



## Description

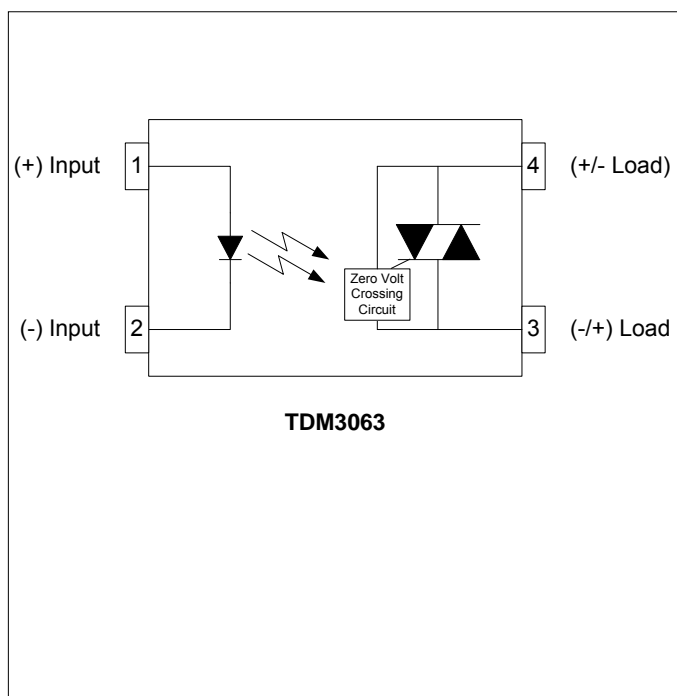
The TDM3063 consists of a single input LED optically coupled to a zero-volt crossing high voltage triac driver. The TDM3063 provides high input-to-output isolation and is designed to drive high-powered triacs. The TDM3063 provides an optically isolated method of interfacing logic level control signals to equipment powered from AC lines rated at 120V to 240V.

The TDM3063 comes standard in a miniature 4 pin SOP package.

## Applications

- Home Appliances
- Motor / Drive Controls
- Solid State Relays
- Solenoid / Valve Controls
- Temperature Controls

## Schematic Diagram



## Features

- Ultra Miniature 4-Pin Small Outline Package
- Zero Volt Switching
- 600V Blocking Voltage
- Low Trigger Current (5mA MAX)
- High Input-to-Output Isolation (3.75kV<sub>RMS</sub>)
- 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 +100°C  
Continuous Input Current.....50mA  
Transient Input Current.....500mA  
Reverse Input Control Voltage .....5V  
Input Power Dissipation.....70mW  
Total Power Dissipation .....170mW  
Solder Temperature – Wave (10sec).....260°C  
Solder Temperature – IR Reflow (10sec).....260°C

## Ordering Information

Part Number	Description
TDM3063	4 pin SOP, (100/Tube)
TDM3063-TR	4 pin SOP, Tape and Reel (2000/Reel)

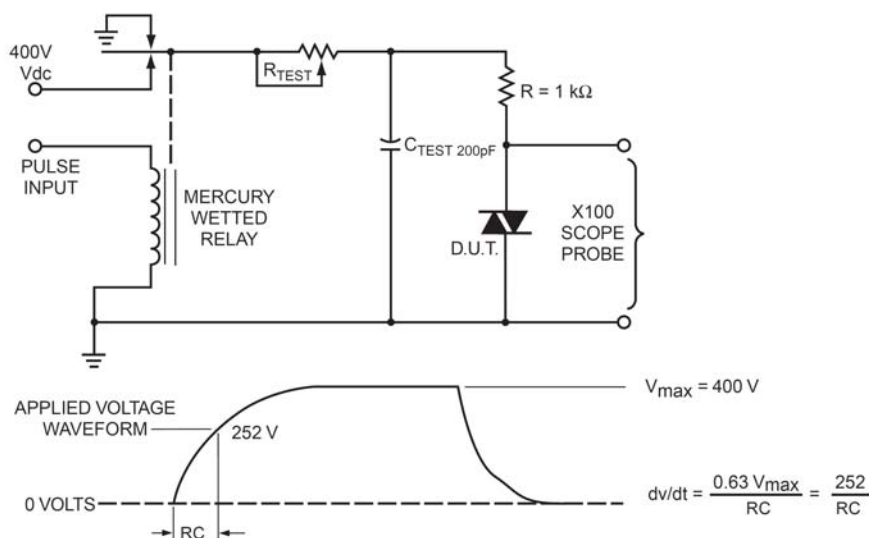
**NOTES:** Suffixes listed above are not included in marking on device for part number identification

