

**Product Summary**

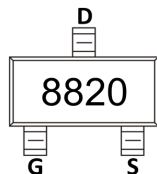
| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---------------|-----------------|-------|
| 20V           | 17mΩ@10V        | 6A    |
|               | 20mΩ@4.5V       |       |
|               | 27mΩ@2.5V       |       |
|               | 43mΩ@1.8V       |       |

**Feature**

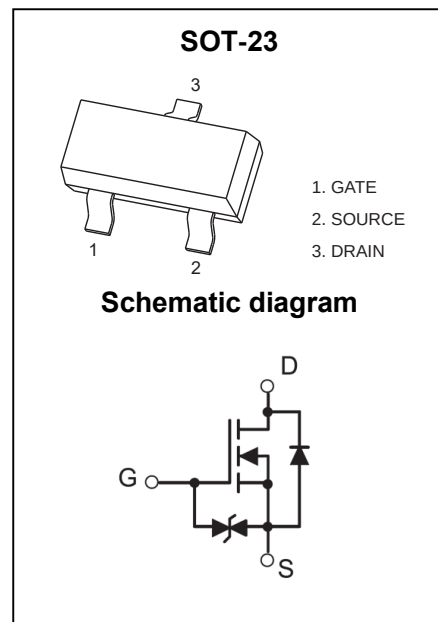
- Trench Technology Power MOSFET
- Low  $R_{DS(ON)}$
- Low Gate Charge
- ESD Protected

**Application**

- Load Switch
- DC/DC Converter

**MARKING:**

**ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$  unless otherwise noted)**

| Parameter                                                |                          | Symbol          | Value     | Unit               |
|----------------------------------------------------------|--------------------------|-----------------|-----------|--------------------|
| Drain - Source Voltage                                   |                          | $V_{DS}$        | 20        | V                  |
| Gate - Source Voltage                                    |                          | $V_{GS}$        | ±12       | V                  |
| Continuous Drain Current <sup>1,5</sup>                  | $T_A = 25^\circ\text{C}$ | $I_D$           | 6         | A                  |
| Pulsed Drain Current <sup>2</sup>                        |                          | $I_{DM}$        | 24        | A                  |
| Power Dissipation <sup>4,5</sup>                         | $T_A = 25^\circ\text{C}$ | $P_D$           | 1         | W                  |
| Thermal Resistance from Junction to Ambient <sup>5</sup> |                          | $R_{\theta JA}$ | 125       | $^\circ\text{C/W}$ |
| Junction Temperature                                     |                          | $T_J$           | 150       | $^\circ\text{C}$   |
| Storage Temperature                                      |                          | $T_{STG}$       | -55~ +150 | $^\circ\text{C}$   |



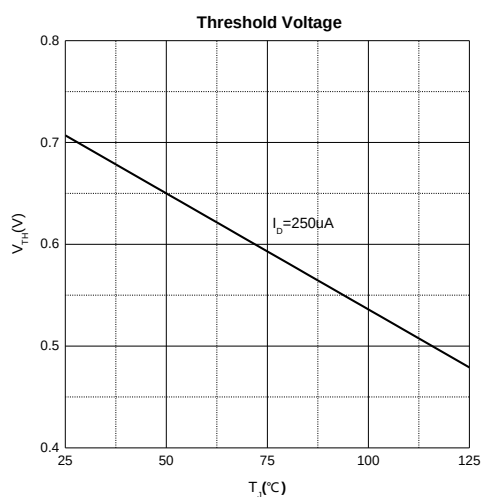
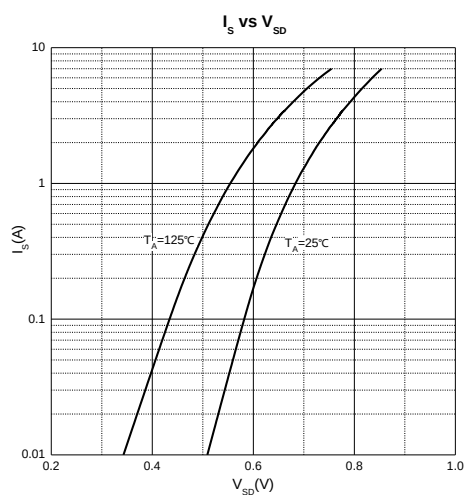
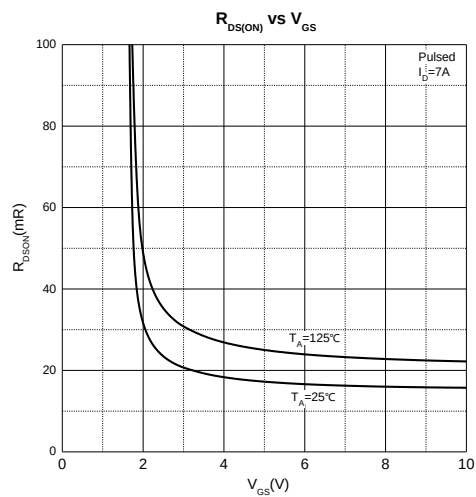
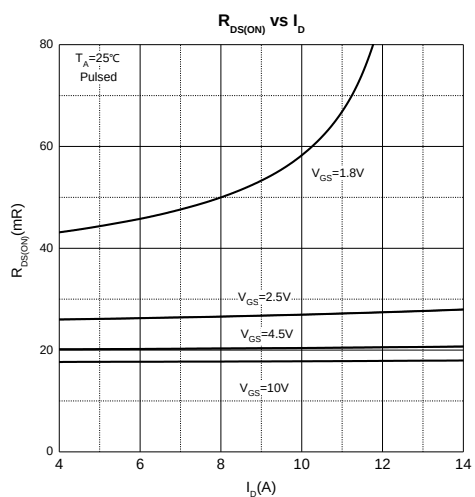
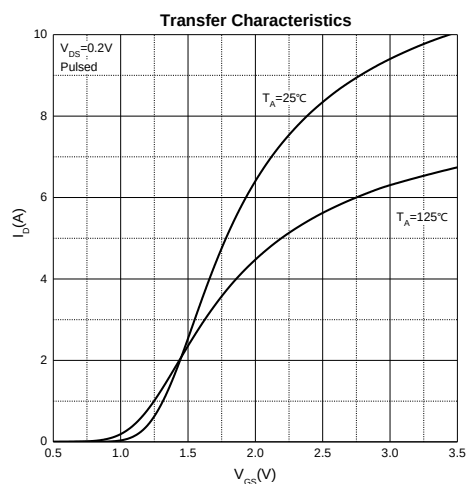
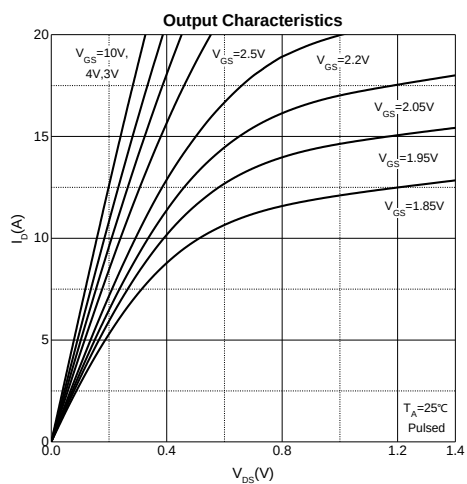
**MOSFET ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25°C unless otherwise noted)**

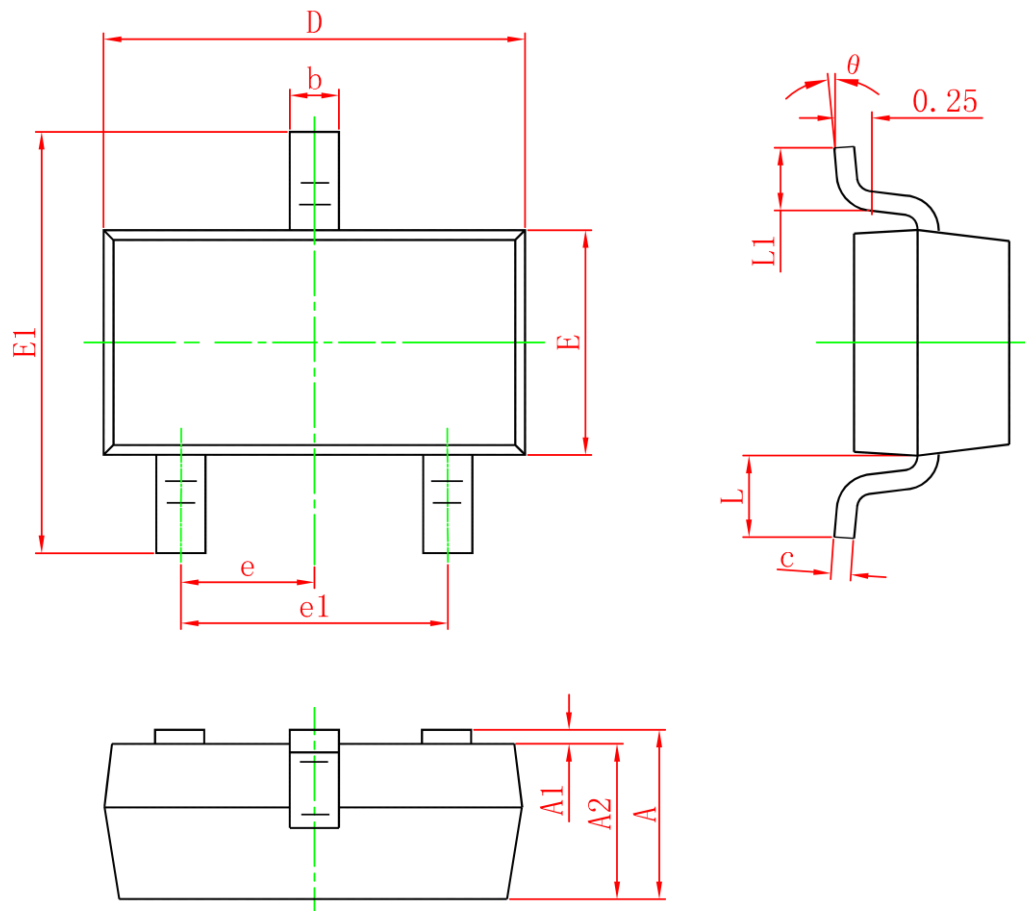
| Parameter                            | Symbol               | Test Condition                                                                              | Min | Type | Max | Unit |
|--------------------------------------|----------------------|---------------------------------------------------------------------------------------------|-----|------|-----|------|
| Off Characteristics                  |                      |                                                                                             |     |      |     |      |
| Drain - Source Breakdown Voltage     | V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA                                                | 20  |      |     | V    |
| Zero Gate Voltage Drain Current      | I <sub>DSS</sub>     | V <sub>DS</sub> = 16V, V <sub>GS</sub> = 0V                                                 |     |      | 1   | μA   |
| Gate - Body Leakage Current          | I <sub>GSS</sub>     | V <sub>GS</sub> = ±10V, V <sub>DS</sub> = 0V                                                |     |      | ±10 | μA   |
| On Characteristics <sup>3</sup>      |                      |                                                                                             |     |      |     |      |
| Gate Threshold Voltage               | V <sub>GS(th)</sub>  | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA                                  | 0.4 | 0.7  | 1   | V    |
| Drain-source On-resistance           | R <sub>DS(on)</sub>  | V <sub>GS</sub> = 10V, I <sub>D</sub> = 7.0A                                                |     | 17   | 23  | mΩ   |
|                                      |                      | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 6.6A                                               |     | 20   | 27  |      |
|                                      |                      | V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 5.5A                                               |     | 27   | 35  |      |
|                                      |                      | V <sub>GS</sub> = 1.8V, I <sub>D</sub> = 2.0A                                               |     | 43   | 63  |      |
| Dynamic Characteristics              |                      |                                                                                             |     |      |     |      |
| Input Capacitance                    | C <sub>iss</sub>     | V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V, f = 0.1MHz                                     |     | 438  |     | pF   |
| Output Capacitance                   | C <sub>oss</sub>     |                                                                                             |     | 102  |     |      |
| Reverse Transfer Capacitance         | C <sub>rss</sub>     |                                                                                             |     | 23   |     |      |
| Gate Resistance                      | R <sub>g</sub>       | V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 0.1MHz                                      |     | 3537 |     | Ω    |
| Switching Characteristics            |                      |                                                                                             |     |      |     |      |
| Total Gate Charge                    | Q <sub>g</sub>       | V <sub>DS</sub> = 30V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 0.3A                         |     | 13   |     | nC   |
| Gate-source Charge                   | Q <sub>gs</sub>      |                                                                                             |     | 0.6  |     |      |
| Gate-drain Charge                    | Q <sub>gd</sub>      |                                                                                             |     | 1.   |     |      |
| Turn-on Delay Time                   | t <sub>d(on)</sub>   | V <sub>DD</sub> = 10V, V <sub>GS</sub> = 10V,<br>R <sub>L</sub> = 1.7Ω, R <sub>G</sub> = 3Ω |     | 3    |     | ns   |
| Turn-on Rise Time                    | t <sub>r</sub>       |                                                                                             |     | 7.5  |     |      |
| Turn-off Delay Ttime                 | t <sub>d(off)</sub>  |                                                                                             |     | 20   |     |      |
| Turn-off Fall Time                   | t <sub>f</sub>       |                                                                                             |     | 6    |     |      |
| Source - Drain Diode Characteristics |                      |                                                                                             |     |      |     |      |
| Diode Forward Voltage <sup>3</sup>   | V <sub>SD</sub>      | V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A                                                   |     |      | 1   | V    |

Notes :

- 1.The maximum current rating is limited by package.
- 2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- 3.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- 4.The power dissipation P<sub>D</sub> is limited by T<sub>J(MAX)</sub> = 150°C.
- 5.Device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> = 25°C.

## Typical Characteristics



**SOT-23 Package Information**


| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1     | 0                         | 0.100 | 0                    | 0.004 |
| A2     | 0.900                     | 1.050 | 0.035                | 0.041 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 2.800                     | 3.000 | 0.110                | 0.118 |
| E      | 1.150                     | 1.500 | 0.045                | 0.059 |
| E1     | 2.250                     | 2.650 | 0.089                | 0.104 |
| e      | 0.950TYP                  |       | 0.037TYP             |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.550REF                  |       | 0.022REF             |       |
| L1     | 0.300                     | 0.500 | 0.012                | 0.020 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |