




SPECIFICATION SHEET

| | | |
|---|---|--|
| SPECIFICATION SHEET NO. | Q1128- YP77K50300S103 | |
| DATE | Nov. 28, 2023 | |
| REVISION | A0 | Updated With Most Recent Data - Official First Release |
| DESCRIPTION AND MAIN PARAMETRICS | <p>KHz SMD Crystals, Plastic Case, L8.0*W3.8*H2.4mm, 4 Pads, CCMC series 77.503000KHz, Tolerance: +/-30ppm, Load Capacitance: 12.5pF, Operating Temp. Range -40°C ~+85°C, ESR 50 Kohm Max, Reflow Profile Condition 260 °C Max. Tape/Reel, 3000pcs/Reel</p> <p>RoHS/RoHS III compliant, RoHS Annex III lead Exemption (exempt per RoHS EU 2015/863)</p> | |
| CUSTOMER | | |
| CUSTOMER PART NO. | | |
| CROSS REF. PART NO. | | |
| ORIGINAL MFG/PART NO. | TGS/CCMC 77K503A30-12.5-40-50TLH | |
| PART CODE | YP77K50300S103 | |

| | | | |
|-------------------------|---|--|---|
| VENDOR APPROVE | | | |
| Issued/Checked/Approved |  |  |  |
| DATE: Nov. 28, 2023 | | | |

| | |
|-------------------------|--|
| CUSTOMER APPROVE | |
| | |
| DATE: | |

2023/11/28

KHZ SMD CRYSTALS PLASTIC CASE 8038 TYPE CCMC SERIES

MAIN FEATURE

- KHz SMD Crystal, Plastic Case L8.0*W3.8*H2.4mm, 4 pads
- Typical Load Capacitance: 12.5pF
- Operating Temperature Range -40°C ~+85°C
- Low Cost, High Precision, High Frequency Stability
- Reflow Profile Condition 260 °C Max.
- Cross More Competitors Part
- RoHS/RoHS III compliant, RoHS Annex III lead Exemption (exempt per RoHS EU 2015/863)



APPLICATION

- Clock Source For Portable
- Mobile Communications And Consumer Devices, Etc.
- Smart Card And Wearable Devices

PART CODE GUIDE

[RFQ](#)
Request For Quotation

| | | | |
|----|----------|---|-----|
| YP | 77K50300 | S | 103 |
| 1 | 2 | 3 | 4 |

1. YP: Parts family Code for KHz Plastic SMD Crystal, Plastic Case L8.0*W3.8*H2.4mm, 4 pads
2. 77K50300: Frequency range code for 77.503000KHz
3. S: SMD type Package code, Tape/Reel
4. 103: Internal Control Code or special Parameters code letter A~Z or digits (1-9)

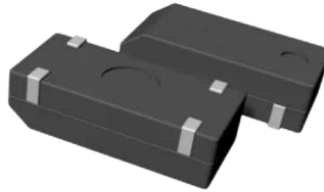
HOW TO ORDER

Please follow up **Part Code Guide** and indicate pat code when you order or RFQ.

KHZ SMD CRYSTALS PLASTIC CASE 8038 TYPE CCMC SERIES

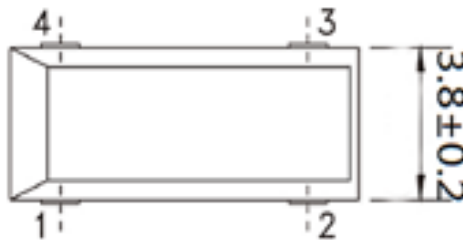
DIMENSION (Unit: Inch/mm)

Image for reference



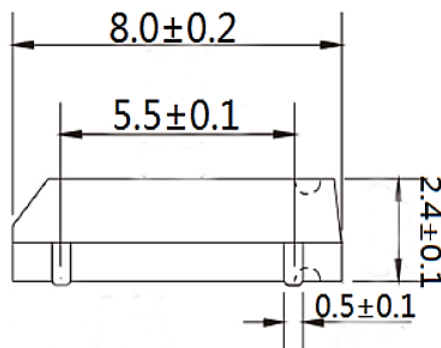
Package code

CCMC, 4 Pads
L8.0*W3.8*H2.4mm,



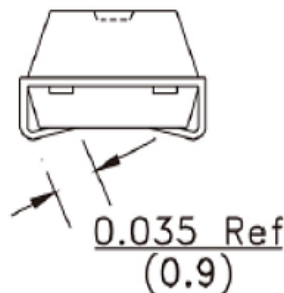
Marking

Frequency Rang



Note

Metal (Crystal inside) may be exposed on the top or bottom of CCMC's plastic case. That will not be affect performance and reliability of the part in question



KHZ SMD CRYSTALS PLASTIC CASE 8038 TYPE CCMC SERIES
GENERAL ELECTRICAL PARAMETERS

| PARAMETERS | UNITS | VALUE | | | CONDITION |
|---------------------------------|--------------------|---|-------|-------|-----------------------|
| | | MIN. | TYP. | MAX. | |
| Mode of Oscillation | | AT Fundamental | | | |
| Frequency Temp. Coefficient (K) | ppm/C ² | -0.040 | 0.034 | 0.040 | |
| Operating Temperature Range | °C | -40 | | +85 | |
| Storage Temperature Range | °C | -55 | | +125 | |
| Drive Level (DL) | μW | | | 1.0 | |
| Shunt Capacitance (C0) | pF | 0.9 | 1.5 | 2.0 | |
| Motional Capacitance(C1) | fF | | 3.0 | | |
| Turnover Temp | °C | +20 | +25 | +30 | |
| Quality Factor (Q) | | 75000 | | | |
| Capacitance Ratio (R) | | 450 | | | |
| Aging per Year | ppm | | | ±3 | @1 st year |
| Insulation Resistance | Mohm | 500 | | | @100VDC, ± 15VDC |
| Package | | Tape/Reel, 3000pcs/Reel | | | |
| RoHS Status | | RoHS/RoHS III compliant, RoHS Annex III lead Exemption (exempt per RoHS EU 2015/863) | | | |

KHZ SMD CRYSTALS PLASTIC CASE 8038 TYPE CCMC SERIES
MAIN ELECTRICAL PARAMETERS - Ta = 25°C

| Part Code | Frequency Range (KHz) | Frequency Tolerance (ppm) | Load Capacitance (CL) (pF) | ESR Max. (KΩ) | Operating Temp. Range (°C) |
|----------------|-----------------------|---------------------------|----------------------------|---------------|----------------------------|
| YP32K00000S102 | 32.000 | ±20 | 12.5 | 50 | -40°C ~+85° |
| YP32K00000S103 | 32.000 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP32K76800S601 | 32.768 | ±10 | 6 | 50 | -40°C ~+85° |
| YP32K76800S602 | 32.768 | ±20 | 6 | 50 | -40°C ~+85° |
| YP32K76800S603 | 32.768 | ±30 | 6 | 50 | -40°C ~+85° |
| YP32K76800S702 | 32.768 | ±20 | 7 | 50 | -40°C ~+85° |
| YP32K76800S703 | 32.768 | ±30 | 7 | 50 | -40°C ~+85° |
| YP32K76800S902 | 32.768 | ±20 | 9 | 50 | -40°C ~+85° |
| YP32K76800S903 | 32.768 | ±30 | 9 | 50 | -40°C ~+85° |
| YP32K76800S101 | 32.768 | ±10 | 12.5 | 50 | -40°C ~+85° |
| YP32K76800S102 | 32.768 | ±20 | 12.5 | 50 | -40°C ~+85° |
| YP32K76800S103 | 32.768 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP36K00000S102 | 36.000 | ±20 | 12.5 | 50 | -40°C ~+85° |
| YP36K00000S103 | 36.000 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP38K00000S102 | 38.000 | ±20 | 12.5 | 50 | -40°C ~+85° |
| YP38K00000S103 | 38.000 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP38K40000S102 | 38.4000 | ±20 | 12.5 | 50 | -40°C ~+85° |
| YP38K40000S103 | 38.400 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP40K00000S102 | 40.000 | ±20 | 12.5 | 50 | -40°C ~+85° |
| YP40K00000S103 | 40.000 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP60K00000S102 | 60.000 | ±20 | 12.5 | 50 | -40°C ~+85° |
| YP60K00000S103 | 60.000 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP65K53600S102 | 65.536 | ±20 | 12.5 | 50 | -40°C ~+85° |

