

# ESDR0524PMUTAG

## Transient Voltage Suppressors

### Low Capacitance ESD Protection for High Speed Data

The ESDR0524P transient voltage suppressor is designed to protect high speed data lines from ESD. Ultra-low capacitance and low ESD clamping voltage make this device an ideal solution for protecting voltage sensitive high speed data lines. The flow-through style package allows for easy PCB layout and matched trace lengths necessary to maintain consistent impedance between high speed differential lines such as HDMI.

#### Features

- Low Capacitance (0.3 pF Typical, I/O to I/O)
- ESD Rating of Class 3B (Exceeding 8 kV) per Human Body model and Class C (Exceeding 400 V) per Machine Model
- Protection for the Following IEC Standards:  
IEC 61000-4-2 ( $\pm 8$  kV Contact)
- UL Flammability Rating of 94 V-0
- This is a Pb-Free Device

#### Typical Applications

- HDMI
- DVI
- Display Port
- MDDI
- eSATA

#### MAXIMUM RATINGS ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Operating Junction Temperature Range	$T_J$	-55 to +125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^\circ\text{C}$
Lead Solder Temperature – Maximum (10 Seconds)	$T_L$	260	$^\circ\text{C}$
IEC 61000-4-2 Contact (ESD)	ESD	$\pm 12$	kV
IEC 61000-4-2 Air (ESD)	ESD	$\pm 15$	kV

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

See Application Note AND8308/D for further description of survivability specs.



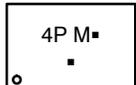
ON Semiconductor®

<http://onsemi.com>



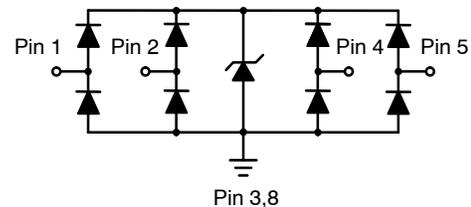
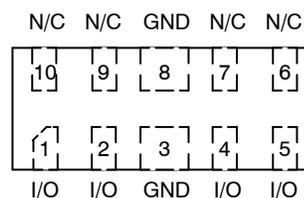
UDFN10  
CASE 517BB

#### MARKING DIAGRAM



- 4P = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package  
(Note: Microdot may be in either location)

#### PIN CONFIGURATION AND SCHEMATIC



#### ORDERING INFORMATION

Device	Package	Shipping
ESDR0524PMUTAG	UDFN10 (Pb-Free)	3000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

# ESDR0524PMUTAG

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

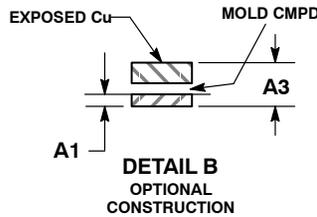
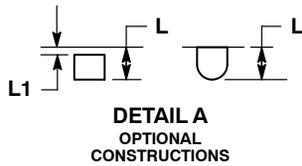
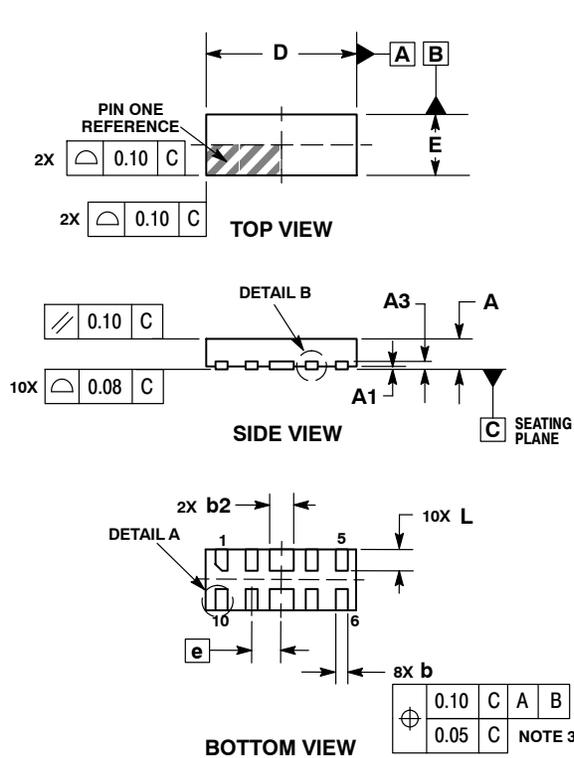
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	$V_{RWM}$	I/O Pin to GND (Note 1)			5.0	V
Breakdown Voltage	$V_{BR}$	$I_T = 1 \text{ mA}$ , I/O Pin to GND	6.0			V
Reverse Leakage Current	$I_R$	$V_{RWM} = 5 \text{ V}$ , I/O Pin to GND			1.0	$\mu\text{A}$
Clamping Voltage	$V_C$	$I_{PP} = 1 \text{ A}$ , I/O Pin to GND (8 x 20 $\mu\text{s}$ pulse)			15	V
Junction Capacitance	$C_J$	$V_R = 0 \text{ V}$ , $f = 1 \text{ MHz}$ between I/O Pins		0.3	0.4	pF
Junction Capacitance	$C_J$	$V_R = 0 \text{ V}$ , $f = 1 \text{ MHz}$ between I/O Pins and GND		0.5	0.8	pF

1. TVS devices are normally selected according to the working peak reverse voltage ( $V_{RWM}$ ), which should be equal or greater than the DC or continuous peak operating voltage level.

# ESDR0524PMUTAG

## PACKAGE DIMENSIONS

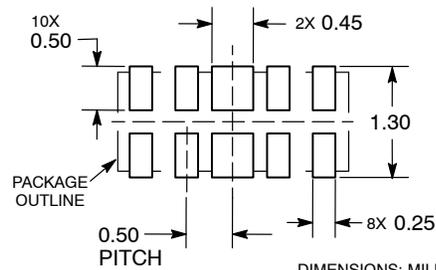
UDFN10 2.5x1, 0.5P  
CASE 517BB-01  
ISSUE O



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
  2. CONTROLLING DIMENSION: MILLIMETERS.
  3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30mm FROM TERMINAL.

DIM	MILLIMETERS	
	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.13 REF	
b	0.15	0.25
b2	0.35	0.45
D	2.50 BSC	
E	1.00 BSC	
e	0.50 BSC	
L	0.30	0.40
L1	---	0.05

### RECOMMENDED SOLDERING FOOTPRINT\*



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

### PUBLICATION ORDERING INFORMATION

**LITERATURE FULFILLMENT:**  
Literature Distribution Center for ON Semiconductor  
P.O. Box 5163, Denver, Colorado 80217 USA  
**Phone:** 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
**Fax:** 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
**Email:** orderlit@onsemi.com

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5773-3850

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)  
**Order Literature:** <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative