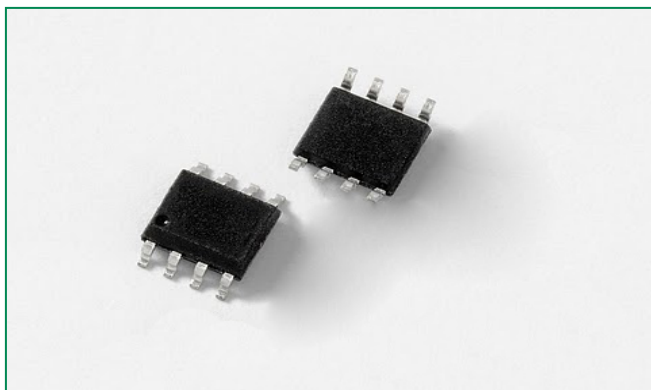


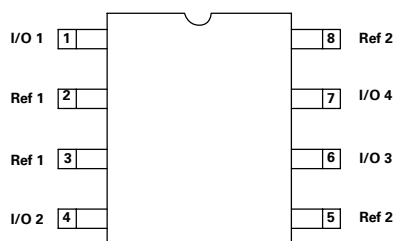
### SRDA05 Series 8pF 30A Diode Array



#### Description

The SRDA05 integrates low capacitance rail-to-rail diodes with an additional zener diode to protect I/O pins against ESD and lightning induced surge events. This robust device can safely absorb up to 30A per IEC61000-4-5 ( $t_p=8/20\mu s$ ) without performance degradation and a minimum  $\pm 30kV$  ESD per IEC61000-4-2 international standard. Its low loading capacitance makes it ideal for high-speed interface protection.

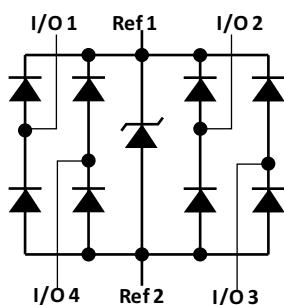
#### Pinout



SOIC-8 (Top View)

Note: Pinout diagrams above shown as device footprint on circuit board.

#### Functional Block Diagram



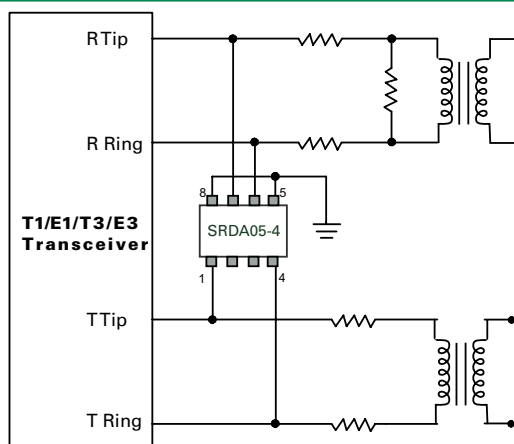
#### Features

- Lightning protection, IEC61000-4-5, 30A ( $8/20\mu s$ )
- EFT, IEC61000-4-4, 50A ( $5/50ns$ )
- ESD, IEC61000-4-2,  $\pm 30kV$  contact,  $\pm 30kV$  air
- Low clamping voltage
- Low leakage current
- SOIC-8 surface mount package (JEDEC MS-012)

#### Applications

- Tertiary (IC Side) Protection:
  - T1/E1/T3/E3
  - HDSD/SDSL
  - Ethernet
- RS232, RS485
- Video Line Protection
- Security Cameras
- Storage DVRs
- Network Equipment
- Instrumentation, Medical Equipment

#### Application Example



T1/E1/T3/E3 Interface Protection

#### Additional Information



Datasheet



Resources



Samples

Life Support Note:

**Not Intended for Use in Life Support or Life Saving Applications**

The products shown herein are not designed for use in life sustaining or life saving applications unless otherwise expressly indicated.

### Absolute Maximum Ratings

| Symbol     | Parameter                         | Value      | Units |
|------------|-----------------------------------|------------|-------|
| $P_{pk}$   | Peak Pulse Power (8/20 $\mu$ s)   | 600        | W     |
| $I_{pp}$   | Peak Pulse Current (8/20 $\mu$ s) | 30         | A     |
| $T_{op}$   | Operating Temperature             | -40 to 125 | °C    |
| $T_{STOR}$ | Storage Temperature               | -55 to 150 | °C    |

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

### Thermal Information

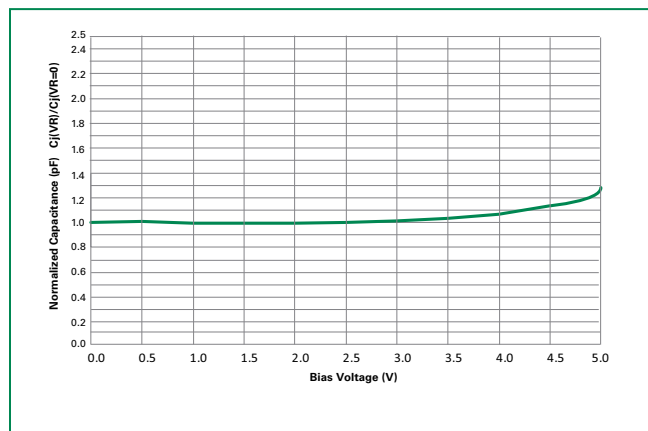
| Parameter                                                           | Rating     | Units |
|---------------------------------------------------------------------|------------|-------|
| SOIC Package                                                        | 170        | °C/W  |
| Operating Temperature Range                                         | -40 to 125 | °C    |
| Storage Temperature Range                                           | -55 to 150 | °C    |
| Maximum Junction Temperature                                        | 150        | °C    |
| Maximum Lead Temperature (Soldering 20-40s) (SOIC - Lead Tips Only) | 260        | °C    |

### Electrical Characteristics ( $T_{op} = 25^{\circ}\text{C}$ )

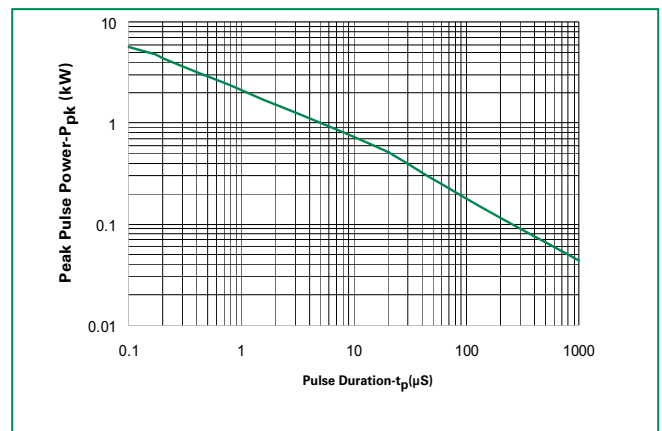
| Parameter                                    | Symbol        | Test Conditions                                 | Min      | Typ  | Max | Units         |
|----------------------------------------------|---------------|-------------------------------------------------|----------|------|-----|---------------|
| Reverse Stand-Off Voltage                    | $V_{RWM}$     | $I_t \leq 1\mu\text{A}$                         | -        | -    | 5.0 | V             |
| Reverse Leakage Current                      | $I_R$         | $V_R = 5\text{V}$                               | -        | -    | 10  | $\mu\text{A}$ |
| Reverse Breakdown Voltage                    | $V_{BR}$      | $I_t = 1\text{mA}$                              | 6        | -    | -   | V             |
| Clamping Voltage, Line-Ground <sup>1</sup>   | $V_C$         | $I_{pp} = 1\text{A}$ , $t_p = 8/20\mu\text{s}$  | -        | 9.2  | -   | V             |
| Clamping Voltage, Line-Ground <sup>1</sup>   | $V_C$         | $I_{pp} = 2\text{A}$ , $t_p = 8/20\mu\text{s}$  | -        | 10.0 | -   | V             |
| Clamping Voltage, Line-Ground <sup>1</sup>   | $V_C$         | $I_{pp} = 10\text{A}$ , $t_p = 8/20\mu\text{s}$ | -        | 14.5 | -   | V             |
| Clamping Voltage, Line-Ground <sup>1</sup>   | $V_C$         | $I_{pp} = 25\text{A}$ , $t_p = 8/20\mu\text{s}$ | -        | 21.0 | -   | V             |
| Dynamic Resistance, Line-Ground <sup>1</sup> | $R_{DYN}$     | $(V_{C2} - V_{C1}) / (I_{PP2} - I_{PP1})$       | -        | 0.8  | -   | $\Omega$      |
| ESD Withstand Voltage <sup>1</sup>           | $V_{ESD}$     | IEC61000-4-2 (Contact Discharge)                | $\pm 30$ | -    | -   | kV            |
|                                              |               | IEC61000-4-2 (Air Discharge)                    | $\pm 30$ | -    | -   | kV            |
| Diode Capacitance <sup>1</sup>               | $C_{I/O-I/O}$ | Reverse Bias=0V                                 | -        | 4.0  | -   | pF            |
|                                              | $C_{I/O-GND}$ | Reverse Bias=0V                                 | -        | 8.0  | -   | pF            |