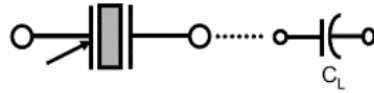
KHZ SMD CRYSTALS PLASTIC CASE 8038 TYPE CCMC SERIES
MAIN ELECTRICAL PARAMETERS - Ta = 25°C

| Part Code | Frequency Range (KHz) | Frequency Tolerance (ppm) | Load Capacitance (CL) (pF) | ESR Max. (KΩ) | Operating Temp. Range (°C) |
|-----------------------|-----------------------|---------------------------|----------------------------|---------------|----------------------------|
| YP65K53600S103 | 65.536 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP75K00000S102 | 75.000 | ±20 | 12.5 | 50 | -40°C ~+85° |
| YP75K00000S103 | 75.000 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP76K80000S102 | 76.800 | ±20 | 12.5 | 50 | -40°C ~+85° |
| YP76K80000S103 | 76.800 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP77K50000S102 | 77.500 | ±20 | 12.5 | 50 | -40°C ~+85° |
| YP77K50000S103 | 77.500 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP77K50300S102 | 77.503 | ±20 | 12.5 | 50 | -40°C ~+85° |
| YP77K50300S103 | 77.503 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP96K00000S102 | 96.000 | ±20 | 12.5 | 50 | -40°C ~+85° |
| YP96K00000S103 | 96.00 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP100K0000S102 | 100.00 | ±20 | 12.5 | 50 | -40°C ~+85° |
| YP100K0000S103 | 100.00 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP153K6000S102 | 153.60 | ±20 | 12.5 | 50 | -40°C ~+85° |
| YP153K6000S103 | 153.60 | ±30 | 12.5 | 50 | -40°C ~+85° |
| YP153K6000S105 | 153.60 | ±50 | 12.5 | 50 | -40°C ~+85° |

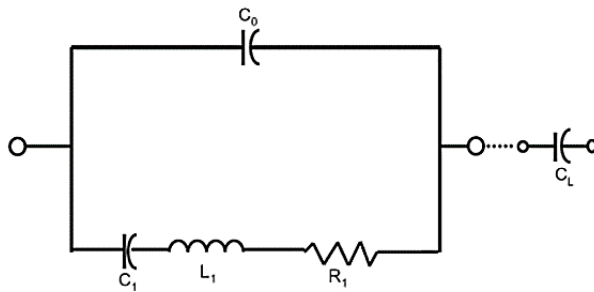
KHZ SMD CRYSTALS PLASTIC CASE 8038 TYPE CCMC SERIES

TEST STANDARD

Equivalent Circuits

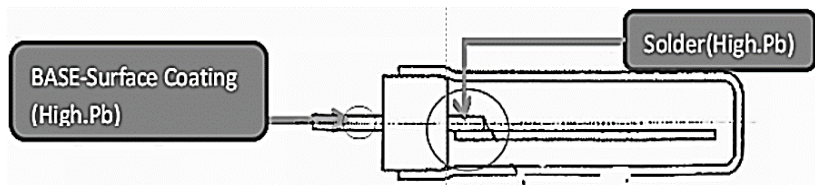


Symbol for crystal unit



Exemption Rule

1. SMD Tuning Fork Crystal series contain Pb chemical substance where solder material is over limitation. The location see at below drawing, The solder purpose is base connected with chip crystal blank.



2. Below statement is that exemption rule: Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead).(RoHS 6/5 2002/95/EC)

