ~ +85	40
XH10M00000S416	10.000000	±30	16	±50	-40 ~ +85	40
XH10M00000S418	10.000000	±30	18	±50	-40 ~ +85	40
XH10M00000S420	10.000000	±30	20	±50	-40 ~ +85	40
XH10M00000S40S	10.000000	±30	Series	±50	-40 ~ +85	40
XH11M05920S416	11.059200	±30	16	±50	-40 ~ +85	40
XH11M05920S418	11.059200	±30	18	±50	-40 ~ +85	40
XH11M05920S420	11.059200	±30	20	±50	-40 ~ +85	40



# MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

PART CODE	FREQUENCY RANGE MHz	FREQUENCY TOLERANCE	LOAD CAPACITANCE pF	FREQUENCY STABILITY ppm	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE Ω Max.
XH12M00000S416	12.000000	±30	16	±50	-40 ~ +85	40
XH12M00000S418	12.000000	±30	18	±50	-40 ~ +85	40
XH12M00000S420	12.000000	±30	20	±50	-40 ~ +85	40
XH12M00000S40S	12.000000	±30	Series	±50	-40 ~ +85	40
XH12M28800S416	12.288000	±30	16	±50	-40 ~ +85	40
XH12M28800S418	12.288000	±30	18	±50	-40 ~ +85	40
XH12M28800S420	12.288000	±30	20	±50	-40 ~ +85	40
XH12M500S33418	12.500000	±30	18	±50	-40 ~ +85	40
XH14M31818S416	14.318180	±30	16	±50	-40 ~ +85	40
XH14M31818S418	14.318180	±30	18	±50	-40 ~ +85	40
XH14M31818S420	14.318180	±30	20	±50	-40 ~ +85	40
XH14M74560S416	14.745600	±30	16	±50	-40 ~ +85	40
XH14M74560S418	14.745600	±30	18	±50	-40 ~ +85	40
XH14M74560S420	14.745600	±30	20	±50	-40 ~ +85	40
XH16M00000S416	16.000000	±30	16	±50	-40 ~ +85	40
XH16M00000S418	16.000000	±30	18	±50	-40 ~ +85	40
XH16M00000S420	16.000000	±30	20	±50	-40 ~ +85	40
XH16M38400S416	16.384000	±30	16	±50	-40 ~ +85	30
XH16M38400S418	16.384000	±30	18	±50	-40 ~ +85	30
XH16M38400S420	16.384000	±30	20	±50	-40 ~ +85	30



# MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

PART CODE	FREQUENCY RANGE MHz	FREQUENCY TOLERANCE	LOAD CAPACITANCE pF	FREQUENCY STABILITY ppm	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE Ω Max.
XH18M00000S418	18.000000	±30	18	±50	-40 ~ +85	30
XH18M43200S416	18.432000	±30	16	±50	-40 ~ +85	30
XH18M43200S418	18.432000	±30	18	±50	-40 ~ +85	30
XH18M43200S420	18.432000	±30	20	±50	-40 ~ +85	30
XH19M66080S416	19.660800	±30	16	±50	-40 ~ +85	30
XH19M66080S418	19.660800	±30	18	±50	-40 ~ +85	30
XH19M66080S420	19.660800	±30	20	±50	-40 ~ +85	30
XH20M00000S416	20.000000	±30	16	±50	-40 ~ +85	30
XH20M00000S418	20.000000	±30	18	±50	-40 ~ +85	30
XH20M00000S420	20.000000	±30	20	±50	-40 ~ +85	30
XH22M11840S416	22.118400	±30	16	±50	-40 ~ +85	30
XH22M11840S418	22.118400	±30	18	±50	-40 ~ +85	30
XH22M11840S420	22.118400	±30	20	±50	-40 ~ +85	30
XH24M00000S416	24.000000	±30	16	±50	-40 ~ +85	30
XH24M00000S418	24.000000	±30	18	±50	-40 ~ +85	30
XH24M00000S420	24.000000	±30	20	±50	-40 ~ +85	30
XH24M00000S40S	24.000000	±30	Series	±50	-40 ~ +85	30
XH24M57600S416	24.576000	±30	16	±50	-40 ~ +85	30
XH24M57600S418	24.576000	±30	18	±50	-40 ~ +85	30
XH24M57600S420	24.576000	±30	20	±50	-40 ~ +85	30



# MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

PART CODE	FREQUENCY RANGE MHz	FREQUENCY TOLERANCE	LOAD CAPACITANCE	FREQUENCY STABILITY	OPERATING TEMPE. RANGE	EQUIVALENT SERIES RESISTANCE Ω Max.
	IVITIZ	ppm	pF	ppm	C	12 IVIAX.
XH25M00000S416	25.000000	±30	16	±50	-40 ~ +85	30
XH25M00000S418	25.000000	±30	18	±50	-40 ~ +85	30
XH25M00000S420	25.000000	±30	20	±50	-40 ~ +85	30
XH26M00000S416	26.000000	±30	16	±50	-40 ~ +85	30
XH26M00000S418	26.000000	±30	18	±50	-40 ~ +85	30
XH26M00000S420	26.000000	±30	20	±50	-40 ~ +85	30
XH27M00000S416	27.000000	±30	16	±50	-40 ~ +85	30
XH27M00000S418	27.000000	±30	18	±50	-40 ~ +85	30
XH27M00000S420	27.000000	±30	20	±50	-40 ~ +85	30
XH28M37500S416	28.375000	±30	16	±50	-40 ~ +85	30
XH28M37500S418	28.375000	±30	18	±50	-40 ~ +85	30
XH28M37500S420	28.375000	±30	20	±50	-40 ~ +85	30
XH30M00000S416	30.000000	±30	16	±50	-40 ~ +85	30
XH30M00000S418	30.000000	±30	18	±50	-40 ~ +85	30
XH30M00000S420	30.000000	±30	20	±50	-40 ~ +85	30
XH32M00000S416	32.000000	±30	16	±50	-40 ~ +85	30
XH32M00000S418	32.000000	±30	18	±50	-40 ~ +85	30
XH32M00000S420	32.000000	±30	20	±50	-40 ~ +85	30
XH40M00000S416	40.000000	±30	16	±50	-40 ~ +85	30
XH40M00000S418	40.000000	±30	18	±50	-40 ~ +85	30
XH40M00000S420	40.000000	±30	20	±50	-40 ~ +85	30
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### MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

#### **CHARACTERISTICS**

Units and values indicated with { } in this specification are the former units and the specified values.

#### **Standard Atmospheric Conditions:**

Unless otherwise specified the standard range of atmospheric conditions for making measurements and tests is as

follows:

Ambient temperature: 15°C to 35°C

Relative humidity: 25% to 85%

Air pressure: 86 to 106 k Pa

If there is any doubt about the results measurements shall be made within the following limits:

Ambient temperature :  $25 \pm 1$ °C

Relative humidity: 63% to 67%

Air pressure: 86 to 106 k Pa

### **Operating Temperature Range:**

The operating temperature range is the range of ambient temperatures at which the quartz crystal oscillator can be stored without damage. Conditions are as specified elsewhere on these specifications.

Operating temperature range: -40°C to +85°C

#### **Storage Temperature Range:**

The storage temperature range is the range of ambient temperatures at which the quartz crystal oscillator can be stored without damage. Conditions are as specified elsewhere on these specifications.

Storage temperature range: -55°C to +125°C



### MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

#### **MECHANICAL CHARACTERISTICS**

Provided that measurement shall be carried out after letting it alone in the room temperature for 1h.

TEST ITEMS	TEST METHOD AND CONDITIONS
Shock	Dropping three times from the height of 50cm onto hard wooden board of thickness more than 30mm.
Vibration	<ul> <li>a) Vibration Frequency: 10 To 55hz</li> <li>b) Vibration Amplitude: 0.8mm</li> <li>c) Cycle Time: 1~2min(10-55-10hz)</li> <li>d) Direction: X.Y.Z</li> <li>e) Duration: 2h/Each Direction, total 6Hours</li> </ul>
Terminal Strength	Pulling:  a) Body of specimen shall be fixed and 8.82N of tension weight shall be supplied gradually to axial direction of terminals/lead-wires for 30s  b) After above test a)there is no observation of any visual damages on the specimen  Bending:  a) Body of specimen shall be fixed and 90 degree bending shall be given being supplied 225g tension weight, After that terminals lead-wires shall be straightened gradually Then the same bending and straightening shall be supplied to the opposite direction in the same axial  b) After above tesla)there is no observation of any visual damages on the specimen
Sealing Tightness	There is no observation of gas bubble after specimen put into alcohol below 1atm for 3 min.
Solder ability	Terminals/lead-wires of specimen shall be dipped into solder melted tank at 230±5°C for 3±0.5sec. Dipping depth shall be 2mm from the bottom of specimen's body. (After applying ROSIN flux) Soldering portion shall be covered in over 90% of terminals/lead-wires dipped
Resistance to Soldering Heat	Terminals/lead-wires of specimen shall be dipped into solder melted tank at $350\pm10^{\circ}\text{C'C}$ for $3\text{-4sec.}$ or $260\pm5^{\circ}\text{C}$ for $5\pm1\text{sec}$

### Note:

- 1) Frequency variation shall be within ±5ppm and equivalent resistance less than ±15% max after the test
- 2) Measuring the frequency should be done after keeping test samples at room temperature for 24 hours 8/12/2024

# MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

### **ENVIRONMENTAL CHARACTERISTICS**

Provided that measurement shall be carried out after letting it alone in the room temperature for 1h.

