

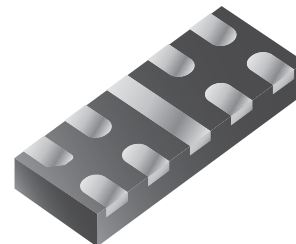
Ultra Low capacitance & Low Clamping Voltage

Uni-directional ESD / Transient Protection Diodes

FEATURES

- Transient protection for data lines to
 - IEC61000-4-2(ESD) : Air mode $\pm 25\text{kV}$ / Contact mode $\pm 20\text{kV}$
 - IEC61000-4-5(Surge) : $4\text{A}(t_p=8/20 \mu\text{s})$
- Low capacitance $C_T = 0.6\text{pF}(\text{Max})$ Any I/O pin to ground
- Uni-directional working voltage up to : $V_{RWM} = 5\text{V}$
- Ultra small Size $2.0 \times 1.0 \times 0.4\text{mm}$
- Suffix U : Qualified to AEC-Q101.

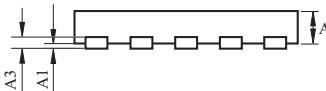
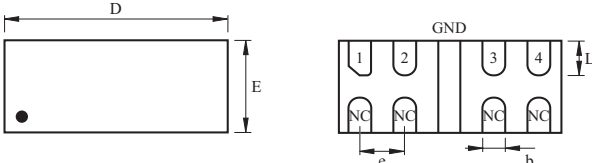
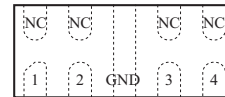
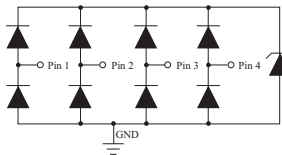
ex) PS05TVUL9-RTL/HU



ULP-9 (leadless-type)

PRODUCT DESCRIPTION

- Molding compound flammability rating : UL 94V-0
- Pb-Free, Halogen-Free, RoHs Compliant

Package dimensions (ULP-9)	Pin configurations (Uni-directional)																																															
<table><thead><tr><th rowspan="2">DIM</th><th colspan="3">MILLIMETERS</th></tr><tr><th>MIN</th><th>NOM</th><th>MAX</th></tr></thead><tbody><tr><td>A</td><td>>0.3</td><td>-</td><td>0.40</td></tr><tr><td>A1</td><td>0.00</td><td>-</td><td>0.05</td></tr><tr><td>A3</td><td colspan="3">0.125REF.</td></tr><tr><td>b</td><td>0.15</td><td>0.20</td><td>0.25</td></tr><tr><td>D</td><td>1.95</td><td>2.00</td><td>2.05</td></tr><tr><td>E</td><td>0.95</td><td>1.00</td><td>1.05</td></tr><tr><td>e</td><td colspan="3">0.40 BSC</td></tr><tr><td>L</td><td>0.28</td><td>0.38</td><td>0.48</td></tr></tbody></table>	DIM	MILLIMETERS			MIN	NOM	MAX	A	>0.3	-	0.40	A1	0.00	-	0.05	A3	0.125REF.			b	0.15	0.20	0.25	D	1.95	2.00	2.05	E	0.95	1.00	1.05	e	0.40 BSC			L	0.28	0.38	0.48	<table><thead><tr><th>Pin</th><th>Identification</th></tr></thead><tbody><tr><td>1,2,3,4</td><td>Input Lines</td></tr><tr><td>5,6,7,8</td><td>Output Lines (No Internal Connection)</td></tr><tr><td>Center Tab</td><td>GND</td></tr></tbody></table>	Pin	Identification	1,2,3,4	Input Lines	5,6,7,8	Output Lines (No Internal Connection)	Center Tab	GND
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ORDERING INFORMATION

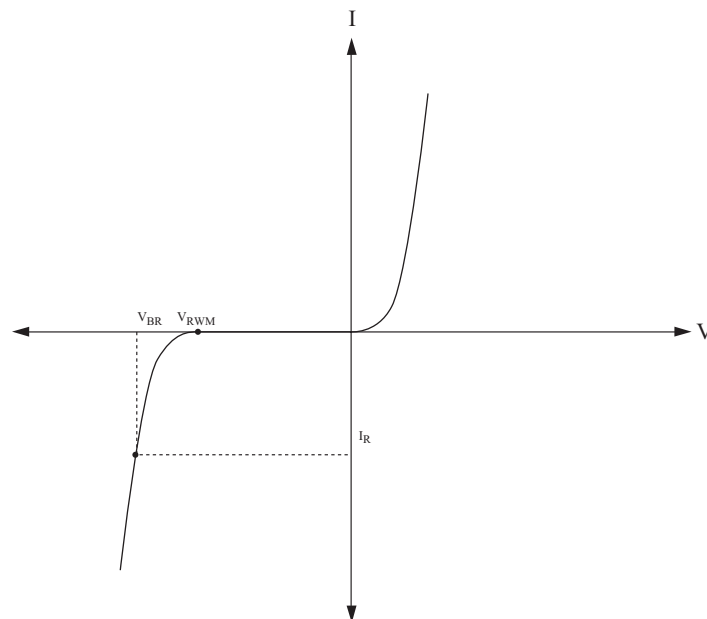
Part Number	Qty per Reel	Reel Size	Marking code
PS05TVUL9-RTK	5,000	7 inch	BY

PS05TVUL9

MAXIMUM RATING (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Peak Pulse Power (tp=8/20 μs)	P _{PK}	60	W
Peak Pulse Current (tp=8/20 μs)	I _{PP}	4	A
Junction Temperature	T _J	150	°C
Operating Junction Temperature	T _{opr}	-40 150	°C
Storage Temperature	T _{STG}	-55 150	°C

DEFINITIONS OF ELECTRICAL CHARACTERISTIC SYMBOL

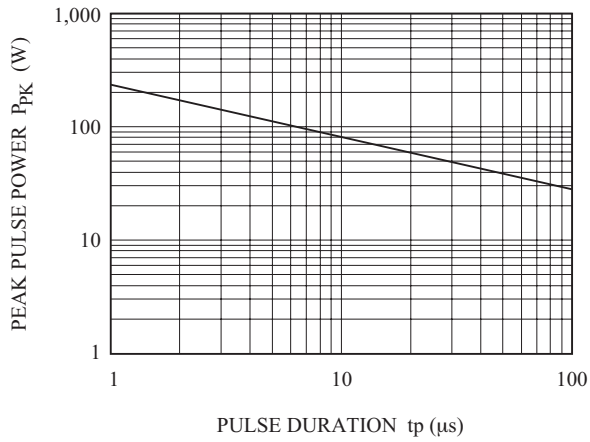


ELECTRICAL CHARACTERISTICS (Ta=25°C)

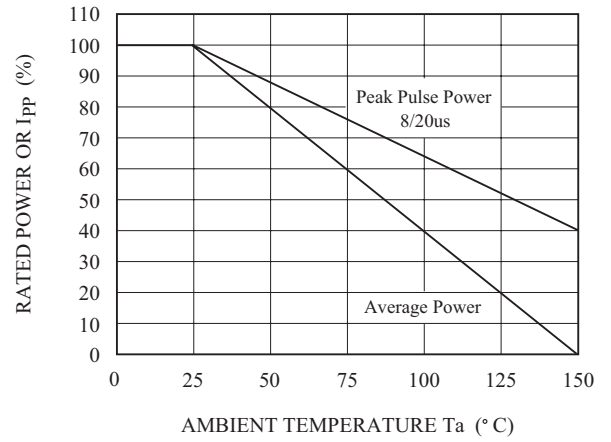
CHARACTERISTIC	SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Reverse Stand-Off Voltage	V _{RWM}	Any I/O pin to ground		-	-	5	V
Reverse Leakage Current	I _R	V _{RWM} =5V Any I/O pin to ground		-	-	0.3	μA
Breakdown Voltage	V _{BR}	I _t =1mA Any I/O pin to ground		6	-	11	V
Clamping Voltage	V _C	I _{PP} =1A, tp=8/20 μs Any I/O pin to ground		-	-	12	V
		I _{PP} =4A, tp=8/20 μs Any I/O pin to ground		-	-	15	
Total Capacitance	C _T	V _R =0V, f=1MHz Between I/O pins		-	0.3	0.4	pF
		V _R =0V, f=1MHz Any I/O pin to ground		-	0.45	0.6	
Electrostatic Discharge	V _{ESD}	IEC61000-4-2	Air	±25	-	-	kV
			Contact	±20			

PS05TVUL9

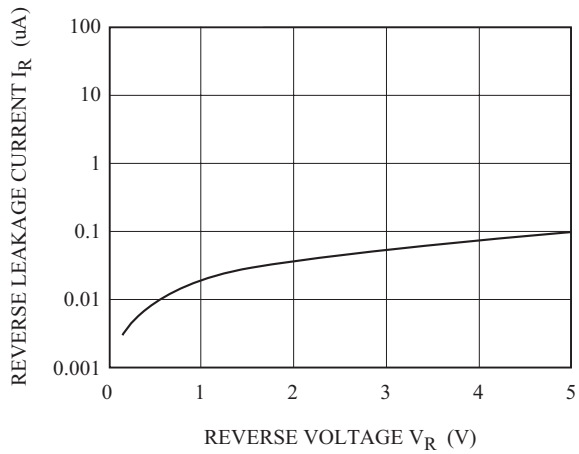
NON-REPETITIVE PEAK PULSE
POWER VS. PULSE TIME