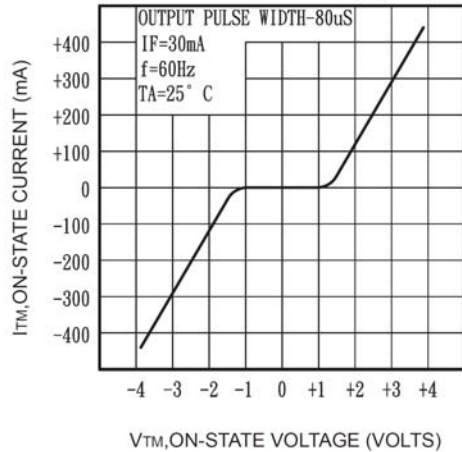
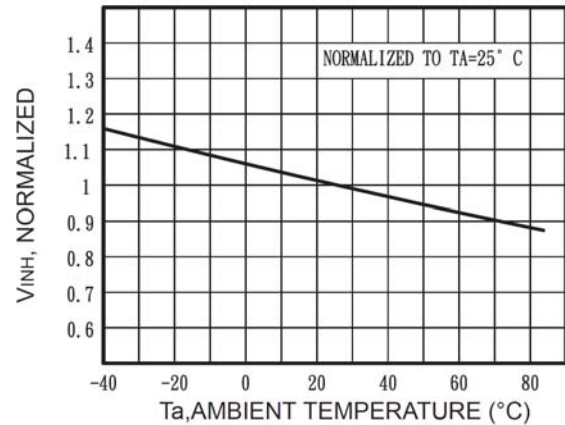
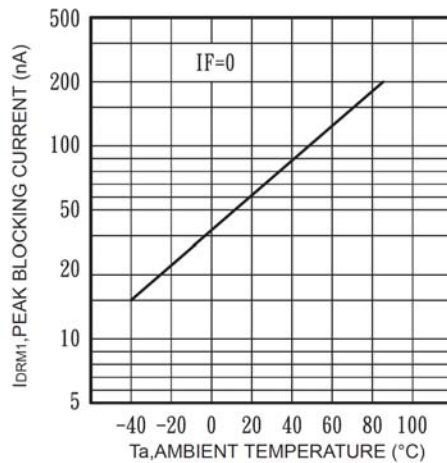
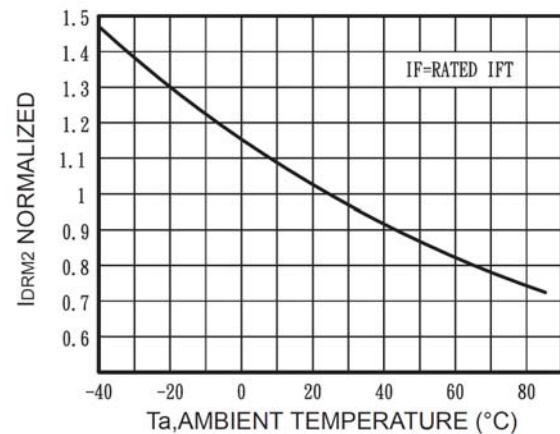
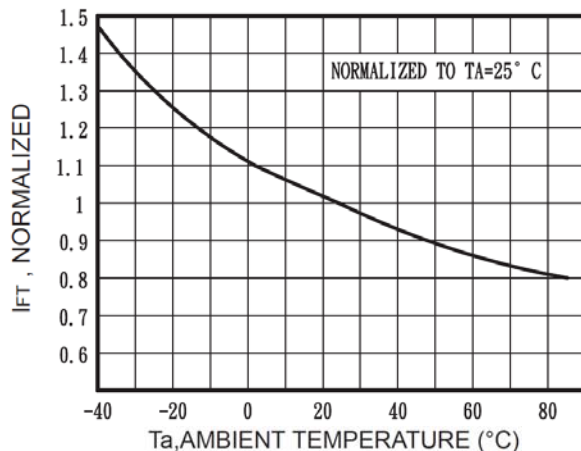
**Electrical Characteristics,  $T_A = 25^\circ\text{C}$  (unless otherwise specified)**

