

LL055AT56

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LL055AT56

5-Channel Ultra Low Capacitance ESD Protection Diodes Array: 5.0V

Features

- Protects five data lines.
- Low capacitance : 0.6pF Typical (I/O - GND).
- IEC61000-4-2 (ESD) $\pm 25\text{KV}$ (air), $\pm 17\text{KV}$ (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns), Cable discharge event (CDE).
- ESD I/O pin can withstand over 1000 ESD strikes for $\pm 8\text{KV}$ contact discharge.
- Suffix "-H" indicates Halogen-free part, ex.LL055AT56-H.

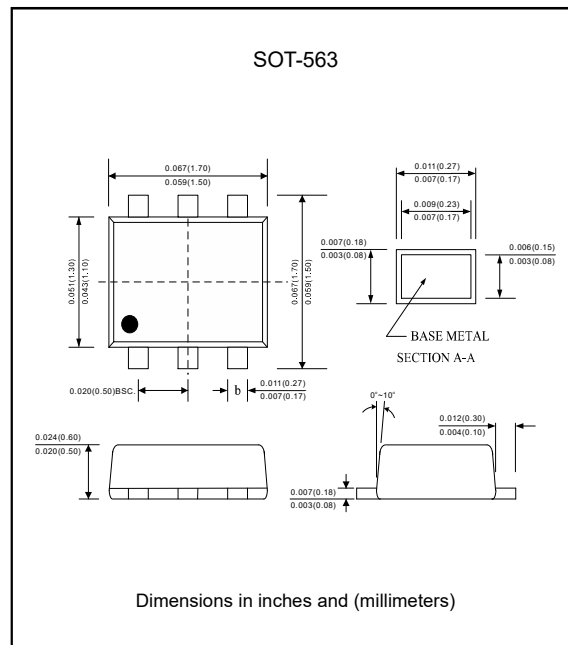
Applications

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

Mechanical data

- Package : SOT-563.
- Flammability rating : UL 94V-0.
- Marking : Part number.
- Packaging : Tape and reel.
- Weight : Approximated 0.006 gram.

Package outline



Maximum ratings (at $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse current ($t_p=8/20\mu\text{s}$)	I_{PP}	1	A
ESD per IEC 61000-4-2 (Contact)	V_{ESD}	± 17	KV
ESD per IEC 61000-4-2 (Air)		± 25	
Operating temperature	T_{OPT}	+150	$^\circ\text{C}$
Storage temperature	T_{STG}	-55 to +150	$^\circ\text{C}$

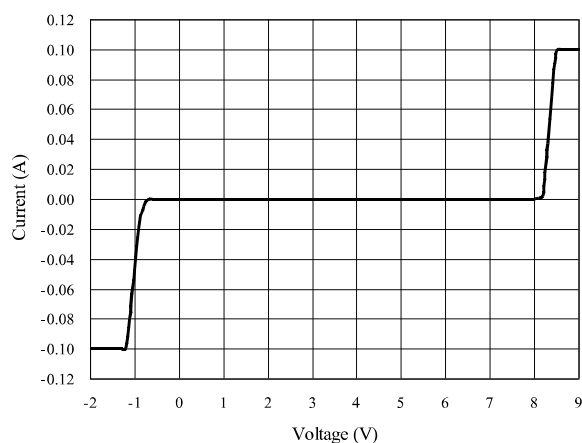
Electrical characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Reverse stand-off voltage		V_{RWM}			5.0	V
Reverse leakage current	$V_{RWM}=5.0\text{V}$, (Between I/O and GND)	I_R		0.1	1.0	μA
Reverse Breakdown voltage	$I_T=1\text{mA}$, (Between I/O and GND)	V_{BR}	6.0			V
Clamping voltage	$I_{PP}=1\text{A}$, $t_p=8/20\mu\text{s}$, (Between I/O and GND)	V_C			11.0	V
Junction capacitance	$V_R=0\text{V}$, $f=1\text{MHz}$, (Between I/O and GND)	C_{ESD}		0.6	0.8	pF
	$V_R=0\text{V}$, $f=1\text{MHz}$, (Between I/O and I/O)			0.3	0.4	

