SOLID STATE OPTRONICS



SDS6011

DC Input
1MHz
Schmitt Trigger Optocoupler

Description

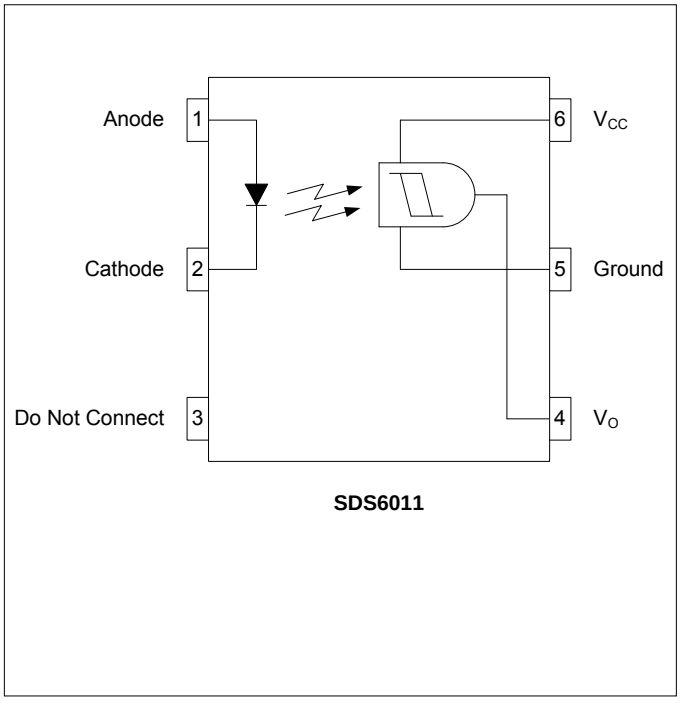
The SDS6011 consists of a light emitting diode optically coupled to an output integrated circuit detector. The output circuit integrates an optical coupler and a Schmitt Trigger providing hysteresis for noise immunity and pulse shaping. Optical coupling between the input IR LED and output structure allows for high isolation levels while maintaining low-level DC signal control capability. An open collector output allows further design flexibility.

The SDS6011 comes standard in a miniature 6 pin DIP package.

Applications

- Logic to Logic Isolator
- Programmable Current Level Sensor
- Line Receiver (eliminate noise & transients)
- A.C. to TTL Conversion (square wave shaping)
- Digital Programming of Power Supplies
- Interfacing PCs with Peripherals

Schematic Diagram



SDS6011

Features

- High data date – 1MHz (NRZ)
- Free from latch up and oscillation
- Microprocessor compatible Drive
- Logic compatible output sinks 16mA @ 0.4V
- Guaranteed on/off threshold hysteresis
- High common mode rejection ratio
- Fast switching (100nS typical t_R and t_F)
- Wide supply voltage compatibility

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 +150°C
Operating Temperature	-40 to +85°C
Continuous Input Current	60mA
Transient Input Current	500mA
Reverse Input Control Voltage	5V
Input Power Dissipation	100mW
Total Power Dissipation	400mW
Solder Temperature – Wave (10sec)	260°C
Solder Temperature – IR Reflow (10sec)	260°C

Ordering Information

Part Number	Description
SDS6011	6 pin DIP, (60/Tube)
SDS6011-H	0.40" (10.16mm) Lead Spacing (VDE0884)
SDS6011-S	6 pin SMD, (60/Tube)
SDS6011-STR	6 pin SMD, Tape and Reel (1000/Reel)

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

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SDS6011 H/S/TR
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Electrical Characteristics, T_A = 25°C (unless otherwise specified)

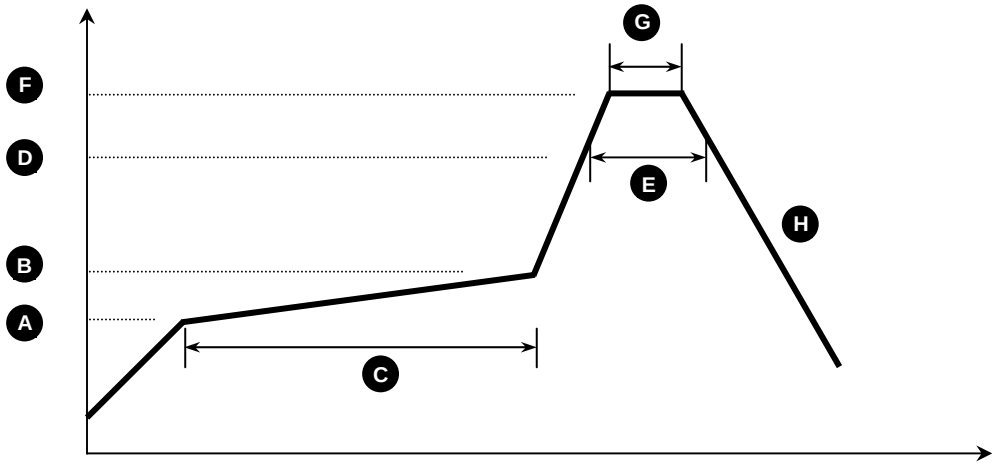
Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Input Specifications						
LED Forward Voltage	V_F	-	1.2	1.5	V	I_F = 10mA
		0.75	0.95	-	V	I_F = 0.3mA
LED Reverse Voltage	BV_R	5	-	-	V	I_R = 10µA
Terminal Capacitance	C_t	-	50	-	pF	V=0, f=1KHz
Reverse Current	I_R	-	-	10	µA	V_R=5V
Output Specifications						
Operating Voltage	V_{CC}	3	-	15	V	-
Supply Current	$I_{CC(OFF)}$	-	-	3	mA	I_F=0mA, V_{CC}=5V
Output Current, High	I_{OH}	-	-	100	µA	I_F=0mA, V_{CC}=V_O=15V
Coupled Specifications						
Supply Current	$I_{CC(ON)}$	-	1.6	5	mA	I_F=$I_{F(on)}$, V_{CC}=5V
Output Voltage, Low	V_{OL}	-	0.2	0.4	V	I_F=$I_{F(on)}$, R_L=270Ω, V_{CC}=5V
Threshold Current, ON	$I_{F(ON)}$	-	1.2	1.6	mA	R_L=270Ω, V_{CC}=5V
-A Option		-	-	10		
-B Option		-	-	5		
Threshold Current, OFF	$I_{F(OFF)}$	0.3	0.75	-	mA	R_L=270Ω, V_{CC}=5V
Hysteresis Ratio	$I_{F(OFF)}$ / $I_{F(ON)}$	0.5	-	0.9	–	R_L=270Ω, V_{CC}=5V
Turn On Time	T_{ON}	-	1.2	4	µS	V_{CC}=5V, R_L=270Ω, I_F=$I_{F(ON)}$
Turn Off Time	T_{OFF}	-	1.2	4		
Rise Time	T_R	-	0.1	-		
Fall Time	T_F	-	0.1	-		
Isolation Specifications						
Isolation Voltage	V_{ISO}	5300	-	-	V_{RMS}	RH ≤ 50%, t=1min
Input-Output Resistance	R_{I-O}	10^{11}	-	-	Ω	V_{I-O} = 500V_{DC}

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SDS6011 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 250ºC:



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

(2) *Wave Solder*:

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

(3) *Hand Solder*:

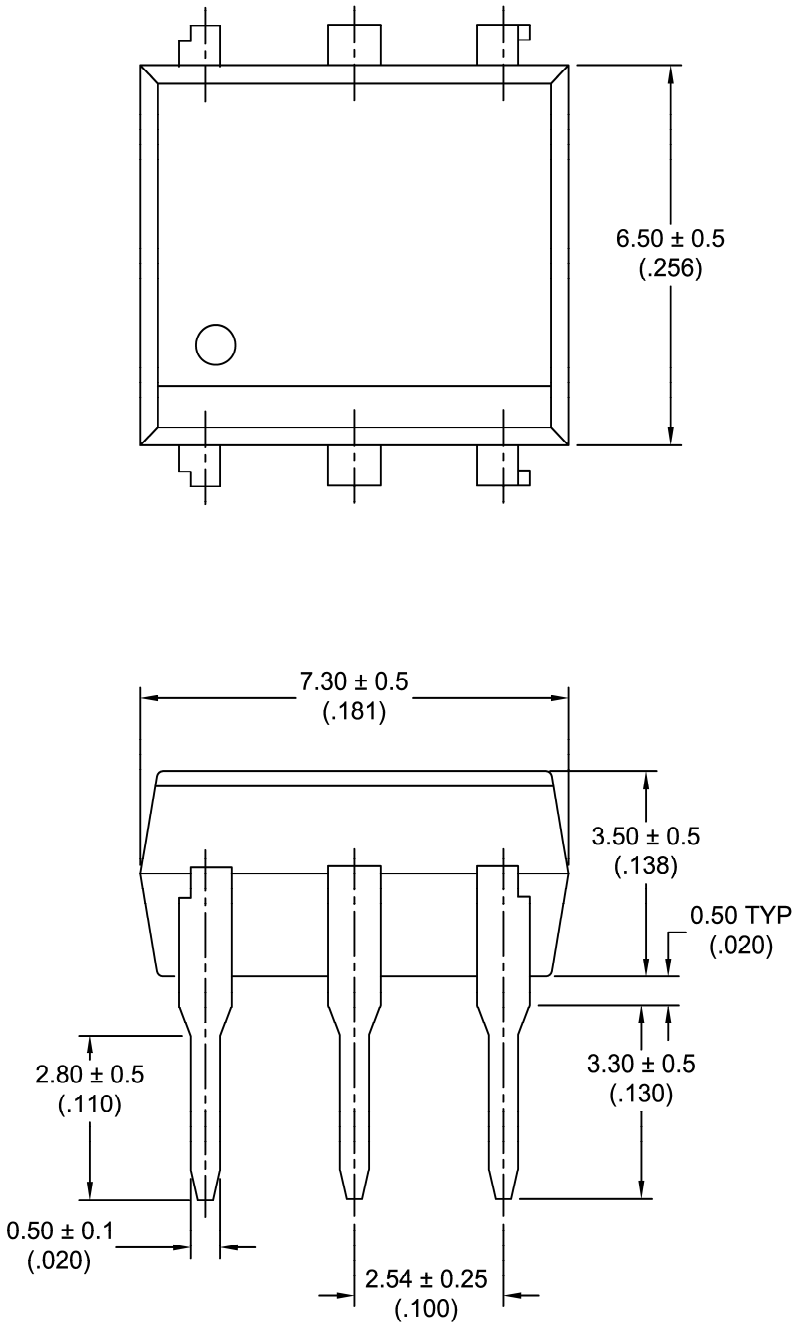
Maximum Temperature: 350ºC (at tip of soldering iron)
Maximum Time: 3s
Single Occurrence

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SDS6011 