



Description

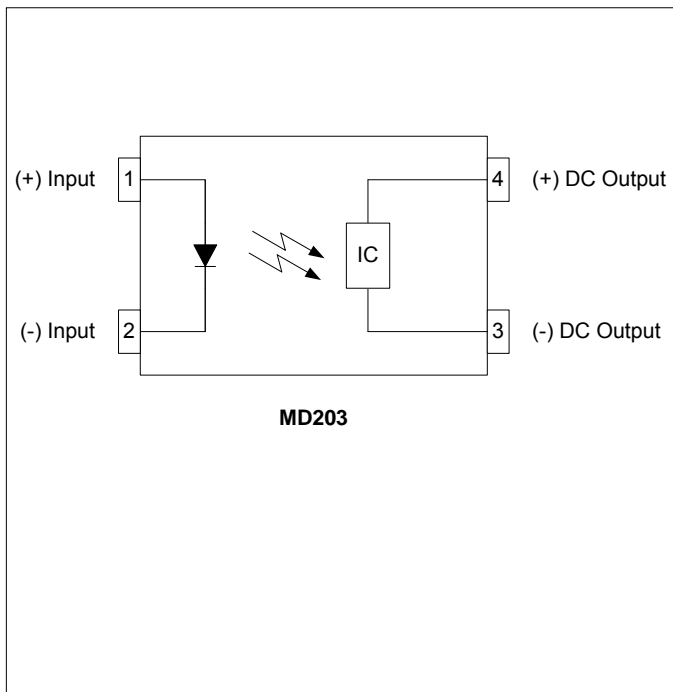
The MD203 consists of an input drive LED optically coupled to a photodiode array output designed to drive highly capacitive loads, including the gate of a power MOSFET. The active discharge circuit of the PDA assures quick discharge of MOSFETs, providing fast turn-off times. This device can be used in a wide variety of applications for which high levels of input are required for a MOSFET output.

The MD203 comes standard in a miniature 4 pin SOP package.

Applications

- Isolated means to drive discrete power MOSFETs
- Lighting Controls
- Process Control Modules
- Solid State Relays
- Solenoid Controls

Schematic Diagram



Features

- Miniature 4 pin SOP package
- Built in active discharge circuit for fast turn-off
- Fast Turn-On
- 6V Gate Drive Voltage
- High Input-to-Output Isolation (1.5kV_{RMS})
- Long Life / High Reliability
- RoHS / Pb-Free / REACH Compliant

Agency Approvals

UL / C-UL: File # E201932
 VDE: File # 40035191 (EN 60747-5-2)

Absolute Maximum Ratings

The values indicated are absolute stress ratings. Functional operation of the device is not implied at these or any conditions in excess of those defined in electrical characteristics section of this document. Exposure to absolute Maximum Ratings may cause permanent damage to the device and may adversely affect reliability.

Storage Temperature-55 to +125°C
 Operating Temperature-40 to +85°C
 Continuous Input Current.....50mA
 Transient Input Current.....500mA
 Reverse Input Control Voltage5V
 Input Power Dissipation.....70mW
 Total Power Dissipation170mW
 Solder Temperature – Wave (10sec).....260°C
 Solder Temperature – IR Reflow (10sec).....260°C

Ordering Information

| Part Number | Description |
|-------------|--------------------------------------|
| MD203 | 4 pin SOP, (100/Tube) |
| MD203-TR | 4 pin SOP, Tape and Reel (2000/Reel) |

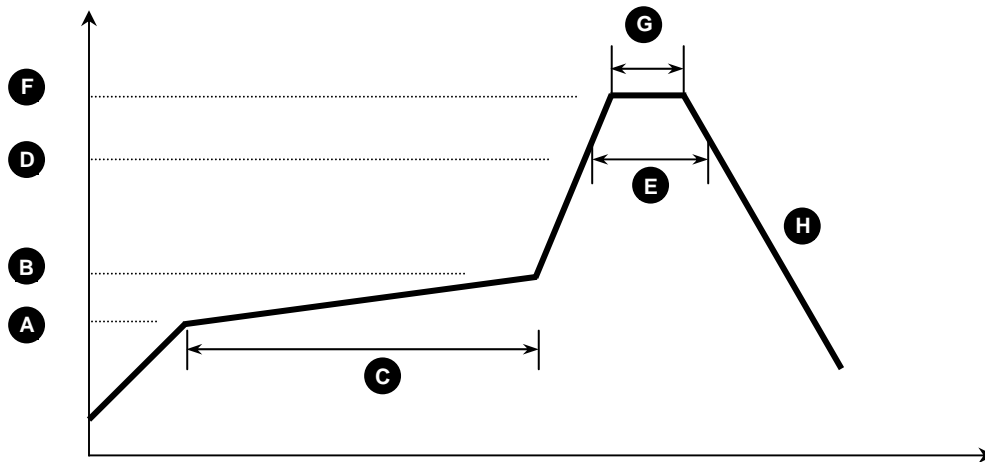
NOTES: Suffixes listed above are not included in marking on device for part number identification

Electrical Characteristics, $T_A = 25^\circ\text{C}$ (unless otherwise specified)

| Parameter | Symbol | Min. | Typ. | Max. | Units | Test Conditions |
|---------------------------------|---------------|------|-----------|------|---------------|----------------------------------|
| Input Specifications | | | | | | |
| LED Forward Voltage | V_F | - | 2.4 | 2.6 | V | $I_F = 10\text{mA}$ |
| LED Reverse Voltage | BV_R | 5 | - | - | V | $I_R = 10\mu\text{A}$ |
| Reverse Leakage Current | $I_{InRleak}$ | - | - | 10 | μA | $V_R = 5\text{V}$ |
| Turn-On Current | I_F | - | 5 | 10 | mA | $V_{OUT} = 5\text{V}$ |
| Turn-Off Current | $I_{F(OFF)}$ | - | 0.5 | - | mA | $V_{OUT} = 2\text{V}$ |
| Output Specifications | | | | | | |
| Open Circuit Voltage | V_{OC} | 6 | 6.3 | - | V | $I_F = 10\text{mA}$ |
| Short Circuit Voltage | I_{SC} | 3 | 4 | - | μA | $I_F = 10\text{mA}$ |
| Isolation Specifications | | | | | | |
| Isolation Voltage | V_{ISO} | 1500 | - | - | V_{RMS} | $RH \leq 50\%$, $t=1\text{min}$ |
| Input-Output Resistance | R_{I-O} | - | 10^{12} | - | Ω | $V_{I-O} = 500\text{V}_{DC}$ |

MD203 Solder Reflow Temperature Profile Recommendations
(1) *Infrared Reflow:*

Refer to the following figure as an example of an optimal temperature profile for single occurrence infrared reflow. Soldering process should not exceed temperature or time limits expressed herein. Surface temperature of device package should not exceed 250°C:



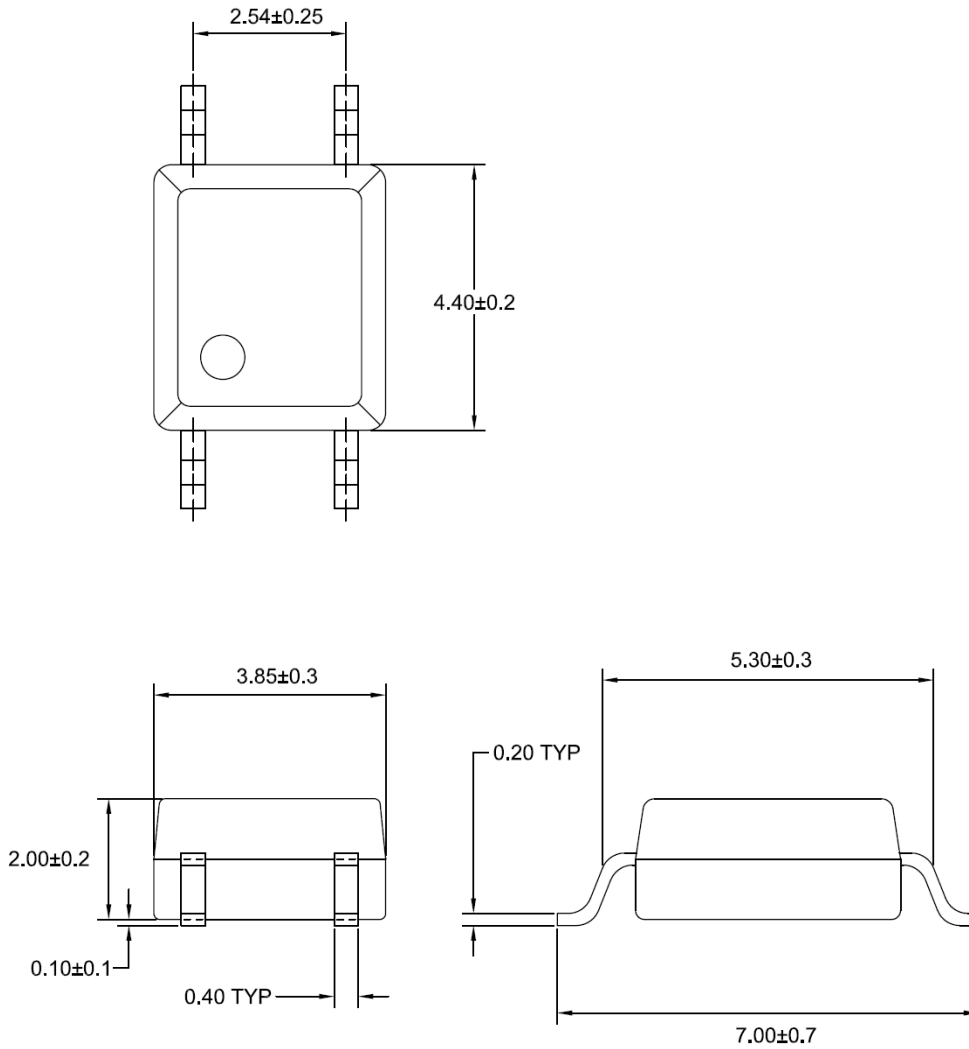
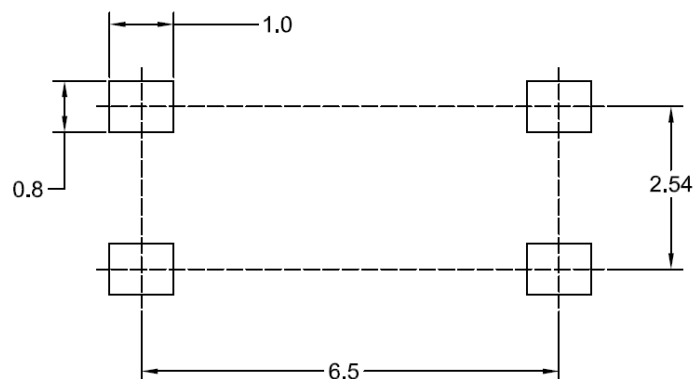
| Process Step | Description | Parameter |
|--------------|------------------------------------|-----------|
| A | Preheat Start Temperature (°C) | 150°C |
| B | Preheat Finish Temperature (°C) | 180°C |
| C | Preheat Time (s) | 90 - 120s |
| D | Melting Temperature (°C) | 230°C |
| E | Time above Melting Temperature (s) | 30s |
| F | Peak Temperature, at Terminal (°C) | 260°C |
| G | Dwell Time at Peak Temperature (s) | 10s |
| H | Cool-down (°C/s) | <6°C/s |

