

## TVP06B6V8-HF Thru. TVP06B601-HF

**Breakdown Voltage: 6.8 to 600Volts**


**Power Dissipation: 600 Watts**

**RoHS Device**

**Halogen Free**



### Features

- Glass passivated chip.
- 600W peak pulse power capability with a 10/1000 $\mu$ s waveform, repetitive rate (duty cycle):0.01%
- Low leakage.
- Uni and Bidirectional unit.
- Excellent clamping capability.
- Very fast response time.
- UL recognized file # E349157  Range: TVP06B6V8(C)A thru. TVP06B510(C)A

### Mechanical Data

- Case: Molded plastic, JEDEC SMB/DO-214AA
- Epoxy: UL 94V-0 rate flame retardant.
- Lead: solderable per MIL-STD-750, method 2026
- Polarity: Color band denotes cathode end except Bipolar.
- Weight: 0.108 gram (approx.)



### Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.  
Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

| Parameter   | Symbol           | Value          | Units |
|---|------------------|----------------|-------|
| Peak power dissipation with a 10/1000 $\mu$ s waveform (Note 1)                       | P <sub>PP</sub>  | 600            | W     |
| Peak pulse current with a 10/1000 $\mu$ s waveform (Note 1)                           | I <sub>PP</sub>  | See Next Table | A     |
| Power dissipation on infinite heatsink at T <sub>L</sub> =75°C                        | P <sub>D</sub>   | 5.0            | W     |
| Peak forward surge current, 8.3ms single half sine-wave uni-directional only (Note 2) | I <sub>FSM</sub> | 100            | A     |
| Maximum instantaneous forward voltage at 25.0A for uni-directional only (Note 3)      | V <sub>F</sub>   | 3.5/5.0        | V     |
| Operation junction temperature  | T <sub>J</sub>   | -55 to +150    | °C    |
| Storage temperature range   | T <sub>STG</sub> | -55 to +150    | °C    |

Note:

1. Non-repetitive current pulse, per Fig.5 and derated above TA=25°C per Fig.1
2. Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulse per minute maximum.
3. V<sub>F</sub><3.5V for devices of V<sub>BR</sub> <200V and V<sub>F</sub> <5.0V for devices of V<sub>BR</sub> >201V.

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## Rating and Characteristics Curves (TVP06B6V8-HF Thru. TVP06B601-HF)

Fig.1 - Pulse Derating Curve



Fig.2 - Maximum Non-Repetitive Surge Current



Fig.3 - Steady State Power Derating Curve



Fig.4 - Peak Pulse Power Rating Curve



Fig.5 - Pulse Waveform



Fig.6 - Typical Junction Capacitance



# SMD Transient Voltage Suppressor



## Electrical Characteristics (TVP06B6V8-HF Thru. TVP06B601-HF)

| Part No.         | Breakdown voltage<br>V <sub>BR</sub> @ I <sub>T</sub> |          |                     | Maximum Reverse Leakage<br>@V <sub>RRWM</sub><br>I <sub>R</sub> (uA) | Working Peak Reverse Voltage<br>V <sub>RRWM</sub> (V) | Maximum Reverse Surge Current<br>I <sub>PP</sub> (A) | Maximum Clamping Voltage<br>@I <sub>PP</sub><br>V <sub>C</sub> (V) | Device Marking Code |      |
|------------------|---|----------|---------------------|--|---|--|--|---------------------|------|
|                  | Min. (V)  | Max. (V) | I <sub>T</sub> (mA) |  |   |  |  | UNI                 | BI   |
| TVP06B6V8(C)A-HF | 6.46  | 7.14     | 10                  | 1000   | 5.8   | 57.14  | 10.5   | 6V8A                | 6V8C |
| TVP06B7V5(C)A-HF | 7.13  | 7.88     | 10                  | 500  | 6.4   | 53.10  | 11.3   | 7V5A                | 7V5C |
| TVP06B8V2(C)A-HF | 7.79  | 8.61     | 10                  | 200  | 7.0   | 49.59  | 12.1   | 8V2A                | 8V2C |
| TVP06B9V1(C)A-HF | 8.65  | 9.56     | 1                   | 50   | 7.8   | 44.78  | 13.4   | 9V1A                | 9V1C |
| TVP06B100(C)A-HF | 9.50  | 10.50    | 1                   | 10   | 8.6   | 41.38  | 14.5   | 10A                 | 10C  |
| TVP06B110(C)A-HF | 10.45   | 11.55    | 1                   | 5  | 9.4   | 38.46  | 15.6   | 11A                 | 11C  |
| TVP06B120(C)A-HF | 11.40   | 12.60    | 1                   | 5  | 10.2  | 35.93  | 16.7   | 12A                 | 12C  |
| TVP06B130(C)A-HF | 12.35   | 13.65    | 1                   | 1  | 11.1  | 32.97  | 18.2   | 13A                 | 13C  |
| TVP06B150(C)A-HF | 14.25   | 15.75    | 1                   | 1  | 12.8  | 28.30  | 21.2   | 15A                 | 15C  |
| TVP06B160(C)A-HF | 15.20   | 16.80    | 1                   | 1  | 13.6  | 26.67  | 22.5   | 16A                 | 16C  |
| TVP06B180(C)A-HF | 17.10   | 18.90    | 1                   | 1  | 15.3  | 23.81  | 25.2   | 18A                 | 18C  |
| TVP06B200(C)A-HF | 19.00   | 21.00    | 1                   | 1  | 17.1  | 21.66  | 27.7   | 20A                 | 20C  |
| TVP06B220(C)A-HF | 20.90   | 23.10    | 1                   | 1  | 18.8  | 19.61  | 30.6   | 22A                 | 22C  |
| TVP06B240(C)A-HF | 22.80   | 25.20    | 1                   | 1  | 20.5  | 18.07  | 33.2   | 24A                 | 24C  |
| TVP06B270(C)A-HF | 25.65   | 28.35    | 1                   | 1  | 23.1  | 16.00  | 37.5   | 27A                 | 27C  |
| TVP06B300(C)A-HF | 28.50   | 31.50    | 1                   | 1  | 25.6  | 14.49  | 41.4   | 30A                 | 30C  |
| TVP06B330(C)A-HF | 31.35   | 34.65    | 1                   | 1  | 28.2  | 13.13  | 45.7   | 33A                 | 33C  |
| TVP06B360(C)A-HF | 34.20   | 37.80    | 1                   | 1  | 30.8  | 12.02  | 49.9   | 36A                 | 36C  |
| TVP06B390(C)A-HF | 37.05   | 40.95    | 1                   | 1  | 33.3  | 11.13  | 53.9   | 39A                 | 39C  |
| TVP06B430(C)A-HF | 40.85   | 45.15    | 1                   | 1  | 36.8  | 10.12  | 59.3   | 43A                 | 43C  |
| TVP06B470(C)A-HF | 44.65   | 49.35    | 1                   | 1  | 40.2  | 9.26   | 64.8   | 47A                 | 47C  |
| TVP06B510(C)A-HF | 48.45   | 53.55    | 1                   | 1  | 43.6  | 8.56   | 70.1   | 51A                 | 51C  |
| TVP06B560(C)A-HF | 53.20   | 58.80    | 1                   | 1  | 47.8  | 7.79   | 77.0   | 56A                 | 56C  |
| TVP06B620(C)A-HF | 58.90   | 65.10    | 1                   | 1  | 53.0  | 7.06   | 85.0   | 62A                 | 62C  |
| TVP06B680(C)A-HF | 64.60   | 71.40    | 1                   | 1  | 58.1  | 6.52   | 92.0   | 68A                 | 68C  |
| TVP06B750(C)A-HF | 71.25   | 78.75    | 1                   | 1  | 64.1  | 5.83   | 103.0  | 75A                 | 75C  |
| TVP06B820(C)A-HF | 77.90   | 86.10    | 1                   | 1  | 70.1  | 5.31   | 113.0  | 82A                 | 82C  |
| TVP06B910(C)A-HF | 86.45   | 95.55    | 1                   | 1  | 77.8  | 4.80   | 125.0  | 91A                 | 91C  |
| TVP06B101(C)A-HF | 95.00   | 105.00   | 1                   | 1  | 85.5  | 4.38   | 137.0  | 100A                | 100C |
| TVP06B111(C)A-HF | 104.50  | 115.50   | 1                   | 1  | 94.0  | 3.95   | 152.0  | 110A                | 110C |
| TVP06B121(C)A-HF | 114.00  | 126.00   | 1                   | 1  | 102.0   | 3.64   | 165.0  | 120A                | 120C |
| TVP06B131(C)A-HF | 123.50  | 136.50   | 1                   | 1  | 111.0   | 3.35   | 179.0  | 130A                | 130C |
| TVP06B151(C)A-HF | 142.50  | 157.50   | 1                   | 1  | 128.0   | 2.90   | 207.0  | 150A                | 150C |
| TVP06B161(C)A-HF | 152.00  | 168.00   | 1                   | 1  | 136.0   | 2.74   | 219.0  | 160A                | 160C |
| TVP06B171(C)A-HF | 161.50  | 178.50   | 1                   | 1  | 145.0   | 2.56   | 234.0  | 170A                | 170C |
| TVP06B181(C)A-HF | 171.00  | 189.00   | 1                   | 1  | 154.0   | 2.44   | 246.0  | 180A                | 180C |
| TVP06B201(C)A-HF | 190.00  | 210.00   | 1                   | 1  | 171.0   | 2.19   | 274.0  | 200A                | 200C |
| TVP06B221(C)A-HF | 209.00  | 231.00   | 1                   | 1  | 185.0   | 1.83   | 328.0  | 220A                | 220C |
| TVP06B251(C)A-HF | 237.50  | 262.50   | 1                   | 1  | 214.0   | 1.74   | 344.0  | 250A                | 250C |
| TVP06B301(C)A-HF | 285.00  | 315.00   | 1                   | 1  | 256.0   | 1.45   | 414.0  | 300A                | 300C |
| TVP06B351(C)A-HF | 332.50  | 367.50   | 1                   | 1  | 299.3   | 1.24   | 482.0  | 350A                | 350C |
| TVP06B381(C)A-HF | 361.00  | 399.00   | 1                   | 1  | 324.9   | 1.14   | 524.4  | 380A                | 380C |
| TVP06B401(C)A-HF | 380.00  | 420.00   | 1                   | 1  | 342.0   | 1.09   | 548.0  | 400A                | 400C |
| TVP06B441(C)A-HF | 418.00  | 462.00   | 1                   | 1  | 376.2   | 0.99   | 607.2  | 440A                | 440C |
| TVP06B501(C)A-HF | 475.00  | 525.00   | 1                   | 1  | 427.5   | 0.87   | 690.0  | 500A                | 500C |
| TVP06B521(C)A-HF | 494.00  | 546.00   | 1                   | 1  | 444.6   | 0.84   | 717.6  | 520A                | 520C |
| TVP06B551(C)A-HF | 522.50  | 577.50   | 1                   | 1  | 470.3   | 0.79   | 759.0  | 550A                | 550C |
| TVP06B601(C)A-HF | 570.00  | 630.00   | 1                   | 1  | 513.0   | 0.72   | 828.0  | 600A                | 600C |

- Note: 1) Suffix A denotes 5% tolerance devices.  
 2) Add suffix "C" or "CA" after part number to specify Bi-directional devices.  
 3) For Bi-Directional devices having V<sub>R</sub> of 10 volts and under, the I<sub>R</sub> limit is double.

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## Reel Taping Specification



| DO-214AA<br>(SMB) | SYMBOL | A                 | B                 | C           | d                 | D      | D1          | D2                |
|-------------------|--------|-------------------|-------------------|-------------|-------------------|--------|-------------|-------------------|
|                   | (mm)   | $3.67 \pm 0.10$   | $5.69 \pm 0.10$   | 4.50 (max)  | $1.55 \pm 0.10$   | 330.00 | 50.00 (min) | $13.00 \pm 0.20$  |
|                   | (inch) | $0.144 \pm 0.004$ | $0.224 \pm 0.004$ | 0.177 (max) | $0.061 \pm 0.004$ | 13.000 | 1.969 (min) | $0.512 \pm 0.008$ |

| DO-214AA<br>(SMB) | SYMBOL | E                 | F                 | P                 | P0                | P1                | W                 | W1          |
|-------------------|--------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------|
|                   | (mm)   | $1.75 \pm 0.10$   | $5.50 \pm 0.05$   | $8.00 \pm 0.10$   | $4.00 \pm 0.10$   | $2.00 \pm 0.05$   | $12.00 \pm 0.30$  | 18.40 (max) |
|                   | (inch) | $0.069 \pm 0.004$ | $0.217 \pm 0.002$ | $0.315 \pm 0.004$ | $0.157 \pm 0.004$ | $0.079 \pm 0.002$ | $0.472 \pm 0.012$ | 0.724 (max) |

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## Marking Code

1. **C**: COMCHIP

2. ○: Package

|   |     |
|---|-----|
| ○ | PKG |
| A | SMA |
| B | SMB |
| C | SMC |

3. XXX/XXXX: Marking code (see Page. 3)

4. : Cathod Band



## Suggested PAD Layout

| SIZE | DO-214AA(SMB) |           |
|------|---------------|-----------|
|      | (mm)          | (inch)    |
| A    | 5.60          | 0.220     |
| B    | 2.16 MAX      | 0.085 MAX |
| C    | 1.52 MIN      | 0.060 MIN |
| D    | 2.18 MIN      | 0.086 MIN |



## Standard Packaging

| Case Type      | REEL PACK    |                  |
|----------------|--------------|------------------|
|                | REEL ( pcs ) | Reel Size (inch) |
| DO-214AA (SMB) | 3,000        | 13               |