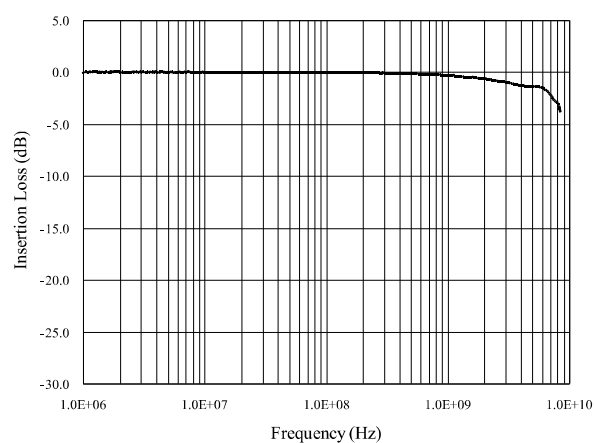
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Rating and characteristic curves

Voltage Sweeping of I/O to GND

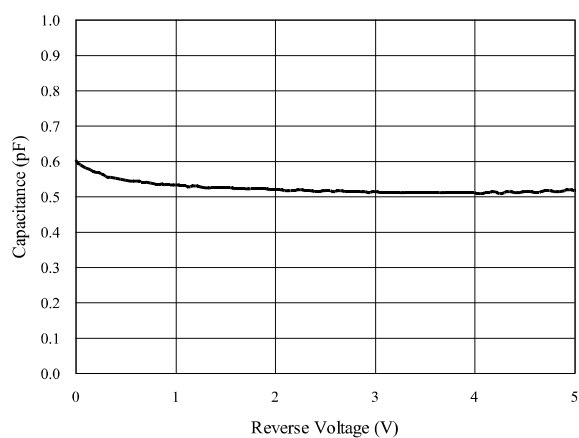


Insertion Loss S2 1 of I/O to GND

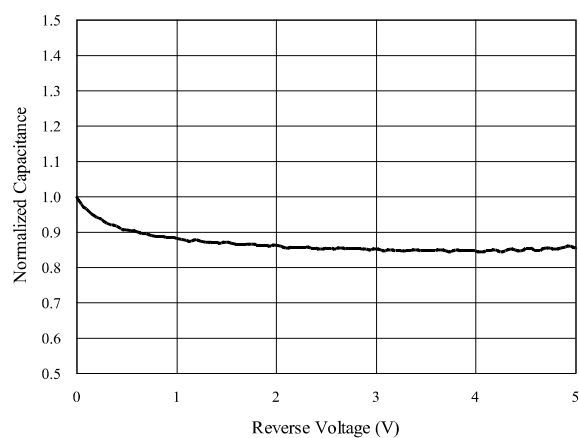
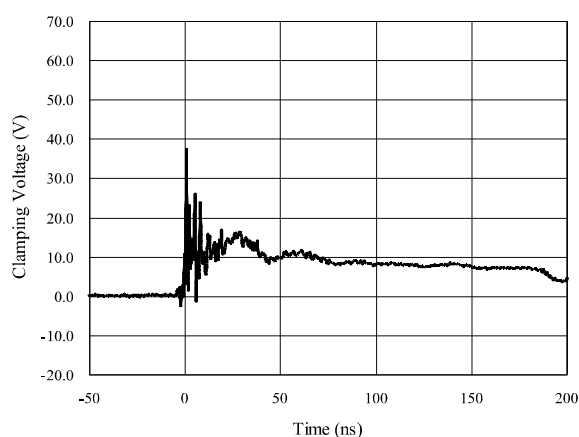
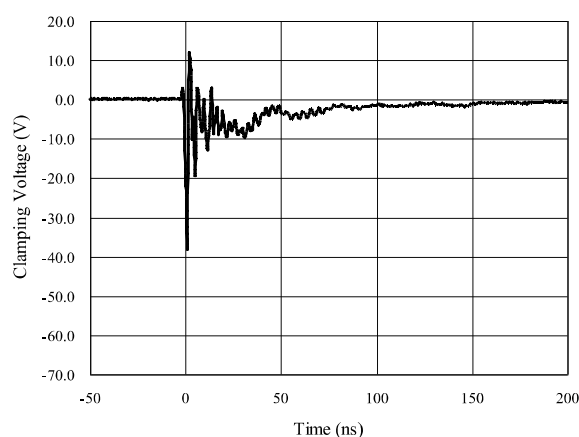