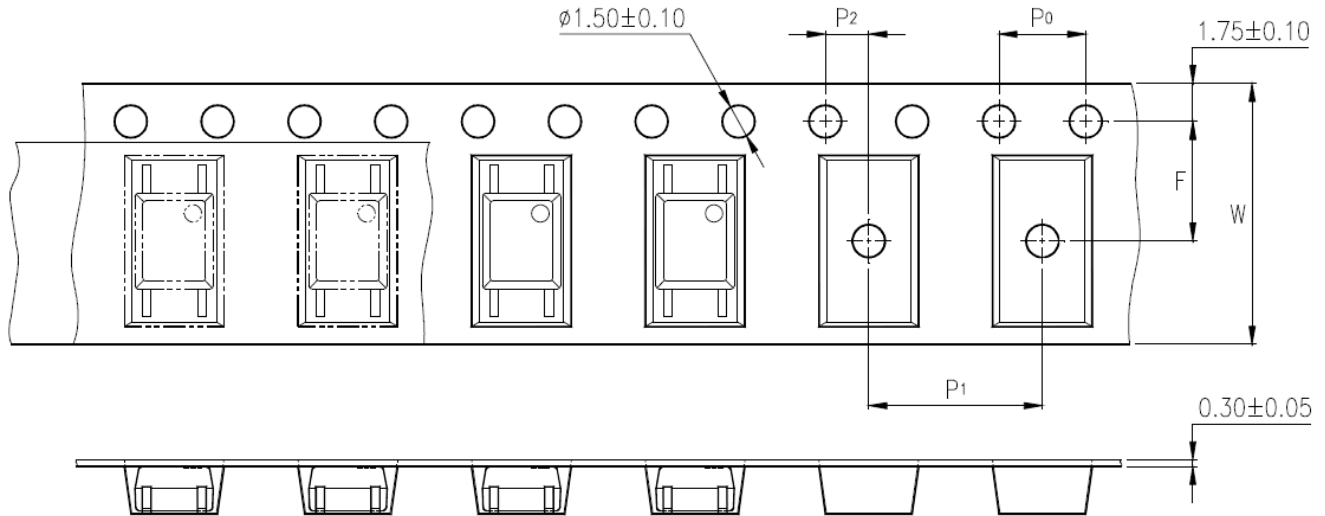
(2) *Wave Solder:*

Maximum Temperature: 260°C (at terminal)
 Maximum Time: 10s
 Pre-heating: 100 - 150°C (30 - 90s)
 Single Occurrence

(3) *Hand Solder:*

Maximum Temperature: 350°C (at tip of soldering iron)
 Maximum Time: 3s
 Single Occurrence

MD203 Package Dimensions
4 PIN SOP Package
Note: All dimensions in millimeters [mm]

4 PIN SOP Footprint


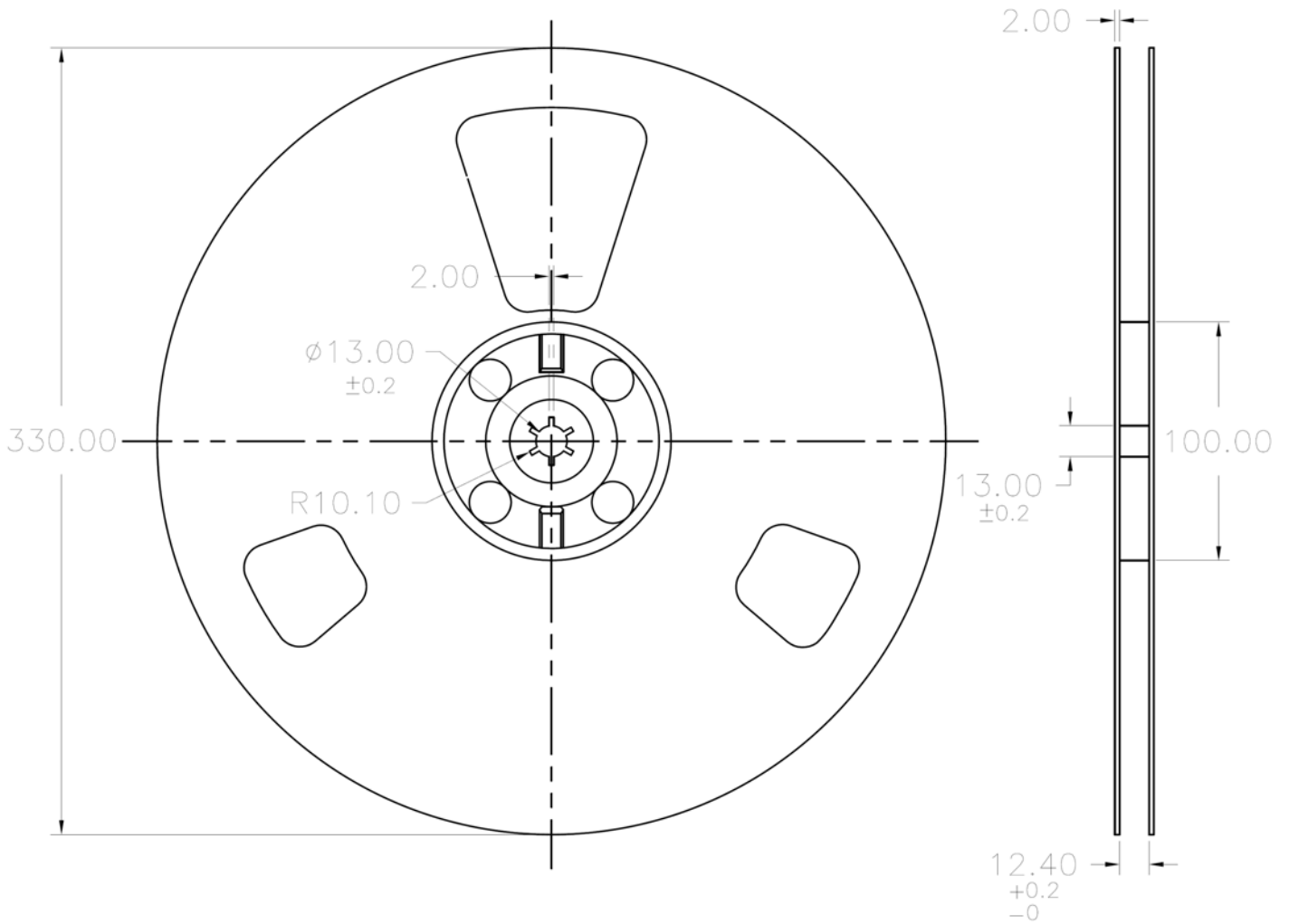
MD203 Packaging Specifications
Tape & Reel Specifications (T&R)
Note: All dimensions in millimeters [mm]


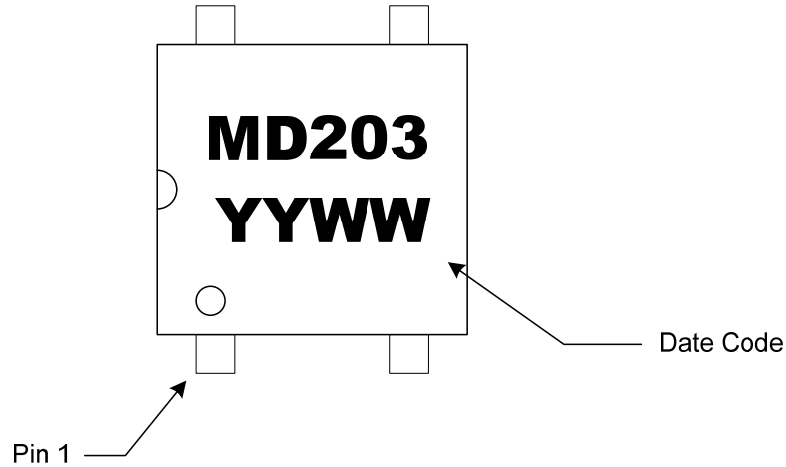
| Specification | Symbol | Dimensions, mm (inches) |
|----------------------|---------|--|
| Tape Width | W | 12 ± 0.3 (0.47) |
| Sprocket Hole Pitch | P0 | 4 ± 0.1 (0.15) |
| Compartment Location | F P2 | 5.5 ± 0.1 (0.217) 2 ± 0.1 (0.079) |
| Compartment Pitch | P1 | 8 ± 0.1 (0.315) |

MD203 Packaging Specifications

Tape & Reel Specifications (T&R)

Note: All dimensions in millimeters [mm]



MD203 Package Marking

MD203 Package Weights

| Device | Single Unit | Full Tube (100pcs) | Full Pouch (10 tubes) | Full Reel (2000pcs) |
|----------|-------------|-----------------------|--------------------------|------------------------|
| MD203 | 0.10 | 23 | 240 | - |
| MD203-TR | 0.10 | - | - | 500 |

Note: All weights above are in GRAMS, and include packaging materials where applicable

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