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
<b>Input Specifications</b>						
LED Forward Voltage	$V_F$	-	1.4	1.8	V	$I_F = 10\text{mA}$
LED Reverse Voltage	$BV_R$	5	-	-	V	$I_R = 10\mu\text{A}$
Reverse Leakage Current	$I_{nRleak}$	-	-	10	$\mu\text{A}$	$V_R = 6\mu\text{A}$
Trigger Current <sup>1</sup>	$I_{FT}$	-	-	5	mA	Main Terminal Voltage = 3V
<b>Output Specifications</b>						
Blocking Voltage	$V_{DRM}$	600	-	-	V	$I_O = 1\mu\text{A}$
Peak Blocking Current	$I_{DRM1}$	-	60	500	nA	$V_{DRM} = 600\text{V}$
On-State Voltage	$V_{ON}$	-	1.8	3	V	$I_F = 5\text{mA}$ , $I_{TM} = 100\text{mA}$
Leakage Current	$I_{DRM2}$	-	0.2	1	$\mu\text{A}$	$I_F = 0\text{mA}$ , $V_{DRM} = 600\text{V}$
Holding Current	$I_{HOLD}$	-	100	-	$\mu\text{A}$	-
Inhibit Voltage	$V_{INH}$	-	5	20	V	$I_F = 5\text{mA}$
Critical Rate of Rise <sup>2</sup>	$dV/dt$	1,000	2,000	-	V/ $\mu\text{S}$	-
<b>Isolation Specifications</b>						
Isolation Voltage	$V_{ISO}$	3,750	-	-	$V_{RMS}$	$RH \leq 50\%$ , $t=1\text{min}$
Input-Output Resistance	$R_{I-O}$	-	$10^{12}$	-	$\Omega$	$V_{I-O} = 500V_{DC}$

Note 1: Resistive load. For inductive loads, higher drive current is recommended

Note 2: This is for static  $dV/dt$ . Test Circuit Below

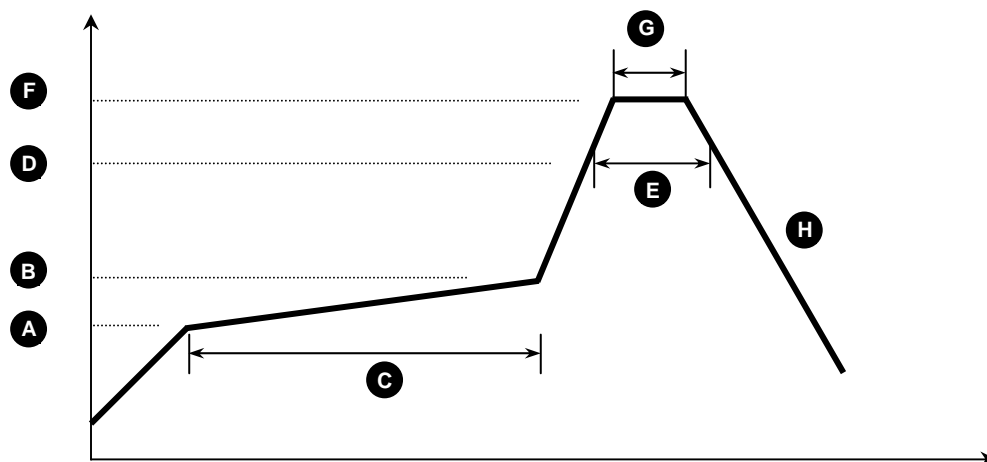
**TDM3063 Static  $dV/dt$  Test Circuit:**


**TDM3063 Performance & Characteristics Plots,  $T_A = 25^\circ\text{C}$  (unless otherwise specified)**
**Figure 1: On-State Characteristics**

**Figure 2: Inhibit Voltage ( $V_{INH}$ ) vs. Temperature ( $^\circ\text{C}$ )**

**Figure 3: Peak Blocking Current ( $I_{DRM1}$ ) vs. Temperature ( $^\circ\text{C}$ )**

**Figure 4: Leakage Current ( $I_{DRM2}$ ) vs. Temperature ( $^\circ\text{C}$ )**

**Figure 5: Trigger Current ( $I_{FT}$ ) vs. Temperature ( $^\circ\text{C}$ )**


## TDM3063 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:

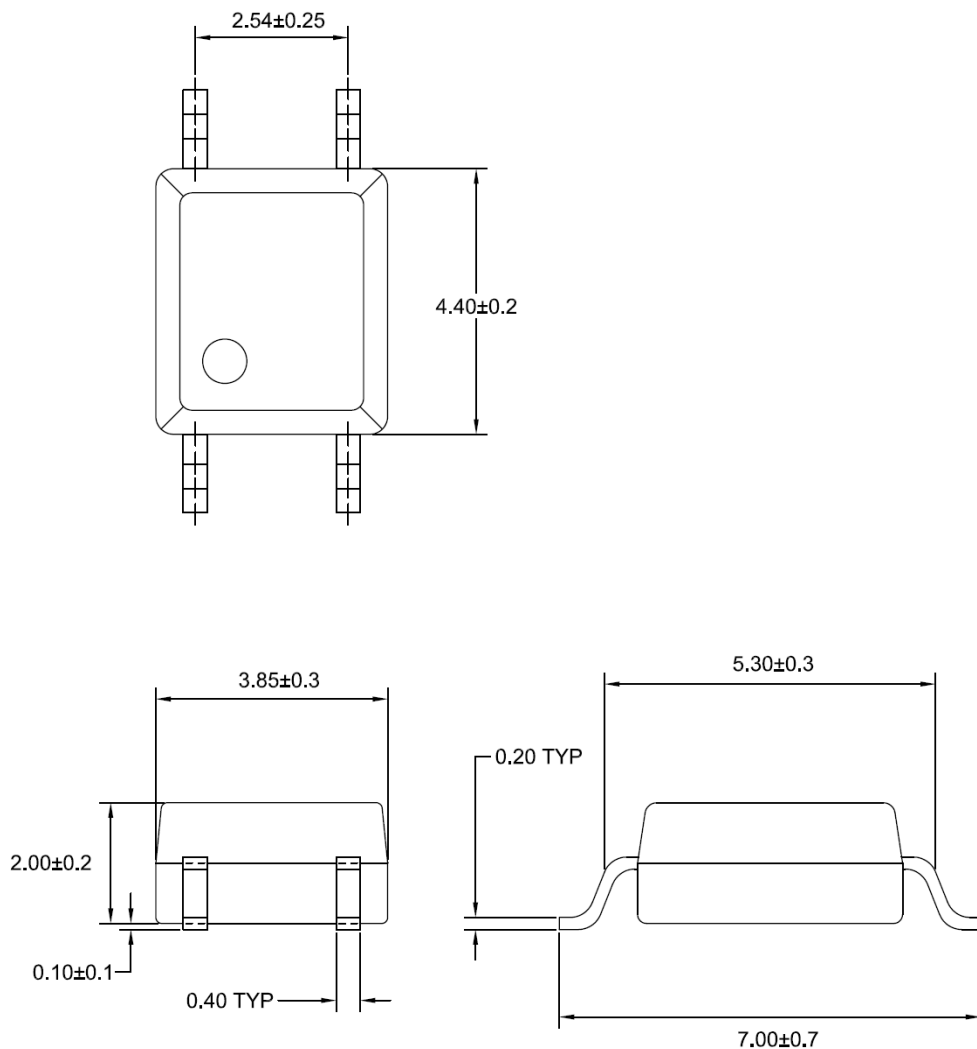
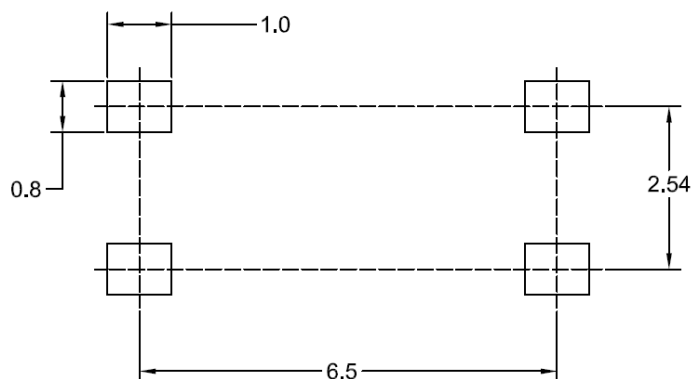
Maximum Temperature: 260°C (at terminal)  
 Maximum Time: 10s  
 Pre-heating: 100 - 150°C (30 - 90s)  
 Single Occurrence

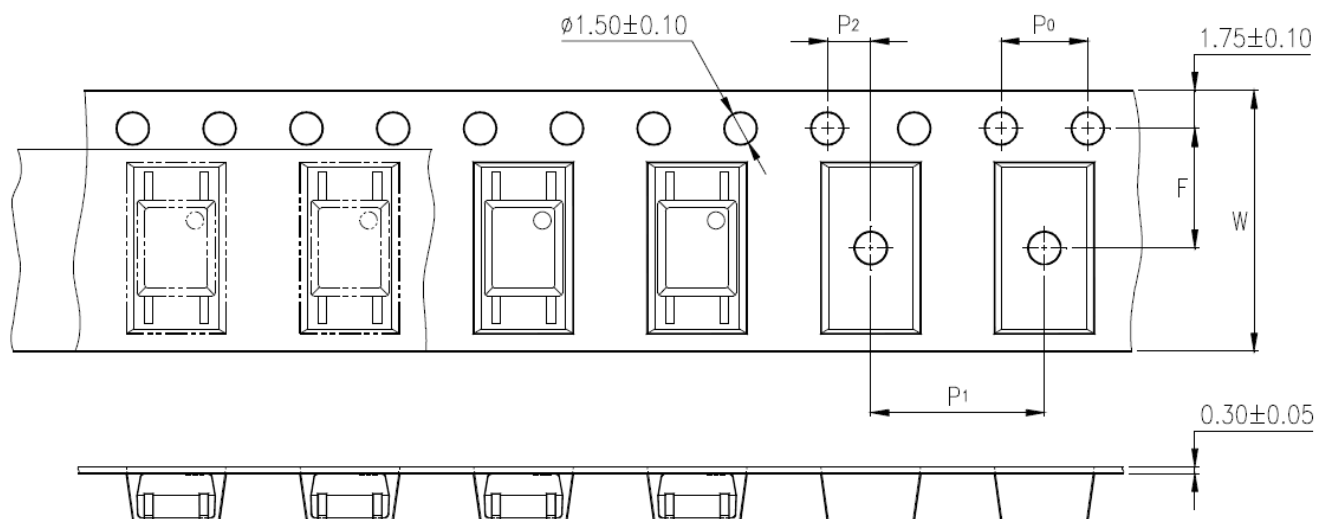
### (3) Hand Solder:

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

**TDM3063 Package Dimensions**
*4 PIN SOP Package*

**Note:** All dimensions in millimeters [mm]


*4 PIN SOP Footprint*


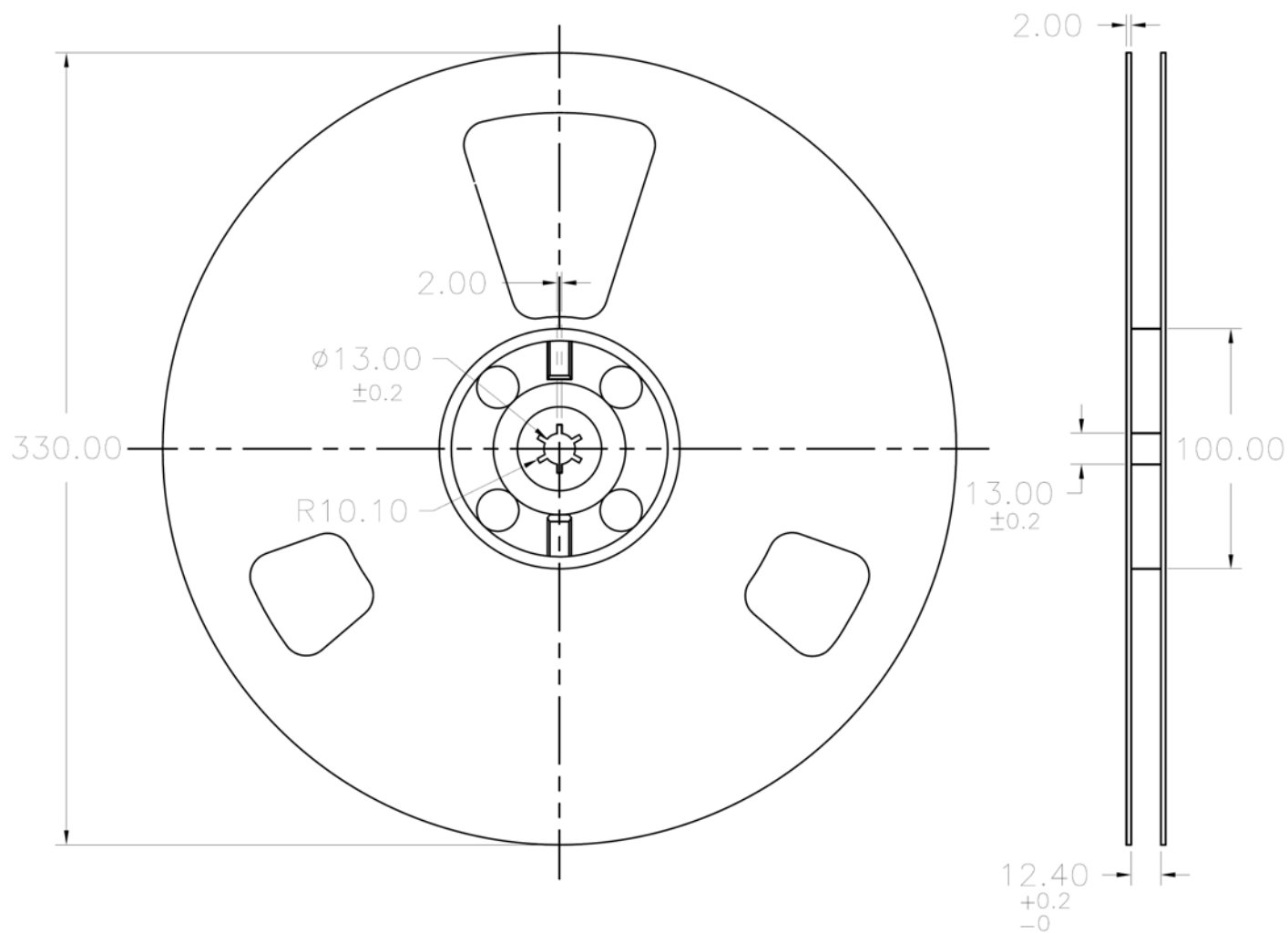
**TDM3063 Packaging Specifications**
*Tape & Reel Specifications (T&R)*
**Note:** All dimensions in millimeters [mm]


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

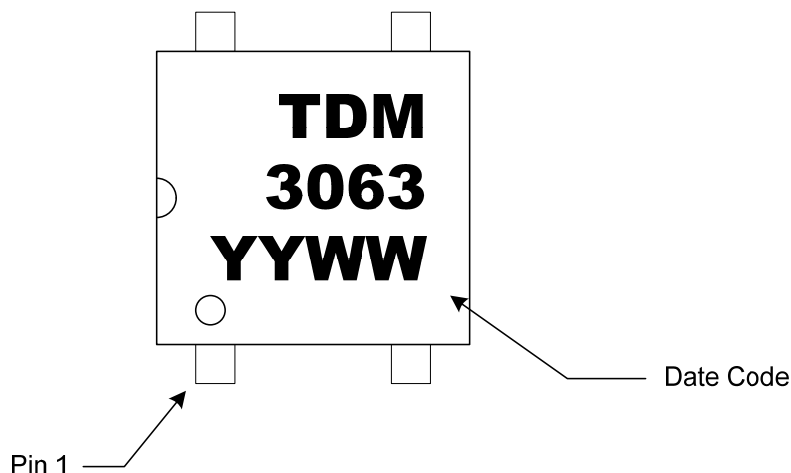
**TDM3063 Packaging Specifications**

*Tape & Reel Specifications (T&R)*

**Note:** All dimensions in millimeters [mm]



## TDM3063 Package Marking



## TDM3063 Package Weights

Device	Single Unit	Full Tube (100pcs)	Full Pouch (10 tubes)	Full Reel (2000pcs)
TDM3063	0.10	23	240	-
TDM3063-TR	0.10	-	-	500

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

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