



## UESD5V0U4U01

ESD / TVS

### ULTRA LOW CAPACITANCE ESD PROTECTION ARRAY FOR HIGH SPEED I/O PORT

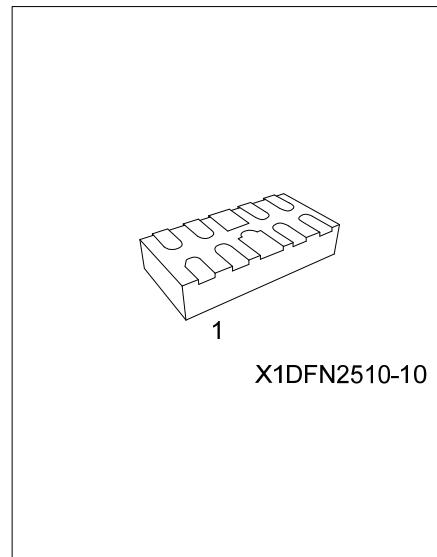
#### ■ DESCRIPTION

The UTC **UESD5V0U4U01** is a design which includes ESD rated diode arrays to protect high speed data interfaces. The AZ1045-04F has been

specifically designed to protect sensitive components which are connected to data and transmission lines from over-voltage caused by Electrostatic Discharging (ESD).

The UTC **UESD5V0U4U01** is a unique design which includes ESD rated, ultra low capacitance steering diodes and a unique design of clamping cell which is an equivalent TVS diode in a single package. During transient conditions, the steering diodes direct the transient to either the internal ESD line or to ground line. The internal unique design of clamping cell prevents over-voltage on the internal ESD line and on the I/O line, which is protecting any downstream components.

The UTC **UESD5V0U4U01** may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 ( $\pm 15\text{kV}$  air,  $\pm 8\text{kV}$  contact discharge).



#### ■ FEATURES

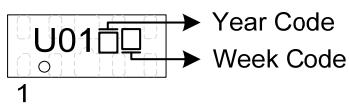
- \* Unidirectional device
- \* ESD Protect for Transition Minimized Differential Signaling (TMDS) channels
- \* Protects four I/O lines
- \* Provide ESD protection for each line to IEC 61000-4-2 (ESD)  $\pm 15\text{kV}$  (air),  $\pm 10\text{kV}$  (contact)  
IEC 61000-4-5 (Lightning) 5.0A (8/20 $\mu\text{s}$ )
- \* For operating voltage of 5V and below
- \* Ultra low capacitance : 0.55pF typical
- \* Fast turn-on and Low clamping voltage
- \* Array of ESD rated diodes with internal equivalent TVS (Transient Voltage Suppression) diode
- \* Simplified layout for HDMI connectors
- \* Solid-state silicon-avalanche and active circuit triggering technology

#### ■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UESD5V0U4U01L-KAV-R	UESD5V0U4U01G-KAV-R	X1DFN2510-10	Tape Reel

UESD5V0U4U01G-KAV-R  (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) KAV: X1DFN2510-10 (3) G: Halogen Free and Lead Free, L: Lead Free
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■ MARKING



■ MARKING INFORMATION

**W: Year Code**

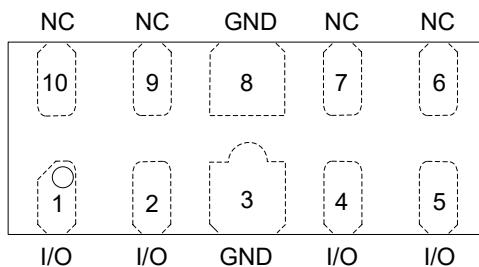
DATE	2XX0	2XX1	2XX2	2XX3	2XX4	2XX5	2XX6	2XX7	2XX8	2XX9
CODE	0	1	2	3	4	5	6	7	8	9

**D: Week Code**

Week	1	2	3	4	5	6	7	8	9	10	11	12
CODE	A	B	C	D	E	F	G	H	J	K	L	M
Week	13	14	15	16	17	18	19	20	21	22	23	24
CODE	N	P	Q	R	S	T	U	V	W	X	Y	Z
Week	25	26	27	28	29	30	31	32	33	34	35	36
CODE	5	6	7	8	9	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>
Week	37	38	39	40	41	42	43	44	45	46	47	48
CODE	<u>H</u>	<u>J</u>	<u>K</u>	<u>L</u>	<u>M</u>	<u>N</u>	<u>P</u>	<u>Q</u>	<u>R</u>	<u>S</u>	<u>T</u>	<u>U</u>
Week	49	50	51	52	53							
CODE	<u>V</u>	<u>W</u>	<u>X</u>	<u>Y</u>	<u>Z</u>							

Note: Weeks 30 to 53 are marking with underlines.

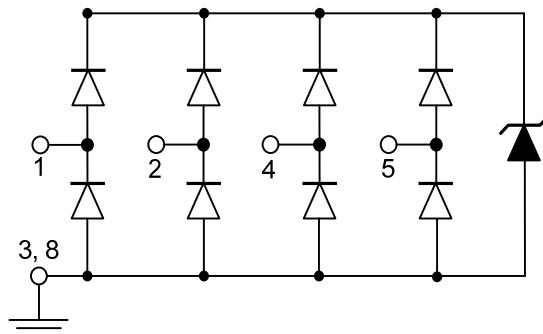
### ■ PIN CONFIGURATION



### ■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	I/O	Terminal of ESD 1
2	I/O	Terminal of ESD 2
3, 8	GND	Ground
4	I/O	Terminal of ESD 3
5	I/O	Terminal of ESD 4

### ■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER			SYMBOL	RATINGS		UNIT		
ESD Discharge	IEC61000-4-2	Air Discharge	$V_{ESD}$	$\pm 15$		kV		
		Contact Discharge		$\pm 12$		kV		
Peak Pulse Current	IEC61000-4-5	$t_p=8/20\mu\text{s}$	$I_{PP}$	5		A		
			$P_{PP}$	45		W		
Operating Junction Temperature			$T_J$	-40 ~ +150		°C		
Storage Temperature			$T_{STG}$	-55 ~ +150		°C		

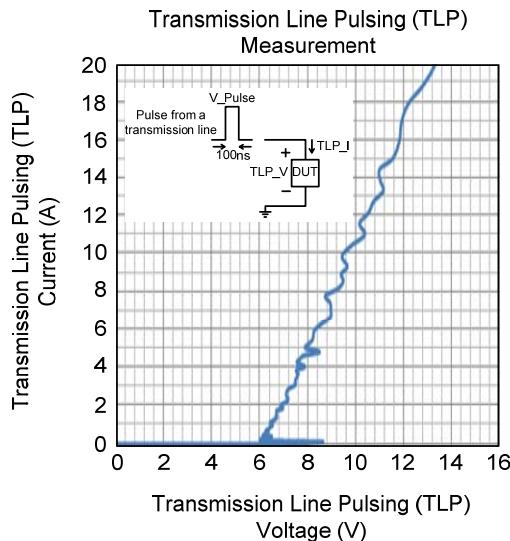
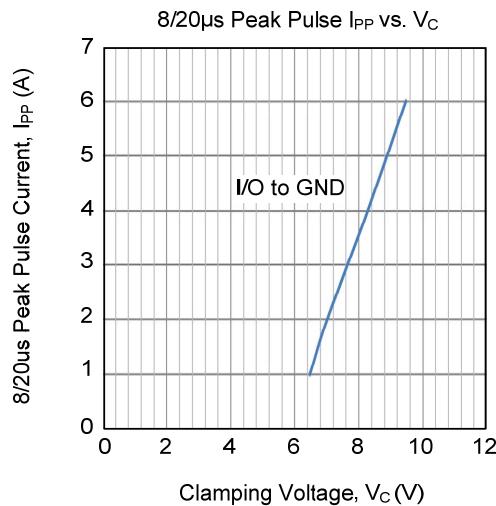
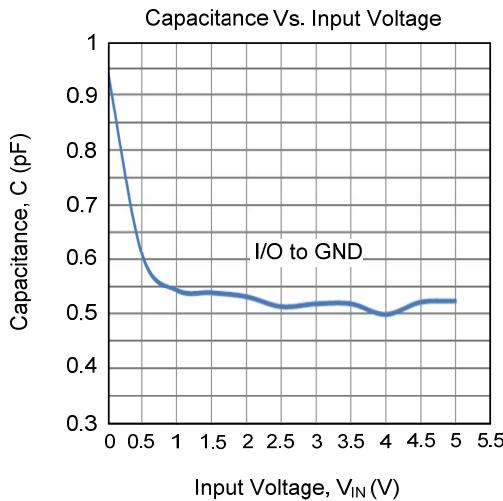
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Reverse Stand-Off Voltage	$V_{RWM}$	Pin 1, 2, 4, 5 to Pin 3, 8			5	V
Reverse Breakdown Voltage	$V_{BR}$	$I_R=1\text{mA}$ , Pin 1, 2, 4, 5 to Pin 3, 8	6			V
Reverse Leakage Current	$I_R$	$V_{I/O}$ to GND=5V			1	μA
Forward Voltage	$V_F$	$I_F=15\text{mA}$ , $T_A=25^\circ\text{C}$ , Pin 3, 8 to Pin 1, 2, 4, 5		0.9	1.1	V
ESD Clamping Voltage	$V_{clamping}$	IEC 61000-4-2 0 ~ +6kV Contact mode, any I/O Pin to Ground		12		V
ESD Dynamic Turn-on Resistance	$R_{dynamic}$	IEC 61000-4-2 0 ~ +6kV Contact mode, any I/O Pin to Ground		0.3		Ω
Channel Input Capacitance	$C_{IN}$	$V_{Pin\ 3,8}=0\text{V}$ , $V_{IN}=2.5\text{V}$ , $f=1\text{MHz}$ , any I/O Pin to Ground		0.55	0.65	pF

■ TYPICAL CHARACTERISTICS



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