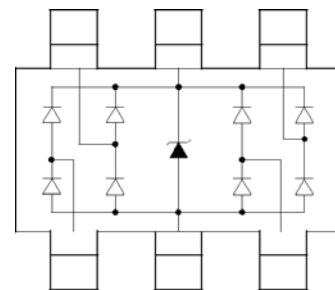
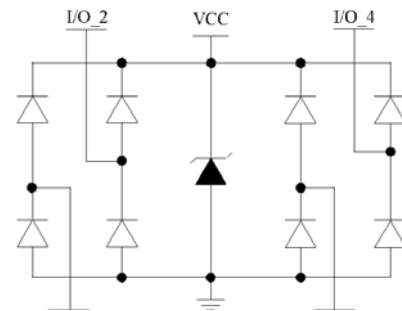


## General Description

CS0816 is a low capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.7pF only, CS0816 is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events.

CS0816 uses small SOT23-6 package. Each CS0816 device can protect four high-speed data lines. The combined features of low capacitance, small size and high ESD robustness make CS0816 ideal for high-speed data ports and high-frequency lines (e.g., HDMI & DVI) applications. The low clamping voltage of the CS0816 guarantees a minimum stress on the protected IC.



SOT23-6  
(Top View)

## Features

- Transient protection for high-speed data lines  
IEC 61000-4-2 (ESD)  $\pm 15\text{kV}$  (Air)  
 $\pm 8\text{kV}$  (Contact)  
IEC 61000-4-4 (EFT) 40A (5/50 ns)  
Cable Discharge Event (CDE)
- Small package (2.9mm  $\times$  2.8mm  $\times$  1.4mm)
- Protects four data lines
- Low capacitance: 0.7pF Typical (I/O-GND)
- Low leakage current: 0.1 $\mu\text{A}$  @  $V_{RWM}$  (Typical)
- Low clamping voltage
- Each I/O pin can withstand over 1000 ESD strikes for  $\pm 8\text{kV}$  contact discharge
- Green Part

## Applications

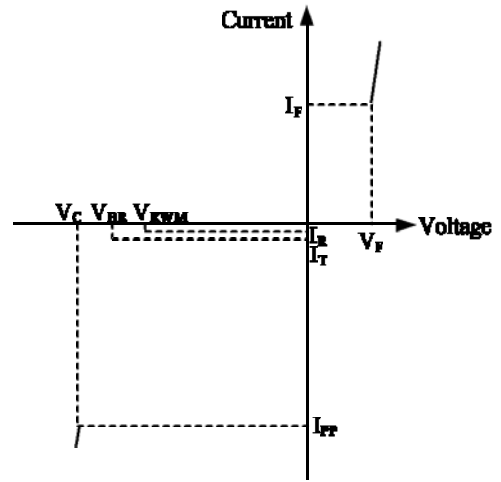
- Video Graphics Cards
- Desktops, Servers and Notebooks
- IEEE 1394 Ports
- USB2.0 Power and Data Line Protection
- Display Ports
- SIM Ports

**Absolute Maximum Rating**

Symbol	Parameter	Value	Units
$V_{ESD}$	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	$\pm 17$ $\pm 12$	kV
$T_{OPT}$	Operating Temperature	-55/+125	°C
$T_{STG}$	Storage Temperature	-55/+150	°C

**Electrical Characteristics (T = 25°C)**

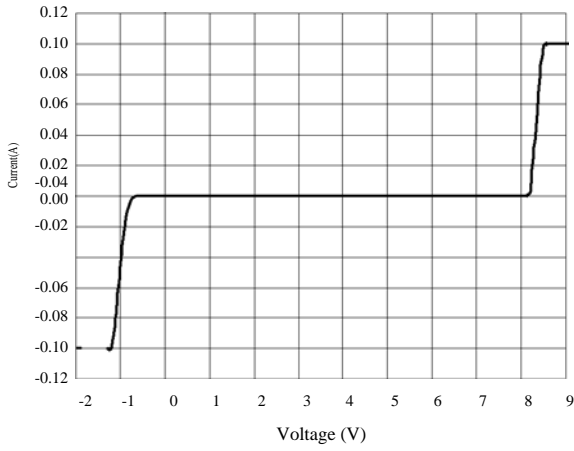
Symbol	Parameter
$V_{RWM}$	Nominal Reverse Working Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Reverse Breakdown Voltage @ $I_T$
$I_T$	Test Current for Reverse Breakdown
$V_C$	Clamping Voltage @ $I_{PP}$
$I_{PP}$	Maximum Peak Pulse Current
$C_{ESD}$	Parasitic Capacitance
$V_R$	Reverse Voltage
f	Small Signal Frequency
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$



