

**SPECIFICATION SHEET**

|                                             |                                                                                                                                                                                                                                                                                      |                               |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| <b>SPECIFICATION SHEET NO.</b>              | R0530- SB1045L000S045                                                                                                                                                                                                                                                                |                               |
| <b>DATE</b>                                 | May 30, 2024                                                                                                                                                                                                                                                                         |                               |
| <b>REVISION</b>                             | A2                                                                                                                                                                                                                                                                                   | Updated With Most Recent Data |
| <b>DESCRIPTION AND<br/>MAIN PARAMETRICS</b> | SMD Schottky Barrier Rectifier, 3 pads, Case TO-277, SB10 series<br>Repetitive Peak Reverse Voltage 45V Max.<br>Average Rectified Output Current 10A<br>Operating Temp. Range -55°C ~+150°C,<br>Package in Tape/Reel, 5000pcs/Reel<br>RoHS III/REACH Compliant and Halogen Free (HF) |                               |
| <b>CUSTOMER</b>                             |                                                                                                                                                                                                                                                                                      |                               |
| <b>CUSTOMER PART NO.</b>                    |                                                                                                                                                                                                                                                                                      |                               |
| <b>CROSS REF. PART NO.</b>                  |                                                                                                                                                                                                                                                                                      |                               |
| <b>ORIGINAL MFG/PART NO.</b>                | MDD Diodes/SB1045L                                                                                                                                                                                                                                                                   |                               |
| <b>PART CODE</b>                            | SB1045L000S045                                                                                                                                                                                                                                                                       |                               |

|                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>VENDOR APPROVE</b>                                                                                                                                                                                                                                                                               |
| Issued/Checked/Approved <div>    </div> |
| DATE: May 30, 2024                                                                                                                                                                                                                                                                                  |

|                         |
|-------------------------|
| <b>CUSTOMER APPROVE</b> |
|                         |
| DATE:                   |

## SMD SCHOTTKY BARRIER RECTIFIER SB10 SERIES CASE TO-277

### MAIN FEATURE

- The Plastic Package Carries Underwriters Laboratory
- Flammability Classification 94V-0
- Low Forward Voltage Drop and High Forward Surge Current Capability
- Built-in Strain Relief And Ideal For Automated Placement
- High Temperature Soldering Guaranteed: 250°C/10 Seconds At Terminals
- Surface Mount Package Ideally Suited For Automatic Insertion
- REACH/RoHS III Complaint And Halogen Free
- Cross Main Competitor Parts In Market



### APPLICATION

- For Surface Mounted Applications

### ELECTRICAL CHARACTERISTICS

- See Page 4

### HOW TO ORDER

- Please Follow Up Part Code Guide And Indicate Pat Code When You Order Or RFQ For Custom Specification

### PART CODE GUIDE

**RFQ**  
[Request For Quotation](#)

| CODE | NAME                     | KEY SPECIFICATION OPTION                                     |
|------|--------------------------|--------------------------------------------------------------|
| SB10 | Product Series Code      | SMD Schottky Barrier Rectifier, 3 pads, Forward Current 10A. |
| 45   | Reverse Voltage Code     | 45: 45V                                                      |
| L0   | Case Code                | L0: Case TO-277                                              |
| 00S  | Internal Control Code    | Custom letter A~Z, a-z or Digits (0-9)                       |
| 045  | DC Blocking Voltage Code | 045: 45V                                                     |

# SMD SCHOTTKY BARRIER RECTIFIER SB10 SERIES CASE TO-277

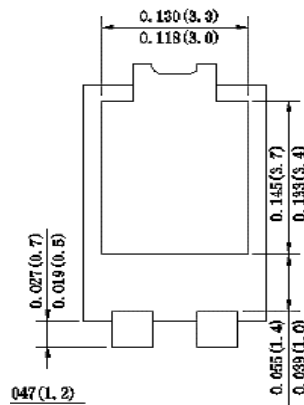
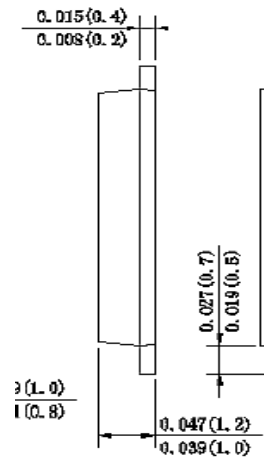
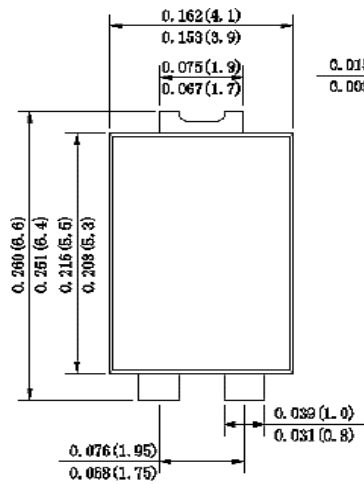
**DIMENSION** (Unit: Inch/mm)

Image for reference



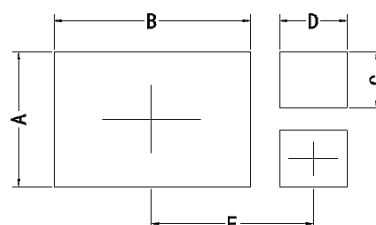
Marking: SB1045L

TO-277



LEFT PIN  RIGHT PIN  BOTTOMSIDE HEAT SINK

Recommend  
Pad Layout



| Symbol | Unit<br>(inch) | Unit<br>(mm) |
|--------|----------------|--------------|
| A      | 0.142          | 3.60         |
| B      | 0.211          | 5.35         |
| C      | 0.059          | 1.50         |
| D      | 0.073          | 1.85         |
| E      | 0.169          | 4.30         |

## SMD SCHOTTKY BARRIER RECTIFIER SB10 SERIES CASE TO-277

### MECHANICAL DATA

| CASE                                   | TERMINALS                                                 | POLARITY                           | MOUNTING POSITION | WEIGHT PER PIECE             |
|----------------------------------------|-----------------------------------------------------------|------------------------------------|-------------------|------------------------------|
| JEDEC TO-277<br>Molded<br>Plastic Body | Solder Plated, Solderable Per MIL-STD-750,<br>Method 2026 | Polarity Symbol<br>Marking On Case | Any               | 0.0030 Ounce,<br>0.092 grams |

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified. Single phase half-wave 60Hz, resistive or inductive load, for capacitive load current derate by 20%.

| PARAMETER                                                                                                     | SYMBOLS | VALUE      | UNITS |
|---------------------------------------------------------------------------------------------------------------|---------|------------|-------|
| Maximum Repetitive Peak Reverse Voltage                                                                       | VRRM    | 45         | V     |
| Maximum DC Blocking Voltage                                                                                   | VDC     | 45         | V     |
| RMS Reverse Voltage                                                                                           | VRMS    | 31.5       | V     |
| Average Rectified Output Current                                                                              | IO      | 10         | A     |
| Non-repetitive Peak Forward Surge 8.3ms<br>Single Half Sine-wave Superimposed On Rated Load<br>(JEDEC Method) | IFSM    | 175        | A     |
| Typical Thermal Resistance                                                                                    | ROJA    | 60         | °C/W  |
| Operating Junction Temperature Range                                                                          | TJ      | -55 ~ +150 | °C    |
| Storage Temperature Range                                                                                     | TSTG    | -55 ~ +150 | °C    |

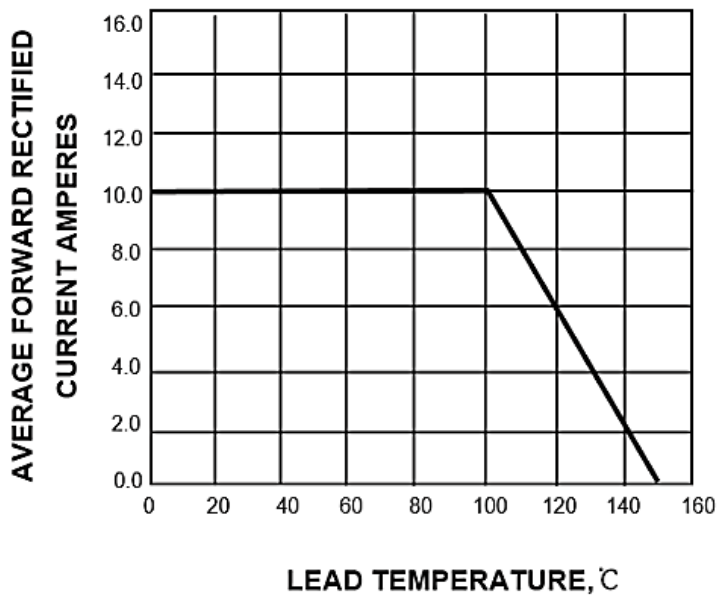
### CHARACTERISTICS - @ 25 °C

| PARAMETER                                            | SYMBOLS | VALUE |      |      | UNIT | CONDITION  |
|------------------------------------------------------|---------|-------|------|------|------|------------|
|                                                      |         | MIN.  | TYP. | MAX. |      |            |
| Forward Voltage Drop                                 | VF      | -     | -    | 0.55 | V    | @ 10A      |
| Peak Reverse Current At<br>Rated DC Blocking Voltage | IR      | -     | -    | 0.5  | mA   | @TA= 25°C  |
|                                                      |         | -     | -    | 50   | mA   | @TA= 125°C |

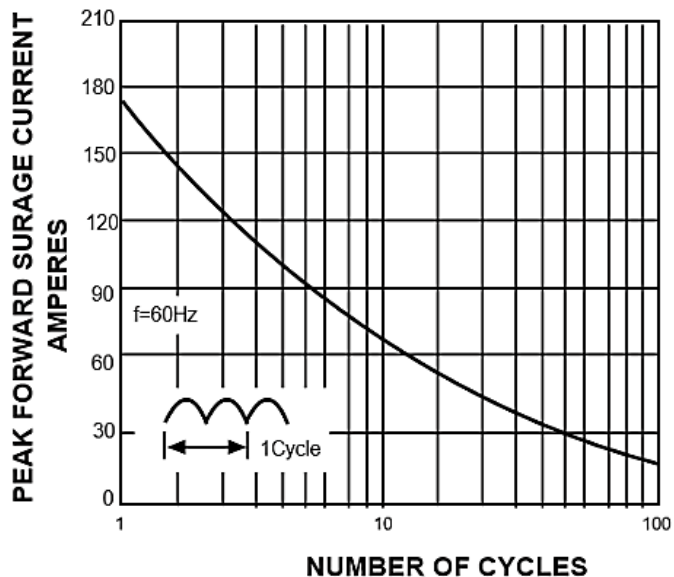
## SMD SCHOTTKY BARRIER RECTIFIER SB10 SERIES CASE TO-277

**TYPICAL CHARACTERISTIC CURVES** - For Reference Only

**FIG. 1- DERATING CURVE OUTPUT RECTIFIED CURRENT**



**FIG. 2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT PER LEG**



## SMD SCHOTTKY BARRIER RECTIFIER SB10 SERIES CASE TO-277

TYPICAL CHARACTERISTIC CURVES - For Reference Only

FIG. 3-TYPICAL FORWARD VOLTAGE CHARACTERISTICS

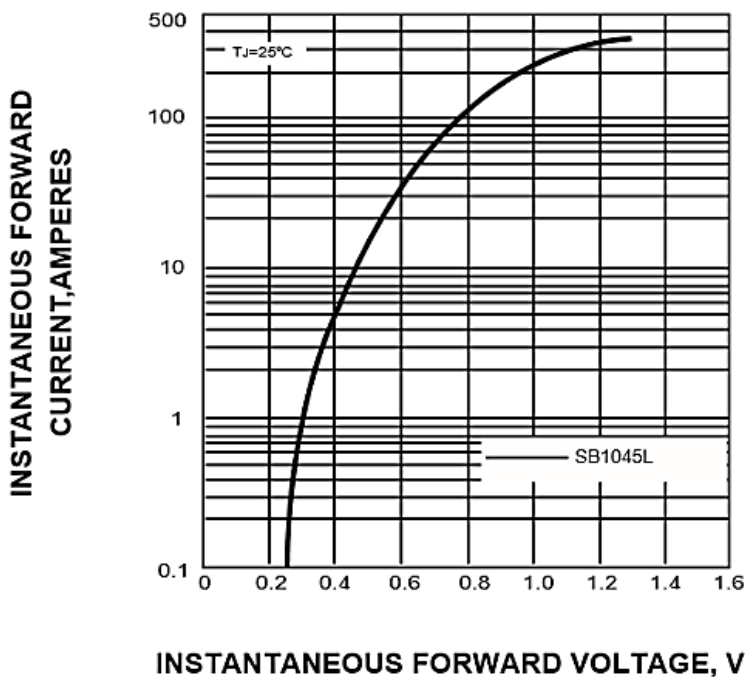
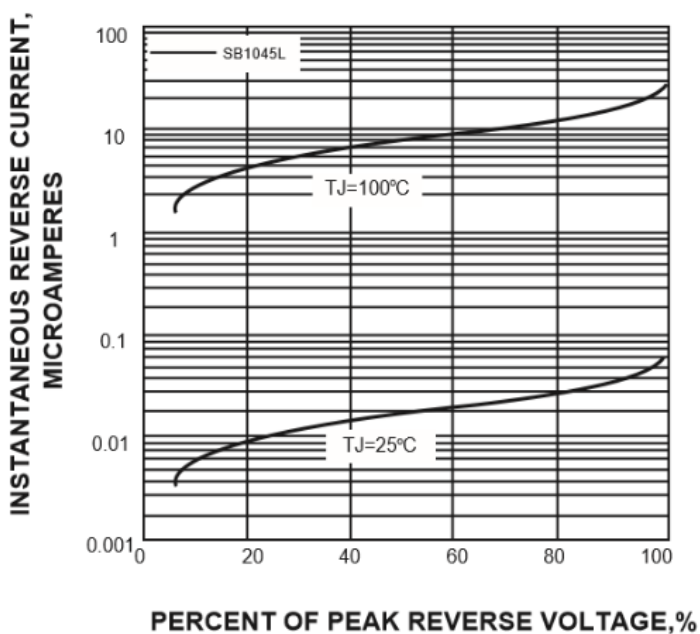


FIG. 4-TYPICAL REVERSE LEAKAGE CHARACTERISTICS



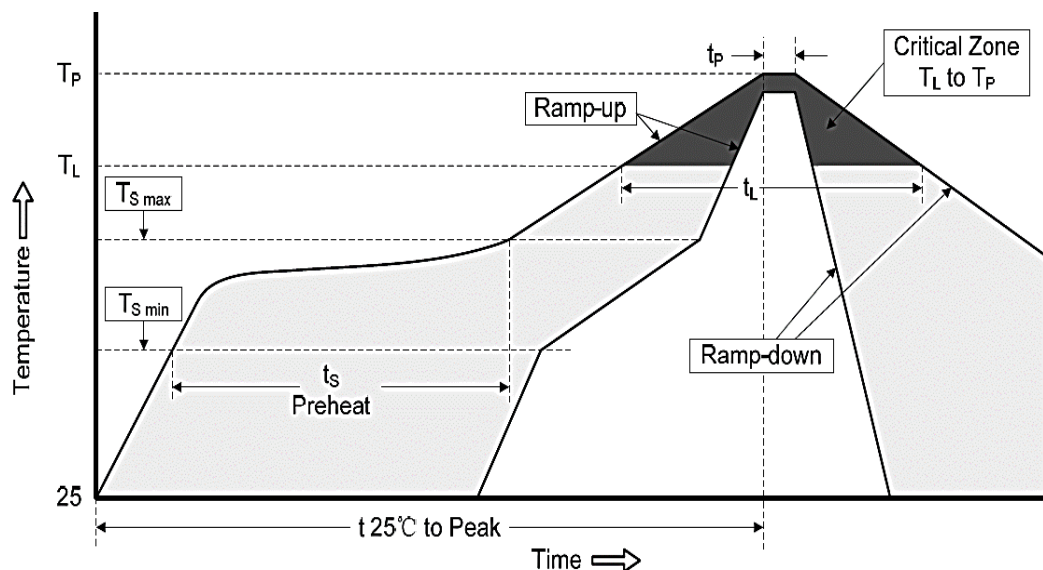
## SMD SCHOTTKY BARRIER RECTIFIER SB10 SERIES CASE TO-277

### RELIABILITY

| NUMBER | EXPERIMENT ITEMS                   | EXPERIMENT METHOD AND CONDITIONS                                                                               | REFERENCE DOCUMENTS             |
|--------|------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------|
| 1      | Solder Resistance Test             | Test 260°C± 5°C for 10 ± 2 sec.<br>Immerse body into solder 1/16" ± 1/32"                                      | MIL-STD-750D<br>METHOD-2031.2   |
| 2      | Solderability Test                 | 230°C ±5°C for 5 sec.                                                                                          | MIL-STD-750D<br>METHOD-2026.1 0 |
| 3      | Pull Test                          | 1 kg in axial lead direction for 10 sec.                                                                       | MIL-STD-750D<br>METHOD-2036.4   |
| 4      | Bend Test                          | 0.5Kg Weight Applied To Each Lead,<br>Bending Arcs 90 °C ± 5 °C For 3 Times                                    | MIL-STD-750D<br>METHOD-2036.4   |
| 5      | High Temperature Reverse Bias Test | TA=100°C for 1000 Hours at VR=80%<br>Rated VR                                                                  | MIL-STD-750D<br>METHOD-1038.4   |
| 6      | Forward Operation Life Test        | TA=25°C Rated Average Rectified<br>Current                                                                     | MIL-STD-750D<br>METHOD-1027.3   |
| 7      | Intermittent Operation Life Test   | On state: 5 min with rated IRMS Power<br>Off state: 5 min with Cool Forced Air.<br>On and off for 1000 cycles. | MIL-STD-750D<br>METHOD-1036.3   |
| 8      | Pressure Cooker Test               | 15 PSIG, TA=121°C, 4 hours                                                                                     | MIL-S-19500<br>APPENOIXC        |
| 9      | Temperature Cycling Test           | -55°C~+125°C; 30 Minutes For Dwelled<br>Time 5 minutes for transferred time.<br>Total: 10 cycles.              | MIL-STD-750D<br>METHOD-1051.7   |
| 10     | Thermal Shock Test                 | 0°C for 5 minutes., 100°C for 5minutes,<br>Total: 10 cycles                                                    | MIL-STD-750D<br>METHOD-1056.7   |
| 11     | Forward Surge Test                 | 8.3ms Single Sale Sine-wave One Surge.                                                                         | MIL-STD-750D<br>METHOD-4066.4   |
| 12     | Humidity Test                      | TA=65°C, RH=98% for 1000 hours.                                                                                | MIL-STD-750D<br>METHOD-1021.3   |
| 13     | High Temperature Storage life Test | 150°C for 1000 Hours                                                                                           | MIL-STD-750D<br>METHOD-1031.5   |

## SMD SCHOTTKY BARRIER RECTIFIER SB10 SERIES CASE TO-277

### SUGGESTED REFLOW PROFILE - For Reference Only

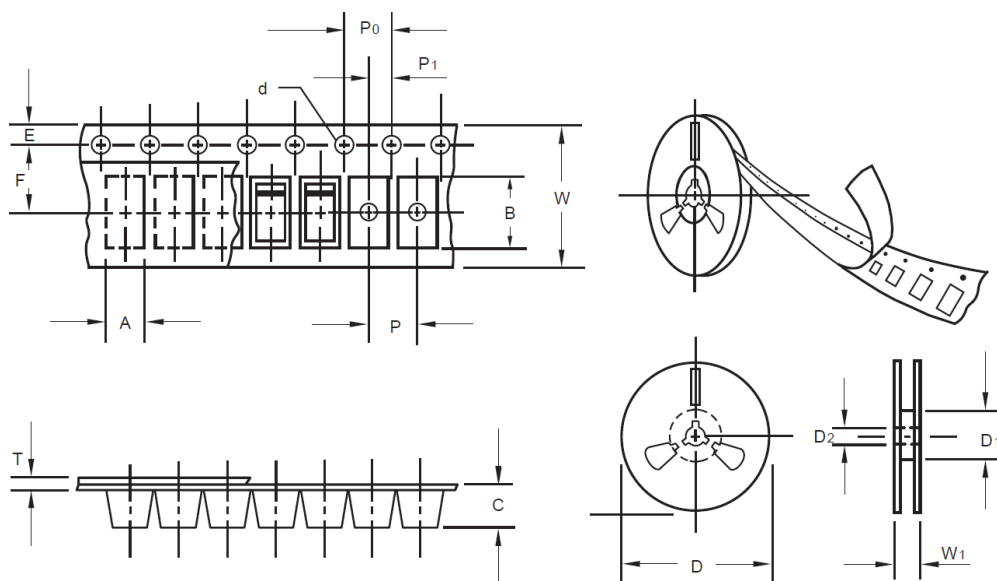


| PROFILE FEATURE                                 |                           | PB-FREE ASSEMBLY  |
|-------------------------------------------------|---------------------------|-------------------|
| Average Ramp-up Rate (Ts Max to Tp)             |                           | 3°C/second Max    |
| Preheat                                         | Temperature Min (Ts Min.) | 150°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.      |

# SMD SCHOTTKY BARRIER RECTIFIER SB10 SERIES CASE TO-277

**TAPE/REEL** - Unit: mm

All Devices are packed in accordance with EIA standard RS-481-A and specifications.



| ITEM                      | SYMBOL       | TOLERANCE | TO-277 |
|---------------------------|--------------|-----------|--------|
| Carrier width             | A            | 0.1       | 4.45   |
| Carrier Length            | B            | 0.1       | 7.0    |
| Carrier Depth             | C            | 0.1       | 1.60   |
| Sprocket hole             | d            | 0.05      | 1.55   |
| 13" Reel outside diameter | D            | 2.0       | 330.00 |
| 13" Reel inner diameter   | D1           | Min.      | 50.00  |
| Feed hole diameter        | D2           | 0.5       | 13.00  |
| Sprocket hole position    | E            | 0.1       | 1.75   |
| Punch hole position       | F            | 0.1       | 7.50   |
| Punch hole pitch          | P            | 0.1       | 8.00   |
| Sprocket hole pitch       | P0           | 0.1       | 4.00   |
| Embossment center         | P1           | 0.1       | 2.00   |
| Overall tape thickness    | T            | 0.1       | 0.25   |
| Tape width                | W            | 0.3       | 12.00  |
| Reel width                | W1           | 1.0       | 12.30  |
| MPQ/Reel                  | 5000pcs/Reel |           |        |

## SMD SCHOTTKY BARRIER RECTIFIER SB10 SERIES CASE TO-277

### IMPORTANT NOTES AND DISCLAIMER

1. **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 at Download Center.
2. **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 at Download Center.
3. 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.
4. 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.
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8. *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.

5/30/2024

10