

## CSRS045V0P-HF

RoHS Device  
Halogen Free



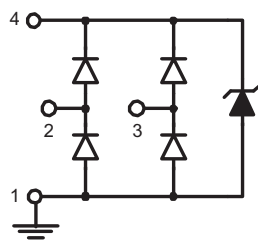
### Features

- ESD Protected for 2 high speed I/O ports
- IEC61000-4-2 (ESD)  $\pm 8\text{kV}$  (Contact),  $\pm 15\text{kV}$  (Air).
- IEC61000-4-4 (FET)(5/50ns) Level-3, 20A for I/O  
40A for Power.
- IEC61000-4-5 (Lightning) 6A(8/20 $\mu\text{s}$ )
- Working voltage: 5V
- Low capacitance: 1.2pF(Typ.).
- Fast turn-on and Low clamping voltage.

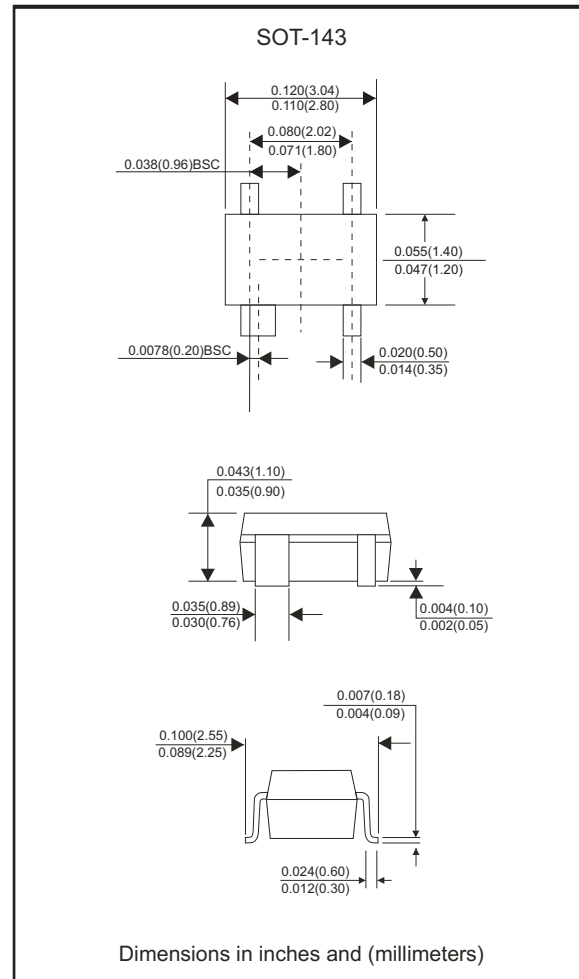
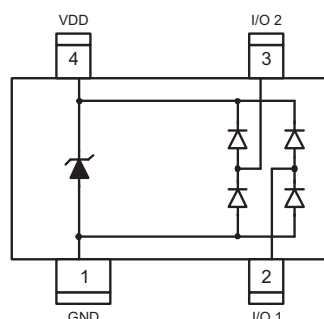
### Mechanical data

- Case: SOT-143 standard package,  
molded plastic.
- Terminals: Solder plated, solderable per  
MIL-STD-750, method 2026.
- Weight: 0.0108 gram(approx.).

### Circuit Diagram



### Pin Configuration



## Maximum Rating (at TA=25°C unless otherwise noted)

| Parameter                                                    | Symbol           | Value                    | Unit |
|--------------------------------------------------------------|------------------|--------------------------|------|
| Peak pulse current ( tp = 8/20 us)                           | I <sub>PP</sub>  | 6                        | A    |
| Operating supply voltage                                     | V <sub>DC</sub>  | 6                        | V    |
| ESD per IEC 61000-4-2(Air)<br>ESD per IEC 61000-4-2(Contact) | V <sub>ESD</sub> | 17<br>12                 | kV   |
| Lead soldering temperature                                   | T <sub>SOL</sub> | 260 ( 10 sec)            | °C   |
| Operating temperature                                        | T <sub>j</sub>   | -55 to +85               | °C   |
| Storage temperature                                          | T <sub>STG</sub> | -55 to +150              | °C   |
| DC voltage at any I/O pin                                    | V <sub>IO</sub>  | (GND -0.5) to (VDD +0.5) | V    |

## Electrical Characteristics (at TA=25°C unless otherwise noted)

| Parameter                            | Conditions                                                                                                                             | Symbol               | Min | Typ  | Max  | Unit |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----|------|------|------|
| Reverse stand-Off voltage            | Pin 4 to Pin 1                                                                                                                         | V <sub>RWM</sub>     |     |      | 5    | V    |
| Reverse leakage current              | V <sub>RWM</sub> = 5 V, T=25°C, Pin 4 to Pin 1                                                                                         | I <sub>Leak</sub>    |     |      | 2    | uA   |
| Channel leakage current              | V <sub>PIN 4</sub> = 5 V, V <sub>PIN 1</sub> = 0V, T=25°C                                                                              | I <sub>CH-Leak</sub> |     |      | 1    | uA   |
| Diode breakdown voltage              | I <sub>R</sub> = 1 mA,, T=25°C, Pin 4 to Pin 1                                                                                         | V <sub>BV</sub>      | 6.2 |      |      | V    |
| Forward voltage                      | I <sub>F</sub> = 15 mA,, T=25°C, Pin 1 to Pin 4                                                                                        | V <sub>F</sub>       |     | 0.8  | 1    | V    |
| Clamping voltage                     | I <sub>PP</sub> = 5 A, tp=8/20us, T=25°C,<br>Any Channel Pin to Ground                                                                 | V <sub>CL</sub>      |     | 8.1  | 9    | V    |
| ESD Holding Voltage                  | IEC 61000-4-2 +6kV, T=25°C,<br>Contact mode Any channel<br>pin to ground                                                               | V <sub>hold</sub>    |     | 13   |      | V    |
| Channel Input Capacitance            | V <sub>pin4</sub> = 5V,V <sub>pin1</sub> = 0V, V <sub>IN</sub> =2.5V,<br>f = 1MHz,Any channel pin to ground                            | C <sub>IN</sub>      |     | 1.2  | 1.4  | pF   |
| Channel to Channel Input Capacitance | V <sub>pin4</sub> = 5V,V <sub>pin1</sub> = 0V, V <sub>IN</sub> =2.5V<br>f = 1MHz,Between channel pin                                   | C <sub>CROSS</sub>   |     | 0.1  | 0.12 | pF   |
| Voltage of Channel Input Capacitance | V <sub>pin4</sub> = 5V,V <sub>pin1</sub> = 0V, V <sub>IN</sub> =2.5V<br>f = 1MHz,Channel_ x pin to ground -<br>channel_y pin to ground | ΔC <sub>IN</sub>     |     | 0.04 | 0.06 | pF   |

