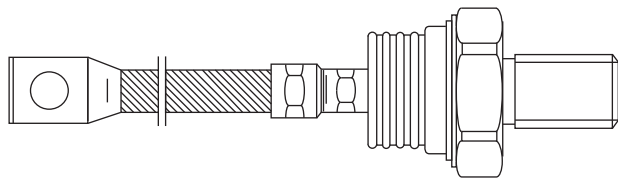


## Standard Recovery Diodes (Stud Version), 600 A



B-8

### FEATURES

- Wide current range
- High voltage ratings up to 3200 V
- High surge current capabilities
- Stud cathode and stud anode version
- Standard JEDEC® types
- Compression bonded encapsulations
- Designed and qualified for industrial level
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

### PRODUCT SUMMARY

|                       |              |
|-----------------------|--------------|
| $I_{F(AV)}$           | 600 A        |
| Package               | B-8          |
| Circuit configuration | Single Diode |

### TYPICAL APPLICATIONS

- Converters
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications

### MAJOR RATINGS AND CHARACTERISTICS

| PARAMETER    | TEST CONDITIONS | SD600N/R    |              | UNITS             |
|--------------|-----------------|-------------|--------------|-------------------|
|              |                 | 04 to 20    | 22 to 32     |                   |
| $I_{F(AV)}$  |                 | 600         | 600          | A                 |
|              | $T_C$           | 92          | 54           | °C                |
| $I_{F(RMS)}$ |                 | 940         | 940          | A                 |
| $I_{FSM}$    | 50 Hz           | 13 000      | 10 500       |                   |
|              | 60 Hz           | 13 600      | 11 000       |                   |
| $I^2t$       | 50 Hz           | 845         | 551          | kA <sup>2</sup> s |
|              | 60 Hz           | 772         | 503          |                   |
| $V_{RRM}$    | Range           | 400 to 2000 | 2200 to 3200 | V                 |
| $T_J$        |                 | - 40 to 180 | - 40 to 150  | °C                |

### ELECTRICAL SPECIFICATIONS

#### VOLTAGE RATINGS

| TYPE NUMBER | VOLTAGE CODE | $V_{RRM}$ , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE<br>V | $V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE<br>V | $I_{RRM}$ MAXIMUM AT $T_J = T_J$ MAXIMUM<br>mA |
|-------------|--------------|----------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------|
| VS-SD600N/R | 04           | 400                                                      | 500                                                          | 35                                             |
|             | 08           | 800                                                      | 900                                                          |                                                |
|             | 12           | 1200                                                     | 1300                                                         |                                                |
|             | 16           | 1600                                                     | 1700                                                         |                                                |
|             | 20           | 2000                                                     | 2100                                                         |                                                |
|             | 22           | 2200                                                     | 2300                                                         |                                                |
|             | 28           | 2800                                                     | 2900                                                         |                                                |
|             | 32           | 3200                                                     | 3300                                                         |                                                |

**FORWARD CONDUCTION**

| PARAMETER                                                     | SYMBOL        | TEST CONDITIONS                                                                         | SD600N/R |          | UNITS              |
|---------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------|----------|----------|--------------------|
|                                                               |               |                                                                                         | 04 to 20 | 22 to 32 |                    |
| Maximum average forward current at case temperature           | $I_{F(AV)}$   | 180° conduction, half sine wave                                                         | 600      |          | A                  |
|                                                               |               |                                                                                         | 92       | 54       | °C                 |
|                                                               |               |                                                                                         | 570      | 375      | A                  |
|                                                               |               |                                                                                         | 100      |          | °C                 |
| Maximum RMS forward current                                   | $I_{F(RMS)}$  | DC at $T_C = 75\text{ °C}$ (04 to 20), $T_C = 36\text{ °C}$ (25 to 32)                  | 940      |          |                    |
| Maximum peak, one-cycle forward, non-repetitive surge current | $I_{FSM}$     | Sinusoidal half wave, initial $T_J = T_J$ maximum                                       | 13 000   | 10 500   | A                  |
|                                                               |               |                                                                                         | 13 600   | 11 000   |                    |
|                                                               |               |                                                                                         | 10 900   | 8830     |                    |
|                                                               |               |                                                                                         | 11 450   | 9250     |                    |
| Maximum $I^2t$ for fusing                                     | $I^2t$        | Sinusoidal half wave, initial $T_J = T_J$ maximum                                       | 845      | 551      | kA <sup>2</sup> s  |
|                                                               |               |                                                                                         | 772      | 503      |                    |
|                                                               |               |                                                                                         | 598      | 390      |                    |
|                                                               |               |                                                                                         | 546      | 356      |                    |
| Maximum $I^2\sqrt{t}$ for fusing                              | $I^2\sqrt{t}$ | $t = 0.1$ to 10 ms, no voltage reapplied                                                | 8450     | 5510     | kA <sup>2</sup> √s |
| Low level value of threshold voltage                          | $V_{F(TO)1}$  | $(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum | 0.78     | 0.84     | V                  |
| High level value of threshold voltage                         | $V_{F(TO)2}$  | $(I > \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum                                      | 0.87     | 0.88     |                    |
| Low level value of forward slope resistance                   | $r_{f1}$      | $(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum | 0.35     | 0.40     | mW                 |
| High level value of forward slope resistance                  | $r_{f2}$      | $(I > \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum                                      | 0.31     | 0.38     |                    |
| Maximum forward voltage drop                                  | $V_{FM}$      | $I_{pk} = 1500\text{ A}$ , $T_J = T_J$ maximum, $t_p = 10\text{ ms}$ sinusoidal wave    | 1.31     | 1.44     | V                  |

**THERMAL AND MECHANICAL SPECIFICATIONS**

| PARAMETER                                    | SYMBOL            | TEST CONDITIONS                               | SD600N/R    |             | UNITS |
|----------------------------------------------|-------------------|-----------------------------------------------|-------------|-------------|-------|
|                                              |                   |                                               | 04 to 20    | 22 to 32    |       |
| Maximum junction operating temperature range | T <sub>J</sub>    |                                               | - 40 to 180 | - 40 to 150 | °C    |
| Maximum storage temperature range            | T <sub>Stg</sub>  |                                               | - 55 to 200 |             |       |
| Maximum thermal resistance, junction to case | R <sub>thJC</sub> | DC operation                                  | 0.1         |             | K/W   |
| Maximum thermal resistance, case to heatsink | R <sub>thCS</sub> | Mounting surface, smooth, flat and greased    | 0.04        |             |       |
| Maximum allowed mounting torque ± 10 %       |                   | Not-lubricated threads                        | 50          |             | Nm    |
| Approximate weight                           |                   |                                               | 454         |             | g     |
| Case style                                   |                   | See dimensions (link at the end of datasheet) | B-8         |             |       |

 **$\Delta R_{thJC}$  CONDUCTION**

| CONDUCTION ANGLE | SINUSOIDAL CONDUCTION | RECTANGULAR CONDUCTION | TEST CONDITIONS     | UNITS |
|------------------|-----------------------|------------------------|---------------------|-------|
| 180°             | 0.012                 | 0.008                  | $T_J = T_J$ maximum | K/W   |
| 120°             | 0.014                 | 0.014                  |                     |       |
| 90°              | 0.017                 | 0.019                  |                     |       |
| 60°              | 0.025                 | 0.026                  |                     |       |
| 30°              | 0.042                 | 0.042                  |                     |       |

**Note**

- The table above shows the increment of thermal resistance  $R_{thJC}$  when devices operate at different conduction angles than DC

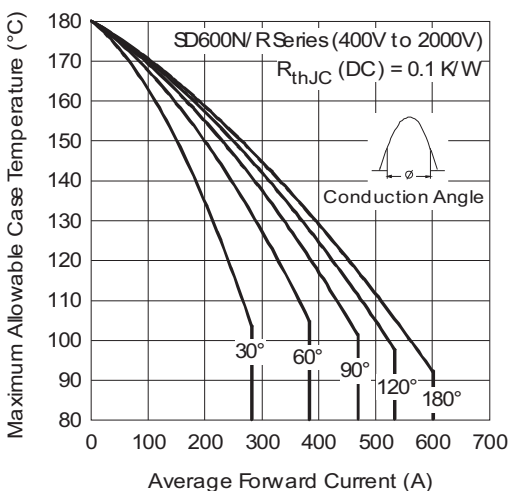


Fig. 1 - Current Ratings Characteristics

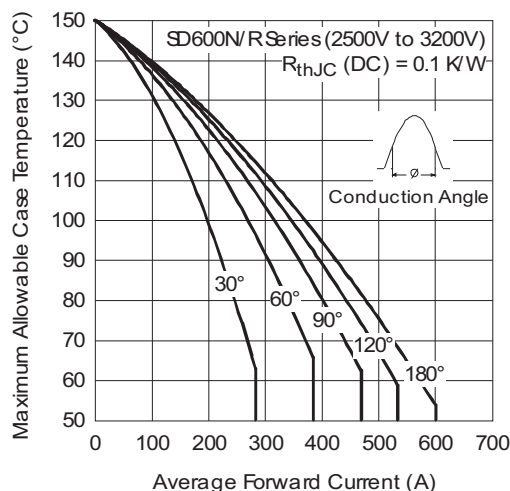


Fig. 3 - Current Ratings Characteristics

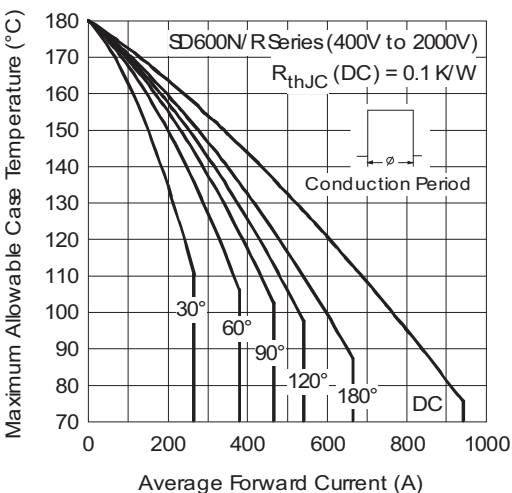


Fig. 2 - Current Ratings Characteristics

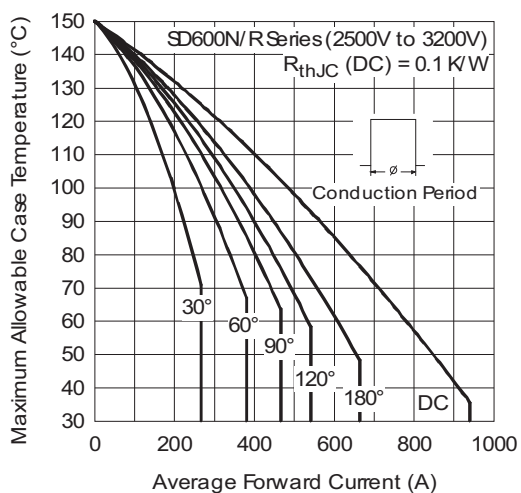


Fig. 4 - Current Ratings Characteristics

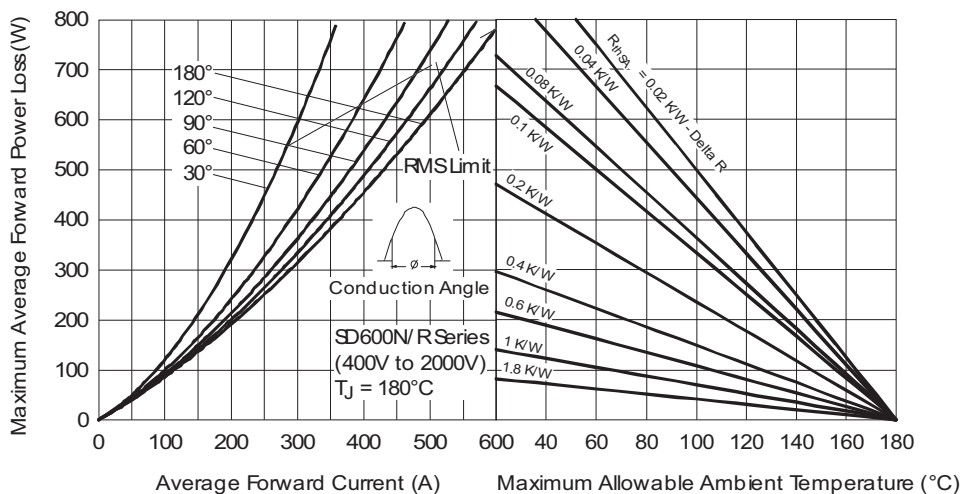


Fig. 5 - Forward Power Loss Characteristics

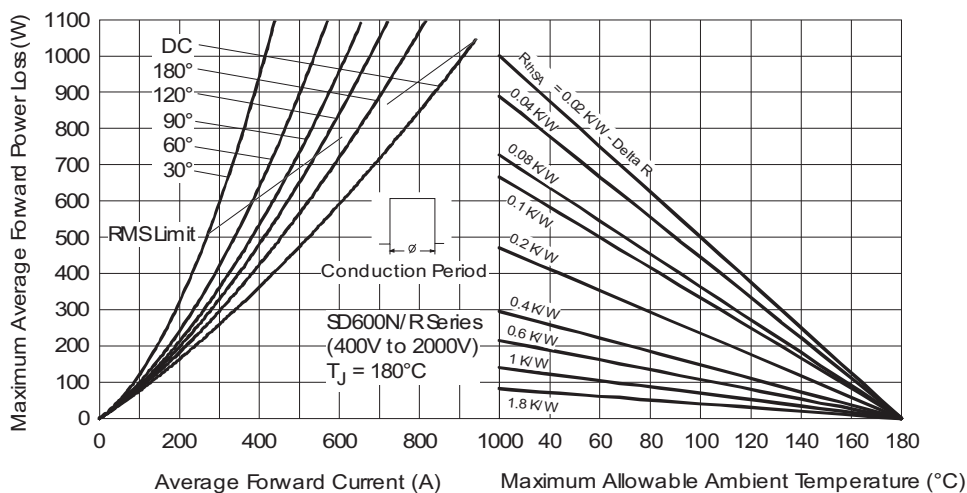


Fig. 6 - Forward Power Loss Characteristics

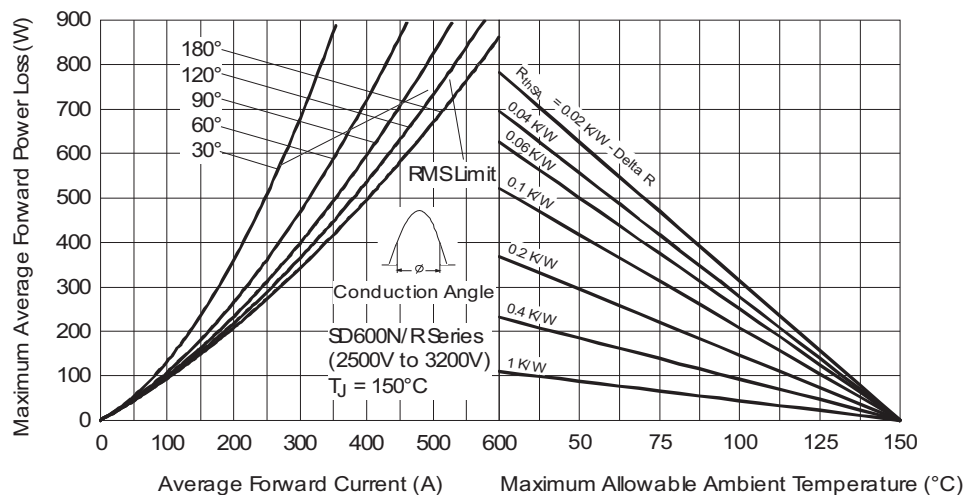


Fig. 7 - Forward Power Loss Characteristics

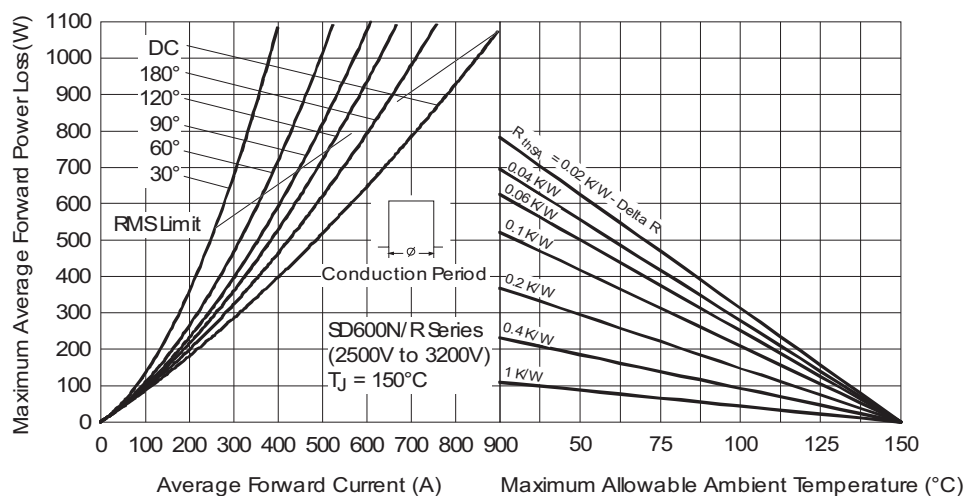


Fig. 8 - Forward Power Loss Characteristics

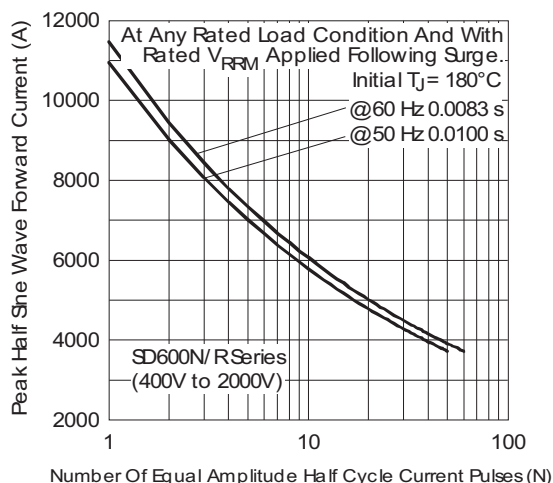


Fig. 9 - Maximum Non-Repetitive Surge Current

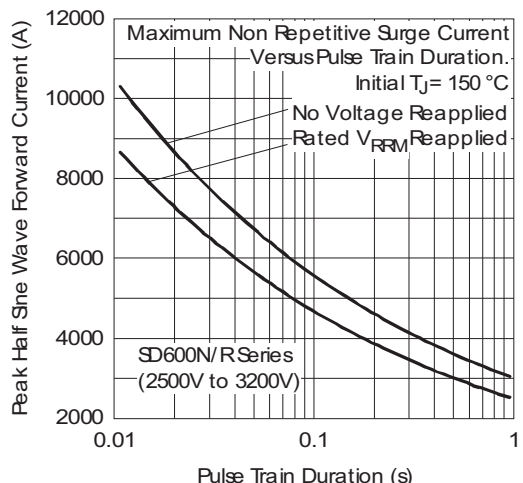


Fig. 12 - Maximum Non-Repetitive Surge Current

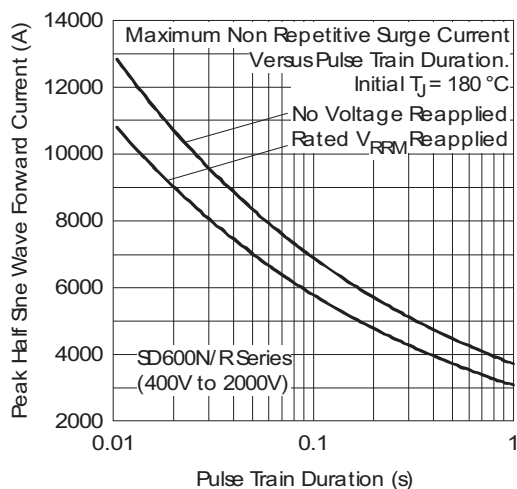


Fig. 10 - Maximum Non-Repetitive Surge Current

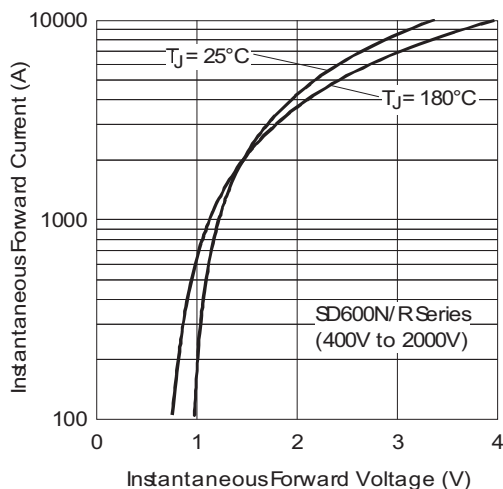


Fig. 13 - Forward Voltage Drop Characteristics

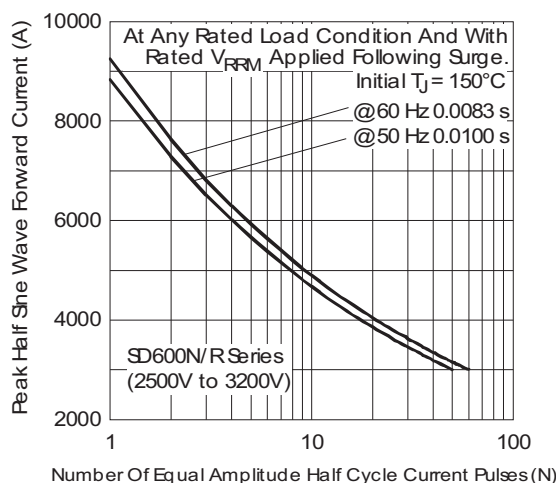


Fig. 11 - Maximum Non-Repetitive Surge Current

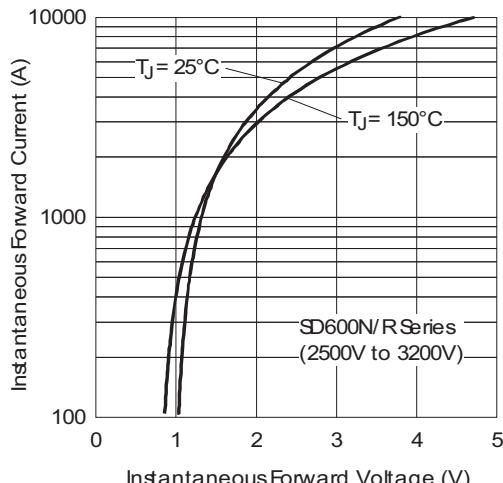
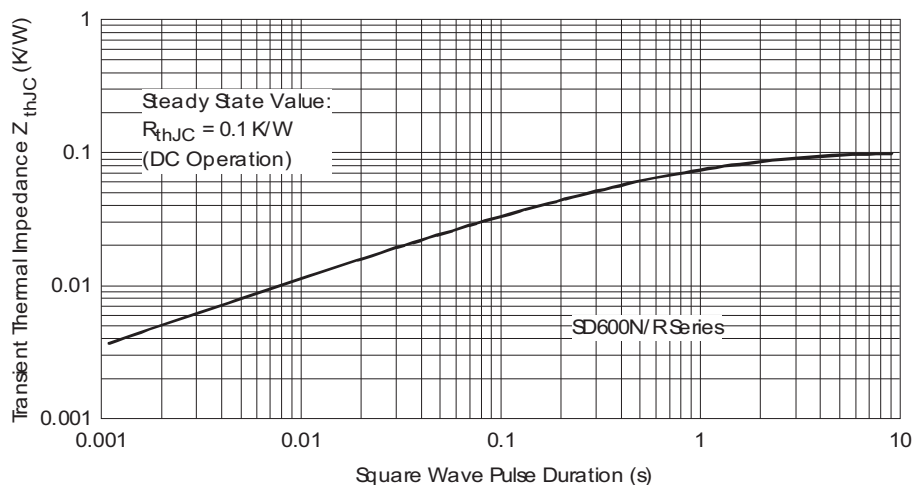


Fig. 14 - Forward Voltage Drop Characteristics


Fig. 15 - Thermal Impedance  $Z_{thJC}$  Characteristics

**ORDERING INFORMATION TABLE**

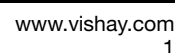
|             |            |           |           |          |          |           |          |          |
|-------------|------------|-----------|-----------|----------|----------|-----------|----------|----------|
| Device code | <b>VS-</b> | <b>SD</b> | <b>60</b> | <b>0</b> | <b>N</b> | <b>32</b> | <b>P</b> | <b>C</b> |
|             | 1          | 2         | 3         | 4        | 5        | 6         | 7        | 8        |

- 1** - Vishay Semiconductors product
- 2** - Diode
- 3** - Essential part number
- 4** - 0 = Standard recovery
- 5** - • N = Stud normal polarity (cathode to stud)  
• R = Stud reverse polarity (anode to stud)
- 6** - Voltage code x 100 =  $V_{RRM}$  (see Voltage Ratings table)
- 7** - P = Stud base B-8 3/4" 16UNF-2A
- 8** - C = Ceramic cap

For metric device M24 x 1.5 contact factory

| LINKS TO RELATED DOCUMENTS |                                                                        |
|----------------------------|------------------------------------------------------------------------|
| Dimensions                 | <a href="http://www.vishay.com/doc?95303">www.vishay.com/doc?95303</a> |

**DIMENSIONS** in millimeters (inches)





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- Подбор аналогов.
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- Входной контроль качества.
- Наличие сертификата ISO.

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- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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