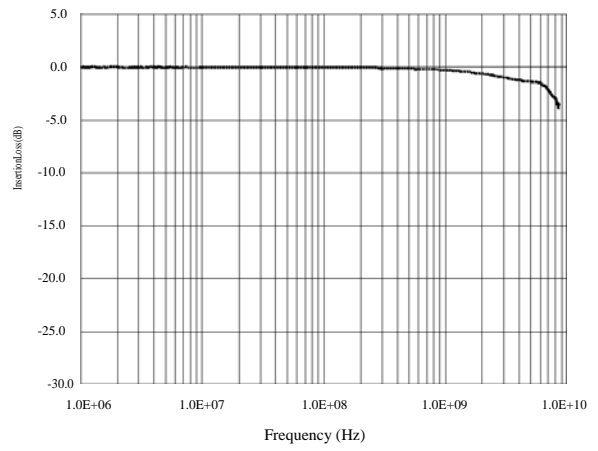
Uni-Directional TVS

Symbol	Test Condition	Minimum	Typical	Maximum	Units
$V_{RWM}$				5.0	V
$I_R$	$V_{RWM} = 5V, T = 25^\circ C$ Between I/O and GND		0.1	1.0	$\mu A$
$V_{BR}$	$I_T = 1mA$ Between I/O and GND	6.0	8.0	10.0	V
$V_C$	$I_{PP} = 1A, t_p = 8/20\mu s$ Between I/O and GND			12	V
$C_{ESD}$	$V_R = 0V, f = 1MHz$ Between I/O and GND		0.7	0.8	pF
$C_{ESD}$	$V_R = 0V, f = 1MHz$ Between I/O and I/O		0.35		pF

**Voltage Sweeping of I/O to GND**

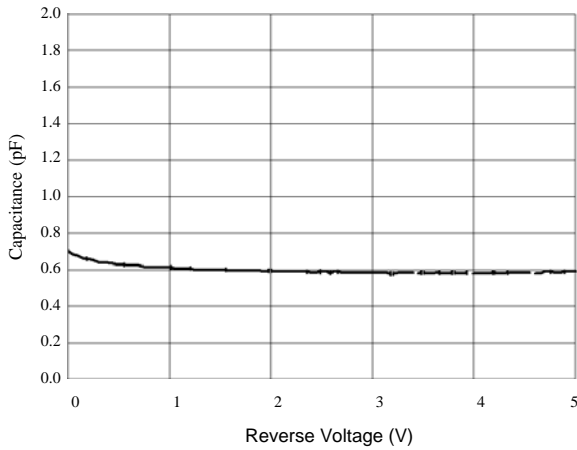


**Insertion Loss S21 of I/O to GND**

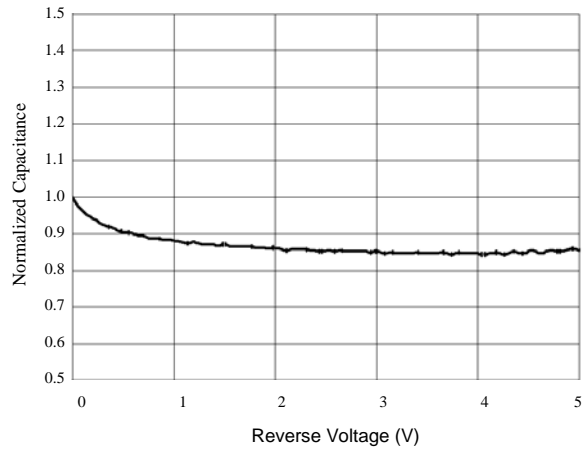


**Capacitance vs. Voltage of I/O to GND (f = 1MHz)**

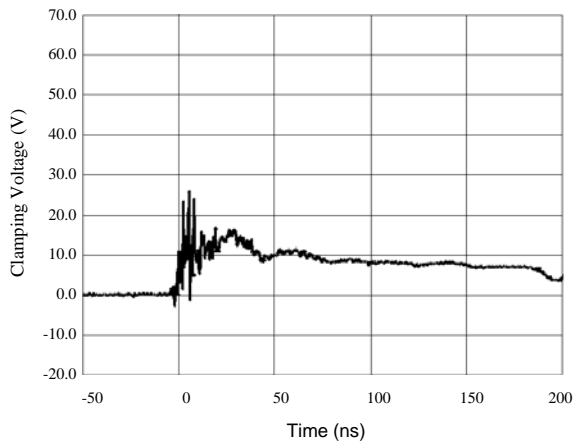
Capacitance vs. Reverse Voltage



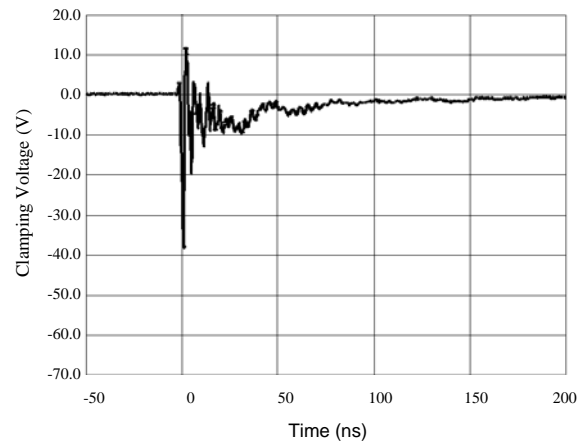
Normalized Capacitance vs. Reverse Voltage



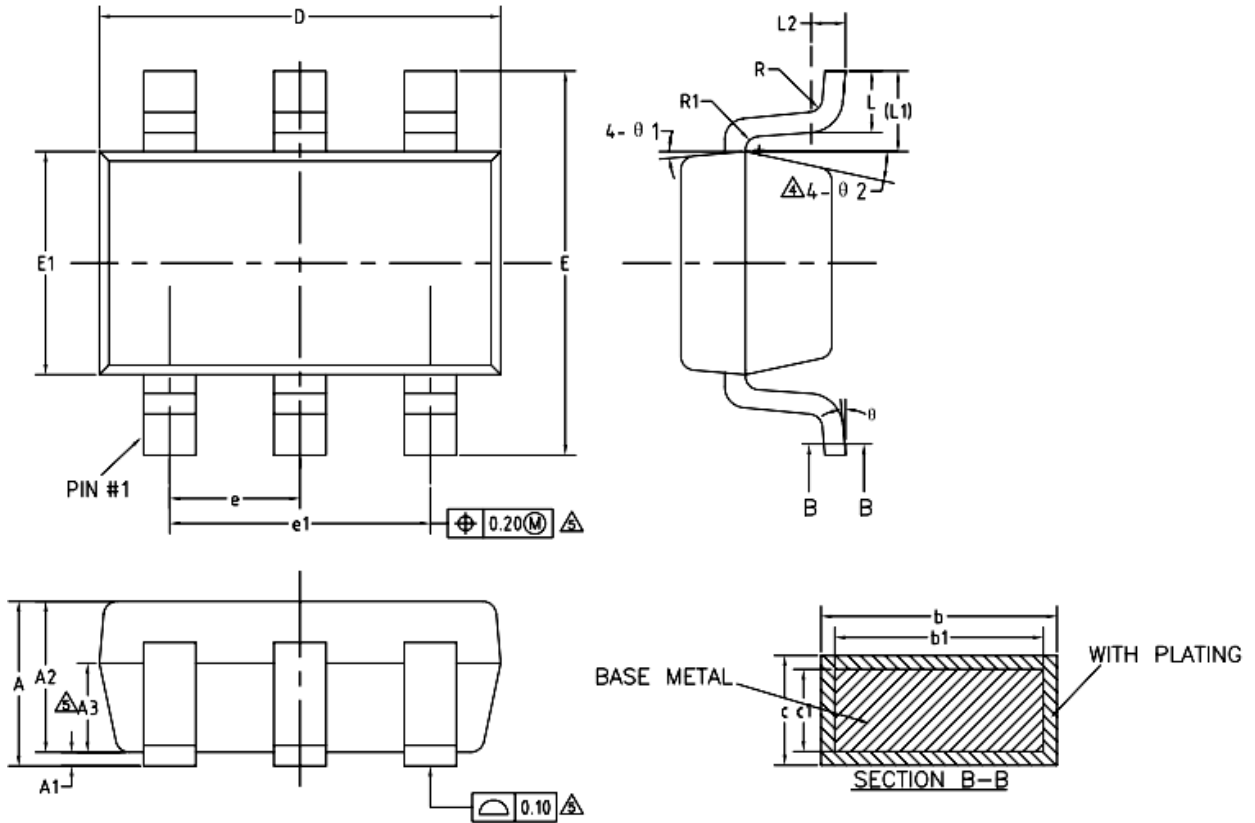
**ESD Clamping of I/O to GND  
(+8kV Contact per IEC 61000-4-2)**



**ESD Clamping of I/O to GND  
(-8kV Contact per IEC 61000-4-2)**



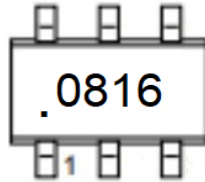
SOT23-6



COMMON DIMENSIONS  
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	-	-	1.25
A1	0	-	0.15
A2	1.00	1.10	1.20
A3	0.60	0.65	0.70
b	0.36	-	0.50
b1	0.36	0.38	0.45
c	0.14	-	0.20
c1	0.14	0.15	0.16
D	2.826	2.926	3.026
E	2.60	2.80	3.00
E1	1.526	1.626	1.726
e	0.90	0.95	1.00
e1	1.80	1.90	2.00
L	0.35	0.45	0.60
L1	0.59REF		
L2	0.25BSC		
R	0.10	-	-
R1	0.10	-	0.20
$\theta$	0°	-	8°
$\theta 1$	3°	5°	7°
$\theta 2$	6°	-	14°

**Marking**



**Ordering information**

Order code	Package	Base qty	Delivery mode
UMW CS0816	SOT23-6	3000	Tape and reel