



## Description

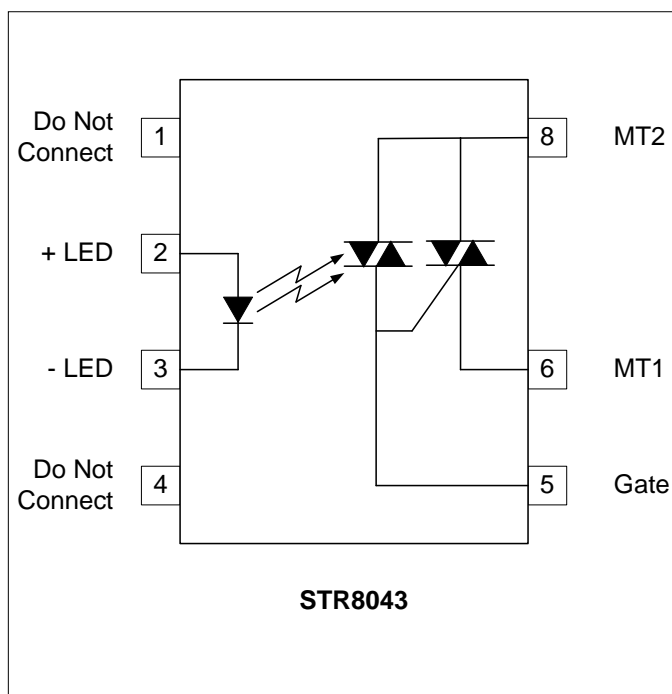
The STR8043 is a bi-directional, single-pole, single-throw, normally open multipurpose relay. The device consists of an IR LED optically coupled to a random phase switching AC output structure. It has a high blocking voltage (400V) and can handle continuous load currents of up to 1.2A<sub>RMS</sub>. The STR8043 assures no false triggering under adverse conditions.

The STR8043 comes standard in a compact 8 pin DIP package. The package construction makes it ideal for high-density board applications.

## Applications

- Valve Control
- Meter Reading Systems
- Heating Elements
- Home Appliances
- Solenoid / Motor Control
- Dimmer Control

## Schematic Diagram



## Features

- High Blocking Voltage (400V)
- 1.2A<sub>RMS</sub> Continuous Load Current
- Random Phase Switching
- Low Control Current (<10mA)
- High Isolation Voltage (up to 5kV<sub>RMS</sub>)
- Long Life / High Reliability
- RoHS / Pb-Free / REACH Compliant

## Agency Approvals

- UL
- C-UL

## 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 Voltage .....	5V
Input Power Dissipation .....	40mW
Output Power Dissipation .....	800mW
Solder Temperature – Wave (10sec).....	260°C
Solder Temperature – IR Reflow (10sec).....	260°C

## Ordering Information

Part Number	Description
STR8043	8 pin DIP, (50/Tube)
STR8043-H	5kV <sub>RMS</sub> Viso, 8 pin DIP, (50/Tube)
STR8043-S	8 pin SMD, (50/Tube)
STR8043-HS	5kV <sub>RMS</sub> , 8 pin SMD, (50/Tube)
STR8043-STR	8 pin SMD, Tape and Reel (1000/Reel)
STR8043-HSTR	5kV <sub>RMS</sub> , 8 pin SMD, Tape and Reel (1000/Reel)

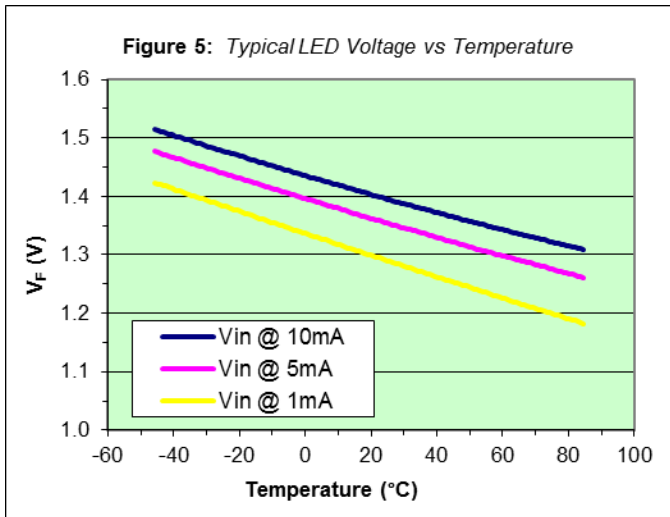
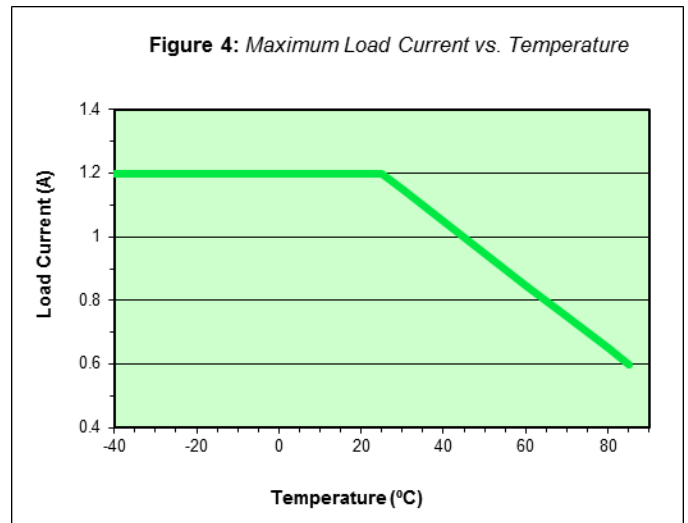
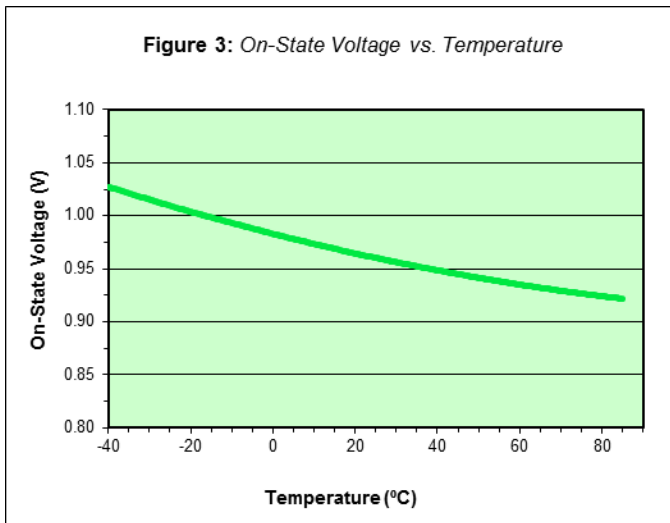
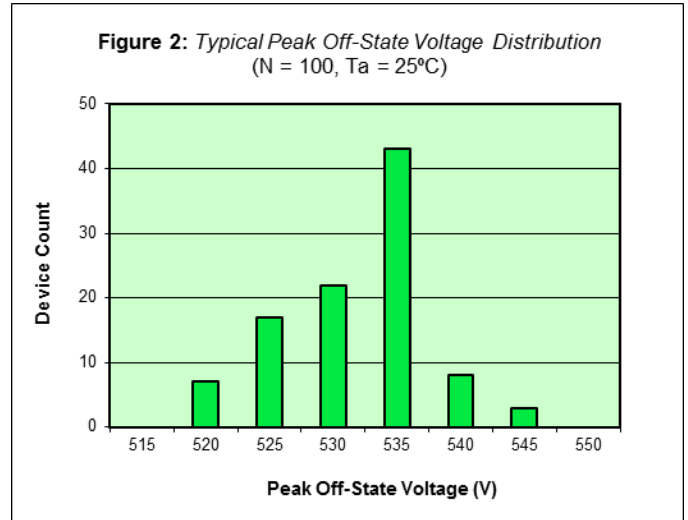
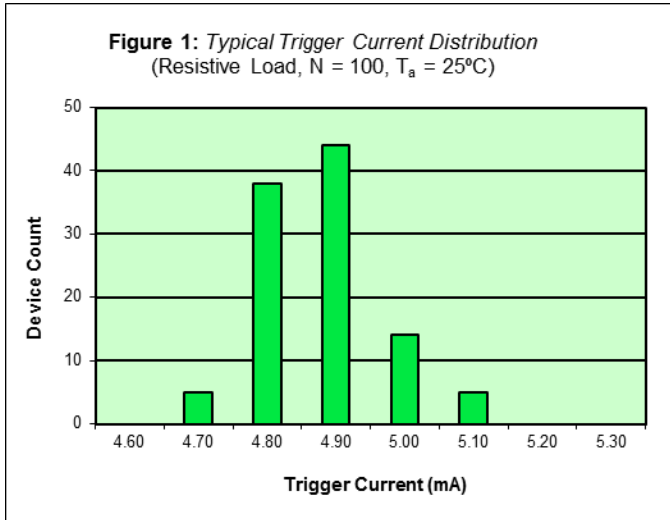
**NOTE: Suffixes listed above are not included in marking on device for part number identification**

**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	$I_R = 10\mu\text{A}$
Trigger Current <sup>1</sup>	$I_{FT}$	-	-	10	mA	Resistive Load
<b>Output Specifications</b>						
Peak Off-State Voltage	$V_{DRM}$	400	-	-	V	$I_{DRM}=10\mu\text{A}$
Continuous Load Current	$I_{T(RMS)}$	-	-	1.2	A	$I_{FT}=10\text{mA}$
Peak On-State Voltage	$V_{TM}$	-	1.0	2.5	V	$I_{FT}=10\text{mA}$ , $I_T=1000\text{mA}$
Leakage Current	$I_{DRM}$	-	10	100	$\mu\text{A}$	$I_{FT}=0\text{mA}$ , $V_{DRM}=400\text{V}$
Holding Current	$I_H$	-	5	25	mA	$I_{FT}=10\text{mA}$
Critical Rate of Rise (dV//dt)	$dV_D/dt$	-	-	400	V/ $\mu\text{S}$	$V_{DM}=67\%$ 400V
<b>Isolation Specifications</b>						
Isolation Voltage (-H Option)	$V_{ISO}$	3750	-	-	$V_{RMS}$	RH $\leq$ 50%, t=1min
		5000	-	-		
Input-Output Resistance	$R_{I-O}$	-	$10^{12}$	-	$\Omega$	$V_{I-O} = 500V_{DC}$

**Notes:**

- 1)  $I_{FT} = 20\text{mA}$  recommended for inductive loads

**STR8043 Performance & Characteristics Plots,  $T_A = 25^\circ\text{C}$  (unless otherwise specified)**


**STR8043 Solder 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:

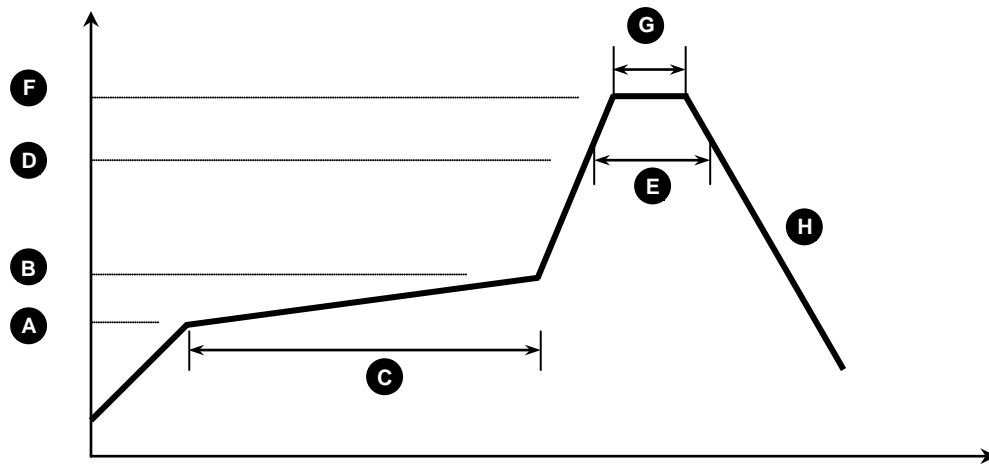


Figure 1

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

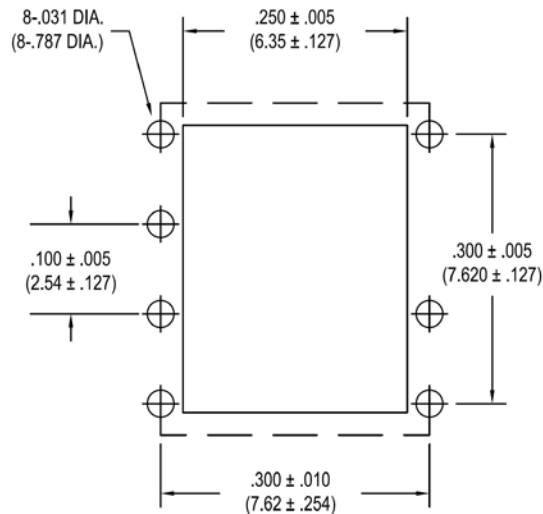
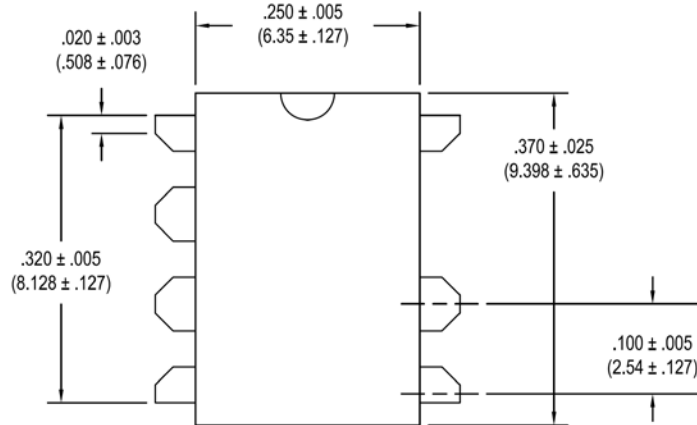
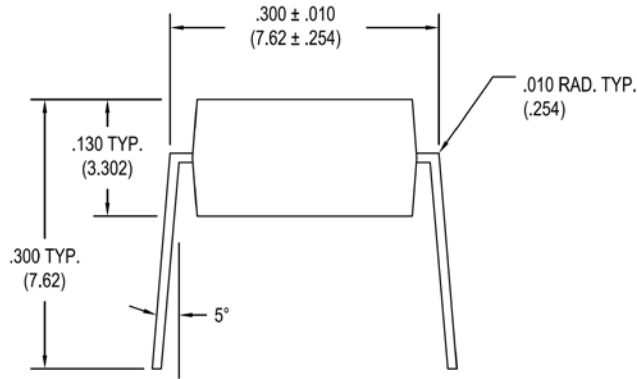
**(3) *Hand Solder:***

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

**STR8043 Package Dimensions**

8 PIN DIP Package

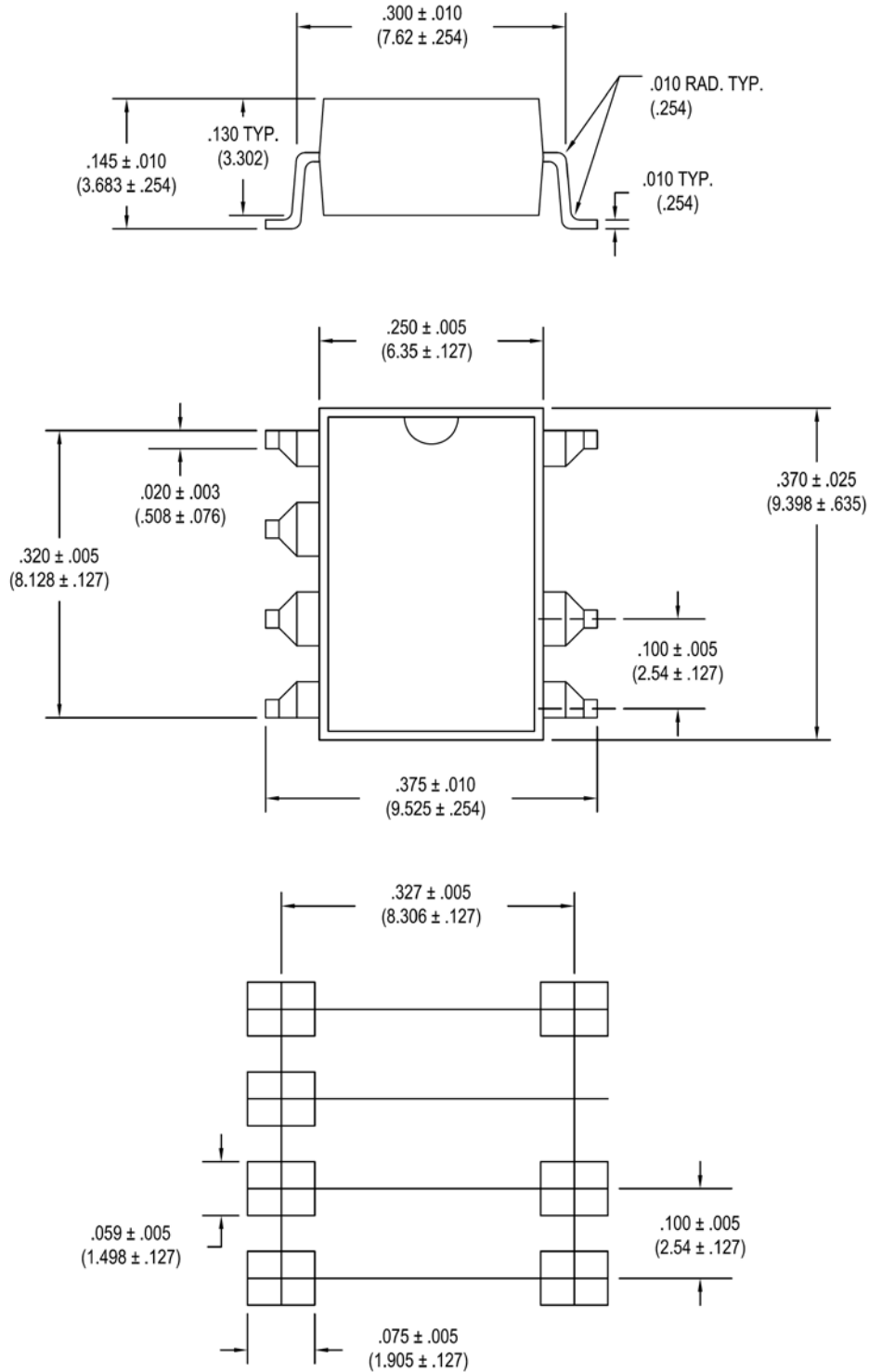
**Note:** All dimensions in inches ["] with millimeters in parenthesis ( )



**STR8043 Package Dimensions**

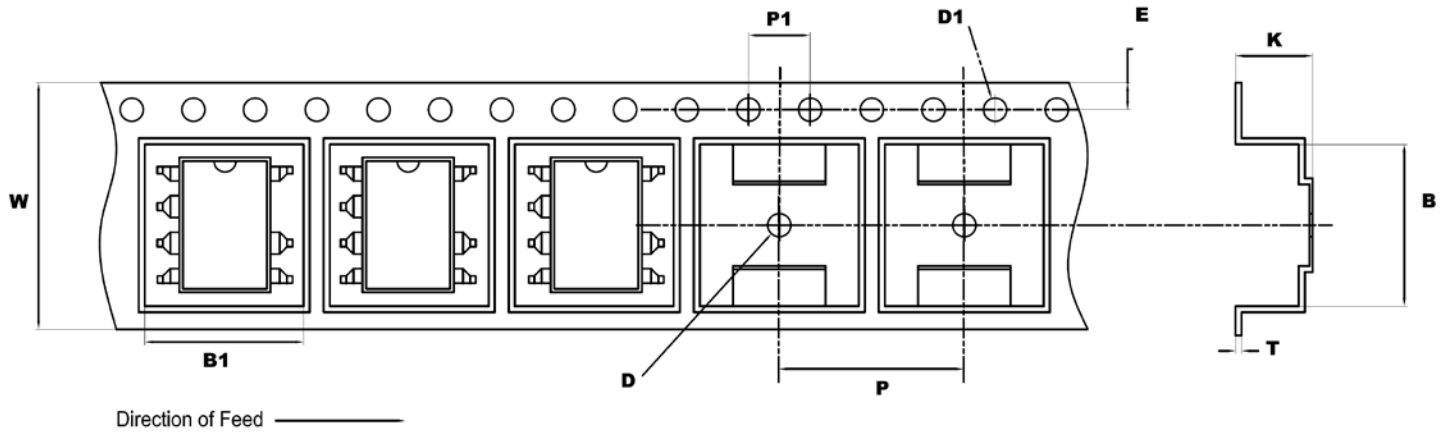
8 PIN SMD Surface Mount Package (-S)

**Note:** All dimensions in inches ["] with millimeters in parenthesis ( )

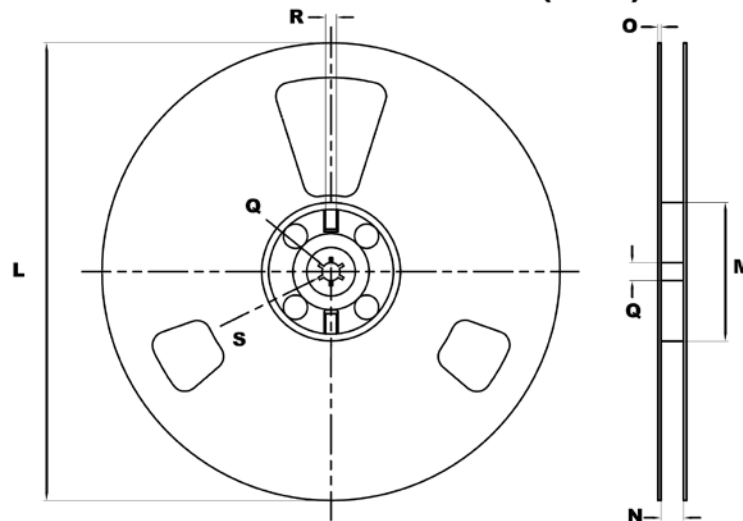


**STR8043 Package Dimensions**

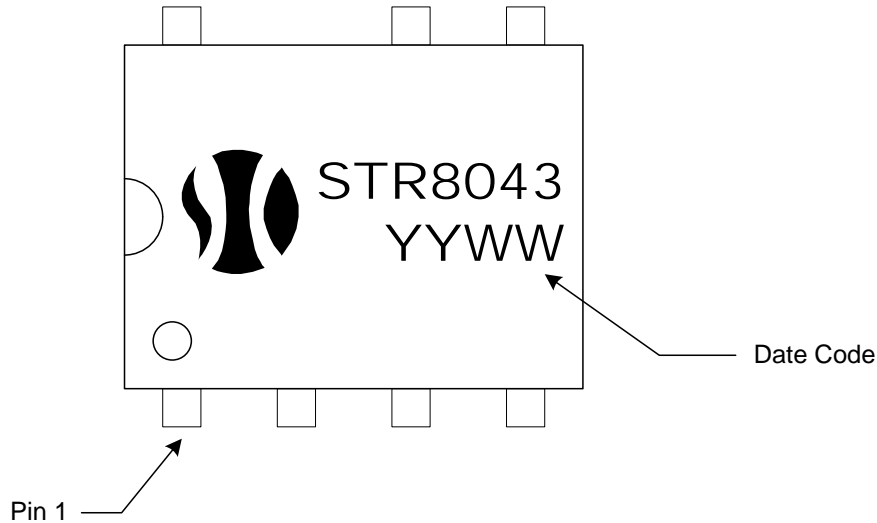
8 PIN SMD Tape &amp; Reel (-STR)

*Note: All dimensions in millimeters*
**Outline and Dimension (Tape)**


W	B	B1	P	P1	K	E	T	D	D1
16.00 ±0.1	10.50 ±0.1	10.30 ±0.1	12.00 ±0.1	4.00 ±0.1	5.00 ±0.1	1.75 ±0.1	0.40 ±0.1	1.50 ±0.1	1.50 ±0.1

**Outline and Dimensions (Reel)**

**Packaging: 1,000 pcs / reel**

L	M	N	O	Q	R	S
330.00	100.00	16.40 +0.2	2.00 ±0.1	13.00 ±0.2	2.00	10.00

**STR8043 Package Marking**

**STR8043 Package Weights**

Device	Single Unit	Full Tube (50pcs)	Full Pouch (10 tubes)	Full Reel (1000pcs)
STR8043-(H)	0.54	42	420	-
STR8043-(H)S	0.53	44	440	-
STR8043-(H)STR	0.53	-	-	950

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

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