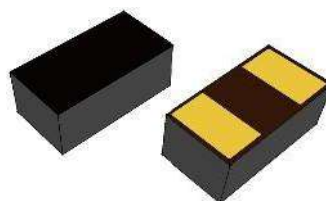


Ultal Low Capacitance ESD Protection Diode in 0402

Features:

- Ultra-Low capacitance:0.05pF(typ.)
- Low leakage current(<10nA)
- Fast response time(<1ns)
- Bi-directional,single line protection
- IEC 61000-4-2 (ESD Air): 15kV
IEC 61000-4-2 (ESD Contact): 8kV

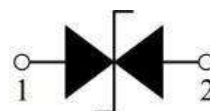
Pin Description



Applications:

- USB 3.0/3.1
- HDMI 1.3/1.4/2.0
- RF Antenna
- SATA and eSATA Interface

Schematic Diagram



Order Information

Type	Package	Size (mm)		
KPESD1442U005	0402	1.00x0.52x0.38	7" T&R	10,000

Limiting Values($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

Symbol	Parameter	Conditions	Min	Max	Unit
V_{ESD}	Electrostatic Discharge Voltage	IEC 61000-4-2; Contact Discharge	-	8	kV
		IEC 61000-4-2; Air Discharge	-	15	kV
T_A	Operating Temperature Range	-	-55	125	$^{\circ}\text{C}$
T_{stg}	Storage Temperature Range	-	-40	85	$^{\circ}\text{C}$

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

Symbol	Parameter	Conditions	Min	Typ.	Max	Unit
V_{DC}	Continuous Operating Voltage	-	-	-	14.0	V
V_T	Trigger Voltage	IEC61000-4-2 8kV contact discharge	-	450	-	V
V_C	Clamping Voltage	IEC61000-4-2 8kV contact discharge	-	40	-	V
I_L	Leakage Current	DC 12V shall be applied on component	-	-	10	nA
C_J	Capacitance	Measured at 10MHz	-	0.05	-	pF

Typical Characteristics

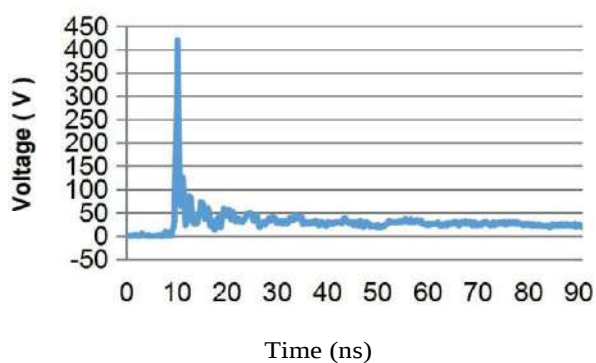


Fig.1 Typical ESD Response
 (IEC 61000-4-2, 8kV contact discharge)

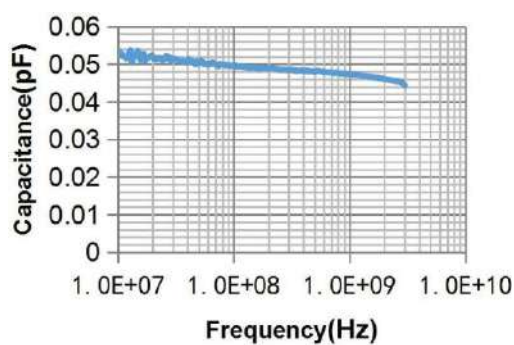


Fig.2 Typical Device Capacitance VS. Frequency

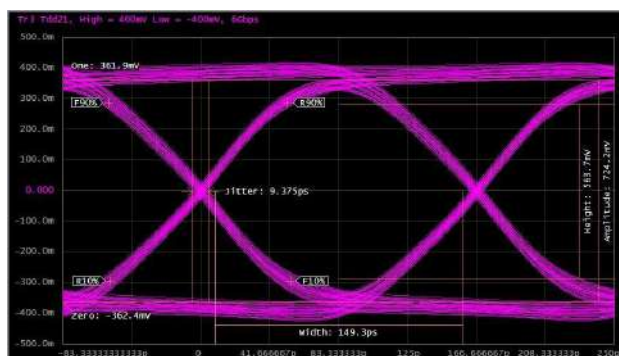
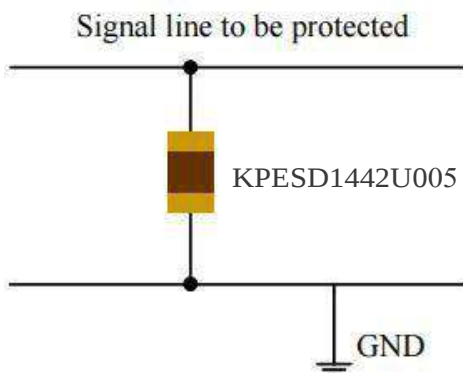
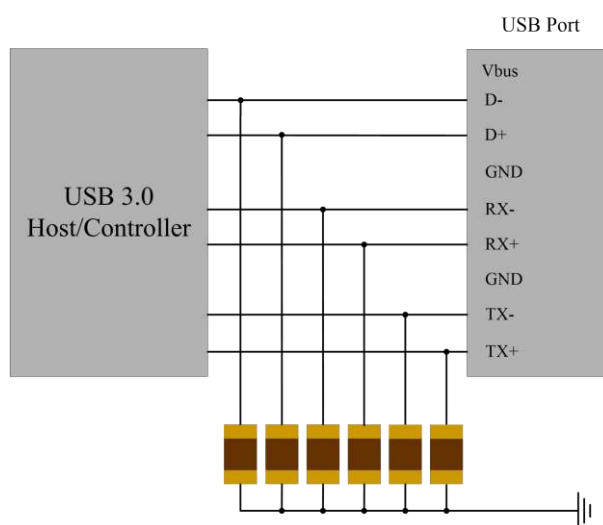