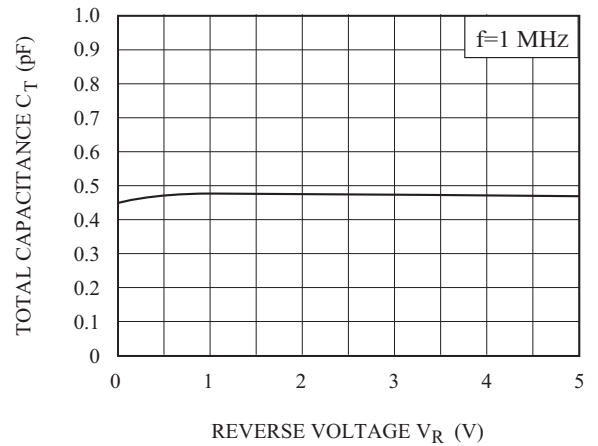
POWER DERATION CURVE



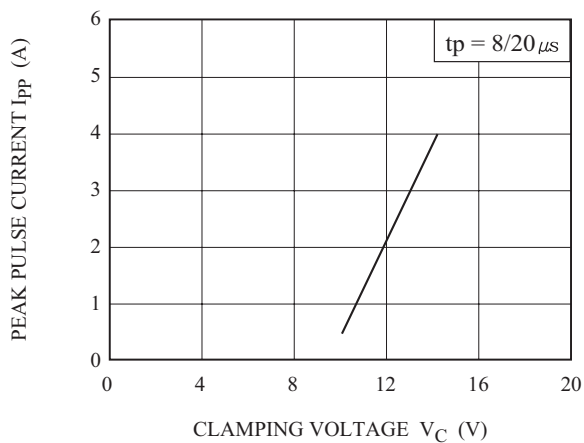
$I_R - V_R$ (I/O to GND)



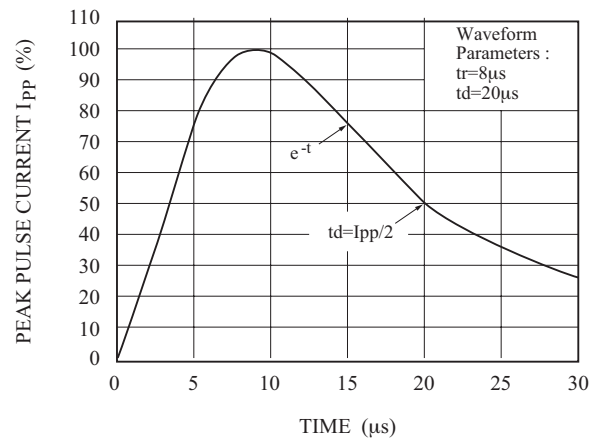
$C_T - V_R$ (I/O to GND)



$I_{pp} - V_C$ (I/O to GND)



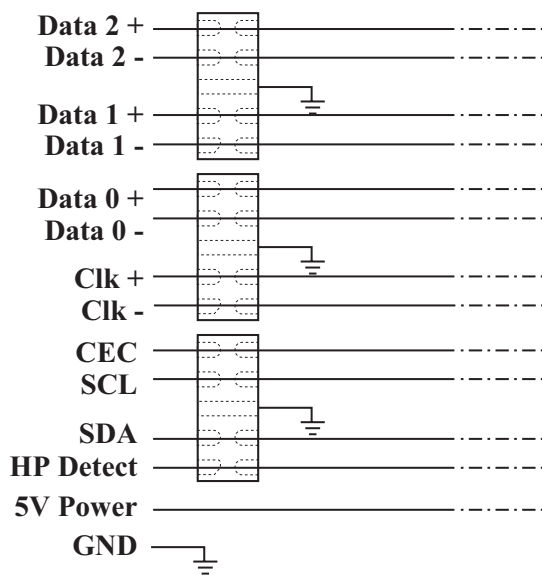
PULSE WAVEFORM



PS05TVUL9

APPLICATIONS

- USB 2.0, 10/100/1000 Ethernet, DVI, HDMI, S-ATA
- Mobile Display Digital Interface (MDDI)
- LCD-Display, Camera
- GPS / FM Antennas
- Low Voltage Differential Signaling (LVDS)
- High speed data lines



Recommended pad dimension & Marking Information

Recommended pad dimension	Marking Code