

1.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 $\pm 25\text{kV}$ air and $\pm 20\text{kV}$ contact discharge. It is assembled into a 6-pin lead-free SOT23 package.

3.Applications

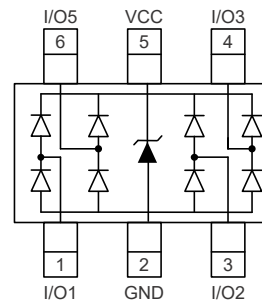
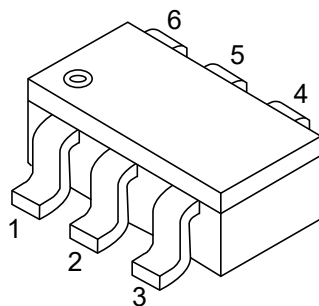
- USB 2.0 and USB 3.0 Ports
- USB OTG
- Digital video interface(DVI)
- Consumer products (STB, DVD, DSC, DVC...)

2.Features

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

- Monitor and Flat Panel Displays
- PCI Express and Serial SATA Ports
- Gigabit Ethernet
- IEEE 1394 Firewire Ports

4.Pinning information



SOT23-6



5. Absolute Maximum Ratings $T_A = 25^\circ\text{C}$

Parameter	Symbol	Maximum	Units
Peak Pulse Power (8/20 μs)	P_{pk}	60	W
Peak Pulse Current (8/20 μs)	I_{pp}	4	A
ESD per IEC 61000-4-2 (Air)	V_{ESD}	± 25	kV
ESD per IEC 61000-4-2 (Contact)		± 20	kV
Junction Temperature Range	T_J	-55 to 125	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ\text{C}$



6. Electrical Characteristic ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reverse Working Voltage	V_{RWM}				5	V
Breakdown Voltage	V_{BR}	$I_T=1\text{mA}$	6		9	V
Reverse leakage current	I_R	$V_{RWM}=5\text{V}$			1	μA
Clamping voltage	V_C	$I_{PP}=1\text{A}$ (8 x 20 μs pulse)			10	V
Clamping voltage	V_C	$I_{PP}=4\text{A}$ (8 x 20 μs pulse)			15	V
Junction capacitance	C_J	$V_R=0\text{V}$, $f=1\text{MHz}$ Between I/O pins and Ground		0.45	0.5	pF
	C_J	$V_R=0\text{V}$, $f=1\text{MHz}$ Between I/O pins		0.2	0.3	pF
	C_J	$V_R=0\text{V}$, $f=1\text{MHz}$ Between V_{CC} and GND		0.8		pF

Notes: I/O Pins are pin 1,3,4,6. Pin 5 is V_{CC} . Pin 2 is GND



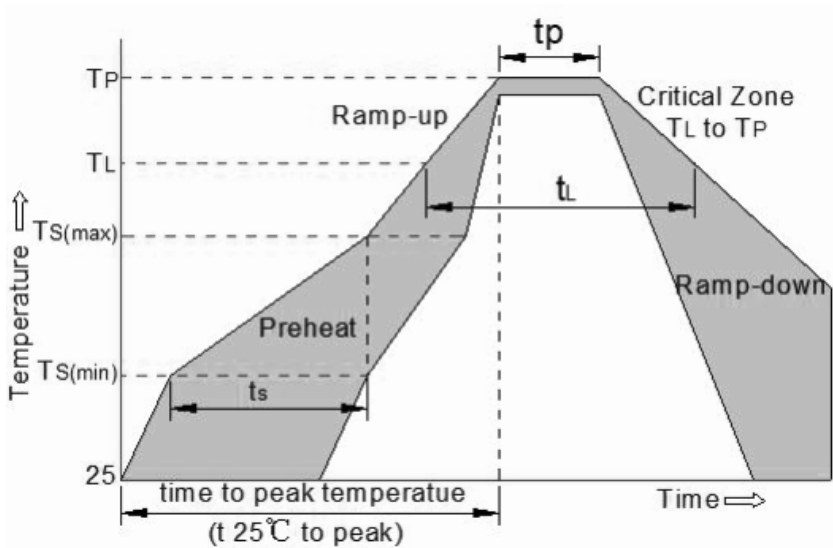
7. Typical characteristic

Figure 1: Insertion Loss S21 of I/O to GND	Figure 2: Normalized Capacitance vs Reverse Voltage
Figure 3: ESD Clamping (+ 8KV Contact per IEC 61000-4-2)	Figure 4: ESD Clamping (+ 8KV Contact per IEC 61000-4-2)



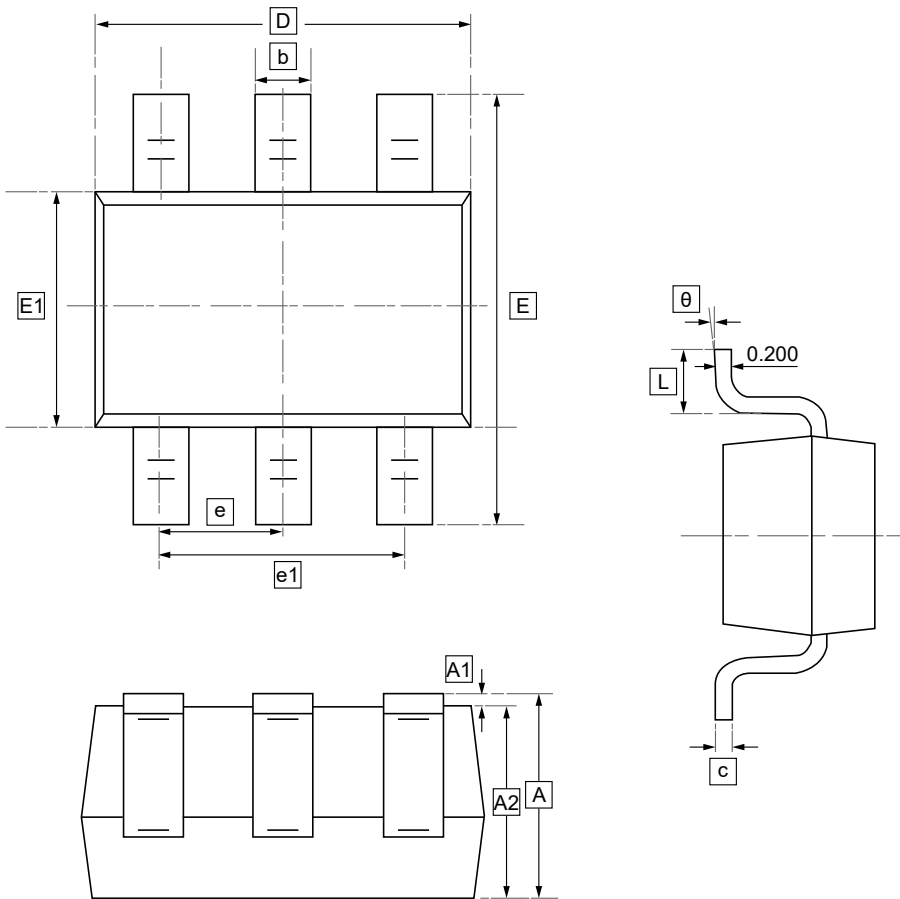
8.Soldering parameters

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





9.SOT-23-6 Package Outline Dimensions

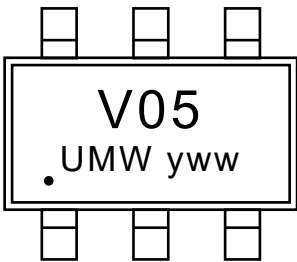


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E1	E	e	e1	L	θ
Min	1.050	0.000	1.050	0.300	0.100	2.820	1.500	2.650	0.950	1.800	0.300	0°
Max	1.250	0.100	1.150	0.500	0.200	3.020	1.700	2.950	BSC	2.000	0.600	8°



10.Ordering information



y: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW CLAMP0504DT	SOT23-6	3000	Tape and reel



11.Disclaimer

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