<sup>1</sup> Parameter is guaranteed by design and/or device characterization.

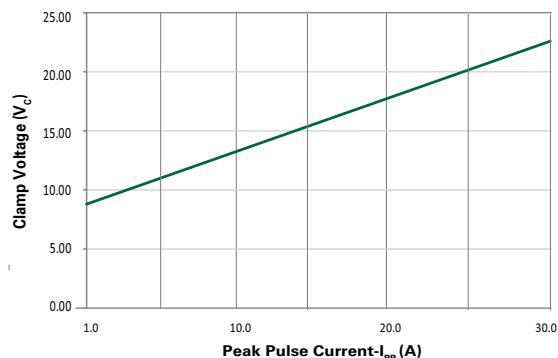
### Normalized Capacitance vs. Bias Voltage



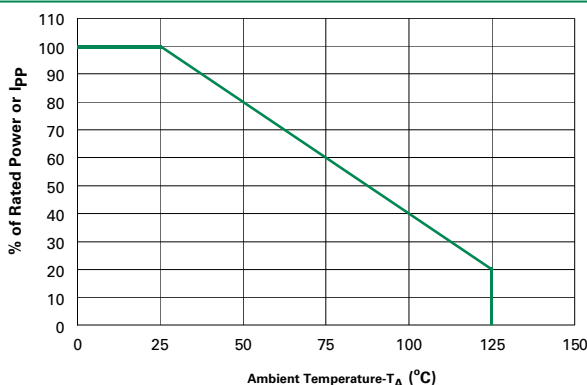
### Non-Repetitive Peak Pulse Power vs. Pulse Time



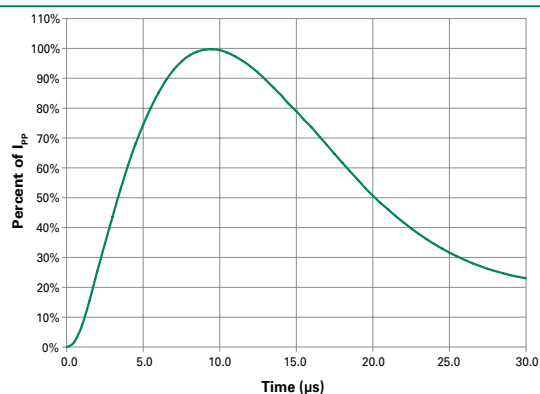
### Clamping Voltage vs. $I_{PP}$



### Power Derating Curve



### Pulse Waveform



### Product Characteristics

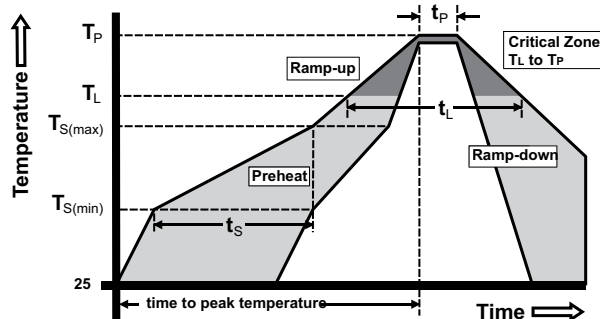
|                            |                         |
|----------------------------|-------------------------|
| <b>Lead Plating</b>        | Matte Tin               |
| <b>Lead Material</b>       | Copper Alloy            |
| <b>Lead Coplanarity</b>    | 0.0004 inches (0.102mm) |
| <b>Substitute Material</b> | Silicon                 |
| <b>Body Material</b>       | Molded Epoxy            |
| <b>Flammability</b>        | UL 94 V-0               |

#### Notes :

1. All dimensions are in millimeters
2. Dimensions include solder plating.
3. Dimensions are exclusive of mold flash & metal burr.
4. Bld is facing up for mold and facing down for trim/form, i.e. reverse trim/form.
5. Package surface matte finish VDI 11-13.

### Soldering Parameters

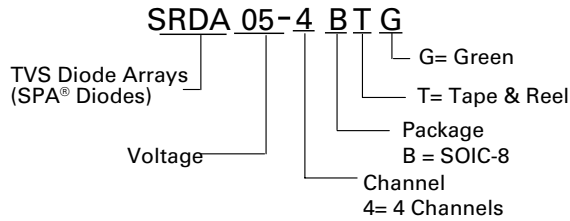
|                                                                        |                                    |                    |
|------------------------------------------------------------------------|------------------------------------|--------------------|
| <b>Reflow Condition</b>                                                |                                    | Pb – Free assembly |
| <b>Pre Heat</b>                                                        | - Temperature Min ( $T_{s(min)}$ ) | 150°C              |
|                                                                        | - Temperature Max ( $T_{s(max)}$ ) | 200°C              |
|                                                                        | - Time (min to max) ( $t_s$ )      | 60 – 180 secs      |
| <b>Average ramp up rate (Liquidus) Temp (<math>T_L</math>) to peak</b> |                                    | 3°C/second max     |
| <b><math>T_{s(max)}</math> to <math>T_L</math> - Ramp-up Rate</b>      |                                    | 3°C/second max     |
| <b>Reflow</b>                                                          | - Temperature ( $T_L$ ) (Liquidus) | 217°C              |
|                                                                        | - Temperature ( $t_L$ )            | 60 – 150 seconds   |
| <b>Peak Temperature (<math>T_P</math>)</b>                             |                                    | 260 $\pm$ 0/5 °C   |
| <b>Time within 5°C of actual peak Temperature (<math>t_p</math>)</b>   |                                    | 20 – 40 seconds    |
| <b>Ramp-down Rate</b>                                                  |                                    | 6°C/second max     |
| <b>Time 25°C to peak Temperature (<math>T_P</math>)</b>                |                                    | 8 minutes Max.     |
| <b>Do not exceed</b>                                                   |                                    | 260°C              |



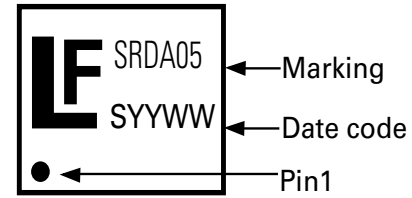
### Ordering Information

| Part Number | Package | Marking            | Min. Order Qty. |
|-------------|---------|--------------------|-----------------|
| SRDA05-4BTG | SOIC-8  | LF SRDA05<br>SYYWW | 2500            |

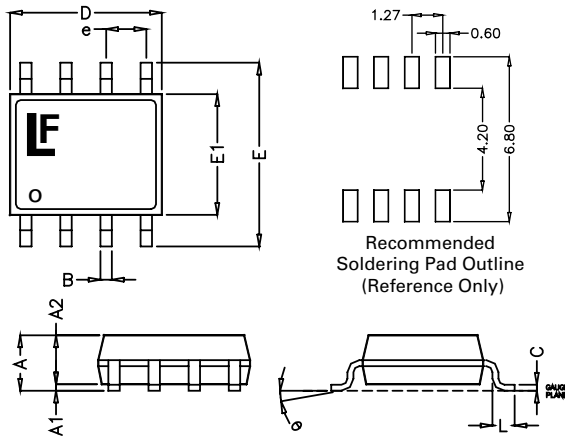
### Part Numbering System



### Part Marking System

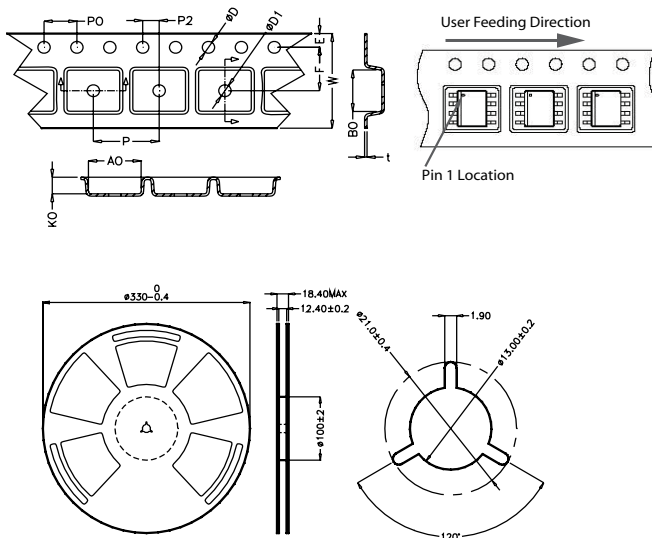


### Package Dimensions — Mechanical Drawings and Recommended Solder Pad Outline



| Package | SOIC        |      |           |       |
|---------|-------------|------|-----------|-------|
| Pins    | 8           |      |           |       |
| JEDEC   | MS-012      |      |           |       |
|         | Millimetres |      | Inches    |       |
|         | Min         | Max  | Min       | Max   |
| A       | 1.35        | 1.75 | 0.053     | 0.069 |
| A1      | 0.10        | 0.25 | 0.004     | 0.010 |
| A2      | 1.25        | 1.65 | 0.050     | 0.065 |
| B       | 0.31        | 0.51 | 0.012     | 0.020 |
| c       | 0.17        | 0.25 | 0.007     | 0.010 |
| D       | 4.70        | 5.10 | 0.185     | 0.201 |
| E       | 5.80        | 6.20 | 0.228     | 0.244 |
| E1      | 3.80        | 4.00 | 0.150     | 0.157 |
| e       | 1.27 BSC    |      | 0.050 BSC |       |
| L       | 0.40        | 1.27 | 0.016     | 0.050 |

### Embossed Carrier Tape & Reel Specification — SOIC Package



|      | Millimetres |      | Inches        |       |
|------|-------------|------|---------------|-------|
|      | Min         | Max  | Min           | Max   |
| E    | 1.65        | 1.85 | 0.065         | 0.073 |
| F    | 5.4         | 5.6  | 0.213         | 0.22  |
| P2   | 1.95        | 2.05 | 0.077         | 0.081 |
| D    | 1.5         | 1.6  | 0.059         | 0.063 |
| D1   | 1.50 Min    |      | 0.059 Min     |       |
| P0   | 3.9         | 4.1  | 0.154         | 0.161 |
| 10P0 | 40.0 ± 0.20 |      | 1.574 ± 0.008 |       |
| W    | 11.9        | 12.1 | 0.468         | 0.476 |
| P    | 7.9         | 8.1  | 0.311         | 0.319 |
| A0   | 6.3         | 6.5  | 0.248         | 0.256 |
| B0   | 5.1         | 5.3  | 0.2           | 0.209 |
| K0   | 2           | 2.2  | 0.079         | 0.087 |
| t    | 0.30 ± 0.05 |      | 0.012 ± 0.002 |       |

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