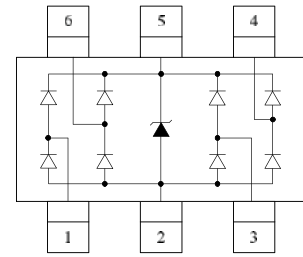


Description

The CLAMP0504DT has an ultra-low capacitance with a typical value at 0.2pF, and complies with the IEC 61000-4-2 (ESD) standard with ±25kV air and ±20kV contact discharge. It is assembled into a 6-pin lead-free SOT23 package. The combination of small size, ultra low capacitance, and high ESD surge capability make it ideal for use in applications such as USB 3.0, multimedia, and other high speed ports.



Circuit Diagram & Pin Schematic

Features

- Ultra low capacitance: 0.2.pF typical (I/O to I/O)
- Ultra low leakage: nA level
- Working voltage: 5V
- Low clamping voltage
- Up to 4 data lines and one power line protects

Applications

- USB 2.0 and USB 3.0 Ports
- USB OTG
- Digital Video Interface (DVI)
- Monitor and Flat Panel Displays
- PCI Express and Serial SATA Ports
- Gigabit Ethernet
- IEEE 1394 Firewire Ports
- Consumer products (STB, DVD, DSC, DVC...)

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

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	Ppk	60	W
Peak Pulse Current (8/20 μs)	Ipp	4	A
ESD per IEC 61000-4-2 (Air)	VESD	± 25	kV
ESD per IEC 61000-4-2 (Contact)		± 20	
Operating Temperature Range	TJ	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$

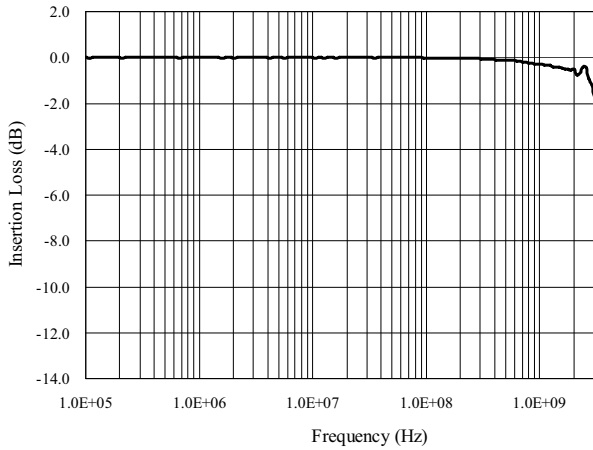
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			5	V	
Breakdown Voltage	VBR	6		9	V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			1	μA	$V_{RWM} = 5.0\text{V}$
Clamping Voltage	V_C			10	V	$I_{PP} = 1\text{A}$ (8 x 20 μs pulse)
Clamping Voltage	V_C			15	V	$I_{PP} = 4\text{A}$ (8 x 20 μs pulse)
Junction Capacitance	C_J		0.45	0.5	pF	Between I/O pins and Ground $V_R=0\text{V}$, $f=1\text{MHz}$
Junction Capacitance	C_J		0.2	0.3	pF	Between I/O pins $V_R=0\text{V}$, $f=1\text{MHz}$
Junction Capacitance	C_J		0.8		pF	Between VCC and GND $V_R=0\text{V}$, $f=1\text{MHz}$

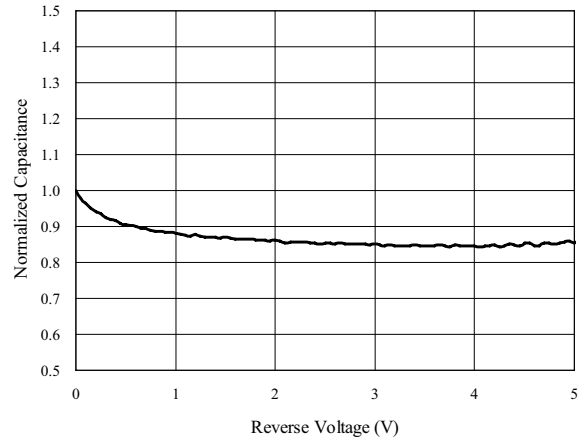
Note: I/O Pins are pin 1,3,4,6. Pin 5 is Vcc. Pin 2 is GND.

Typical Performance Characteristics (T_A=25°C unless otherwise Specified)

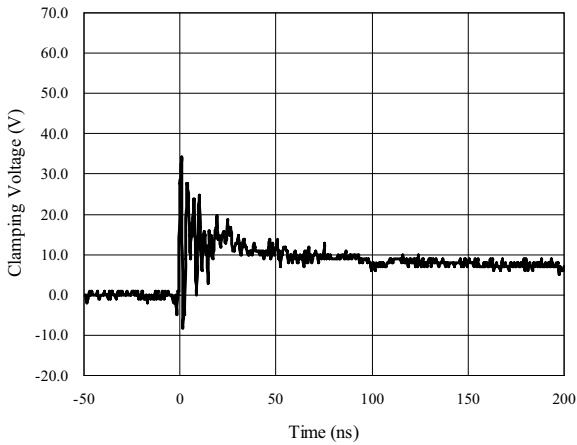
Insertion Loss S21 of I/O to GND



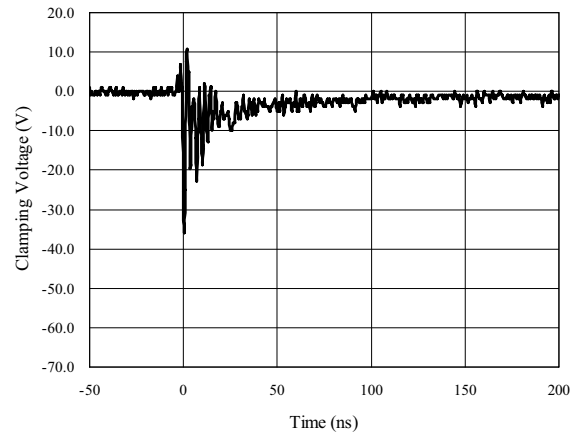
Normalized Capacitance vs Reverse Voltage



ESD Clamping
(+ 8KV Contact per IEC 61000-4-2)

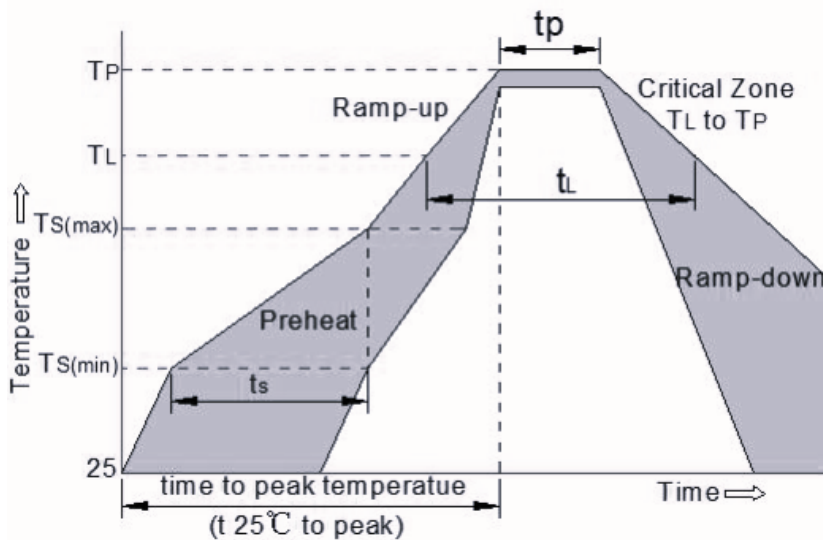


ESD Clamping
(+ 8KV Contact per IEC 61000-4-2)

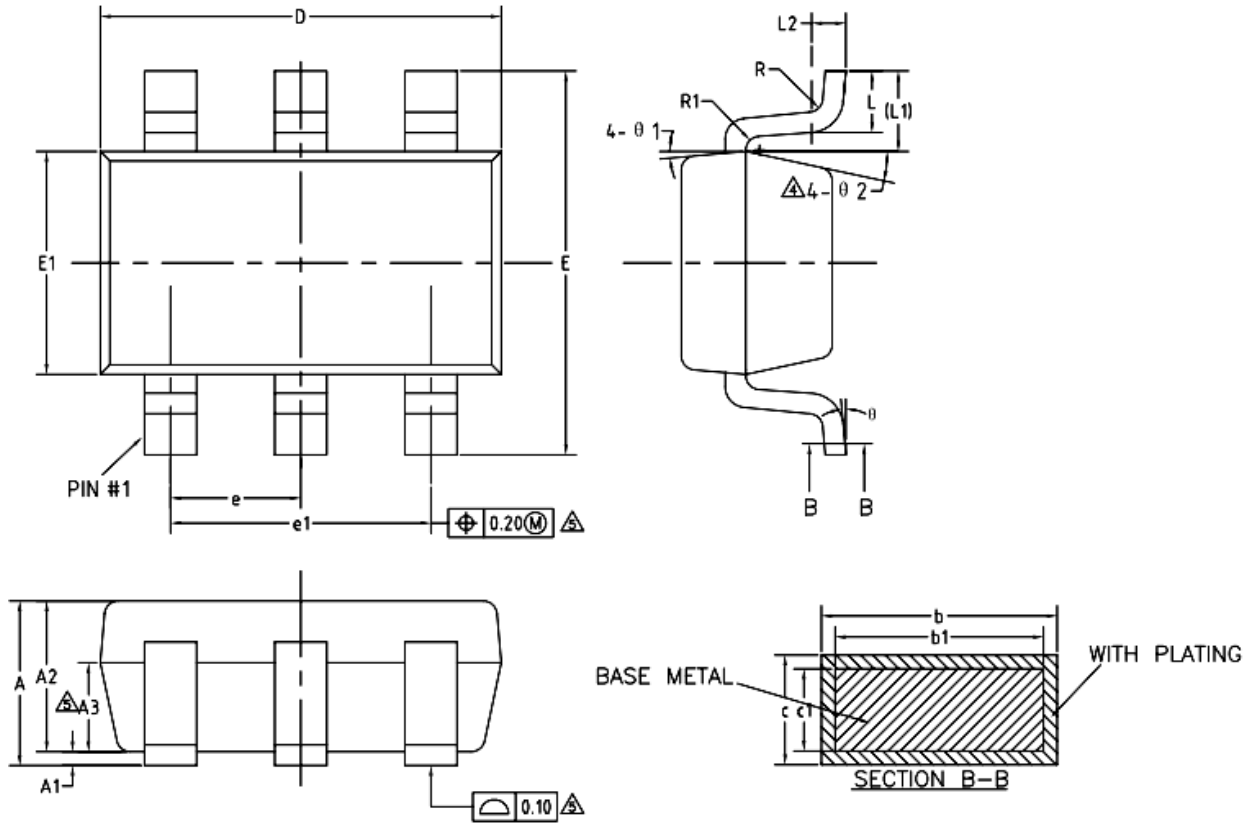


Soldering parameters

Reflow Condition		Pb-Free assembly (see FIG.2)
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
Time 25°C to Peak Temp (T_p)		8 min. Max
Do not exceed		+260°C



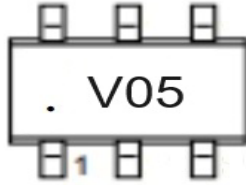
SOT23-6



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
θ	0°	-	8°
$\theta 1$	3°	5°	7°
$\theta 2$	6°	-	14°

Marking



Ordering information

Order code	Package	Base qty	Delivery mode
UMW CLAMP0504DT	SOT23-6	3000	Tape and reel