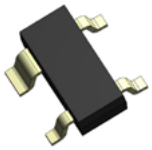
STS142XXXUXXX

TVS Diode array ESD suppressor



Product features

- Protects two I/O lines
- Low clamping voltage
- Low operating voltage
- Low capacitance
- Meets moisture sensitivity level (MSL) 3
- Molding compound flammability rating: UL 94V-0
- Termination finish: Tin

Applications

- ADSL lines
- I²C bus protection
- ISDN S/T interface
- Portable electronics
- WAN/LAN equipment
- Video line protection
- Microcontroller input protection
- T1/E1 secondary IC side protection
- Fire wire & USB
- Sensitive analog inputs
- Power over Ethernet

Environmental compliance and general specifications

- IEC61000-4-2 (ESD)
  - Up to ±30 kV (air)
  - Up to ±30 kV (contact)
- IEC61000-4-5 (Lightning) Up to 10 A (8/20 µs)

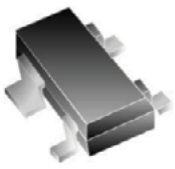
Pb HALOGEN HF FREE RoHS

Ordering part number

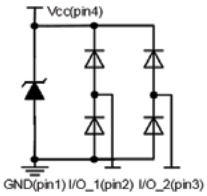
ST S14 2 050 U L08

- Family
- Package (S14- SOT-143)
- Number of channels (2- 2)
- Operating voltage (050- 5 V)
- Bi/Uni directional (U- Uni)
- Capacitance (L08- 0.8 pF)

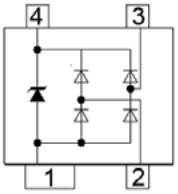
Pin out/functional diagram



SOT-143



Pin configuration



Top view

Powering Business Worldwide

Absolute maximum ratings

(+25 °C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value		Unit
		STS142050UL08	STS142700UL55	
Peak pulse power dissipation on 8/20 µs waveform	P_{PP}	60	150	W
ESD per IEC 61000-4-2 (Air)	V_{ESD}	+/-20	+/-30	kV
ESD per IEC 61000-4-2 (Contact)		+/-20	+/-30	
Lead soldering temperature	T_L	+260 (10 seconds)	+260 (10 seconds)	°C
Operating junction temperature range	T_J	-55 to +125	-55 to +125	°C
Storage temperature range	T_{STG}	-55 to +150	-55 to +150	°C

Electrical characteristics

(+25 °C)

STS142050UL08

Parameter	Test condition	Minimum	Typical	Maximum	Symbol (Units)
Reverse working voltage	-	-	-	5	V_{RWM} (V)
Reverse breakdown voltage	I_T = 1mA	6.0	7.2	-	V_{BR} (V)
Reverse leakage current*	V_{RWM} = 5 V	-	-	1	I_R (µA)
Clamping voltage (I/O pin to Ground)	I_{PP} = 1 A, t_p = 8/20 µs	-	9.5	10.5	V_F (V)
	I_{PP} = 4.5 A, t_p = 8/20 µs	-	13	15	I_{PP} (A)
Clamping voltage (V_{CC} to Ground)	I_{PP} = 8 A, t_p = 8/20 µs	-	12	15	V_C (V)
	I_{PP} = 17 A, t_p = 8/20 µs	-	16.5	20	V_C (V)
Junction capacitance	V_{RWM} = 0 V, f = 1 MHz Any I/O pin to GND	-	0.8	1.0	C_J (pF)
	V_{RWM} = 0 V, f = 1 MHz Between I/O pins	-	0.4	0.6	C_J (pF)

