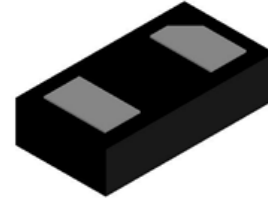
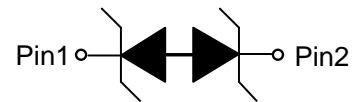


ESD54331CY
1-Line, Bi-directional, Transient Voltage Suppressor
<http://www.omnivision-group.com>
Descriptions

The ESD54331CY is a bi-directional TVS (Transient Voltage Suppressor). It is specifically designed to protect sensitive electronic components which are connected to low speed data lines and control lines from over-stress caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and Lightning.

The ESD54331CY may be used to provide ESD protection up to $\pm 30\text{kV}$ (contact and air discharge) according to IEC61000-4-2, and withstand peak pulse current up to 10A (8/20 μs) according to IEC61000-4-5.

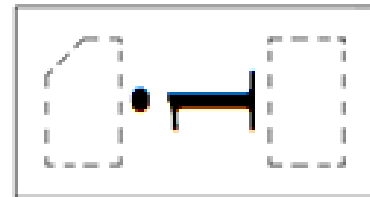
The ESD54331CY is available in DWN0402-2L package. Standard products are Pb-free and Halogen-free.


DWN0402-2L (Bottom View)

Circuit diagram
Features

- Reverse stand-off voltage: $\pm 5\text{V}$ Max
- Transient protection for each line according to IEC61000-4-2 (ESD): $\pm 30\text{kV}$ (contact and air discharge)
IEC61000-4-5 (surge): 10A (8/20 μs)
- Capacitance: $C_J = 23\text{pF}$ typ.
- Low clamping voltage: $V_{CL} = 5.9\text{V}$ typ. @ $I_{PP} = 16\text{A}$ (TLP)
- Solid-state silicon technology

Applications

- Cellular handsets
- Tablets
- Laptops
- Other portable devices
- Network communication devices



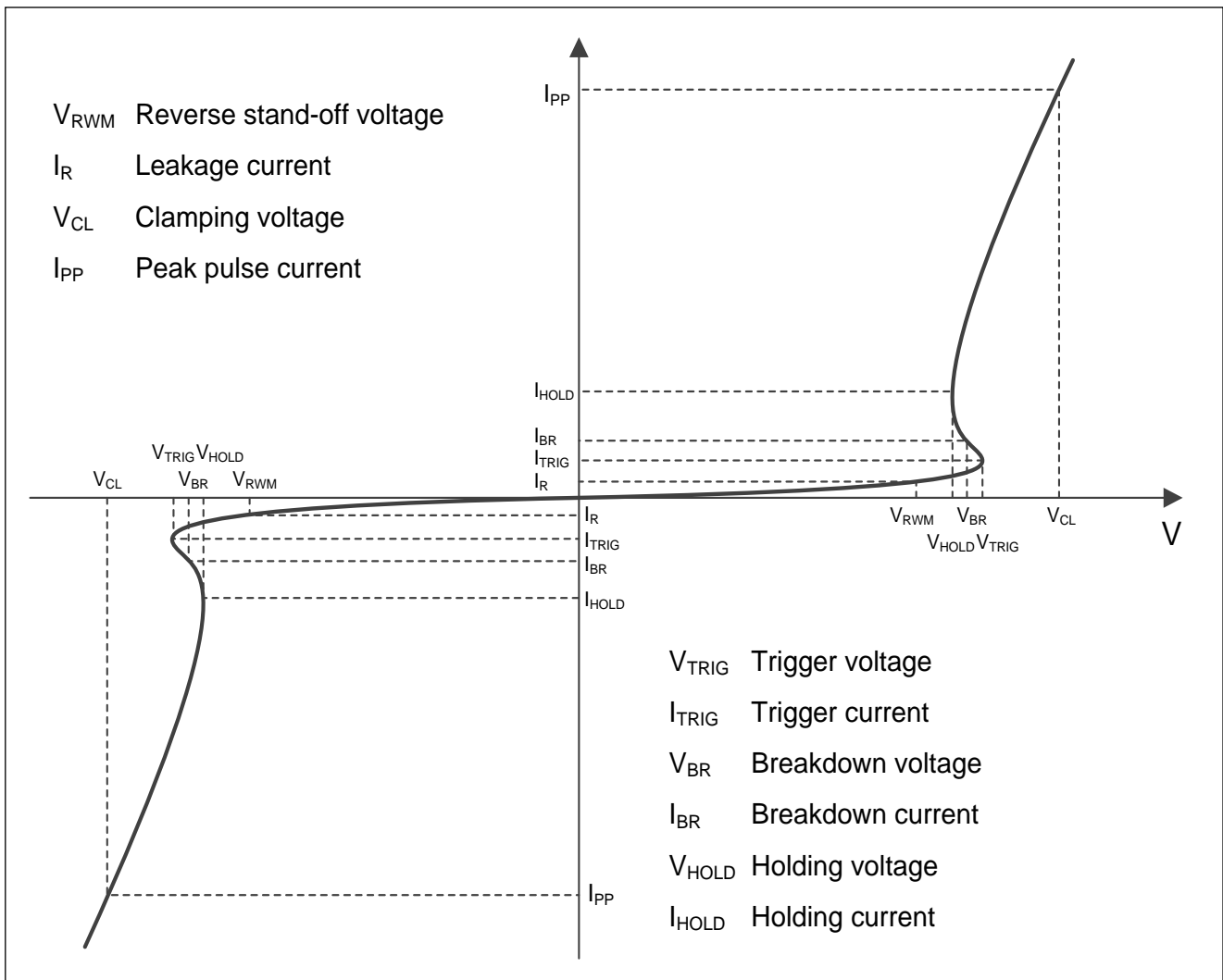
i (Lowercase letter, rotated 90° counterclockwise)
= Device code

Marking (Top View)
Order information

Device	Package	Shipping
ESD54331CY-2/TR	DWN0402-2L	10000/Tape&Reel

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	69	W
Peak pulse current ($t_p = 8/20\mu s$)	I_{PP}	10	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 30	kV
ESD according to IEC61000-4-2 contact discharge		± 30	
Junction temperature	T_J	125	$^{\circ}C$
Operating temperature	T_{OP}	-40~85	$^{\circ}C$
Lead temperature	T_L	260	$^{\circ}C$
Storage temperature	T_{STG}	-55~150	$^{\circ}C$

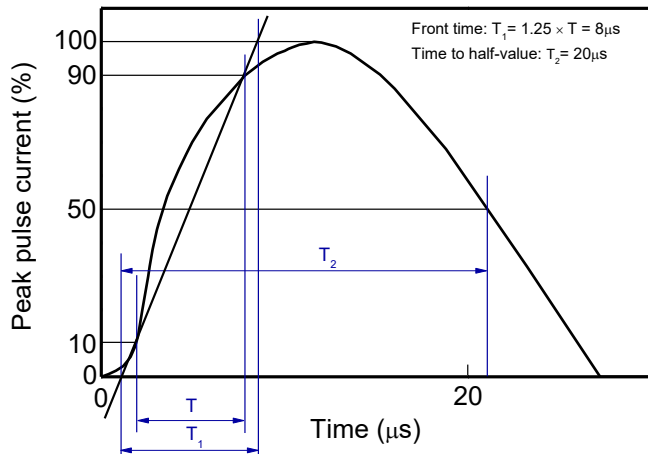
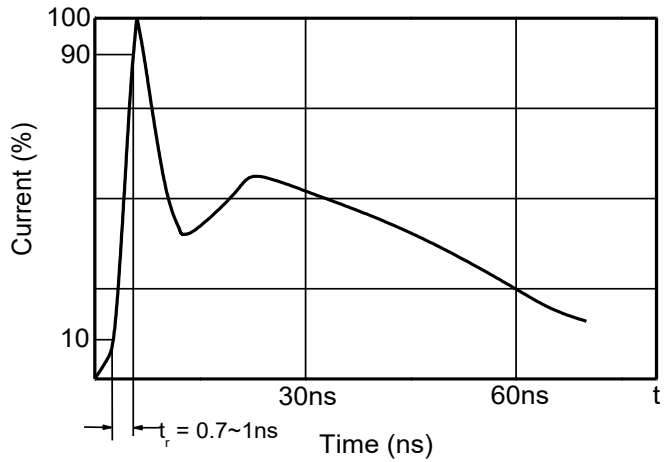
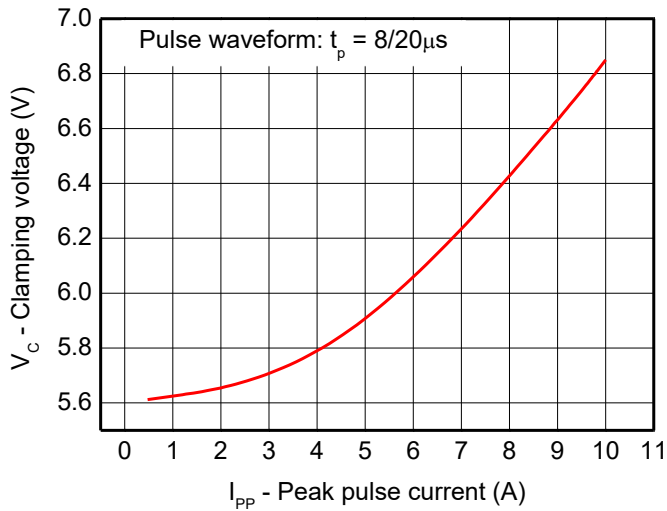
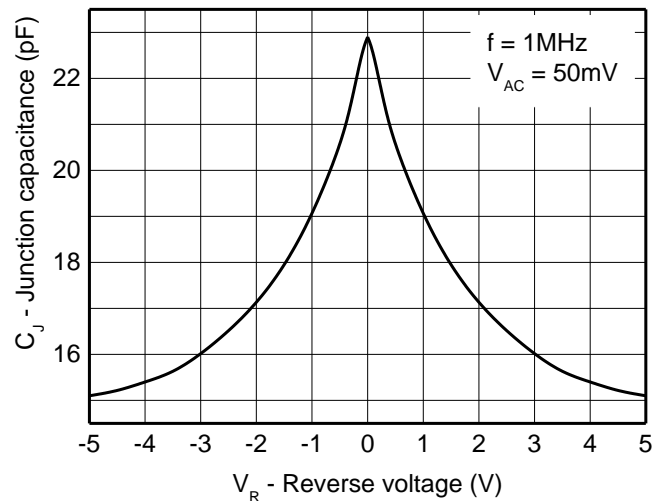
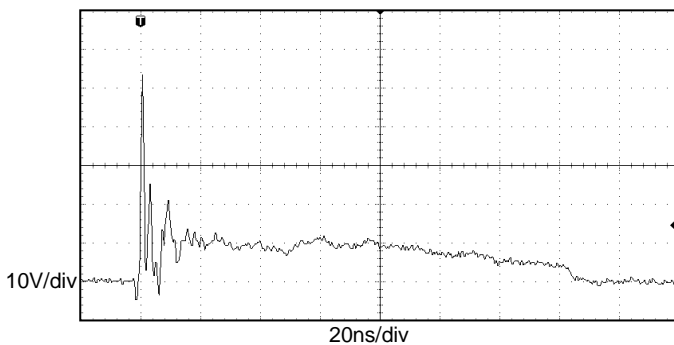
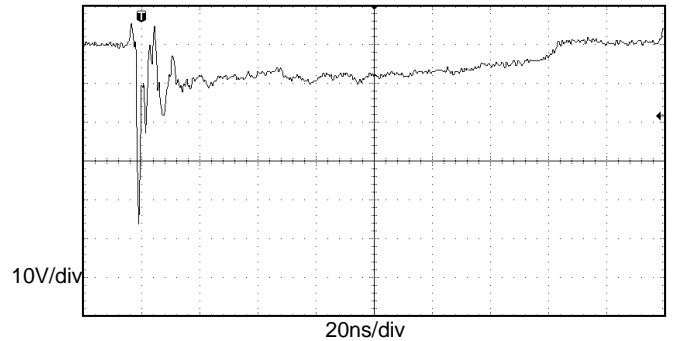
Electrical characteristics ($T_A=25^{\circ}C$, unless otherwise noted)

Definitions of electrical characteristics

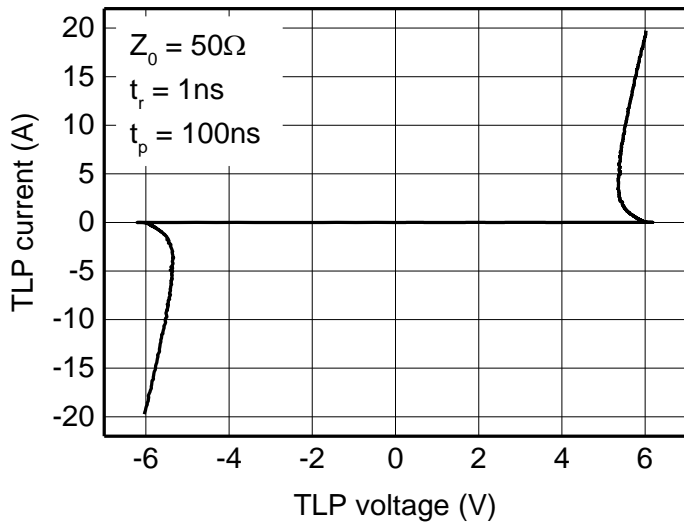
Electrical characteristics (T_A=25 °C, unless otherwise noted)

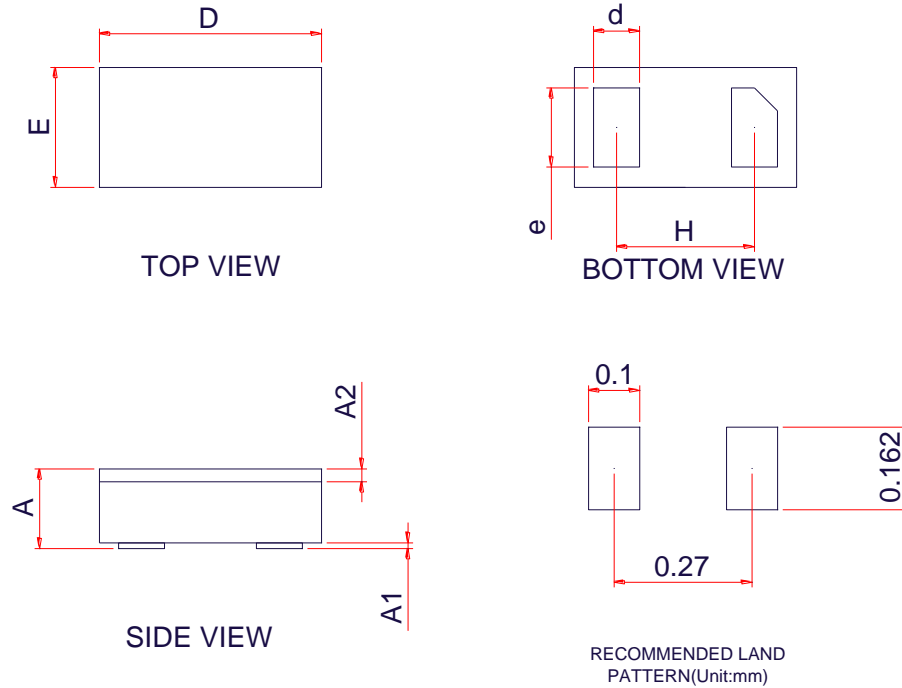
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V _{RWM}				±5	V
Leakage current	I _R	V _{RWM} = 5V			100	nA
Breakdown voltage	V _{BR}	I _{BR} = 1mA	5.5		7.5	V
Holding voltage	V _{HOLD}	I _{HOLD} = 50mA	5.1			V
Clamping voltage ¹⁾	V _{CL}	I _{PP} = 16A, t _p = 100ns		5.9		V
Clamping voltage ²⁾	V _{CL}	V _{ESD} = 8kV		5.9		V
Clamping voltage ³⁾	V _{CL}	I _{PP} = 1A, t _p = 8/20μs			7.0	V
		I _{PP} = 10A, t _p = 8/20μs			8.5	V
Dynamic resistance ¹⁾	R _{DYN}			0.04		Ω
Junction capacitance	C _J	V _R = 0V, f = 1MHz		23	30	pF

Notes:

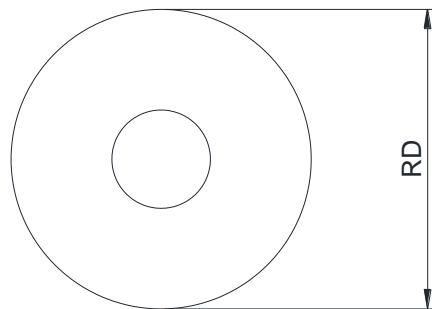
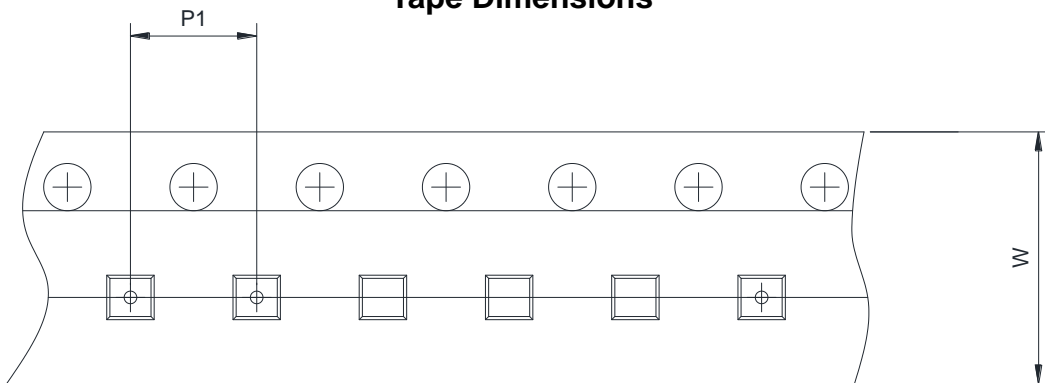
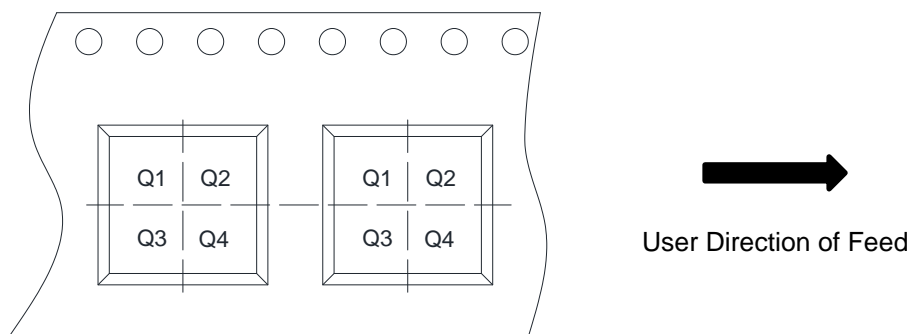
- 1) TLP parameter: Z₀ = 50Ω, t_p = 100ns, t_r = 1ns, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.
- 2) Contact discharge mode, according to IEC61000-4-2.
- 3) Non-repetitive current pulse, according to IEC61000-4-5.

Typical characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)

8/20μs waveform per IEC61000-4-5

Contact discharge current waveform per IEC61000-4-2

Clamping voltage vs. Peak pulse current

Capacitance vs. Reverse voltage

**ESD clamping
(+8kV contact discharge per IEC61000-4-2)**

**ESD clamping
(-8kV contact discharge per IEC61000-4-2)**

Typical characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)**TLP Measurement**

PACKAGE OUTLINE DIMENSIONS
DWN0402-2L


Symbol	Dimensions in Millimeters		
	Min.	Nom	Max.
A	0.120	0.145	0.170
A1	0.008	0.011	0.014
A2		0.025 REF	
D	0.410	0.435	0.460
E	0.210	0.235	0.260
d	0.084	0.090	0.096
e	0.147	0.155	0.163
H	0.270		

TAPE AND REEL INFORMATION
Reel Dimensions

Tape Dimensions

Quadrant Assignments For PIN1 Orientation In Tape


RD	Reel Dimension	<input checked="" type="checkbox"/> 7inch	<input type="checkbox"/> 13inch
W	Overall width of the carrier tape	<input checked="" type="checkbox"/> 8mm	<input type="checkbox"/> 12mm <input type="checkbox"/> 16mm
P1	Pitch between successive cavity centers	<input checked="" type="checkbox"/> 2mm	<input type="checkbox"/> 4mm <input type="checkbox"/> 8mm
Pin1	Pin1 Quadrant	<input checked="" type="checkbox"/> Q1	<input checked="" type="checkbox"/> Q2 <input type="checkbox"/> Q3 <input type="checkbox"/> Q4