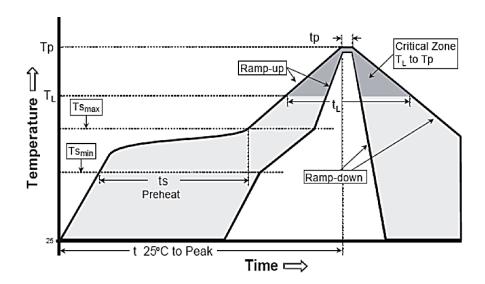
TEST ITEMS	TEST METHOD AND CONDITIONS					
Humidity Storage	It alone at 40°C+-2°C in humidity of 90~95% for 48h					
Storage in Low Temperature	It alone at -40°C+-2°C for 240h					
Storage in High Temperature	It alone at -85°C+-2°C for 240h					
Temperature Cycle	The following temperature cycle (10 cycles) Refer to below Fig. Temperature shift from low to high, high to low shall be done in 1°C'C /min.  85+/-5°C  2 min  25+/-5°C  2 min  1 Cycle					

### Note:

- 1) Frequency variation shall be within ±5ppm and equivalent resistance less than ±15% max after the test
- 2) Measuring the frequency should be done after keeping test samples at room temperature for 24 hours

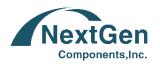
### MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

### SUGGESTED REFLOW PROFILE (For Reference Only)



PROFILE FEATURE		HIGH-PB ASSEMBLY		
Average Ramp-up Rate (Ts Max to Tp)		3°C/second Max		
Preheat	Temperature Min (Ts Min.)	140°C		
	Temperature Max (Ts Max.)	180°C		
	Time (ts Min. to ts Max.)	70 ~ 100 seconds		
Time maintained Temperature (TL) above		240°C		
	Time (tL)	20 ~ 50 seconds		
Peak/Classification Temperature (Tp)		260 °C		
Time within 5°C of actual Peak Temperature (tp)		7 ~ 8 seconds		
Ramp-down rate		6 °C /Second Max.		
Time 25 °C to Peak Temperature		3 minutes Max.		

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# MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

#### **NOTES**

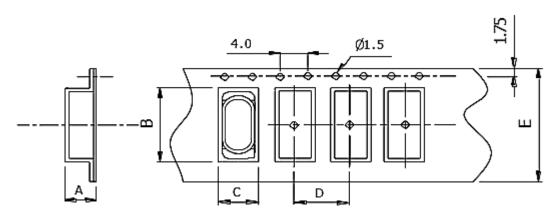
- Only the lead should be heated when soldering. In case that the package temperature is exceeding 150°C It
  may impair the crystal or may e cause the crystal quartz 10 destroy.
- Pulling the lead strongly may cause cracking of the hermetic grass seal bending the lead closely from the case
  may also cause same problem so when the lead needs to be bent please leave move than 05.mm of lead from
  the case.
- Too much shock or vibration is not allowed. According to conditions such as machine shock during the
  assembly the internal quartz crystal might be damaged. Please check your conditions carefully when using it in
  advance.
- 4. Don't storage or use in the environment that temperature may change rapidly to avoid the condensation. And also we recommend to storage the products in the normal environment (Temperature humidity).
- 5. This product can be subjected to ultrasonic cleaning. However since the oscillator may be affected depending on the condition be sure to check it.
- 6. Applying excessive drive level to the quartz crystal may cause deterioration for characteristics or damage.

  Circuit design must be such as to maintain a proper drive level.
- Unless adequate negative resistance is allocated in the oscillation circuit startup time of oscillation may be
  increased or no oscillation may occur in order to avoid this provide enough negative resistance in the circuitry
  design.

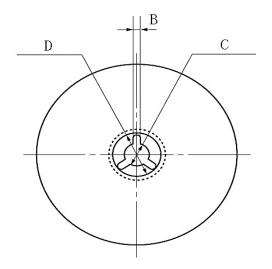
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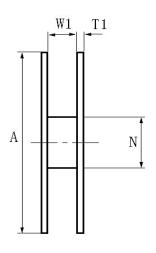
# MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

### TAPE AND REEL (1000pcs/Reel, Unit: mm)



F	E	D	С	В	А
0.40±0.05	24.00±0.30	12.00±0.10	5.00±0.10	14.2±0.20	4.40±0.20





А	В	С	D	N	W1	T1
ф330±0.20	2.50±0.50	ф13.5±0.50	ф21.0±1.00	ф99.0±1.00	24.5±1.00	2.3±0.50

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### MHZ SMD CRYSTAL 4 PADS HOLD TYPE HC-49SX XH SERIES

#### **IMPORTANT NOTES AND DISCLAIMER**

- ROHS COMPLIANCE: The levels of RoHS restricted materials in this product are below the maximum
  concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an
  exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for
  this product can be obtained can be obtained at Download Center.
- REACH COMPLIANCE: REACH substances of high concern (SVHCs) information is available for this product.
   Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained can be obtained at Download Center.
- All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test
  conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics
  if operated under different conditions.
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