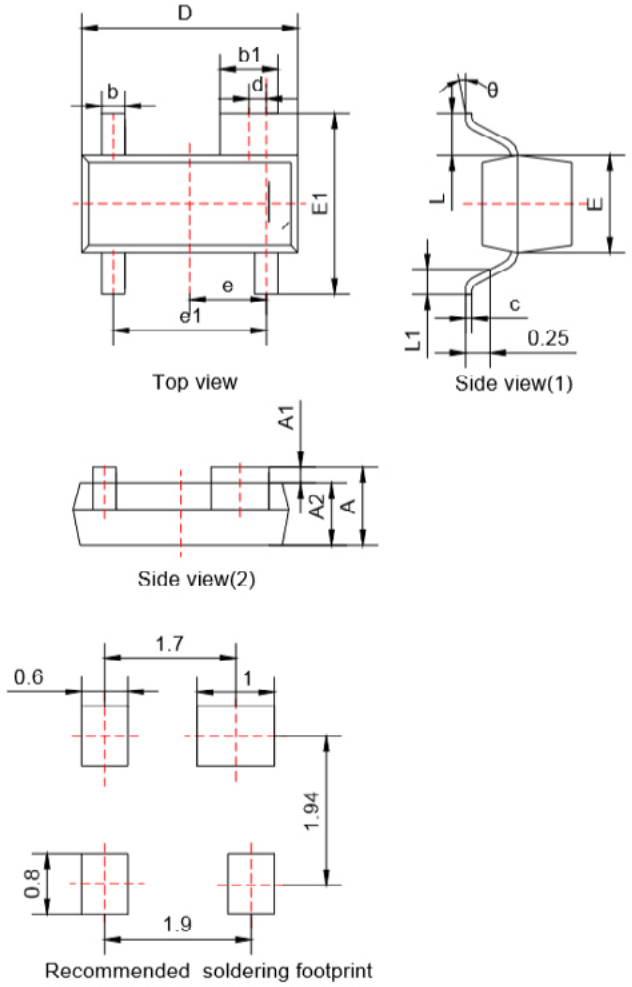
*I/O to GND for STS142050UL0

STS142700UL55

Parameter	Test condition	Minimum	Typical	Maximum	Symbol (Units)
Reverse working voltage	-	-	-	70	V_{RWM} (V)
Reverse breakdown voltage	I_T = 50 µA	85	-	-	V_{BR} (V)
Reverse leakage current	V_{RWM} = 70 V	-	-	1	I_R (µA)
Clamping voltage** (I/O pin to Ground)	I_{PP} = 1 A, t_p = 8/20 µs	-	1.0	1.5	V_F (V)
	I_{PP} = 10 A, t_p = 8/20 µs	-	3.0	4.0	I_{PP} (A)
	I_{PP} = 24 A, t_p = 8/20 µs	-	7.0	9.0	-
Junction capacitance	V_{RWM} = 0 V, f = 1 MHz Any I/O pin to GND	-	0.55	1.5	C_J (pF)
	V_{RWM} = 0 V, f = 1 MHz Between I/O pins	-	0.4	0.75	

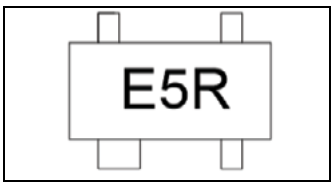
** Forward Clamping voltage for STS142700UL55

Mechanical parameters, pad layout- mm/inches

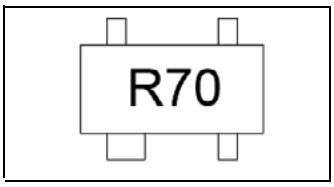


	Millimeters		Inches	
Dimension	**Minimum**	**Maximum**	**Minimum**	**Maximum**
A	0.90	1.15	0.035	0.045
A1	0.00	0.10	0.000	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
b1	0.75	0.90	0.030	0.035
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
d	0.20 Typ.		0.008 Typ.	
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.95 Typ.		0.037Typ.	
e1	1.80	2.00	0.071	0.079
L	0.55 Typ.		0.022 Typ.	
L1	0.30	0.50	0.012	0.020
e	0°	8°	0°	8°

Part marking



(STS142050UL08)