KHZ SMD CRYSTALS PLASTIC CASE 8038 TYPE CCMC SERIES

RELIABILITY (Mechanical And Environmental Endurance)

| TEST ITEMS | TEST METHOD AND CONDITIONS | REQUIREMENTS |
|-------------------|--|--|
| Vibration | <ol style="list-style-type: none"> Vibration Frequency: 10 To 55hz Vibration Amplitude: 1.5mm Cycle Time: 1~2min(10-55-10hz) Direction: X.Y.Z Duration: 2h/Each Direction, total 6Hours | Frequency Change: ±10ppm Max. Resistance Change: ± 15% Rr Max |
| Drop | 3 Times Free Fall From 75cm Height table to 3cm thickness hard wood board, After 30 minutes, the relative change value of frequency was measured. | Frequency Change: ±10ppm Max. Resistance Change: ± 15% Rr Max. |
| Leakage | Placed in a helium pressurized tank and filled with helium at a pressure of 0.5-0.6mpa for 1 hour then tested with a helium mass spectrometry leak detector. | Leakage:1x10 ⁻⁸ mbar.L/S Max. |
| Solder ability | Dip in flux 3-5 seconds Temperature: 260°C ± 5°C | Solder adhesion is good, solder adhesion more than 95% |
| High Temp Storage | Temperature: 125°C ± 5°C for 72 H, and the relative change in frequency was measured after 1-2 hours at room temperature | Frequency Change: ± 10ppm Max. Resistance Change: ± 15% Rr Max. |
| Low Temp Storage | Temperature: -45°C ± 5°C for 72 H, and the relative change in frequency was measured after 1-2 hours at room temperature | Frequency Change: ± 10ppm Max. Resistance Change: ± 15% Rr Max. |

KHZ SMD CRYSTALS PLASTIC CASE 8038 TYPE CCMC SERIES

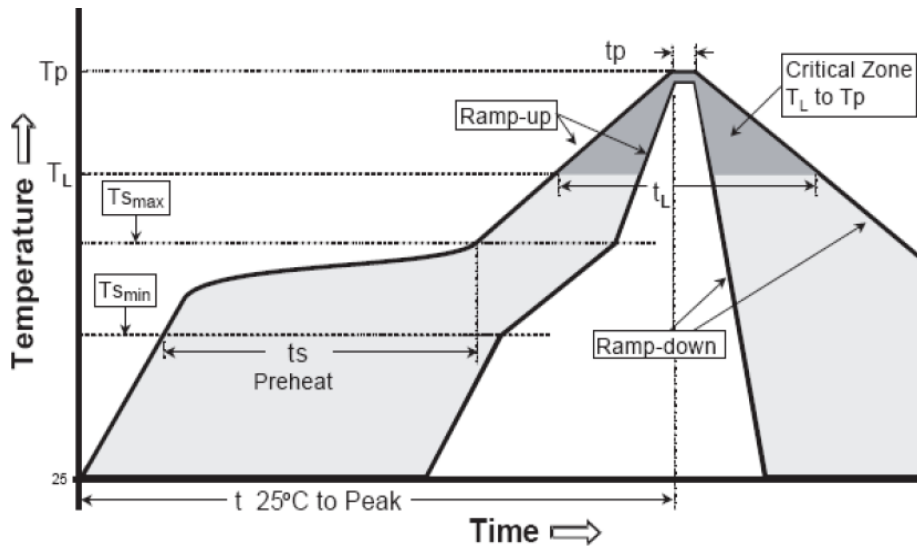
RELIABILITY (Mechanical And Environmental Endurance)

| TEST ITEMS | TEST METHOD AND CONDITIONS | REQUIREMENTS |
|------------------|--|---|
| Humidity Storage | Temperature: $80^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 72 H, relative Humidity: 90-95% for 72 hours, and then the relative change in frequency was measured | Frequency Change: $\pm 10\text{ppm Max.}$ Resistance Change: $\pm 15\% \text{rr max.}$ |
| Temp cycle | Temperature 1: $-55^{\circ}\text{C} \pm 5^{\circ}\text{C}$, Temperature 2: $-55^{\circ}\text{C} \pm 5^{\circ}\text{C}$, Temperature change between from T1 to T2 to T1, Run 5 cycles, maintain T1 and T2 30minutes each in one cycle. And the relative change in frequency was measured after 1-2 hours at room temperature | Frequency Change: $\pm 10\text{ppm Max.}$ Resistance Change: $\pm 15\% \text{rr max.}$ |
| Salt Fog | Put the crystal units in the salt spray room(salt density: 5%) at the temperature of 35°C for 96 hours. Then clean it with water and dry its surface. | The appearance shall has no abnormality and soldering is good. |
| Aging | Temperature: $85^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 1000H hours, the stood at room temperature for 1-2hours, and the relative change in frequency was measured | Frequency Change: $\pm 10\text{ppm Max.}$ Resistance Change: $\pm 15\% \text{rr max.}$ |

KHZ SMD CRYSTALS PLASTIC CASE 8038 TYPE CCMC SERIES

SUGGESTED REFLOW PROFILE (For Reference Only)

Recommended Solder Composition: It is following industry trend of using alloy range Sn-Ag (3.4-4.1)-Cu (0.45-0.9) or Sn-Pb-Ag for reflow and wave soldering.

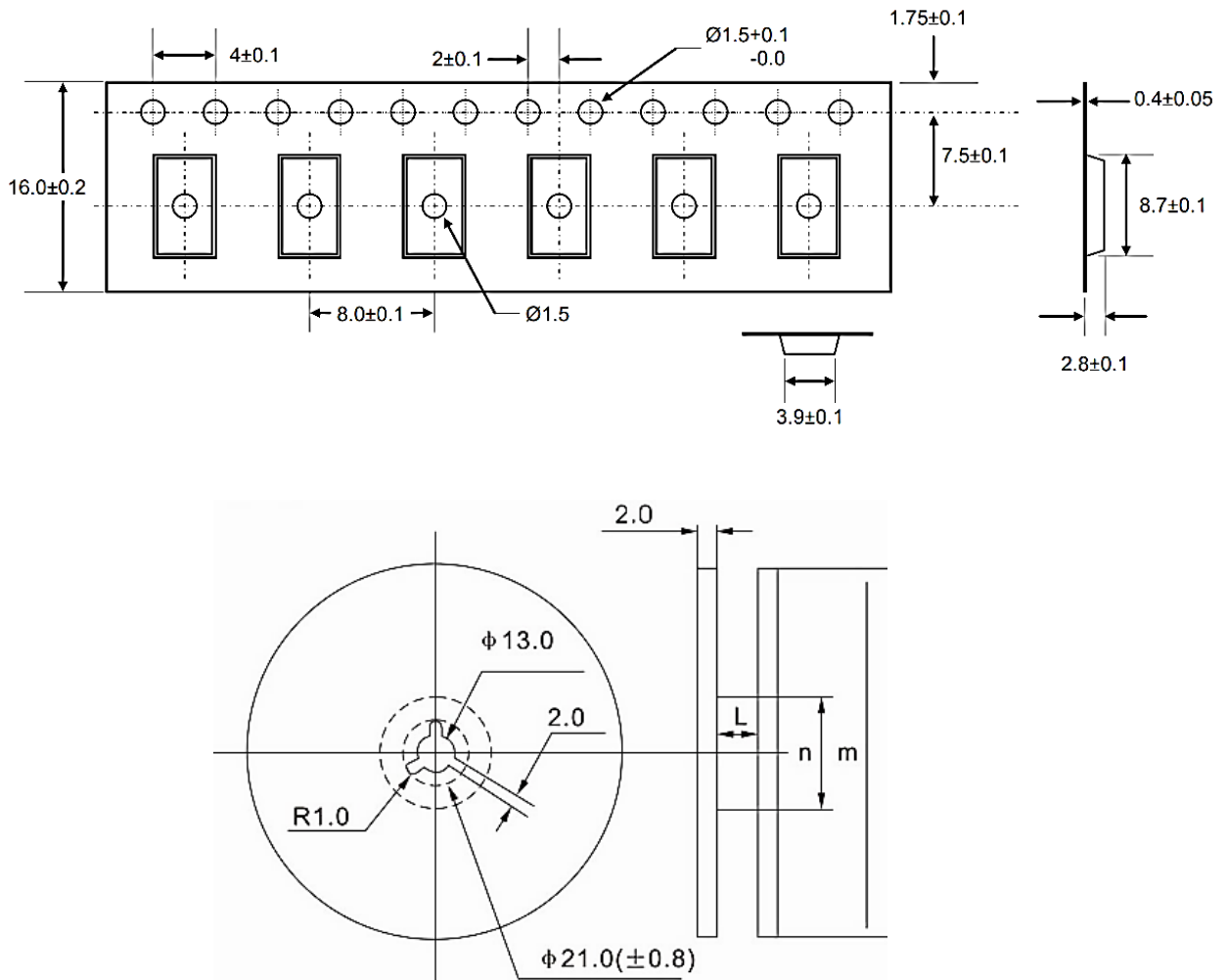


| PROFILE FEATURE | | PB-FREE ASSEMBLY |
|---|---------------------------|-------------------|
| Average Ramp-up Rate (Ts Max to Tp) | | 3°C/second Max |
| Preheat | Temperature Min (Ts Min.) | 125°C |
| | Temperature Max (Ts Max.) | 200°C |
| | Time (ts Min. to ts Max.) | 60 ~ 180 seconds |
| Time maintained above | Temperature (TL) | 217°C |
| | Time (tl) | 60 ~ 150 seconds |
| Peak/Classification Temperature (Tp) | | 260 °C |
| Time within 5°C of actual Peak Temperature (tp) | | 20 ~ 40 seconds |
| Ramp-down rate | | 6 °C /Second Max. |
| Time 25 °C to Peak Temperature | | 8 minutes Max. |
| Suggest reflow times | | 3 Times Max. |

KHZ SMD CRYSTALS PLASTIC CASE 8038 TYPE CCMC SERIES

TAPE/REEL (Unit: mm)

All Devices are packed in accordance with EIA standard RS-481-2 and specifications, 3000pcs/Reel



| Symbol | ϕm | ϕn | L | Carrier tape size |
|-----------|----------|----------|------|-------------------|
| Dimension | 330±3 | 80 Min. | 17.5 | 16 |

KHZ SMD CRYSTALS PLASTIC CASE 8038 TYPE CCMC SERIES

CAUTION

In Order To Maintain Quality. Without Change In Characteristics Of The crystal Units. Please Follow Below Recommendation

Shock

All Crystal Units Have A Thin Crystal Blanks Within If It Is Dropped Above The Recommended Dropping Height (500mm) The Specific Characteristics And Appearance Can Be Changed Please Pay Special Attention To External Shock

Environmental

1. Crystal Units' Frequency Can Be Changed Due To Surrounding Temperature If It Is Stored Next To A High Temperature Heater (Above+85°C) Or Below 40°C. And A Strong Light Source For Long Period Of Time. The Electrical Characteristics Can Be Changed It Is Suggested That These Environment Be Avoided
2. If The Unit Is Placed In A Humid Environment. Lead Terminal Can Be Damaged: Therefore. Do Not Store The Crystal Units In A Humid Environment
3. Crystal unit Has Vibrating Characteristics If It Is Placed Where Vibration Exists The Operating Characteristics Can Be Altered; Therefore This Environment Should Be Avoided

Leads

1. After Soldering Crystal Units Into A PCB Impacting The Unit From The top, bottom Left Or Right Side Of The Unit Can Shatter The Glass Portion Of The Base Rendering The Unit Useless

Assembly Method

1. Correct Ultrasonic Frequency For Cleaning Should Be Less Than 20khz
2. Soldering Should Be Done Using IEC 61760-1 OR Pb-free Products

Storage

If The Crystal Units Are Stored In Humid Or Salty Environment Appearance Can Be Changed And Solderability Can Deteriorate; Therefore avoid Storing In Such Environment Do Not Store The Crystal Unit More Than 3 Months

KHZ SMD CRYSTALS PLASTIC CASE 8038 TYPE CCMC SERIES

IMPORTANT NOTES AND DISCLAIMER

1. 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.
2. NextGen Component, Inc (*NextGen*) reserves the right to make changes to this document and its products and specifications at any time without notice. Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.
3. *NextGen* makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does NextGen assume any liability for application assistance or customer product design.
4. *NextGen* does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application. No license is granted by implication or otherwise under any intellectual property rights of NextGen.
5. *NextGen* products are not authorized for use as critical components in life support devices or systems without express written approval by *NextGen*.
6. *NextGen* requires that customers first obtain an RMA (Returned Merchandise Authorization) number prior to returning any products. Returns must be made within 30 days of the date of invoice, be in the original packaging, unused and like-new condition. At the time of quoting or purchasing, a product may say that it is Non-Cancelable/ Non-Returnable (NCNR). These products are not returnable and not refundable.