Fig.3 HDMI 2.0 Mask at 6.0 Gbps

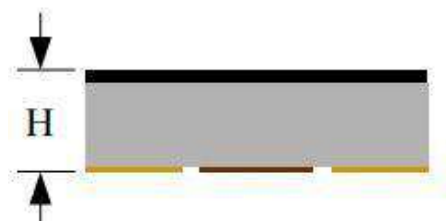
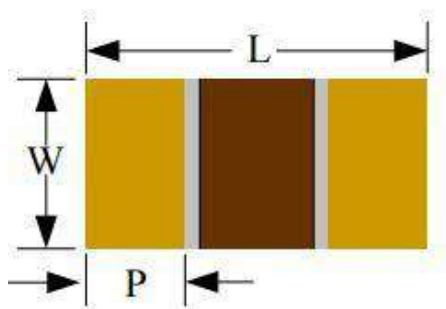
ESD Protection for Signal Line

The KPESD is designed for the protection of one bidirectional data line from ESD damage.

- Place the KPESD as close to the input terminal or connector as possible.
- Minimize the path length between the KPESD and the protected signal line.
- Use ground planes whenever possible.

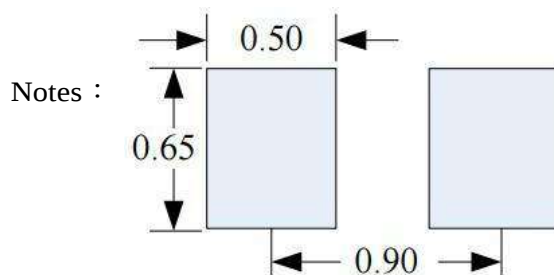


Package Dimension



Dimension	Unit: Millimeters	
	Min.	Max.
L	0.90	1.10
W	0.42	0.62
P	0.15	0.35
H	0.25	0.45

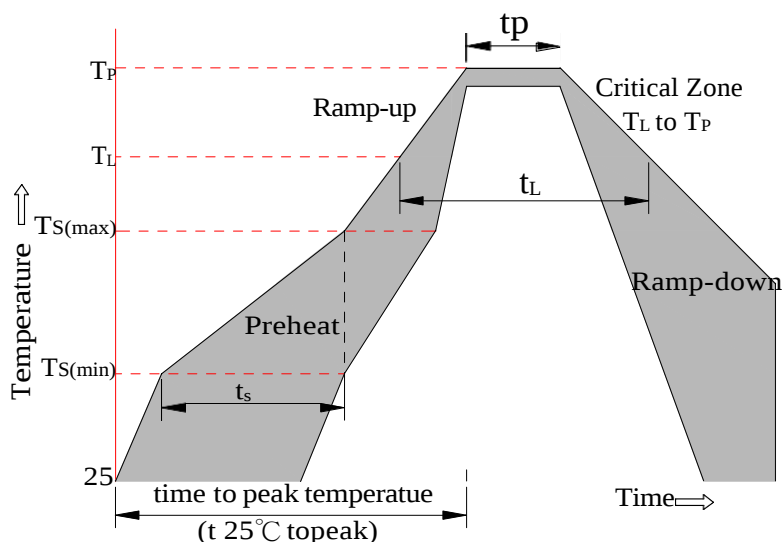
Recommended Solder PadFootprint



***Sizes in mm**

This solder pad layout is for reference purposes only.

Soldering Parameters



Reflow Condition		Pb-Free Assembly
Pre-heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
xTime 25°C to Peak Temp (T_p)		8 min. Max
Do not exceed		+260°C