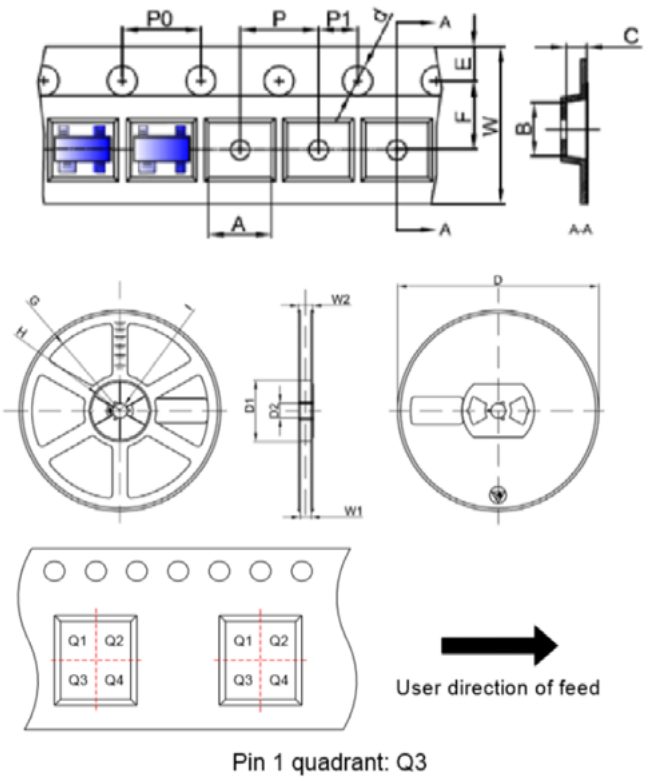


(STS142700UL55)

Packaging information mm/inches

Drawing not to scale.

Supplied in tape and reel packaging, 3,000 parts per 7" diameter reel (EIA-481 compliant)

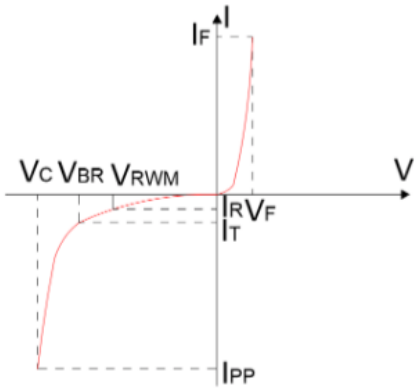


Pin 1 quadrant: Q3

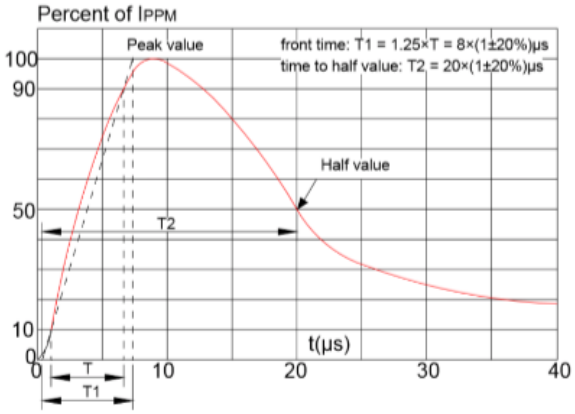
Symbol	Millimeters	Inches
A	3.19±0.1	0.126±0.004
B	2.80±0.1	0.110±0.004
C	1.31±0.1	0.052±0.004
d	Φ1.50±0.1	Φ0.059±0.004
E	1.75±0.1	0.069±0.004
F	3.50±0.1	0.138±0.004
P0	4.00±0.1	0.157±0.004
P	4.00±0.1	0.157±0.004
P1	2.00±0.1	0.079±0.004
W	8.00±0.1	0.315±0.004
D	Φ178±2	7.008±0.079
D1	54.40±1	2.142±0.039
D2	13.00±1	0.512±0.039
G	R78.00±1	3.071±0.039
H	R25.60±1	1.008±0.039
I	R6.50±1	0.256±0.039
W1	9.50±1	0.374±0.039
W2	12.30±1	0.484±0.039

Ratings and V-I characteristic curves (+25 °C unless otherwise noted)

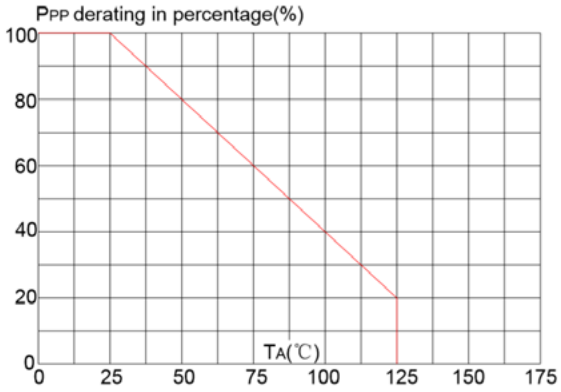
V- I curve characteristics (Uni-directional)



Pulse waveform (8/20 µs)



Pulse derating curve



ESD waveform