



ULTRA LOW CAPACITANCE & LOW CLAMPING VOLTAGE UNI-DIRECTIONAL ESD / TRANSIENT PROTECTION DIODES

■ DESCRIPTION

The UTC **UESD5V0U4U03** is a design which includes ESD rated diode arrays to protect high speed data interfaces. The AZ1045-04F has been

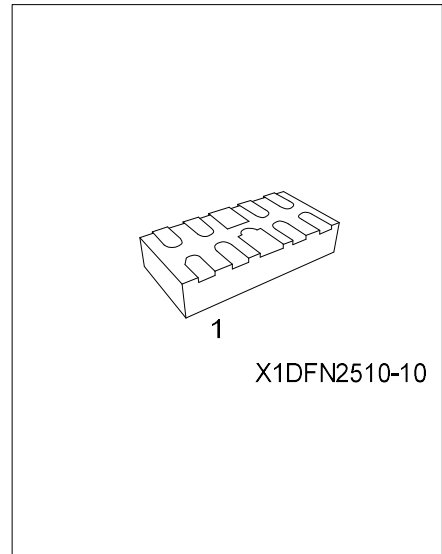
specifically designed to protect sensitive components which are connected to data and transmission lines from over-voltage caused by Electrostatic Discharging (ESD).

The UTC **UESD5V0U4U03** 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 **UESD5V0U4U03** may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 ($\pm 20\text{kV}$ air, $\pm 20\text{kV}$ contact discharge).

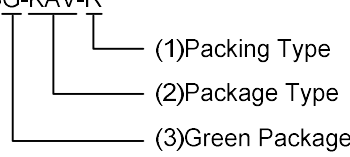
■ FEATURES

- * 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) $\pm 20\text{kV}$ (air), $\pm 20\text{kV}$ (contact) IEC 61000-4-5 (Lightning) 5A (8/20 μs)
- * For operating voltage of 5V and below
- * Ultra low capacitance : 0.6pF 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
- * Green & Pb Free

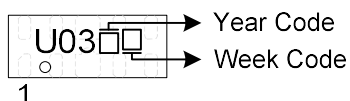


■ ORDERING INFORMATION

Ordering Number	Package	Packing
UESD5V0U4U03G-KAV-R	X1DFN2510-10	Tape Reel

UESD5V0U4U03G-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
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■ MARKING



■ MARKING INFORMATION

W: Year Code

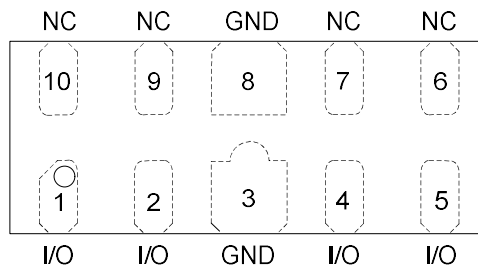
DATE	2XX0	2XX1	2XX2	2XX3	2XX4	2XX5	2XX6	2XX7	2XX8	2XX9
CODE	0	1	2	3	4	5	6	7	8	9

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.

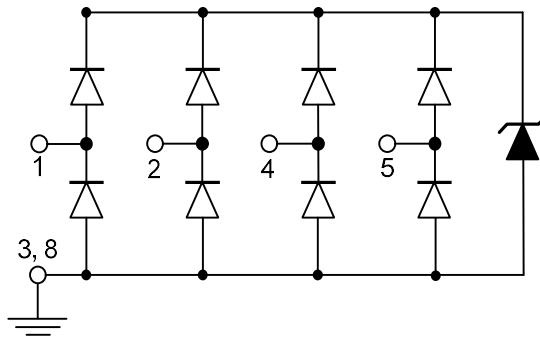
■ PIN CONFIGURATION



■ 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}	± 20	kV
		Contact Discharge		± 20	kV
Peak Pulse Current	IEC61000-4-5	$t_p=8/20\mu\text{s}$	I_{PP}	5	A
Peak Pulse Power			P_{PP}	65	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}	Any I/O Pin to Ground			5	V
Reverse Breakdown Voltage	V_{BR}	$I_{\text{R}}=1\text{mA}$, I/O to GND	5.5			V
Reverse Leakage Current	I_{R}	$V_{\text{I/O}}$ to GND=5V			500	nA
Forward Voltage	V_{F}	$I_{\text{F}}=15\text{mA}$,		0.95	1.2	V
ESD Clamping Voltage	V_{clamping}	$I_{\text{PP}}=1\text{A}$, $t_p=8/20\mu\text{s}$ Any I/O Pin to Ground		9	12	V
		$I_{\text{PP}}=5\text{A}$, $t_p=8/20\mu\text{s}$ Any I/O Pin to Ground		11	13	V
ESD Dynamic Turn-on Resistance	R_{dynamic}	$V_{\text{R}}=0\text{V}$, $f=1\text{MHz}$ Between I/O Pins		0.3	0.5	pF
		$V_{\text{R}}=0\text{V}$, $f=1\text{MHz}$ Any I/O Pin to Ground			1.0	pF

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