Package Dimensions

6 PIN DIP Package

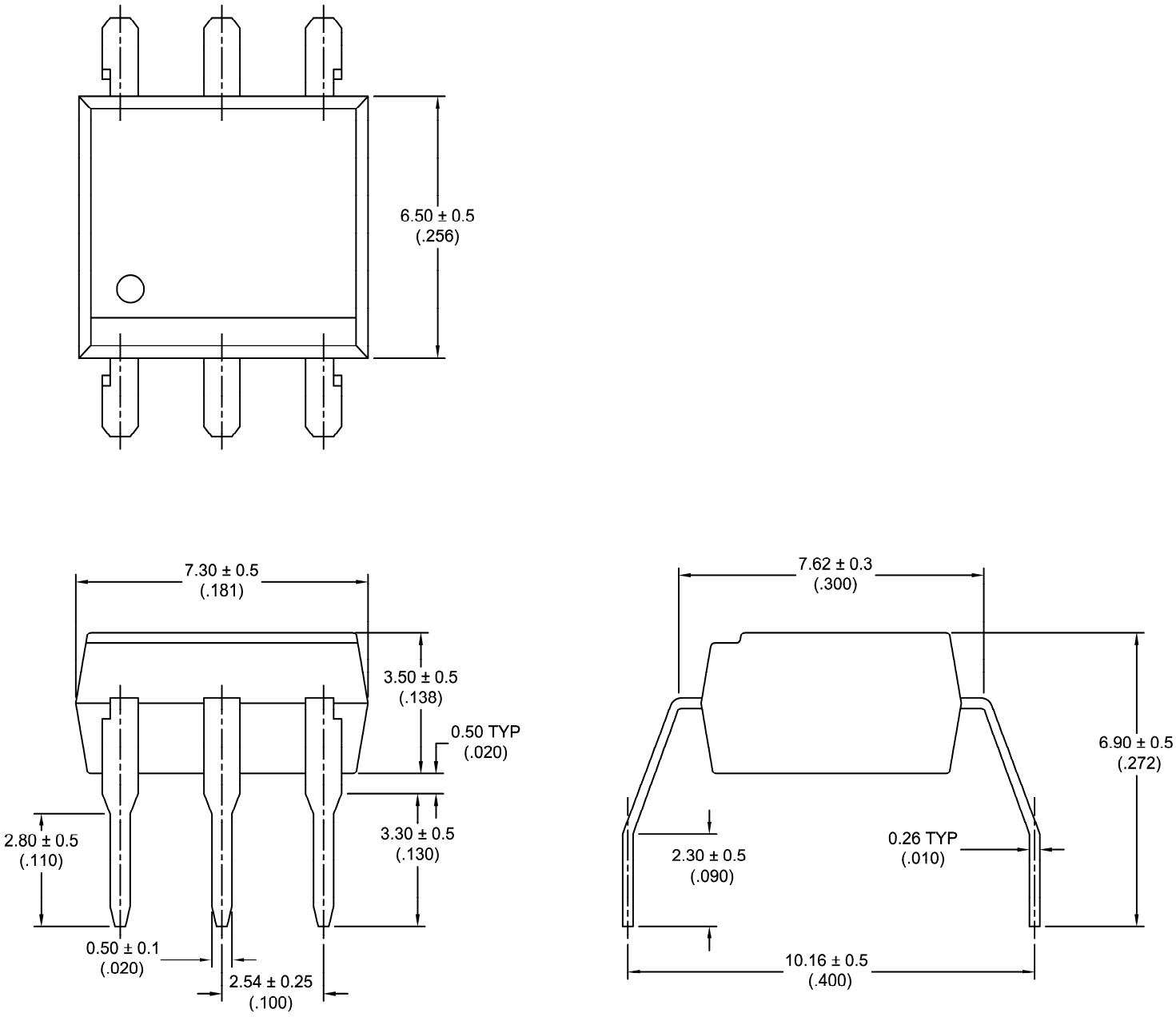
Note: *All dimensions in millimeters [mm] with inches in parenthesis ()*



SDS6011 Package Dimensions

6 PIN WIDE Lead Space Package (-H)

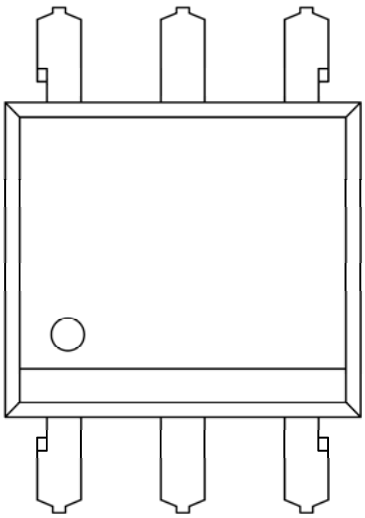
Note: *All dimensions in millimeters [mm] with inches in parenthesis ()*

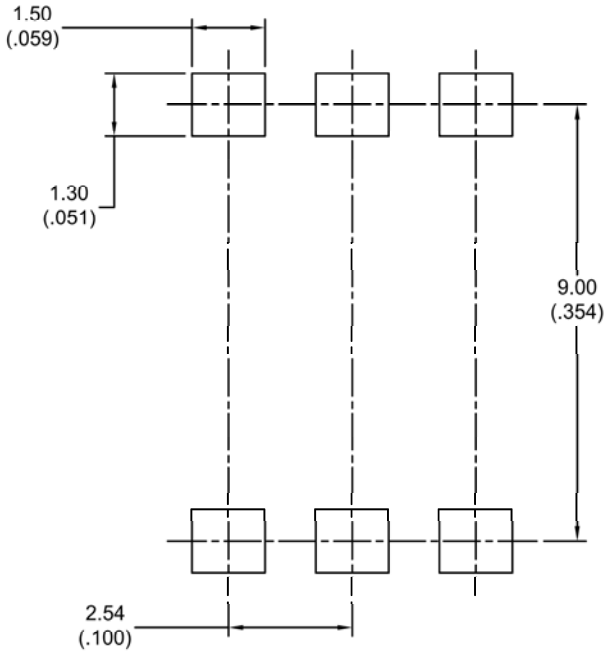


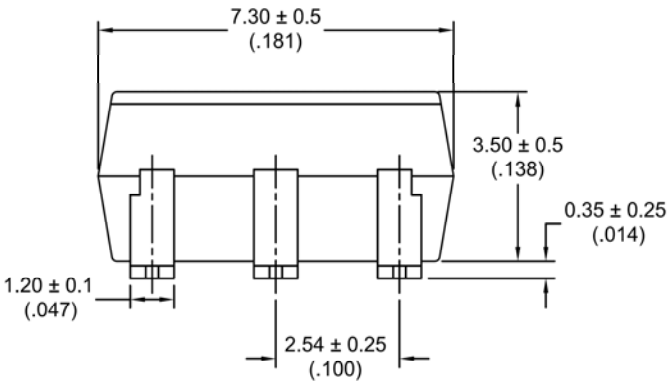
SDS6011 Package Dimensions

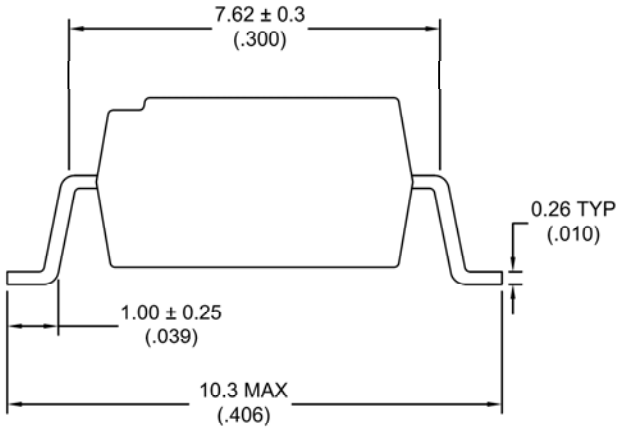
6 PIN SMD Surface Mount Package

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





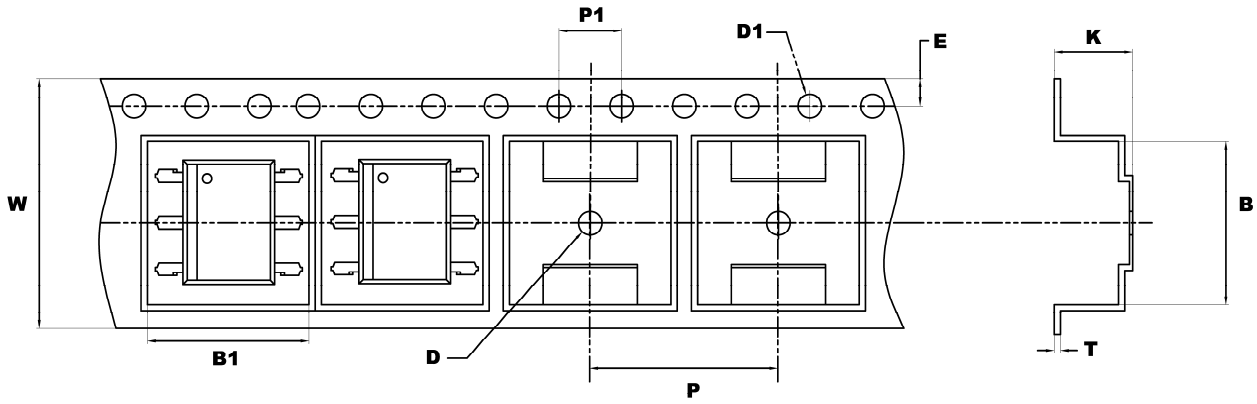




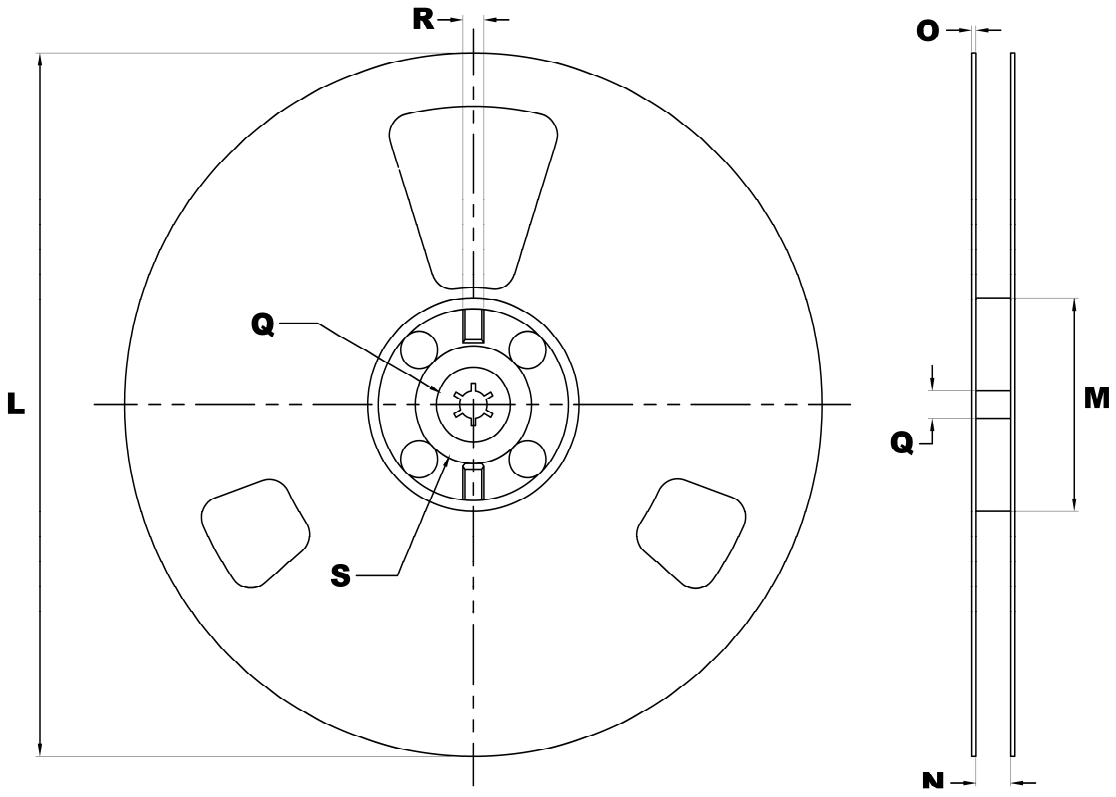
SDS6011 Packaging Specifications

Tape & Reel Specifications (T&R)

Note: *All dimensions in millimeters [mm]*



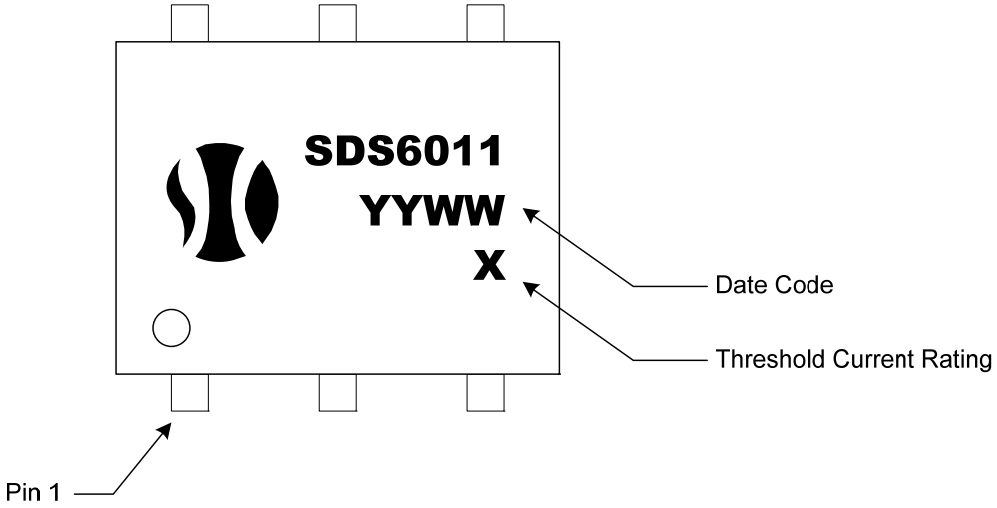
B	B1	D	D1	E	K	P	P1	T	W
7.70±0.1	10.46±0.1	ø1.60±0.1	ø1.55±0.05	1.75±0.1	4.25±0.1	12.0±0.1	4.00±0.1	0.3±0.05	16±0.3



L	M	N	O	Q	R	S
330±2	101.6±1	16.4+0.2	2.0±0.2	R13±0.5	1.50±0.5	R10±1

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SDS6011 Package Marking



SDS6011 Package Weights

Device	Single Unit	Full Tube (60pcs)	Full Pouch (10 tubes)	Full Reel (1000pcs)
SDS6011(-H)	0.41	44	450	-
SDS6011-S	0.40	42	440	-
SDS6011-STR	0.40	-	-	880

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

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