

### SOT-23 Plastic-Encapsulate CAN bus ESD Protection Diodes

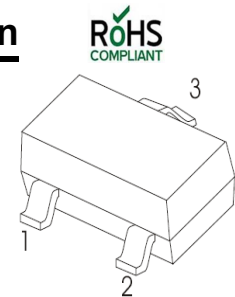
## DESCRIPTION

The ESD2105L has been designed to protect the CAN transceiver in high-speed and fault tolerant networks from ESD and other harmful transient voltage events. This device provides bidirectional protection for each data line with a single compact SOT-23 package, giving the system designer a low cost option for improving system reliability and meeting stringent EMI requirements.

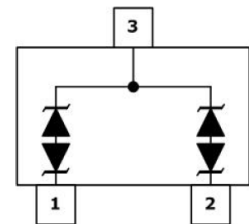
## Features

- ◆ 350 Watts Peak Pulse Power per (8/20 $\mu$ s)
- ◆ Transient protection for asymmetrical data lines to IEC61000-4-2 (ESD)  $\pm$ 15kV (air),  $\pm$ 8kV (contact)  
IEC61000-4-4 (EFT) 40A (5/50ns)  
IEC61000-4-5 (Lightning) 8A (8/20 $\mu$ s)
- ◆ Working voltages : 24V
- ◆ Low leakage current
- ◆ Low clamping voltage
- ◆ Meets MSL 1 Requirements

## Pin Configuration



## Circuit Diagram



## Applications

- ◆ Industrial Control Networks
- ◆ Smart Distribution Systems
- ◆ Automotive Networks
- ◆ Low and High-Speed CAN
- ◆ Fault Tolerant CAN

## Mechanical Characteristics

- ◆ Package: SOT-23
- ◆ Flammability Rating: UL 94V-0
- ◆ Terminal: Matte tin plated.
- ◆ High temperature soldering guaranteed: 260 $^{\circ}$ C/10s
- ◆ Marking: 271
- ◆ Packaging: Tape and Reel

## Absolute Maximum Ratings (T<sub>A</sub>=25 $^{\circ}$ C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power(8/20 $\mu$ s )	P <sub>PP</sub>	350	W
ESD per IEC 61000-4-2 (Air)	V <sub>ESD</sub>	$\pm$ 30	KV
ESD per IEC 61000-4-2 (Contact)		$\pm$ 30	
Operating Temperature	T <sub>OPT</sub>	-55 to +150	$^{\circ}$ C
Storage Temperature	T <sub>STG</sub>	-55 to +150	$^{\circ}$ C
Lead Solder Temperature – Maximum (10 Second Duration)	T <sub>L</sub>	260(10 sec.)	$^{\circ}$ C

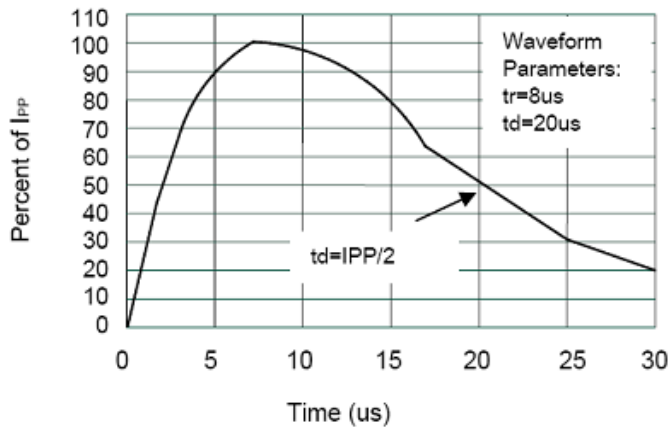
The above data are for reference only.

