TVW DF10 04 AD0 Series Engineering Specification

1. Scope

TVW DF10 04 AD0's are TVS arrays designed to protect high-speed signal lines from overvoltage hazard of Electrostatic Discharge (**ESD**) and Electrical Fast Transients (**EFT**). These interfaces can be used in **HDMI**, **DisplayPort** interface, **SATA** and **eSATA** interface, digital visual interface (DVI), USB2.0, IEEE 1394 Firewire Ports, Ethernet port (10/100/1000 Mb/s), etc.

TVW DF10 04 AD0 incorporates a pair of rail-to-rail diodes with ultra low capacitance for each of four I/O channels. Additional Zener diode is employed to minimize the influence of supply voltage. The ESD protection of TVS arrays meets the immunity standard of IEC 61000-4-2, level 4 (±15kV air, ±8kV contact discharge).

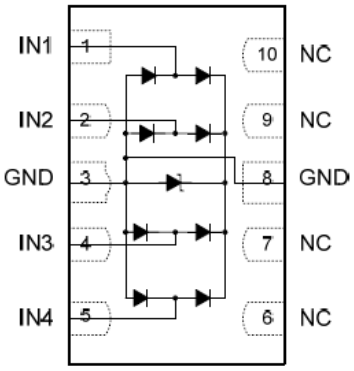
TVW DF10 04 AD0's are **lead free** and in **ROHS** compliance.

2. Explanation of Part Number

TV	W	DF10	04	AD0
(1)	(2)	(3)	(4)	(5)

(1) Product Type：TV=TVS Diode
(2) Capacitance Code：W=Ultra Low Capacitance
(3) Package Size Code
(4) Channel Code：04=4 Channels
(5) Specialized Specification Code

3. Circuit Diagram /Pin Configuration



Circuit Diagram
DFN-10 (Top-view)

4. Specifications

4.1. ABSOLUTE MAXIMUM RATINGS

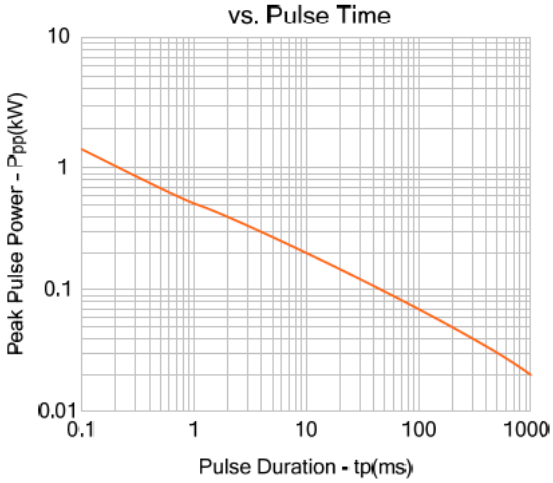
Parameter	Symbol	Typical	Unit
Peak Pulse Power (tp = 8/20 μs)	Ppk	150	W
Maximum Peak Pulse Current (tp = 8/20 μs)	Ipp	5	A
ESD per IEC 61000 – 4 – 2 (Air)	Vpp	±15	KV
ESD per IEC 61000 – 4 – 2 (Contact)	Vpp	±8	KV
Operating Junction Temperature	T_J	-55 ~ 125	℃
Storage Temperature Range	T_{STG}	-55 ~ 150	℃
Lead Soldering Temperature	T_L	260 (10sec)	℃

4.2. ELECTRICAL CHARACTERISTICS

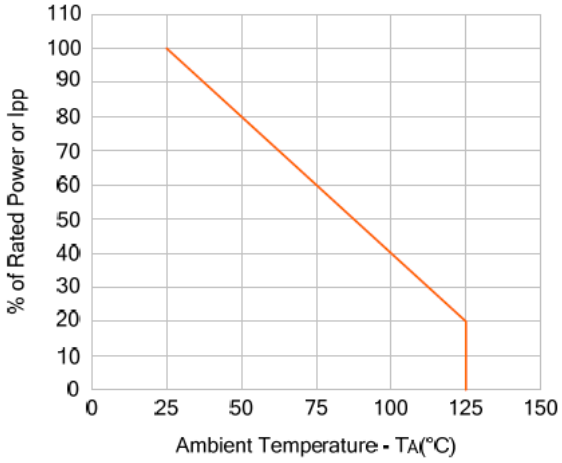
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Reverse Stand – Off Voltage	V_{RWM}				5	V
Forward Voltage @ IF	V_F	I_F = 10mA	0.4	0.8	1.5	V
Reverse Breakdown Voltage	V_{BR}	It = 1mA	6.0	7.0		V
Reverse Leakage Current	I_R	V_{RWM} = 5V , T=25℃		0.03	1	μA
Clamping Voltage	V_C	Ipp = 1A , tp = 8/20 μs		8.5	12	V
Junction Capacitance	Cj	V_R = 0V, f = 1MHz Any I/O pin to Ground		0.5		pF
		V_R = 0V, f = 1MHz Between I/O pins		0.35		

4.3. TYPICAL CHARACTERISTICS

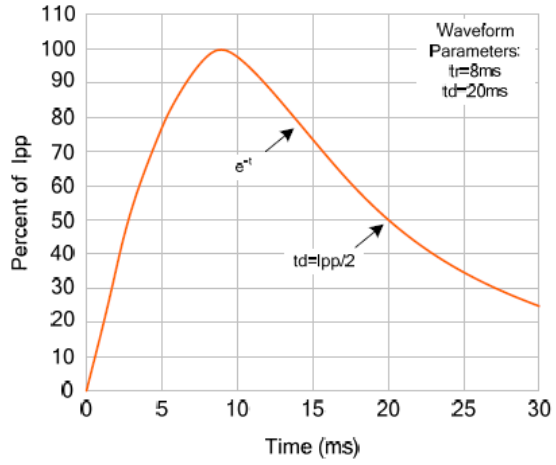
Non-Repetitive Peak Pulse Power vs. Pulse Time



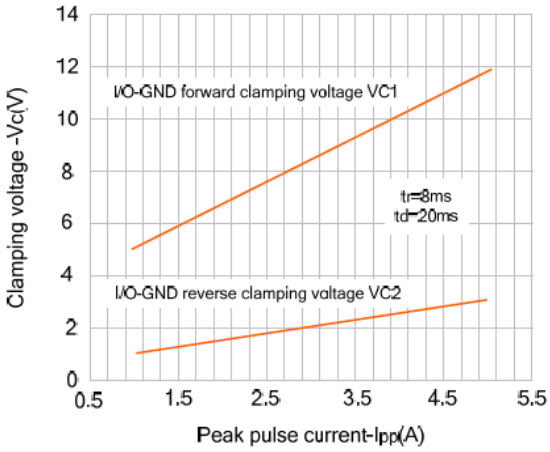
Power Derating Curve



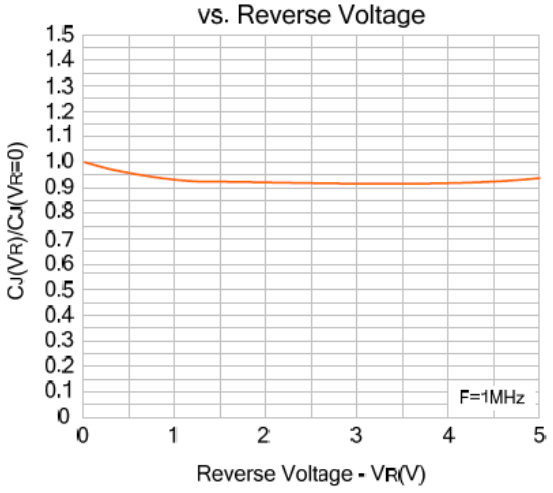
Pulse Waveform



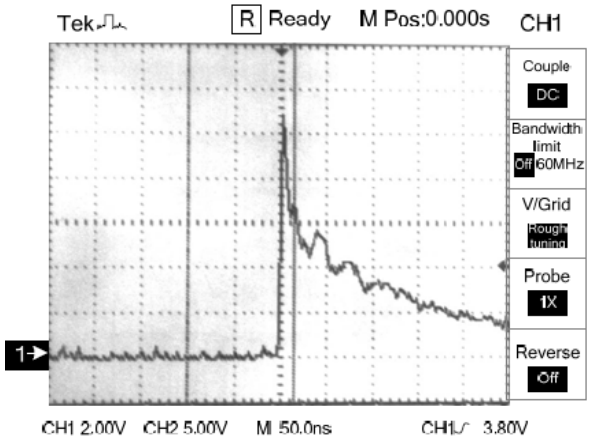
I/O–GND clamping voltage vs. peak pulse current

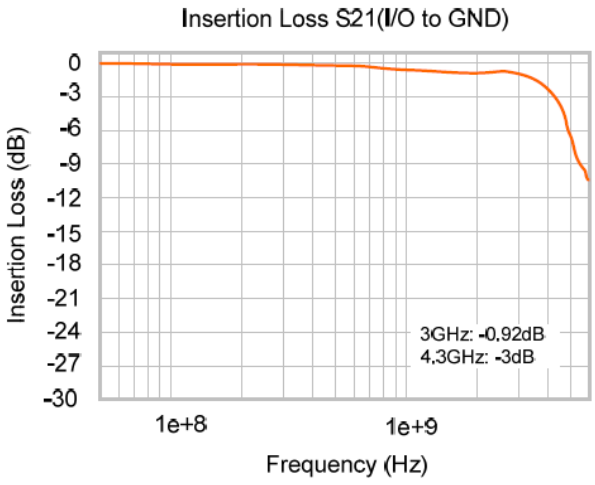


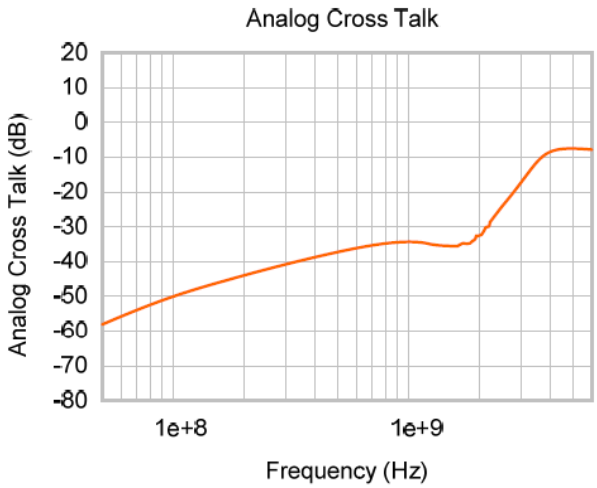
Normalized Capacitance vs. Reverse Voltage



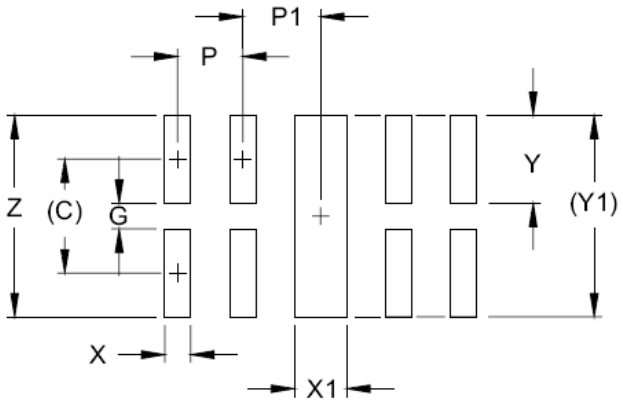
ESD Clamping for +8KV pulse per IEC61000-4-2







5. LAND LAYOUT



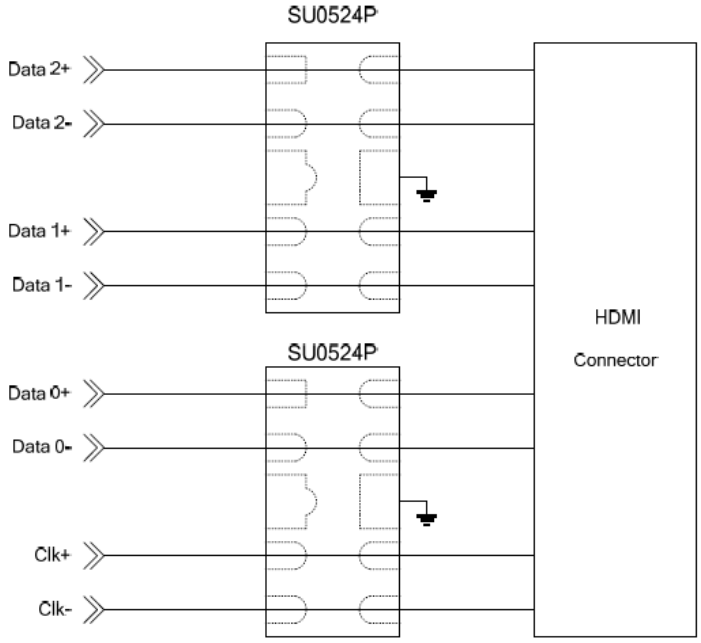
DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	(.034)	(0.875)
G	.008	0.20
P	.020	0.50
P1	.020	0.50
X	.008	0.20
X1	.016	0.40
Y	.027	0.675
Y1	(.061)	(1.55)
Z	.061	1.55

NOTES:

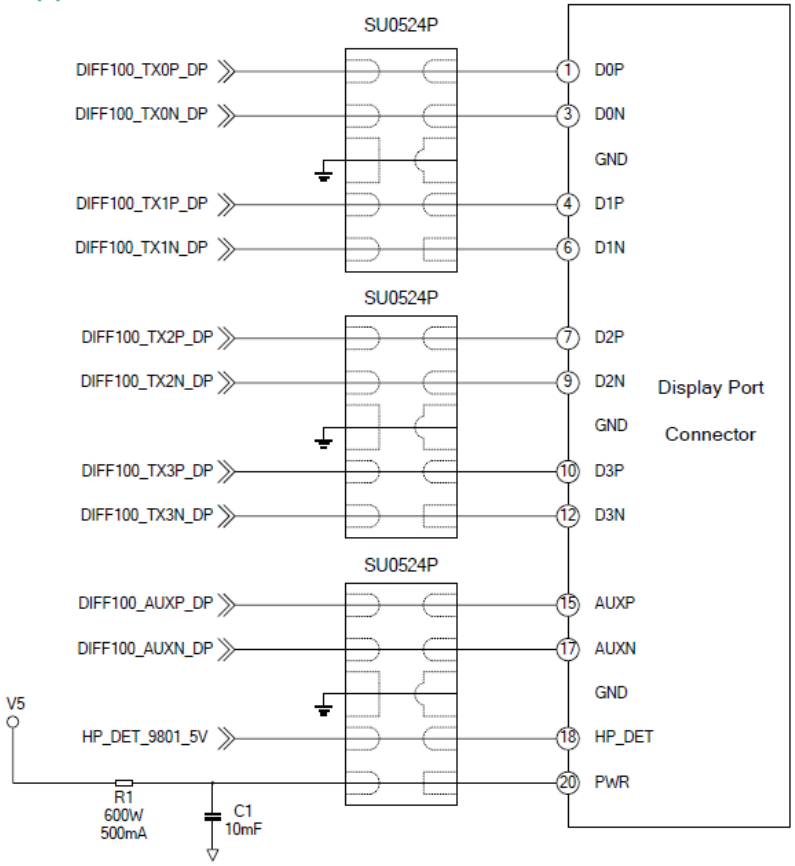
1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. THIS LAND PATTERN IS FOR REFERENCE PURPOSES ONLY. CONSULT YOUR MANUFACTURING GROUP TO ENSURE YOUR COMPANY'S MANUFACTURING GUIDELINES ARE MET.

6. Application information

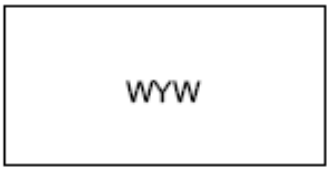
HDMI Port Application



Display Port Application

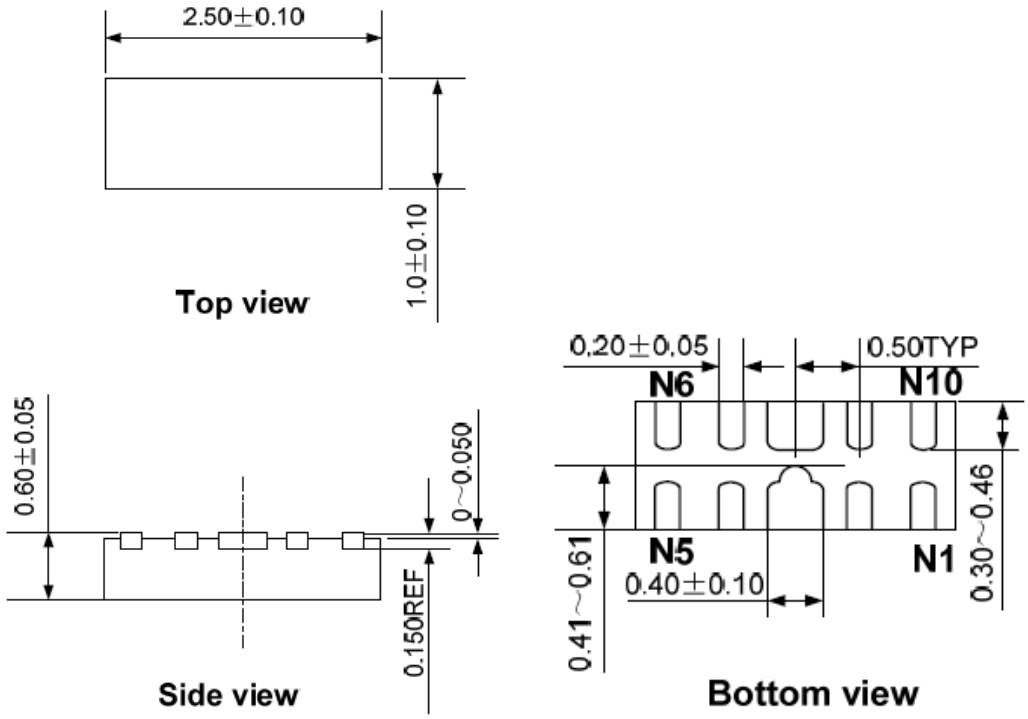


7. MARKING CODE



W=Specific Device Code
YW =Date Code (y=year,w=week)

8. Mechanical Details



8.1. Taping Quantity:

3,000pcs/ Reel (for 7” Reel)