



DW05-4R2S-AT-S ESD Protection Diode

Feature

- Uni-directional ESD protection of four lines
- 45Watts peak pulse power ($t_p = 8/20\mu s$)
- Working voltage: 5V
- Junction Capacitance: 0.36pF(Typ)
- Low clamping voltage
- Low leakage current
- AEC-Q101 qualified
- IEC 61000-4-2 $\pm 12kV$ contact $\pm 15kV$ air
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 3.8A (8/20 μs)

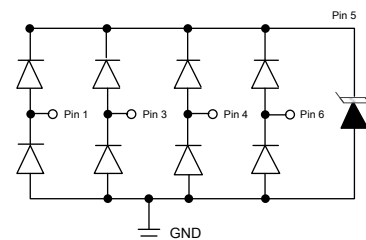
Application

- Ethernet
- Digital Visual Interface (DVI)
- USB2.0
- Notebook and PC Computers

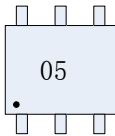
Mechanical Data

- Package: SOT-23-6L
- Molding compound flammability rating: UL 94V-0
- RoHS/WEEE compliant

Schematic & PIN Configuration



Ordering Information

Part Number	Package	Marking	QTY per Reel	Reel Size
DW05-4R2S-AT-S	SOT-23-6L		3000 pcs	7 inches



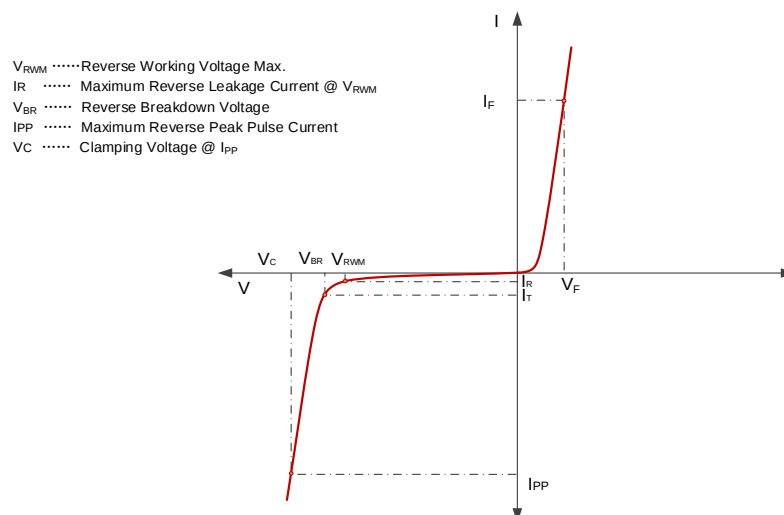
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	P_{PK}	45	W
Peak Pulse Current (8/20 μs)	I_{PP}	3.8	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	± 15 ± 12	kV
Lead Soldering Temperature	T_L	260 (10seconds)	$^{\circ}\text{C}$
Junction Temperature	T_J	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55 to +125	$^{\circ}\text{C}$

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typical	Max	Units
Reverse Stand-Off Voltage	V_{RWM}				5.0	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1\text{mA}$	6	7.2	8.5	V
Reverse Leakage Current	I_R	$V_{RWM}=5\text{V}, T=25^{\circ}\text{C}$		50	500	nA
Peak Pulse Current	I_{PP}	$t_p=8/20> \text{s}$			3.8	A
Clamping Voltage	V_C	$I_{PP}=3.8\text{A}, t_p=8/20> \text{s}$		10	12	V
Junction Capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz}$ IO to IO		0.2	0.25	pF
		$V_R = 0\text{V}, f = 1\text{MHz}$ IO to GND		0.36	0.4	

Electrical Parameters



Notes (1) TLP parameter : $Z_0=50\Omega$, $t_r=0.2\text{ns}$, $t_p=100\text{ns}$, averaging window from 70ns to 90ns.

(2) Dynamic resistance calculated from $I_{PP}=4\text{A}$ to $I_{PP}=16\text{A}$.



Typical Characteristics

Fig.1 Peak Pulse Power Rating Curve

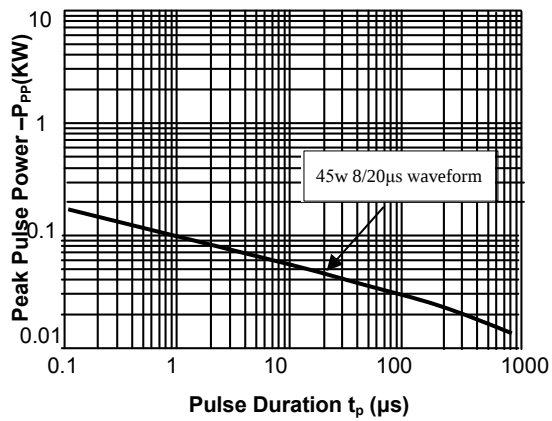


Fig.2 Pulse Derating Curve

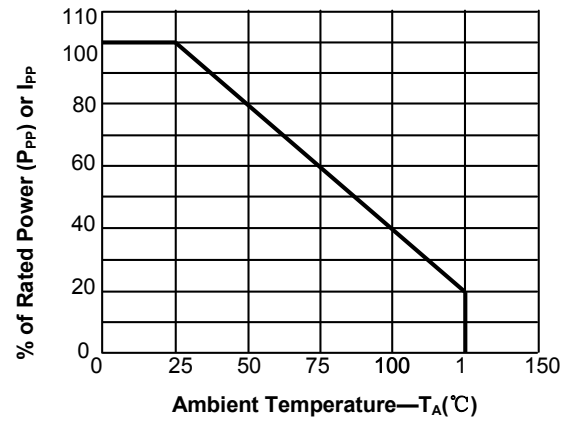


Fig.3 Pulse Waveform-8/20 μ s

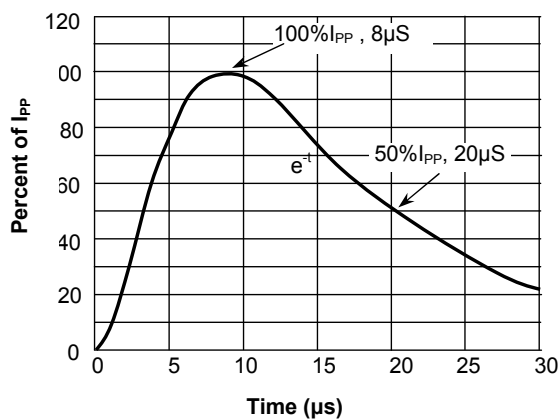


Fig.4 Pulse Waveform-ESD(IEC61000-4-2)

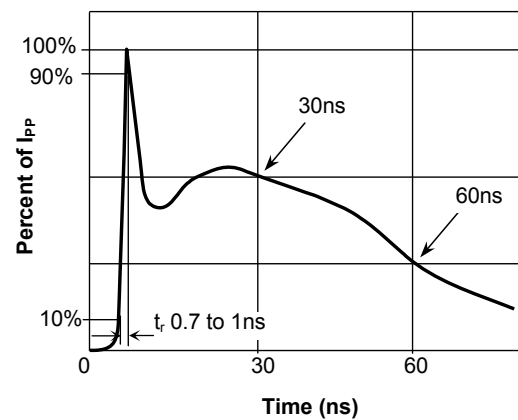


Fig.5 Eye Diagram - HDMI mask at 3.4Gbps per channel

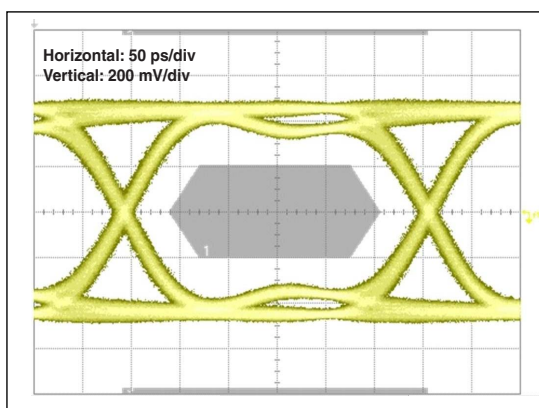
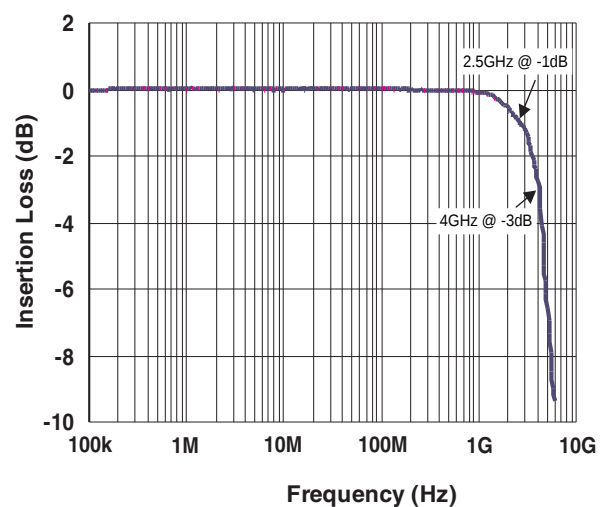
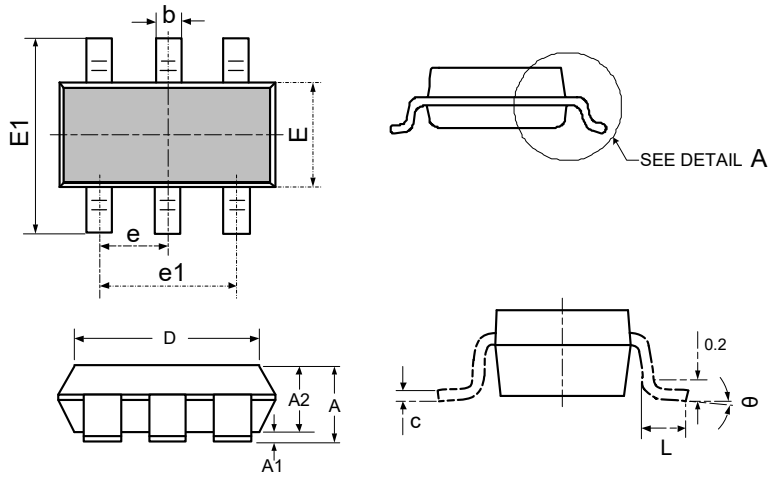


Fig.6 Insertion Loss S21 - I/O to GND





SOT-23-6L Outline Drawing



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	0.041	0.049	1.050	1.250
A1	0.000	0.004	0.000	0.100
A2	0.041	0.045	1.050	1.150
D	0.111	0.119	2.820	3.020
E	0.059	0.067	1.500	1.700
E1	0.104	0.116	2.650	2.950
b	0.012	0.020	0.300	0.500
e	0.037(BSC)		0.950(BSC)	
e1	0.071	0.079	1.800	2.000
L	0.012	0.024	0.300	0.600
θ	0°	8°	0°	8°