

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 μ 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 μ s waveform (Note 1) | P _{PP} | 600 | W |
| Peak pulse current with a 10/1000 μ s waveform (Note 1) | I _{PP} | See Next Table | A |
| Power dissipation on infinite heatsink at T _L =75°C | P _D | 5.0 | W |
| Peak forward surge current, 8.3ms single half sine-wave uni-directional only (Note 2) | I _{FSM} | 100 | A |
| Maximum instantaneous forward voltage at 25.0A for uni-directional only (Note 3) | V _F | 3.5/5.0 | V |
| Operation junction temperature | T _J | -55 to +150 | °C |
| Storage temperature range | T _{STG} | -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_F<3.5V for devices of V_{BR} <200V and V_F <5.0V for devices of V_{BR} >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 V _{BR} @ I _T | | | Maximum Reverse Leakage @V _{RRWM} I _R (uA) | Working Peak Reverse Voltage V _{RRWM} (V) | Maximum Reverse Surge Current I _{PP} (A) | Maximum Clamping Voltage @I _{PP} V _C (V) | Device Marking Code | |
|------------------|---|----------|---------------------|--|---|--|--|---------------------|------|
| | Min. (V) | Max. (V) | I _T (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_R of 10 volts and under, the I_R limit is double.

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Reel Taping Specification



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

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



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