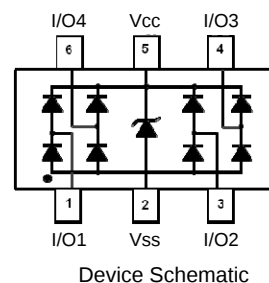


Features

- Low Clamping Voltage, I/O to V_{SS}
- Typical 9V at 10A 100ns, TLP
- Typical 7.7V at 6A 8 μ s/20 μ s
- IEC 61000-4-2 (ESD): Air – +27/-19kV, Contact – $\pm$ 16kV
- IEC 61000-4-4 (EFT): Level-4
- IEC 61000-4-5 (Lightning): $\pm$ 6A
- 4 Channels of ESD protection
- Low Channel Input Capacitance of 0.65pF Typical
- TLP Dynamic Resistance: 0.25 Ω
- Typically Used for High Speed Ports such as USB 2.0, IEEE1394, HDMI, Laptop and Personal Computers, Flat Panel Displays, Video Graphics Displays, SIM Ports



Mechanical Data

- Case Material: Molded Plastic, “Green” Molding Compound.
- Terminals: Matte Tin Finish annealed over Copper leadframe
- Weight: 0.016 grams (approximate)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current, per IEC 61000-4-5	I _{PP_I/O}	±6	A	I/O to V _{SS} , 8/20 μs
Peak Pulse Power, per IEC 61000-4-5	P _{PP_I/O}	55	W	I/O to V _{SS} , 8/20 μs
Operating Voltage (DC)	V _{DC}	5.5	V	I/O to V _{SS}
ESD Protection – Contact Discharge, per IEC 61000-4-2	V _{ESD_I/O}	±16	kV	I/O to V _{SS}
ESD Protection – Air Discharge, per IEC 61000-4-2	V _{ESD_I/O}	+27/-19	kV	I/O to V _{SS}
Operating Temperature	T _{OP}	-55 to +85	°C	—
Storage Temperature	T _{STG}	-55 to +150	°C	—

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation Typical (Note 5)	P _D	300	mW
Thermal Resistance, Junction to Ambient Typical (Note 5)	R _{θJA}	417	°C/W

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	V _{RWM}			5.0	V	V _{CC} to V _{SS}
Reverse Current (Note 6)	I _{R(VCC to VSS)}			1.0	μA	V _R = V _{RWM} = 5V, V _{CC} to V _{SS}
Reverse Current (Note 6)	I _{R(I/O to VSS)}			0.5	μA	V _R = V _{RWM} = 5V, any I/O to V _{SS}
Reverse Breakdown Voltage	V _{BR}	6.2			V	I _R = 1mA, V _{CC} to V _{SS}
Forward Clamping Voltage	V _F	-1.0	-0.8		V	I _F = -15mA, V _{CC} to V _{SS}
Reverse Clamping Voltage(Note 7)	V _{C_VCC}		6.3		V	I _{PP} = 9A, V _{CC} to V _{SS} , 8/20 μs
	V _{C_I/O}		7.7	9	V	I _{PP} = 6A, I/O to V _{SS} , 8/20 μs
ESD Clamping Voltage	V _{ESD_VCC}		6.8		V	TLP, 10A, tp = 100 ns, V _{CC} to V _{SS} , per Fig. 8
	V _{ESD_I/O}		9		V	TLP, 10A, tp = 100 ns, I/O to V _{SS} , per Fig. 8
Dynamic Resistance	R _{DIF_VCC}		0.1		Ω	TLP, 10A, tp = 100 ns, V _{CC} to V _{SS}
	R _{DIF_I/O}		0.25		Ω	TLP, 10A, tp = 100 ns, I/O to V _{SS}
Channel Input Capacitance	C _{I/O to VSS}		0.65	0.8	pF	V _R = 2.5V, V _{CC} = 5V, f = 1MHz
Variation of Channel Input Capacitance	ΔC _{I/O}		0.02		pF	V _{CC} = 5V, V _{SS} = 0V, I/O = 2.5V, f = 1MHz, T = +25°C, I/O _x to V _{SS} – I/O _y to V _{SS}

- Notes:
1. Device mounted on Polyimide PCB pad layout.
 2. Short duration pulse test used to minimize self-heating effect.
 3. Clamping voltage value is based on an 8x20μs peak pulse current (I_{pp}) waveform.

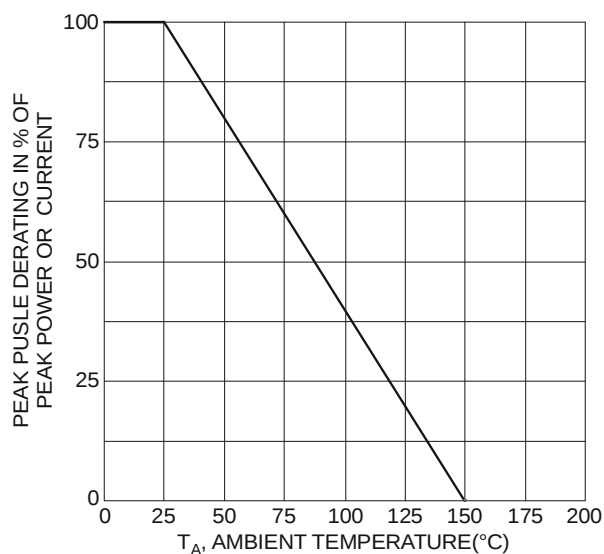


Figure 1 Pulse Derating Curve

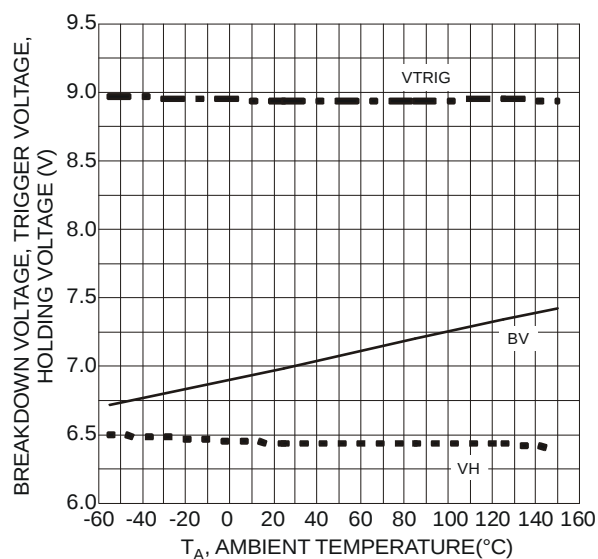


Figure 2 Breakdown Voltage, Trigger Voltage, Holding Voltage vs. Ambient Temperature

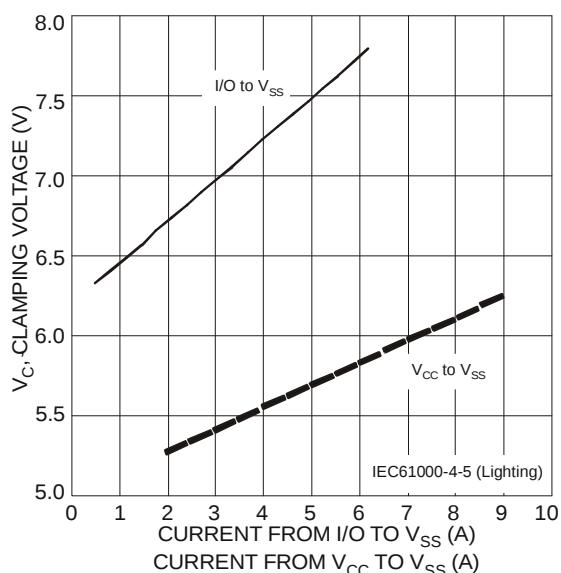


Figure 3 Clamping Voltage Characteristics

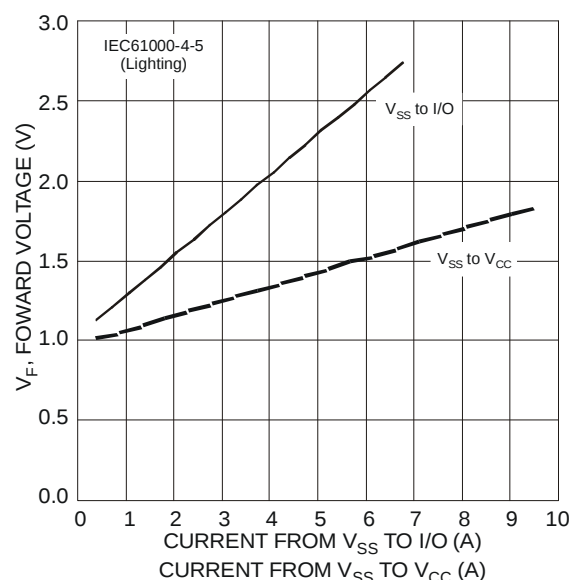


Figure 4 Forward Voltage Characteristics

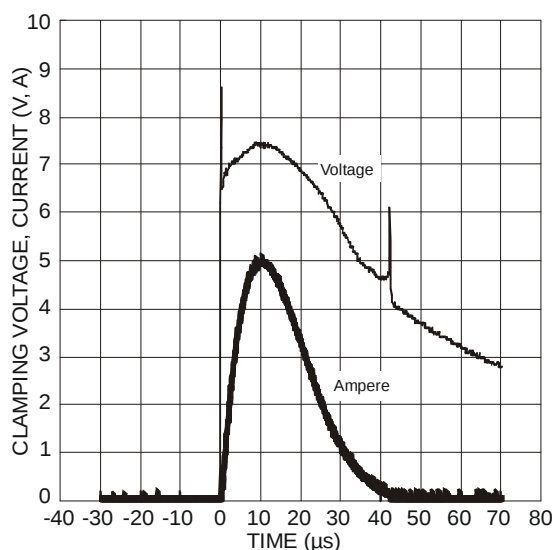


Figure 5 Waveform of Clamping Voltage, Current vs. Time (8/20μs, I/O to V_{SS})

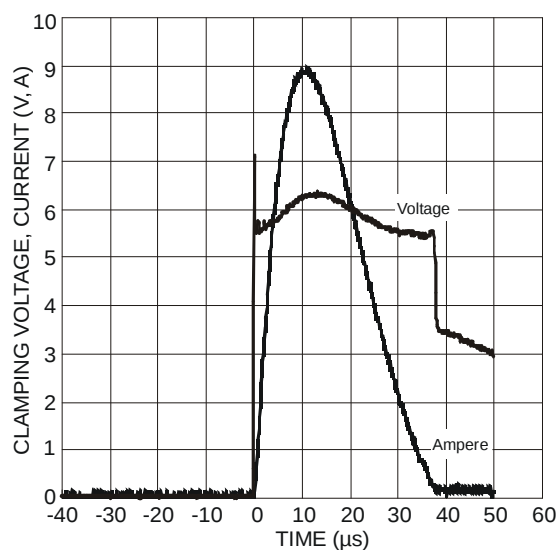


Figure 6 Waveform of Clamping Voltage, Current vs. Time (8/20μs, V_{CC} to V_{SS})

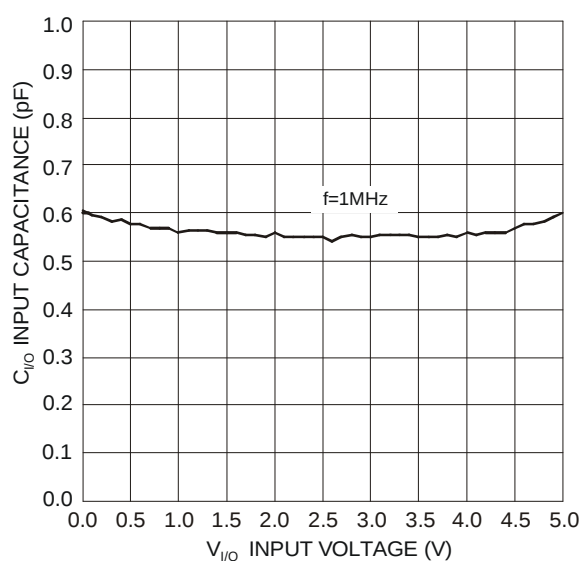


Figure 7 Input Capacitance vs. Input Voltage

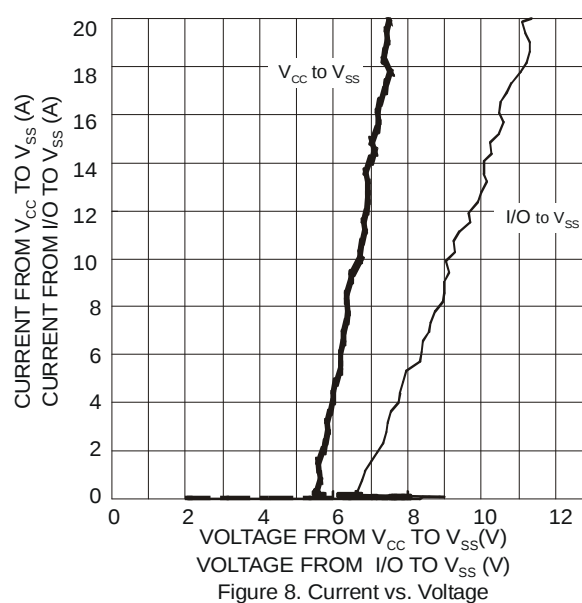
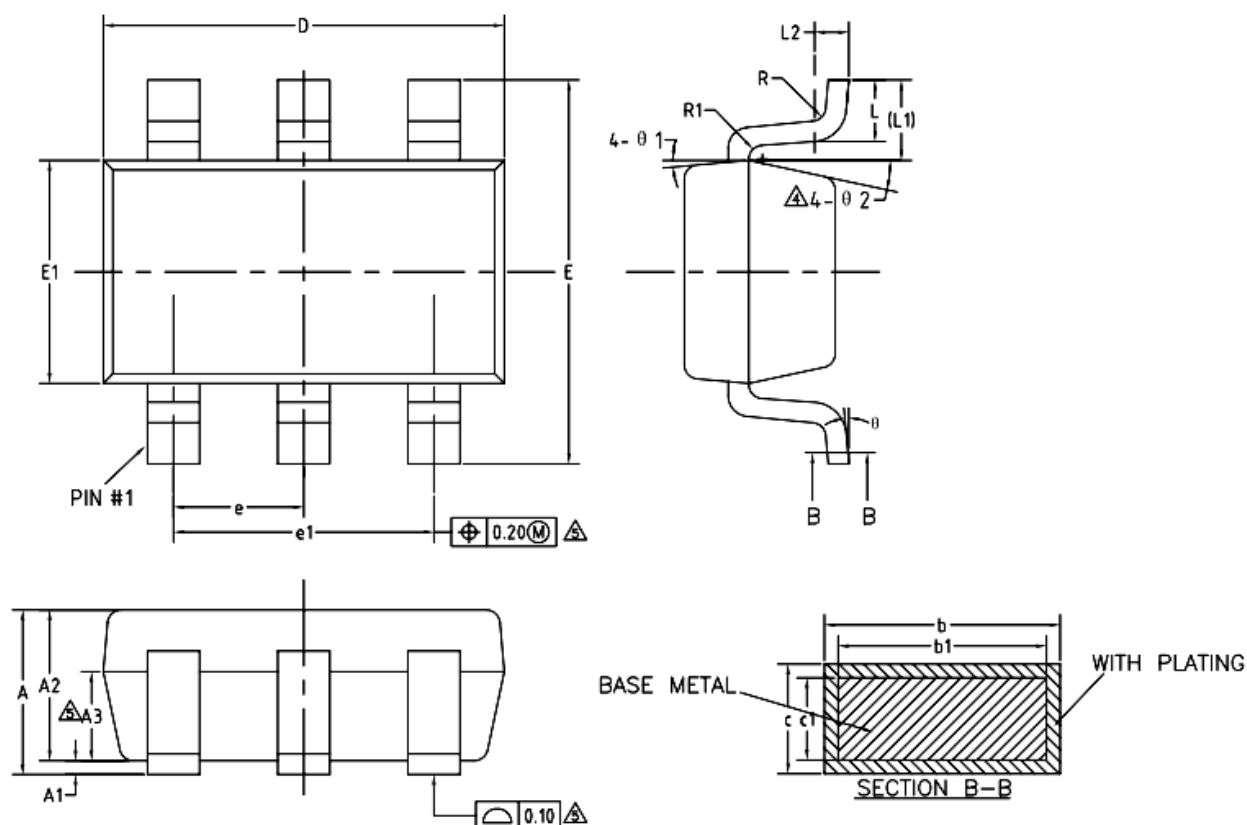


Figure 8. Current vs. Voltage

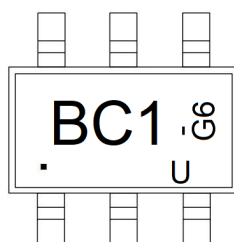
SOT23-6



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 DT1042-04SO-7	SOT23-6	3000	Tape and reel