

## Features

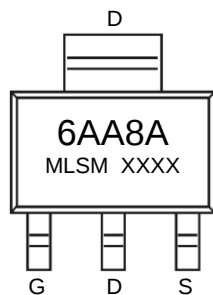
- Fast switching capability
- 100% avalanche tested
- Improved dv/dt capability

## Product Summary

| $V_{DS}$ | $R_{DS(ON)}$ TYP | $I_D$ |
|----------|------------------|-------|
| 600V     | 14Ω@10V          | 0.8A  |

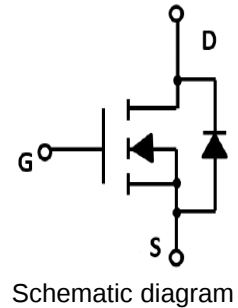
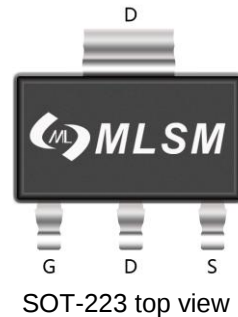
## Application

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)



6AA8A: Device code  
 XXXX: Code

Marking and pin assignment

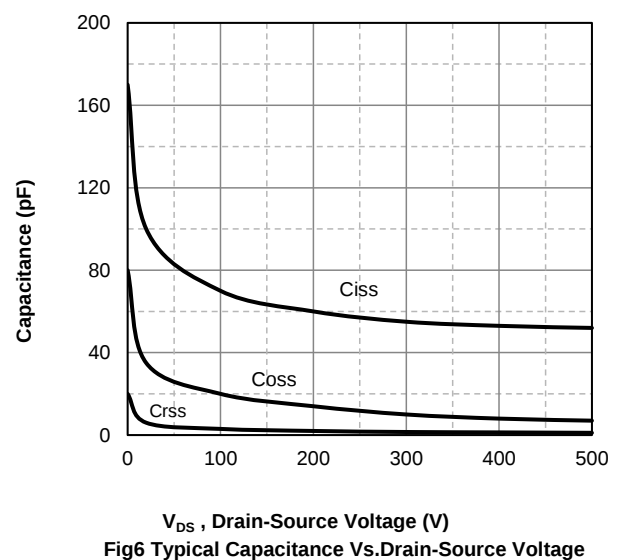
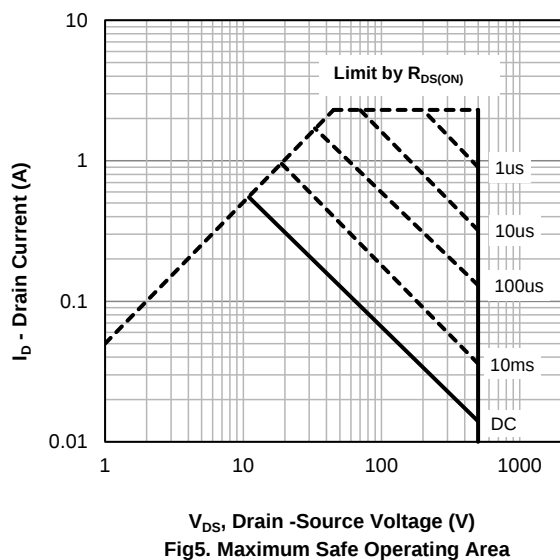
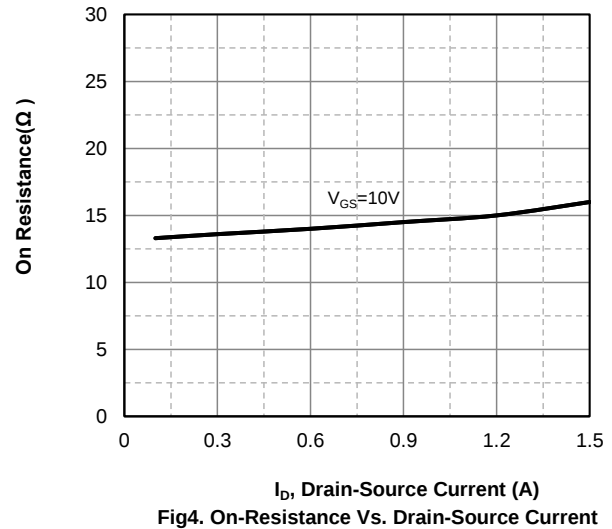
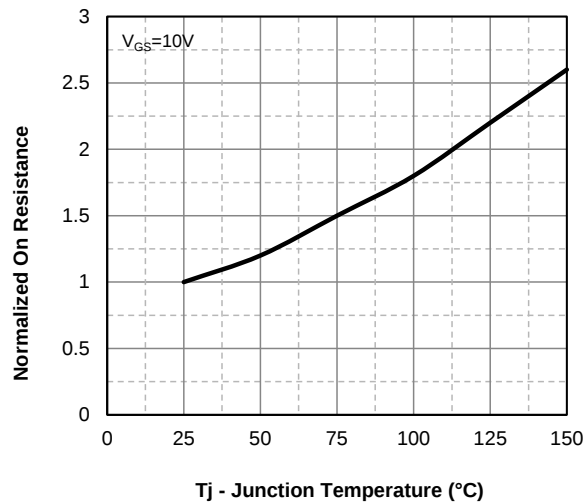
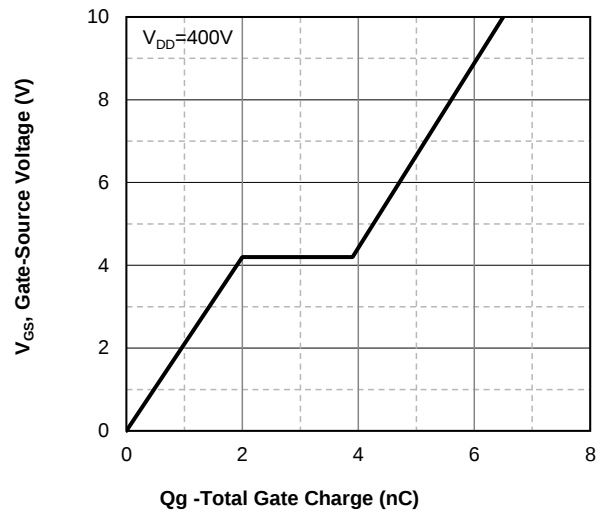
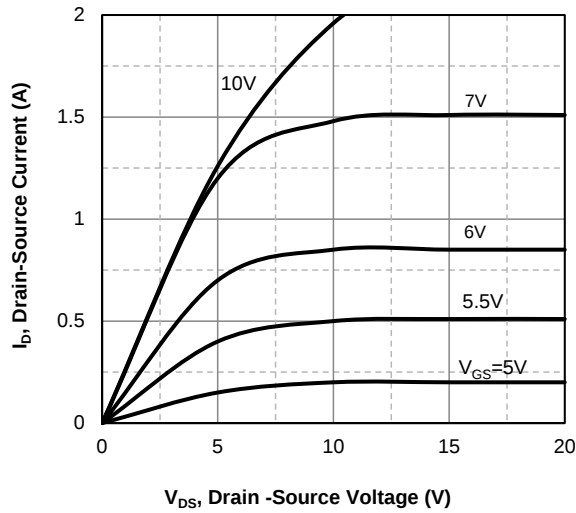


| Absolute Maximum Ratings (TA=25°C unless otherwise noted) |                                     |         |            |      |
|-----------------------------------------------------------|-------------------------------------|---------|------------|------|
| Symbol                                                    | Parameter                           |         | Rating     | Unit |
| Common Ratings (TC=25°C Unless Otherwise Noted)           |                                     |         |            |      |
| V <sub>DS</sub>                                           | Drain-Source Breakdown Voltage      |         | 600        | V    |
| V <sub>GS</sub>                                           | Gate-Source Voltage                 |         | ±30        | V    |
| T <sub>J</sub>                                            | Maximum Junction Temperature        |         | 150        | °C   |
| T <sub>STG</sub>                                          | Storage Temperature Range           |         | -50 to 155 | °C   |
| I <sub>S</sub>                                            | Diode Continuous Forward Current    | Tc=25°C | 0.8        | A    |
| Mounted on Large Heat Sink                                |                                     |         |            |      |
| I <sub>DM</sub>                                           | Pulse Drain Current Tested          | Tc=25°C | 2.4        | A    |
| I <sub>D</sub>                                            | Continuous Drain Current            | Tc=25°C | 0.8        | A    |
| P <sub>D</sub>                                            | Maximum Power Dissipation           | Tc=25°C | 1.3        | W    |
| R <sub>θJA</sub>                                          | Thermal Resistance Junction-Ambient |         | 96         | °C/W |

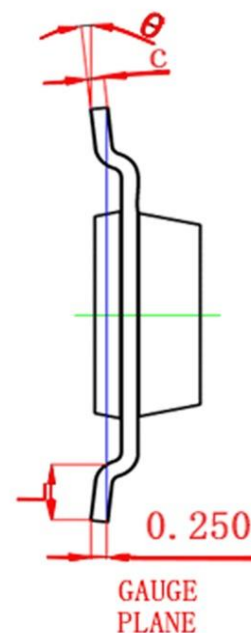
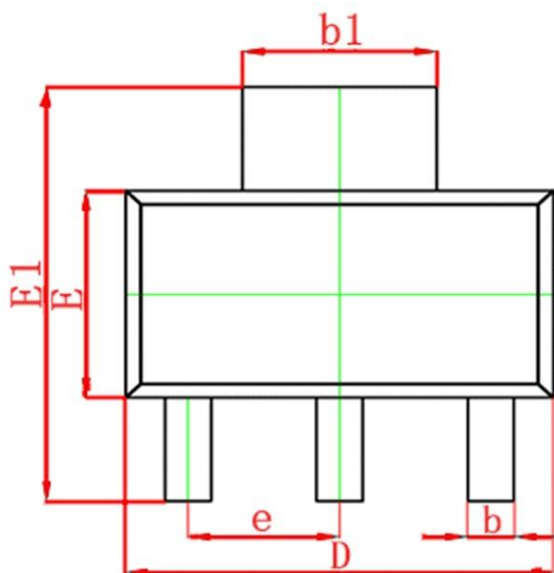
| Ordering Information (Example) |         |         |                      |                         |                            |               |
|--------------------------------|---------|---------|----------------------|-------------------------|----------------------------|---------------|
| Type                           | Package | Marking | Minimum Package(pcs) | Inner Box Quantity(pcs) | Outer Carton Quantity(pcs) | Delivery Mode |
| MT6AA8A                        | SOT-223 | 6AA8A   | 2,500                | 5,000                   | 35,000                     | 13"reel       |

| Electrical Characteristics (TJ=25℃ unless otherwise noted)              |                                  |                                                                                        |     |     |      |      |
|-------------------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------|-----|-----|------|------|
| Symbol                                                                  | Parameter                        | Condition                                                                              | Min | Typ | Max  | Unit |
| Static Electrical Characteristics @ TJ = 25℃ (unless otherwise stated)  |                                  |                                                                                        |     |     |      |      |
| BV <sub>(BR)DSS</sub>                                                   | Drain-Source Breakdown Voltage   | V <sub>GS</sub> =0V, I <sub>D</sub> =250μA                                             | 600 | --  | --   | V    |
| I <sub>DSS</sub>                                                        | Zero Gate Voltage Drain Current  | V <sub>DS</sub> =550V, V <sub>GS</sub> =0V                                             | --  | --  | 1.0  | μA   |
| I <sub>GSS</sub>                                                        | Gate-Body Leakage Current        | V <sub>GS</sub> =±30V, V <sub>DS</sub> =0V                                             | --  | --  | ±100 | nA   |
| V <sub>GS(th)</sub>                                                     | Gate Threshold Voltage           | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA                               | 2.0 | 3.0 | 4.0  | V    |
| R <sub>DS(on)</sub>                                                     | Drain-Source On-State Resistance | V <sub>GS</sub> =10V, I <sub>D</sub> =0.8A                                             | --  | 14  | 20   | Ω    |
| Dynamic Electrical Characteristics @ TJ = 25℃ (unless otherwise stated) |                                  |                                                                                        |     |     |      |      |
| C <sub>ISS</sub>                                                        | Input Capacitance                | V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz                                      | --  | 51  | --   | pF   |
| C <sub>OSS</sub>                                                        | Output Capacitance               |                                                                                        | --  | 10  | --   | pF   |
| C <sub>RSS</sub>                                                        | Reverse Transfer Capacitance     |                                                                                        | --  | 1.2 | --   | pF   |
| Switching Characteristics                                               |                                  |                                                                                        |     |     |      |      |
| Q <sub>g</sub>                                                          | Total Gate Charge                | V <sub>DD</sub> =400V, I <sub>D</sub> =0.8A, V <sub>GS</sub> =10V                      | --  | 5   | --   | nC   |
| Q <sub>gs</sub>                                                         | Gate Source Charge               |                                                                                        | --  | 1.5 | --   | nC   |
| Q <sub>gd</sub>                                                         | Gate Drain Charge                |                                                                                        | --  | 1.4 | --   | nC   |
| t <sub>d(on)</sub>                                                      | Turn-on Delay Time               | V <sub>DD</sub> =250V, I <sub>D</sub> =0.8A, V <sub>GS</sub> =10V, R <sub>G</sub> =25Ω | --  | 2.2 | --   | nS   |
| t <sub>r</sub>                                                          | Turn-on Rise Time                |                                                                                        | --  | 36  | --   | nS   |
| t <sub>d(off)</sub>                                                     | Turn-Off Delay Time              |                                                                                        | --  | 18  | --   | nS   |
| t <sub>f</sub>                                                          | Turn-Off Fall Time               |                                                                                        | --  | 65  | --   | nS   |
| Source- Drain Diode Characteristics                                     |                                  |                                                                                        |     |     |      |      |
| V <sub>SD</sub>                                                         | Forward on voltage               | Tj=25℃, Is=0.8A                                                                        | --  | --  | 1.2  | V    |

## Typical Operating Characteristics



SOT-223 Package information



| Symbol | Dimensions in Millimeters(mm) |       | Dimensions In Inches |       |
|--------|-------------------------------|-------|----------------------|-------|
|        | Min                           | Max   | Min                  | Max   |
| A      | --                            | 1.800 | --                   | 0.071 |
| A1     | 0.020                         | 0.100 | 0.001                | 0.004 |
| A2     | 1.500                         | 1.700 | 0.059                | 0.067 |
| b      | 0.660                         | 0.840 | 0.026                | 0.033 |
| b1     | 2.900                         | 3.100 | 0.114                | 0.122 |
| c      | 0.230                         | 0.350 | 0.009                | 0.014 |
| D      | 6.300                         | 6.700 | 0.248                | 0.264 |
| E      | 3.300                         | 3.700 | 0.130                | 0.146 |
| E1     | 6.700                         | 7.300 | 0.264                | 0.287 |
| e      | 2.300(BSC)                    |       | 0.091(BSC)           |       |
| L      | 0.750                         | --    | 0.030                | --    |
| θ      | 0°                            | 10°   | 0°                   | 10°   |