## RATING AND CHARACTERISTIC CURVES (CSRS045V0P-HF)

Fig. 1 - Power derating curve

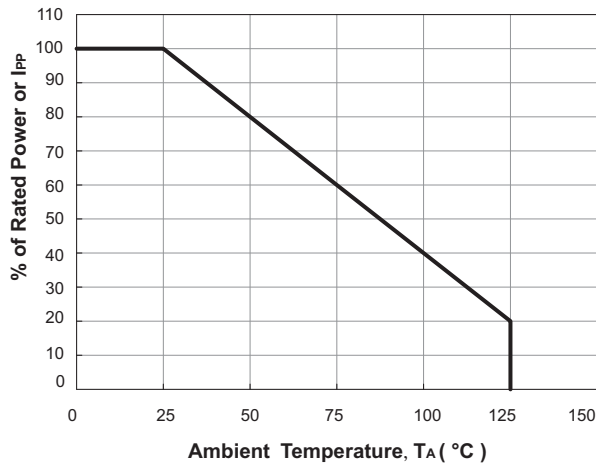


Fig. 2 - Clamping voltage vs. Peak pulse current

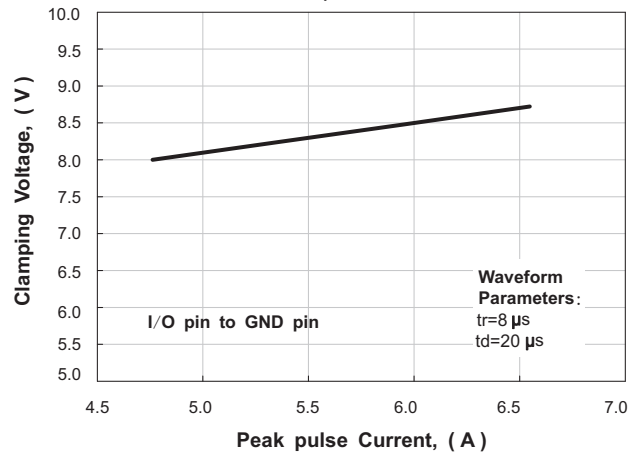


Fig.3 - Forward voltage v.s. forward current

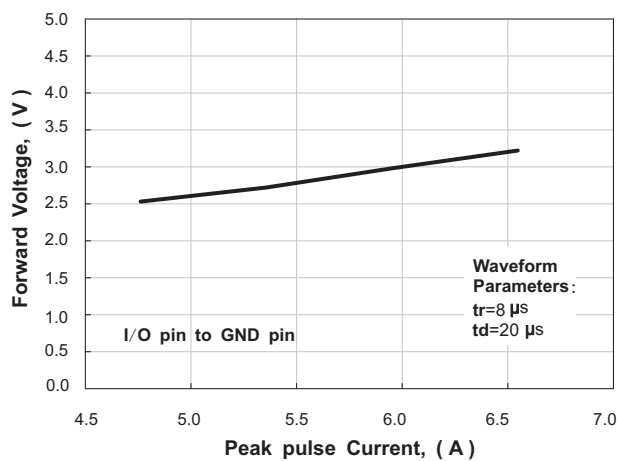


Fig.4 - Typical variation of  $C_{IN}$  v.s.  $V_{IN}$

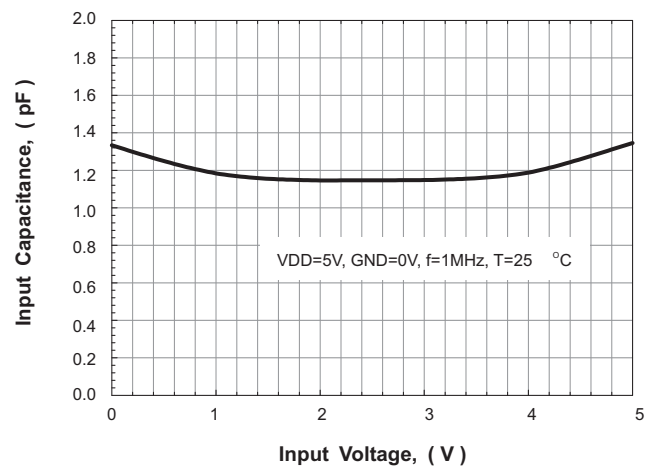


Fig. 5 - Typical variation of  $C_{IN}$  v.s. temperature

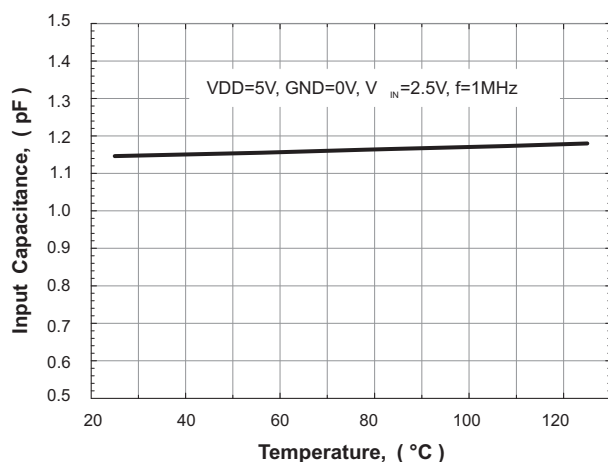
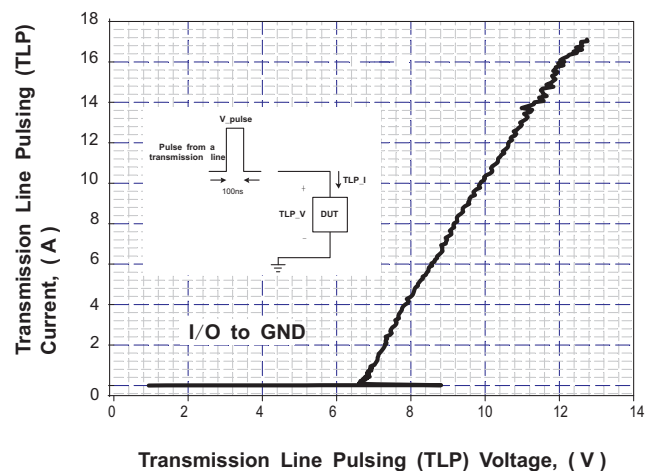
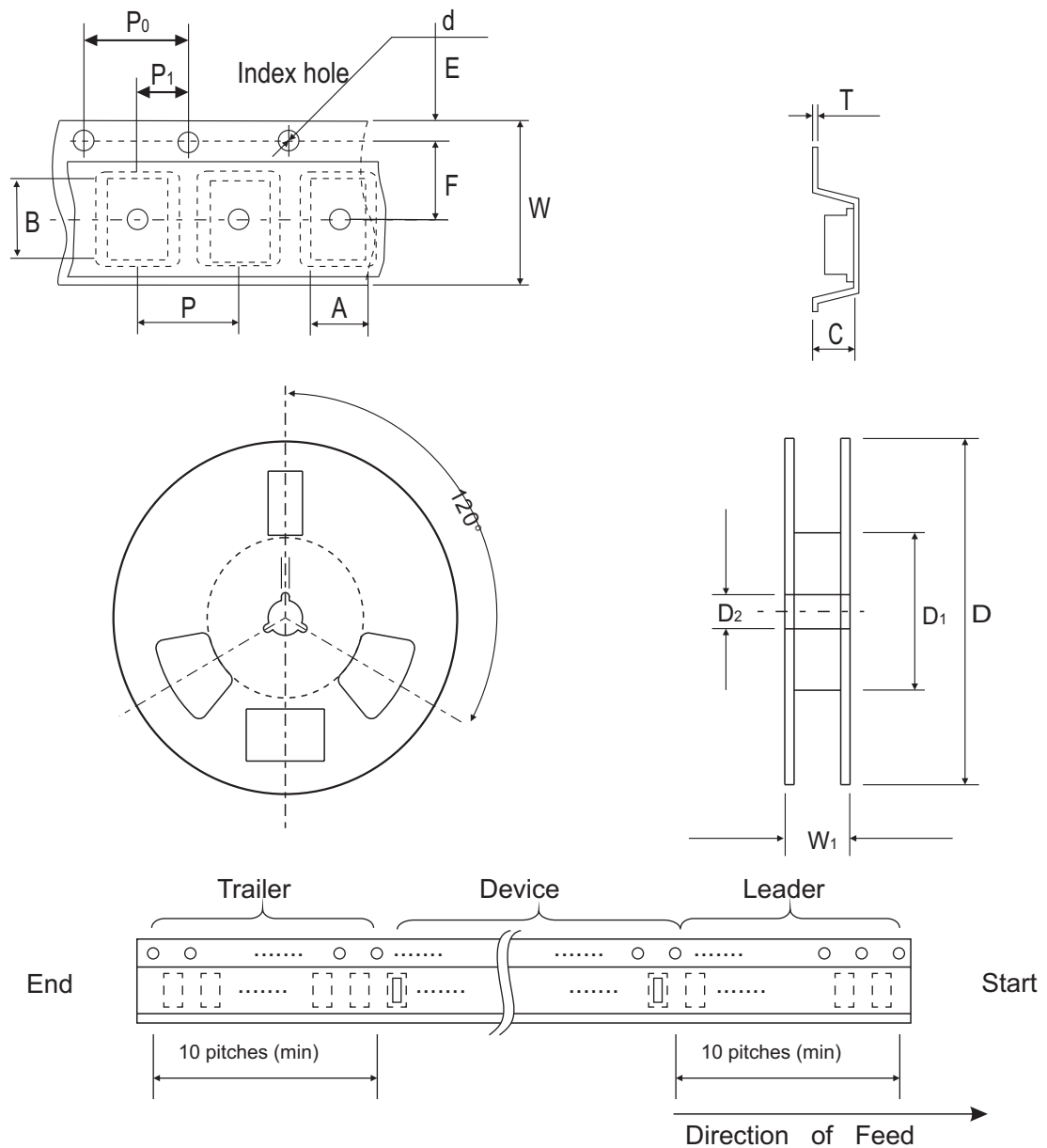


Fig. 6 - Transmission line pulsing (TLP) measurement



## Reel Taping Specification

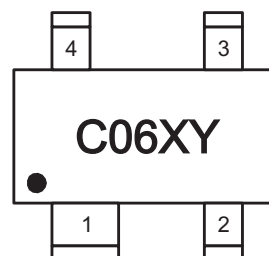


| SOT-143 | SYMBOL | A                 | B                 | C                 | d                 | D                 | D1         | D2                |
|---------|--------|-------------------|-------------------|-------------------|-------------------|-------------------|------------|-------------------|
|         | (mm)   | $3.19 \pm 0.10$   | $2.80 \pm 0.10$   | $1.31 \pm 0.10$   | $1.55 \pm 0.10$   | $178 \pm 1$       | 50.0 MIN.  | $13.0 \pm 0.20$   |
|         | (inch) | $0.126 \pm 0.004$ | $0.110 \pm 0.004$ | $0.052 \pm 0.004$ | $0.061 \pm 0.004$ | $7.008 \pm 0.040$ | 1.969 MIN. | $0.512 \pm 0.008$ |

| SOT-143 | SYMBOL | E                 | F                 | P                 | $P_0$             | $P_1$             | W                 | $W_1$     |
|---------|--------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-----------|
|         | (mm)   | $1.75 \pm 0.10$   | $3.50 \pm 0.05$   | $4.00 \pm 0.10$   | $4.00 \pm 0.10$   | $2.00 \pm 0.05$   | $8.00 \pm 0.30$   | 14.4 MAX. |
|         | (inch) | $0.069 \pm 0.004$ | $0.138 \pm 0.002$ | $0.157 \pm 0.004$ | $0.157 \pm 0.004$ | $0.079 \pm 0.002$ | $0.315 \pm 0.012$ | 0.567 MAX |

## Marking Code

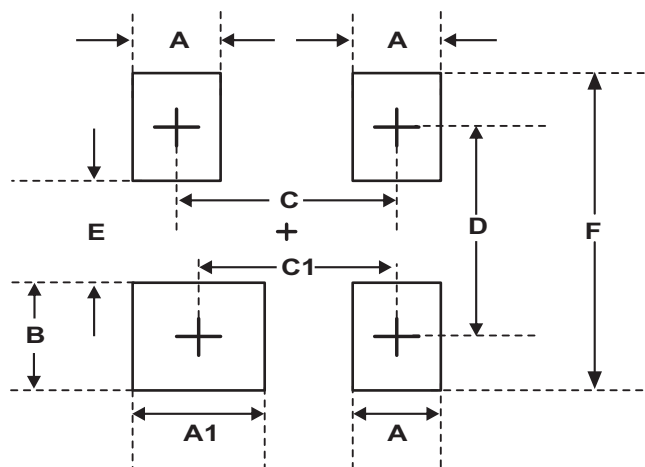
| Part Number   | Marking Code |
|---------------|--------------|
| CSRS045V0P-HF | C06XY        |



C06 = Device code  
X = Date Code  
Y = Control Code

## Suggested PAD Layout

| SIZE | SOT-143 |        |
|------|---------|--------|
|      | (mm)    | (inch) |
| A    | 1.00    | 0.039  |
| A1   | 1.40    | 0.055  |
| B    | 1.40    | 0.055  |
| C    | 1.92    | 0.076  |
| C1   | 1.72    | 0.068  |
| D    | 2.20    | 0.087  |
| E    | 0.80    | 0.031  |
| F    | 3.60    | 0.142  |



## Standard Packaging

| Case Type | Qty Per Reel | Reel Size |
|-----------|--------------|-----------|
|           | (Pcs)        | (inch)    |
| SOT-143   | 3,000        | 7         |

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