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

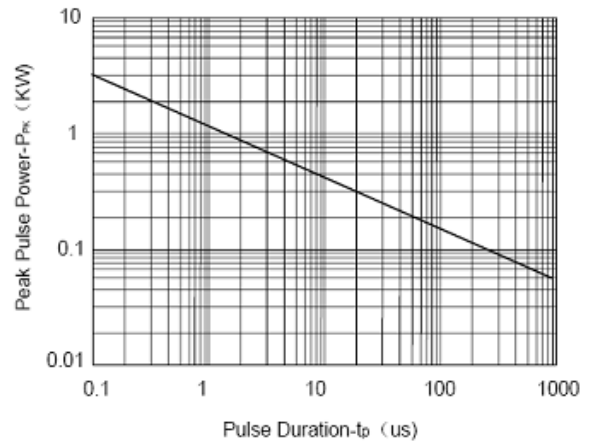
Symbol	Parameter	Test Condition	Min	Typ	Max	Units
$V_{RWM}$	Reverse Working Voltage	Pin 1,2 to Pin3			24	V
$V_{BR}$	Reverse Breakdown Voltage	$I_T = 1\text{mA}$ Pin 1,2 to Pin3	26.2		32	V
$I_R$	Reverse Leakage Current	$V_{RWM} = 24\text{V}$ Pin 1,2 to Pin3		15	100	nA
$V_{C1}$	Clamping Voltage 1	$I_{PP} = 1\text{A}$ , $t_p = 8/20\mu\text{s}$ Pin 1,2 to Pin3			36	V
$V_{C2}$	Clamping Voltage 2	$I_{PP} = 5\text{A}$ , $t_p = 8/20\mu\text{s}$ Pin 1,2 to Pin3			46	V
$C_J$	Junction Capacitance	$V_R = 0\text{V}$ , $f = 1\text{MHz}$ Pin 1,2 to Pin3		25	30	pF

The above data are for reference only.

### ELECTRICAL CHARACTERISTICS CURVE



**Pulse Waveform**

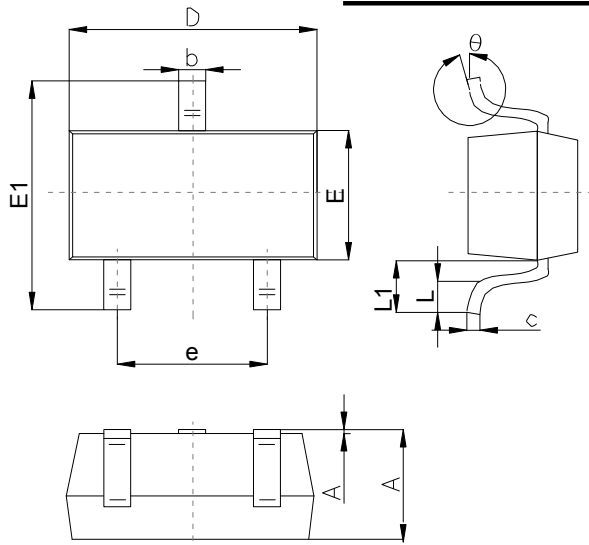


**Non-Repetitive Peak Pulse Power vs. Pulse Time**

The curve above is for reference only.

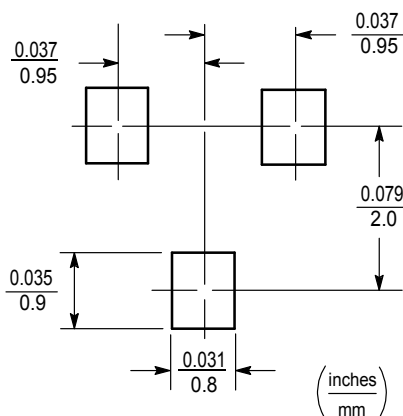
### Outline Drawing

#### SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		
	Min	Typ	Max
A	1.00		1.40
A1			0.10
b	0.35		0.50
c	0.10		0.20
D	2.70	2.90	3.10
E	1.40		1.60
E1	2.4		2.80
e		1.90	
L	0.10		0.30
L1	0.4		
$\theta$	0°		10°

### Suggested Pad Layout



**Note:**

1. Controlling dimension:in/millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

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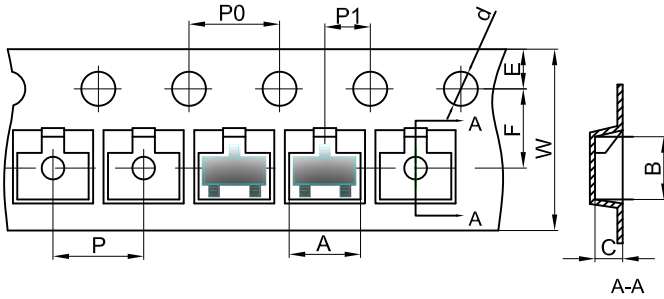
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### SOT-23 Tape and Reel

#### SOT-23 Embossed Carrier Tape

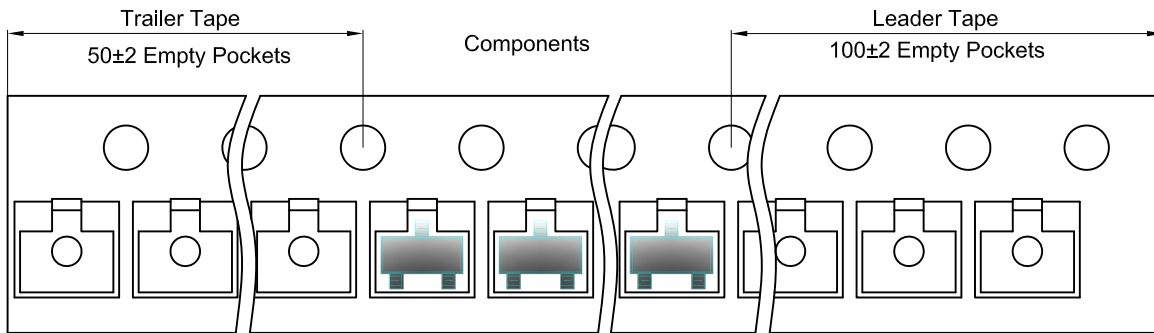


#### Packaging Description:

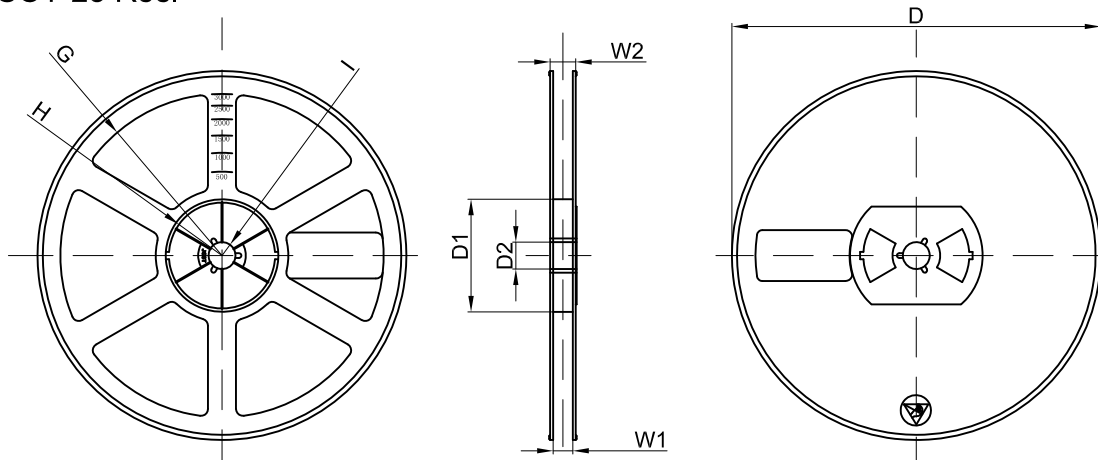
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

#### SOT-23 Tape Leader and Trailer



#### SOT-23 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 Inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	

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