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## AVS08

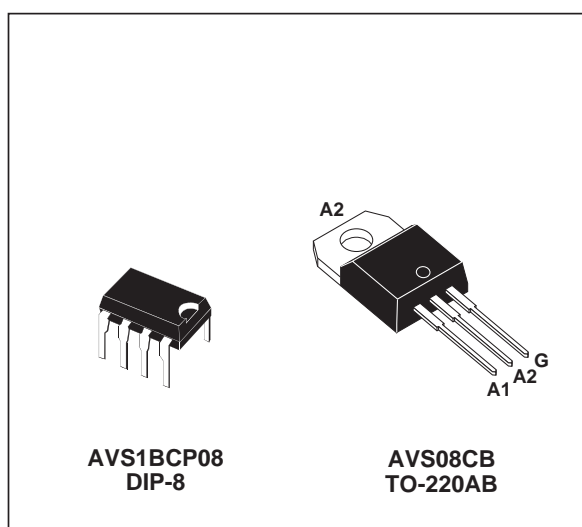
### AUTOMATIC VOLTAGE SWITCH (SMPS < 200W)

#### CONTROLLER

- 50/60Hz FULL COMPATIBILITY
- INTEGRATED VOLTAGE REGULATOR
- TRIGGERING PULSE TRAIN OF THE TRIAC
- PARASITIC FILTER
- LOW POWER CONSUMPTION

#### TRIAC

- HIGH EFFICIENCY AND SAFETY SWITCHING
- UNINSULATED PACKAGE : AVS08CB
- INSULATED PACKAGE 2500V<sub>(RMS)</sub> : AVS08CBI
- $V_{DRM} = \pm 500\text{ V}$
- $I_{T(RMS)} : 5\text{ A}$

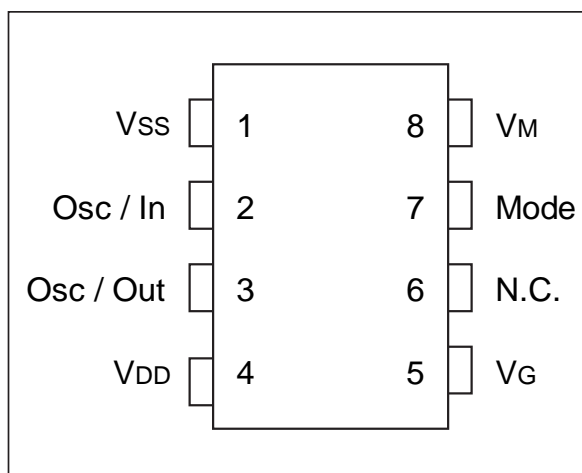


#### DESCRIPTION

The AVS08 kit is an automatic mains selector (110/220V AC) to be used in SMPS < 200 W. It is composed of 2 devices :

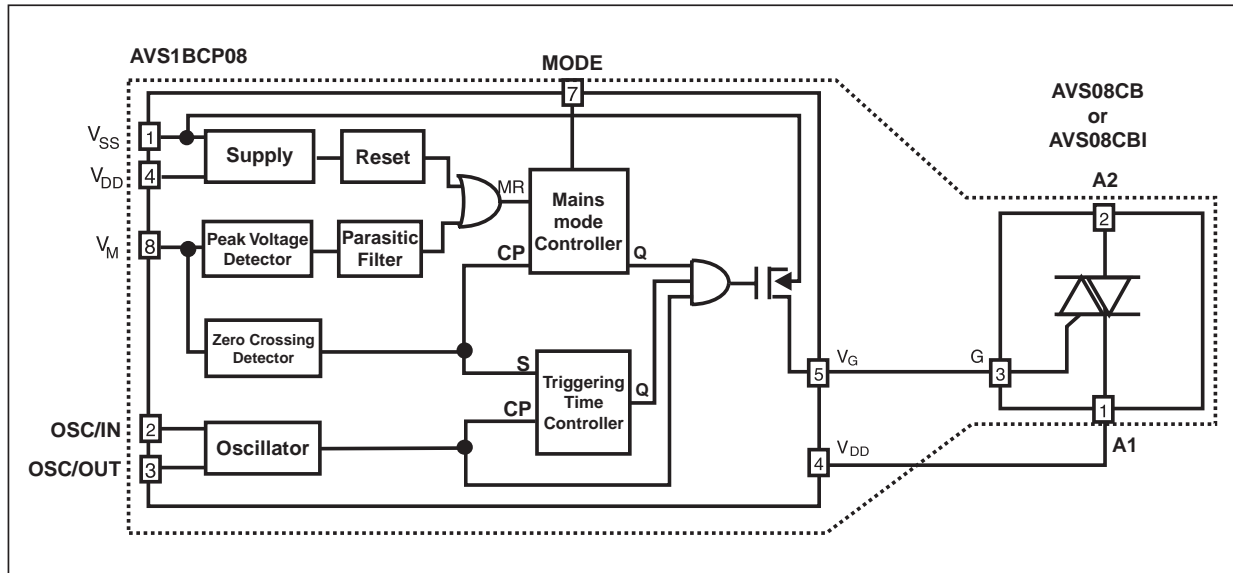
- The **Controller** is optimized for low consumption and high security triggering of the triac. When connected to  $V_{SS}$ , the **mode** input activates an additional **option**. If the main power drops from 220V to 110V, the triac control remains locked to the 220V mode and avoids any high voltage spike when the voltage is restored to 220V. When connected to  $V_{DD}$ , the mode input deactivates this option.
- The **TRIAC** is specially designed for this application. An optimization between sensitivity and dynamic parameters of the triac gate highly reduces the losses of supply resistor and allows excellent immunity against disturbances.

#### PIN CONNECTION



## AVS08

### BLOCK DIAGRAM



### ABSOLUTE MAXIMUM RATINGS CONTROLLER AVS1BCP08

| Symbol                          | Parameter                      | Value                |      | Unit |
|---------------------------------|--------------------------------|----------------------|------|------|
|                                 |                                | Min.                 | Max. |      |
| V <sub>SS</sub>                 | Supply voltage                 | -12                  | 0.5  | V    |
| V <sub>I</sub> / V <sub>O</sub> | I / O voltage                  | V <sub>SS</sub> -0.5 | 0.5  | V    |
| I <sub>I</sub> / I <sub>O</sub> | I / O current                  | -40                  | +40  | mA   |
| T <sub>stg</sub>                | Storage Temperature            | -60                  | +150 | °C   |
| T <sub>oper</sub>               | Operating Temperature code "C" | 0                    | +70  | °C   |

TRIAC AVS08CB / AVS08CBI T<sub>j</sub> = +25°C (unless otherwise specified)

| Symbol                             | Parameter  | Value                          | Unit |                  |
|------------------------------------|--|--------------------------------|------|------------------|
| V <sub>DRM</sub>                   | Repetitive peak off-state voltage (2)  | ± 500                          | V    |                  |
| I <sub>T(RMS)</sub>                | RMS on-state current (360° conduction angle)                                 | AVS08CB T <sub>C</sub> = 100°C | 5    | A                |
|                                    |  | AVS08CBI T <sub>C</sub> = 95°C |      |                  |
| I <sub>TSM</sub>                   | Non repetitive surge peak on-state current ( T <sub>j</sub> initial = 25°C ) | t = 8.3ms                      | 70   | A                |
|                                    |  | t = 10ms                       | 65   |                  |
| I <sup>2</sup> t                   | I <sup>2</sup> t value   | t = 10ms                       | 21   | A <sup>2</sup> s |
| di / dt                            | Critical rate of rise of on-state current (1)                                | Repetitive<br>F = 50Hz         | 20   | A/μs             |
|                                    |  | Non<br>Repetitive              | 100  |                  |
| T <sub>stg</sub><br>T <sub>j</sub> | Storage Temperature<br>Junction Temperature Range                            | - 40 + 125<br>- 10 + 125       | °C   |                  |

(1) Gate supply : I<sub>G</sub> = 100mA - di/dt = 1A/μs

(2) T<sub>j</sub> = 125°C

**AVS08**

**THERMAL RESISTANCE**

TRIAC AVS08CB / AVS08CBI

| Symbol       | Parameter   | Value    | Unit |
|--------------|---|----------|------|
| Rth (j-a)    | Junction to ambient                                   | 60       | °C/W |
| Rth (j-c) DC | Junction to case for DC                               | AVS08CB  | 5.4  |
|              |   | AVS08CBI | 6.3  |
| Rth (j-c) AC | Junction to case for 360° conduction angle (F = 50Hz) | AVS08CB  | 4.0  |
|              |   | AVS08CBI | 4.7  |

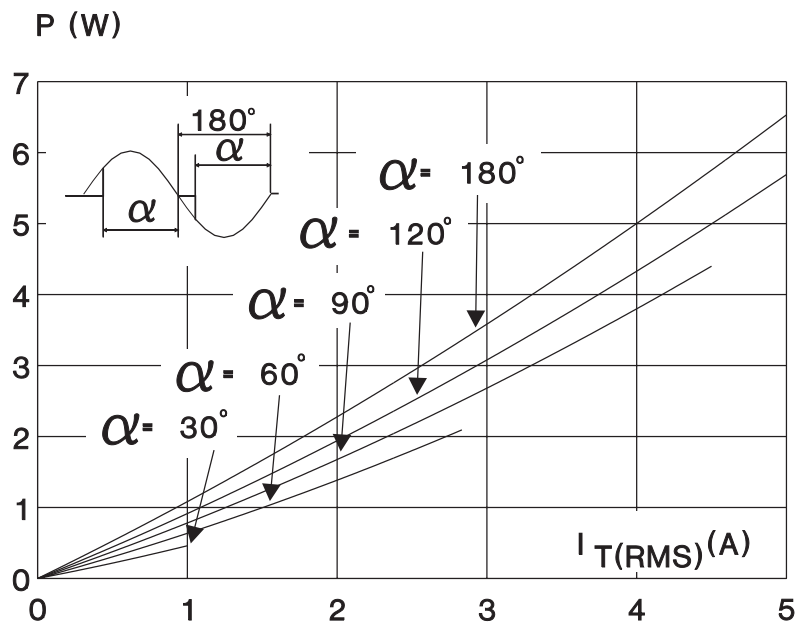
**DC GENERAL ELECTRICAL CHARACTERISTICS**

TRIAC AVS08CB / AVS08CBI

| Symbol             | Parameter   | Value |      | Unit |
|--------------------|---|-------|------|------|
|                    |   | Min.  | Max. |      |
| V <sub>TM</sub> *  | I <sub>TM</sub> = 7A t <sub>p</sub> = 10ms<br>T <sub>j</sub> = 25°C |       | 1.65 | V    |
| I <sub>DRM</sub> * | V <sub>DRM</sub> rated Gate open<br>T <sub>j</sub> = 25°C           |       | 10   | μA   |

\* For either polarity of electrode A2 voltage with reference to electrode A1

**Fig. 1:** Maximum RMS power dissipation versus RMS on-state current (F = 60Hz).  
(Curves are cut off by (di/dt)<sub>c</sub> limitation)



## AVS08

### DC GENERAL ELECTRICAL CHARACTERISTICS (continued)

CONTROLLER AVS1BCP08 Toper = 25°C (unless otherwise specified)

| Symbol   | Parameter   | Value    |             |           | Unit    |
|--|---|----------|-------------|-----------|---------|
|  |   | Min.     | Typ.        | Max.      |         |
| V <sub>SS</sub> (pin 1) (Vreg)                             | Shunt regulator   | -10      | -9          | -8        | V       |
| I <sub>SS</sub> (pin 1) (Vreg)<br>(@ V <sub>SS</sub> = 9V) | Supply current  | 0.4      |             | 25        | mA      |
| I <sub>SS</sub> (pin 1)<br>(@ triac gate non connected)    | Quiescent current   |          |             | 1         | mA      |
| F (pin 3)<br>(@ R = 91kΩ)<br>(C = 100pF)                   | Oscillator frequency  | 42       | 44          | 46        | KHz     |
| V <sub>M</sub> (pin 8) V <sub>th</sub> (3)                 | Peak voltage of detection high-threshold  | 4.08     | 4.25        | 4.42      | V       |
| V <sub>M</sub> (pin 8) V <sub>h</sub> (3)                  | Peak voltage of detection hysteresis  | 0.370    | 0.4         | 0.420     | V       |
| (1) V <sub>M</sub> (pin 8) V <sub>th</sub> (3)             | Zero-crossing detection high-threshold  | 95       | 110         | 125       | mV      |
| V <sub>M</sub> (pin 8) V <sub>h</sub> (3)                  | Zero-crossing detection hysteresis  | 27       | 50          | 80        | mV      |
| (2) V <sub>r</sub> azht (4)                                | Power-on-reset activation threshold   |          | Vreg x 0.89 |           | V       |
| (2) V <sub>r</sub> azlt (4)                                | Power-down-reset activation threshold   | 3        |             | 6.95      | V       |
| Mode (pin 7)   | V <sub>IL</sub> (4)<br>V <sub>IH</sub> (4)  | 0.7 Vreg |             | 0.3 Vreg  | V       |
| V <sub>G</sub> (pin 5)                                     | V <sub>OL</sub> (I <sub>VG</sub> = 25mA)<br>Leakage current (V <sub>G</sub> = V <sub>DD</sub> ) |          |             | 1<br>+ 50 | V<br>μA |

#### NOTE:

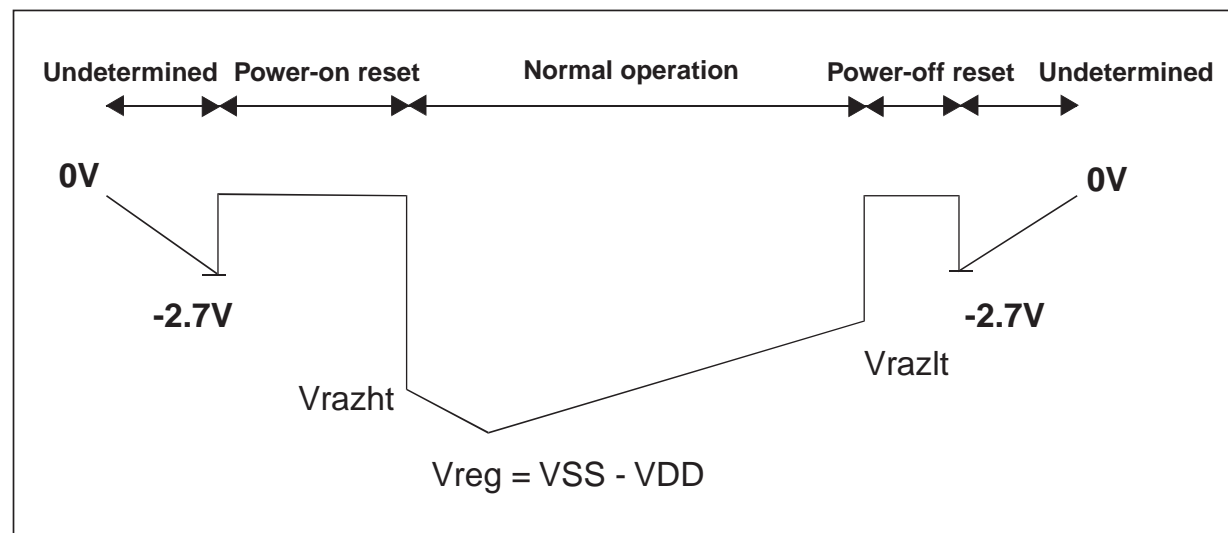
(1) : This value gives a typical noise immunity on the zero-crossing detection of 110mV x 1018/18 = 6.20V on the main supply

(2) : See following diagram

 (3) : Voltage referred to V<sub>SS</sub>

 (4) : Voltage referred to V<sub>DD</sub>

### POWER-ON AND POWER-OFF RESET BEHAVIOUR

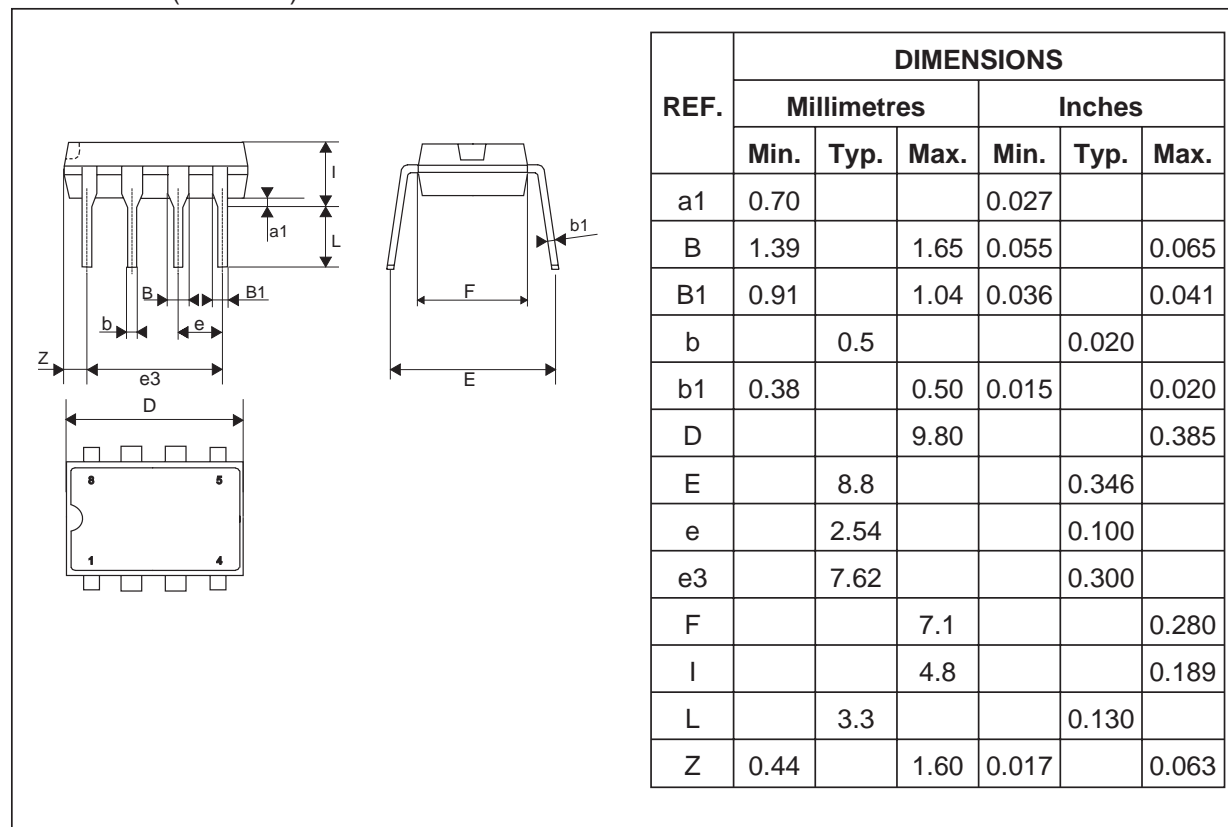




## AVS08

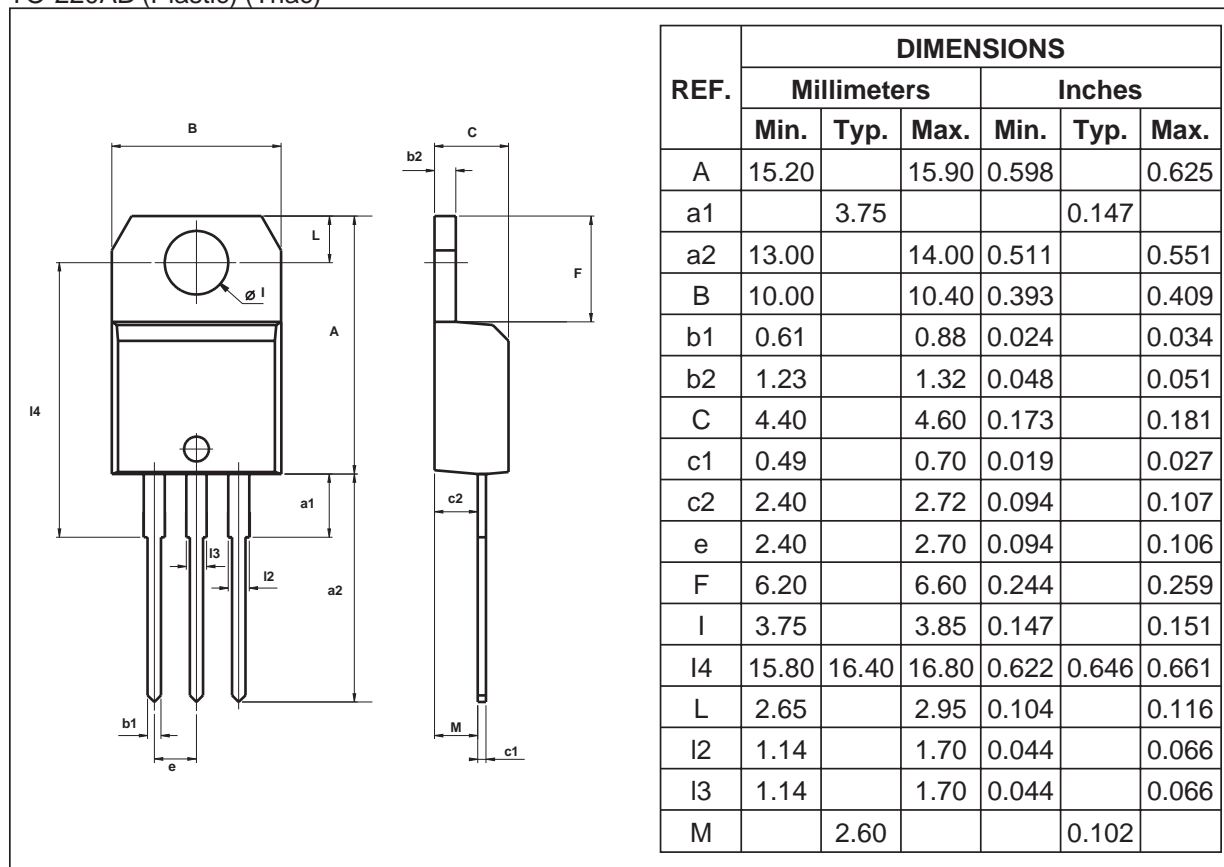
### PACKAGE MECHANICAL DATA

DIP-8 Plastic (controller)



**PACKAGE MECHANICAL DATA**

TO-220AB (Plastic) (Triac)



- Cooling method: C
- Recommended torque value: 0.8 m.N
- Maximum torque value: 1 m.N

**OTHER INFORMATION**

| Part Number | Marking   | Weight | Base Qty | Packing mode |
|-------------|-----------|--------|----------|--------------|
| AVS08CB     | AVS08CB   | 2.3 g  | 1000     | Tube         |
| AVS08CBI    | AVS08CBI  | 2.3 g  | 1000     | Tube         |
| AVS1BCP08   | AVS1BCP08 | 0.6 g  | 2000     | Tube         |

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