Capacitance vs. Voltage of I/O to GND (f = 1MHz)

Capacitance vs. Reverse Voltage

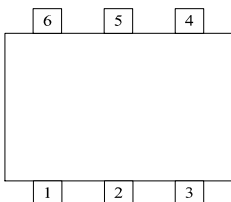
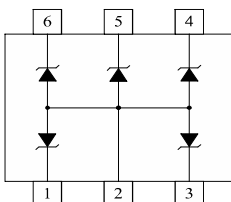


Normalized Capacitance vs. Reverse Voltage

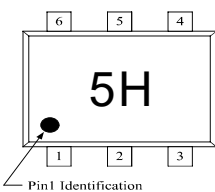
ESD Clamping of I/O to GND
(+8kV Contact per IEC 61000-4-2)ESD Clamping of I/O to GND
(-8kV Contact per IEC 61000-4-2)

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Pinning information

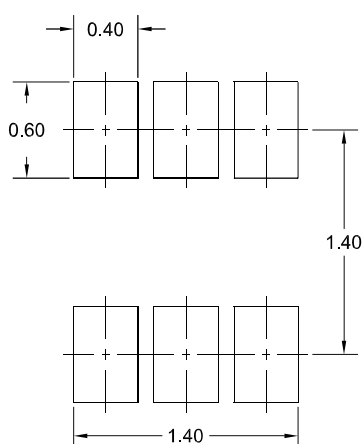
Pin Configuration	Simplified outline	Circuit Diagram
Pin : 1, 3, 4, 5, 6 I/O Pin : 5 V_{CC} Pin : 2 GND		

Marking

Type number	Marking code
LL055AT56	

Suggested solder pad layout

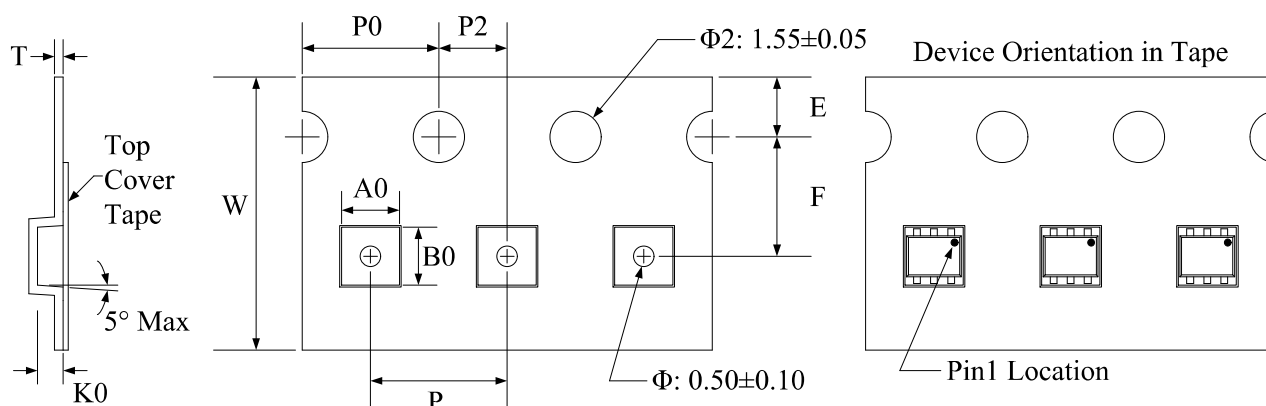
SOT-563



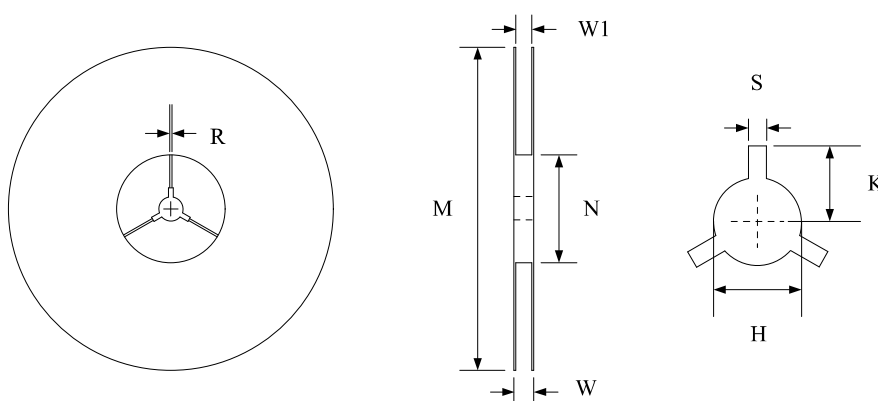
Dimensions in millimeters

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Packing information



Symbol	W	A0	B0	K0	E	F	P	P0	P2	T
Dimensions (mm)	8.00+0.3 -0.1	1.83±0.05	1.83±0.05	0.75±0.05	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.1	2.0±0.05	0.25±0.02



Symbol	Reel Size	M	N	W	W1	H	S	K	R
Dimensions (mm)	Φ178	178.0±1.0	60.0±1.0	11.5±0.5	9.0±0.5	13.0±0.5	2.0±0.1	11.0±0.2	1.0±0.05

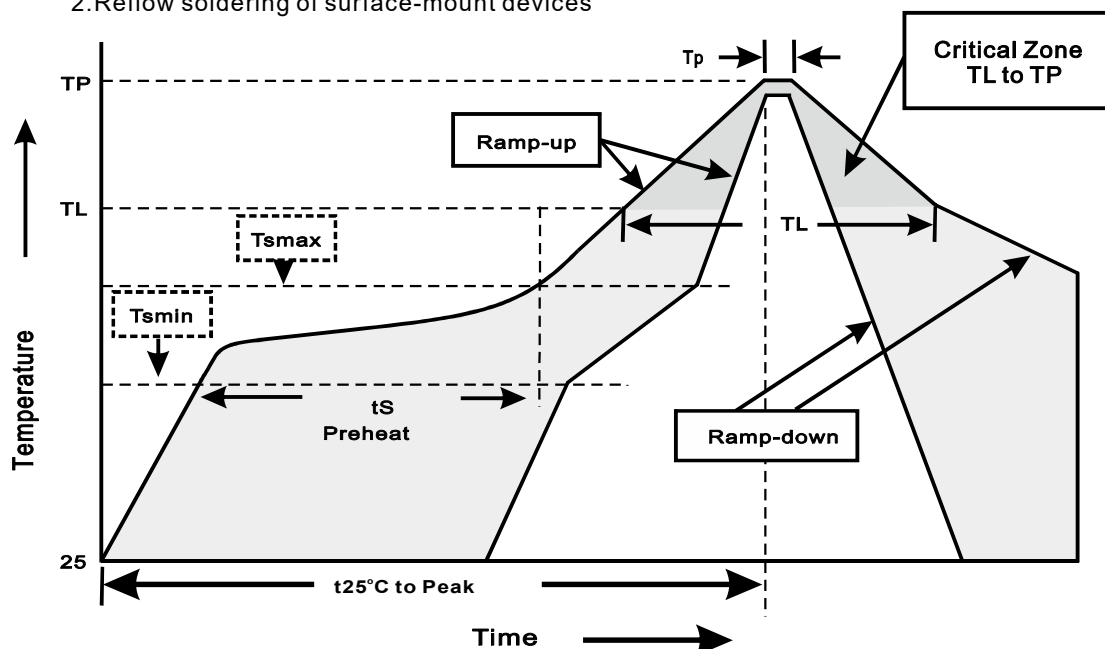
Ordering information

Part Number	Working Voltage	Quantity Per Reel	Reel Size
LL055AT56	5V	4,000	7 Inch

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Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(TL to TP)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(ts)	150°C 200°C 60~120sec
Tsmax to TL -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(TL) -Time(tL)	217°C 60~260sec
Peak Temperature(TP)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(tp)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes