

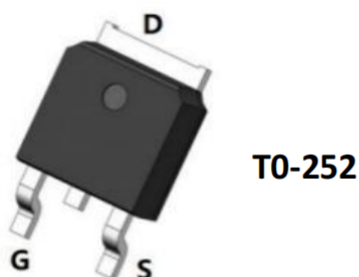
### Product Summary

- $V_{DS}$  100 V
- $I_{DS}$  50A
- $R_{DS(ON)}$  (at  $V_{GS}=10V$ )  $<18m\Omega$
- Advanced Trench Technology

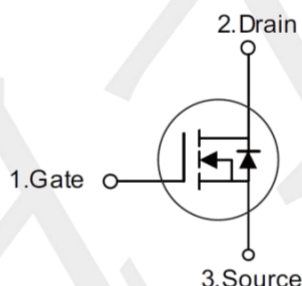
### Application

- Reverse Battery protection
- Load switch
- Power management
- PWM Application

### Package and Pin Configuration



### Circuit diagram



### Marking:



### Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER                            |                         | SYMBOL       | LIMIT       | UNIT             |
|--------------------------------------|-------------------------|--------------|-------------|------------------|
| Drain-Source Voltage                 |                         | $V_{DS}$     | 100         | V                |
| Gate-Source Voltage                  |                         | $V_{GS}$     | $\pm 20$    | V                |
| Continuous Drain Current             | $T_C=25^\circ\text{C}$  | $I_D$        | 50          | A                |
|                                      | $T_C=100^\circ\text{C}$ |              | 30          |                  |
| Pulsed Drain Current                 |                         | $I_{DM}$     | 200         | A                |
| Total Power Dissipation              | $T_C=25^\circ\text{C}$  | $P_{D(TOT)}$ | 100         | W                |
| Operating Junction Temperature Range |                         | $T_J$        | -55 to +175 | $^\circ\text{C}$ |
| Storage Temperature Range            |                         | $T_{stg}$    | -55 to +175 | $^\circ\text{C}$ |

### Thermal Characteristic

| PARAMETER                            |                  | Symbol          | Value | Unit               |
|--------------------------------------|------------------|-----------------|-------|--------------------|
| Thermal Resistance, Junction to Case | PCB Mount (Note) | $R_{\theta JC}$ | 2     | $^\circ\text{C/W}$ |

Note : When mounted on 1" square PCB (FR4 material).

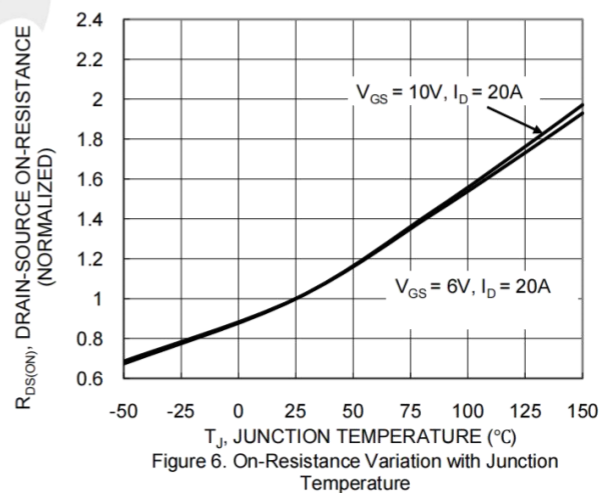
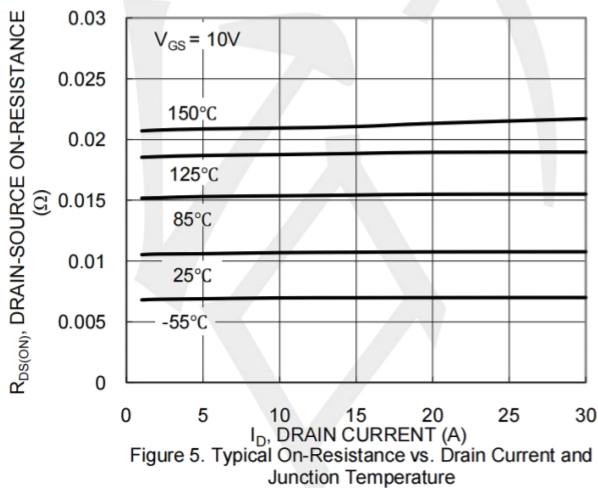
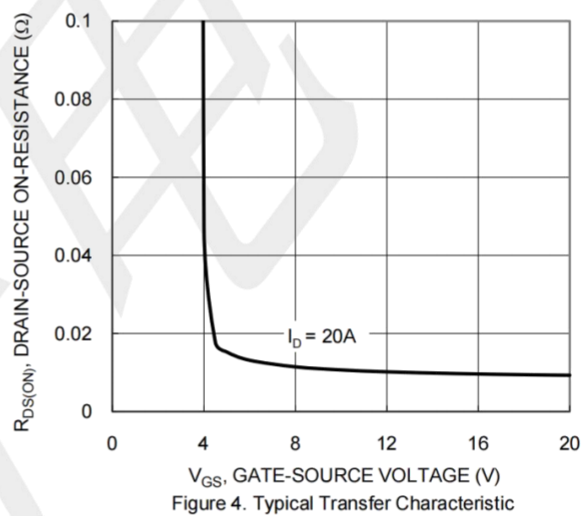
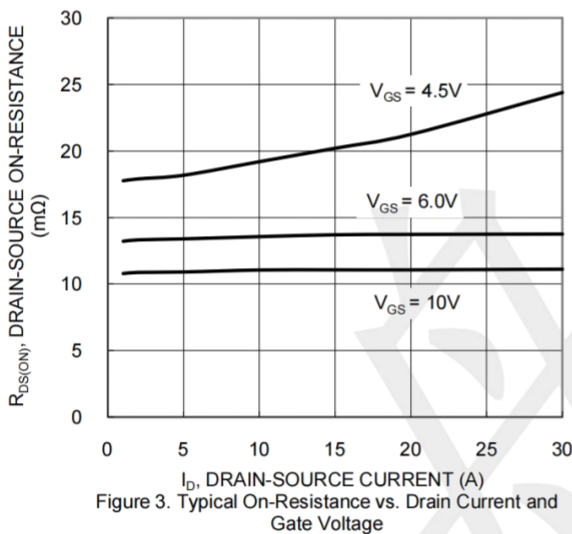
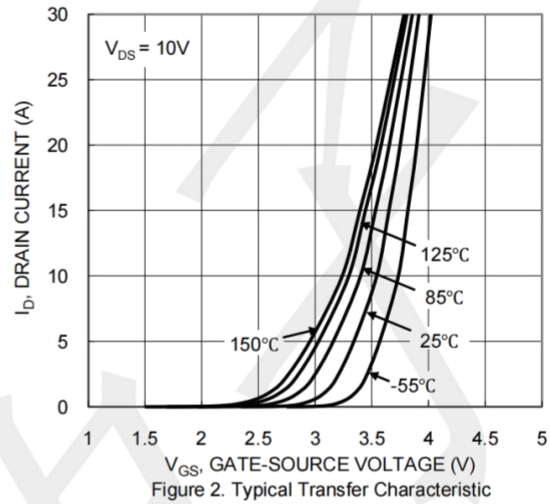
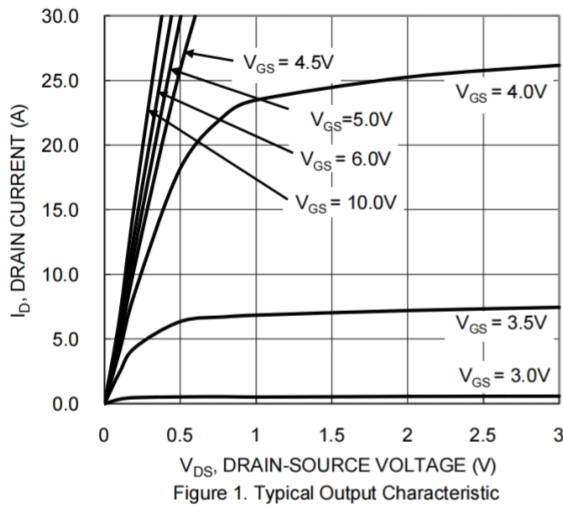
### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                                               | CONDITIONS                                                       | SYMBOL       | MIN | TYP  | MAX       | UNIT       |
|---------------------------------------------------------|------------------------------------------------------------------|--------------|-----|------|-----------|------------|
| Static                                                  |                                                                  |              |     |      |           |            |
| Drain-Source Breakdown Voltage                          | $V_{GS}=0V, I_D=250\mu A$                                        | $BV_{DSS}$   | 100 | --   | --        | V          |
| Gate-Source Threshold Voltage                           | $V_{DS}=V_{GS}, I_D=250\mu A$                                    | $V_{GS(th)}$ | --  | 1.5  | --        | V          |
| Gate-Source Leakage                                     | $V_{DS}=0V, V_{GS}= \pm 20V$                                     | $I_{GSS}$    | --  | --   | $\pm 100$ | nA         |
| Zero Gate Voltage Drain Current                         | $V_{DS}= 80V, V_{GS}=0V$                                         | $I_{DSS}$    | --  | --   | 1         | $\mu A$    |
|                                                         | $V_{DS}= 80V, T_J=125^{\circ}C$                                  |              | --  | --   | 50        | $\mu A$    |
| Drain-Source On-State Resistance<br>(Note 1)            | $V_{GS}= 10V, I_D= 20A$                                          | $R_{DS(on)}$ | --  | 18   | --        | m $\Omega$ |
|                                                         | $V_{GS}= 4.5V, I_D= 20A$                                         |              | --  | 22   | --        |            |
| Dynamic (Note 2)                                        |                                                                  |              |     |      |           |            |
| Total Gate Charge (Note 3)                              | $V_{DS}= 50V, I_D= 10A,$<br>$V_{GS}= 10V$                        | $Q_g$        | --  | 33.3 | --        | nC         |
| Gate-Source Charge (Note 3)                             |                                                                  | $Q_{gs}$     | --  | 6.9  | --        |            |
| Gate-Drain Charge (Note 3)                              |                                                                  | $Q_{gd}$     | --  | 5.1  | --        |            |
| Input Capacitance                                       | $V_{DS}= 50V, V_{GS}= 0V,$<br>$F= 1.0MHz$                        | $C_{iss}$    | --  | 1870 | --        | pF         |
| Output Capacitance                                      |                                                                  | $C_{oss}$    | --  | 260  | --        |            |
| Reverse Transfer Capacitance                            |                                                                  | $C_{rss}$    | --  | 6.9  | --        |            |
| Switching                                               |                                                                  |              |     |      |           |            |
| Turn-On Delay Time (Note 3)                             | $V_{DD}= 50V, I_D= 10A,$<br>$V_{GS}= 10V,$<br>$R_{GEN}= 6\Omega$ | $t_{d(on)}$  | --  | 6.5  | --        | nS         |
| Rise Time (Note 3)                                      |                                                                  | $t_r$        | --  | 7    | --        |            |
| Turn-Off Delay Time (Note 3)                            |                                                                  | $t_{d(off)}$ | --  | 19.6 | --        |            |
| Fall Time (Note 3)                                      |                                                                  | $t_f$        | --  | 8    | --        |            |
| Source-Drain Diode Ratings and Characteristics (Note 2) |                                                                  |              |     |      |           |            |
| Forward Voltage                                         | $V_{GS}= 0V, I_S= 20A$                                           | $V_{SD}$     | --  | 0.8  | 1.3       | V          |
| Continuous Source Current                               | Integral reverse diode<br>in the MOSFET                          | $I_S$        | --  | --   | 50        | A          |
| Pulsed Current (Note 1)                                 |                                                                  | $I_{SM}$     | --  | --   | 200       | A          |

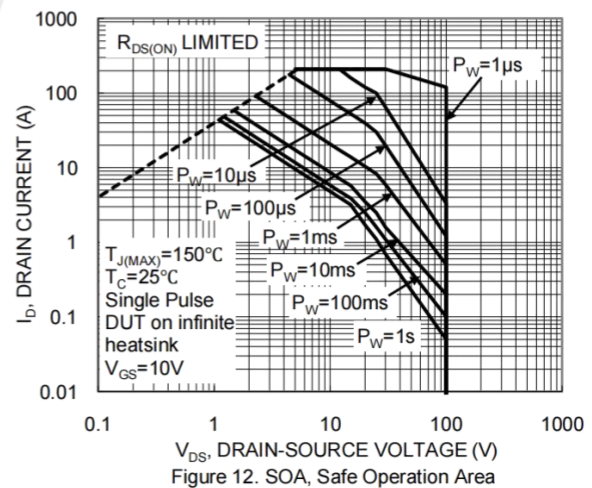
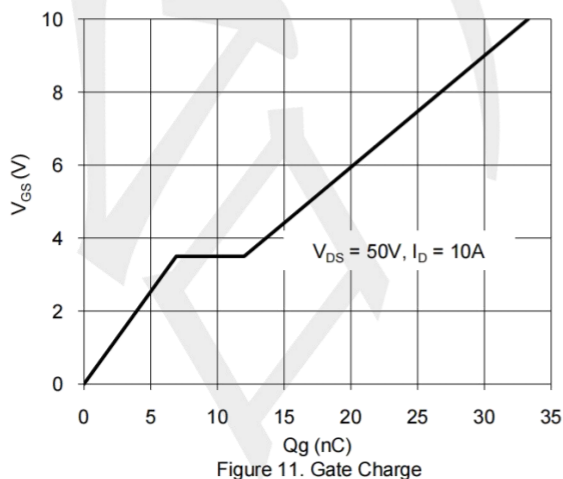
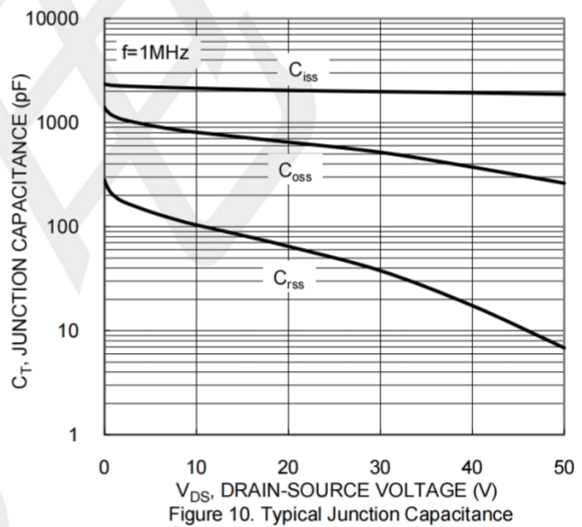
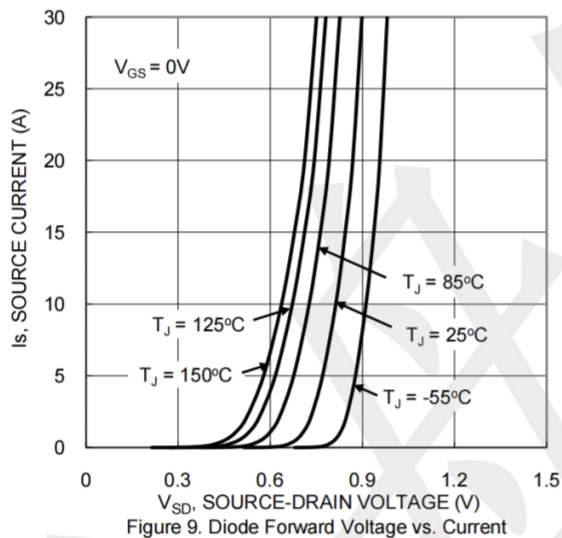
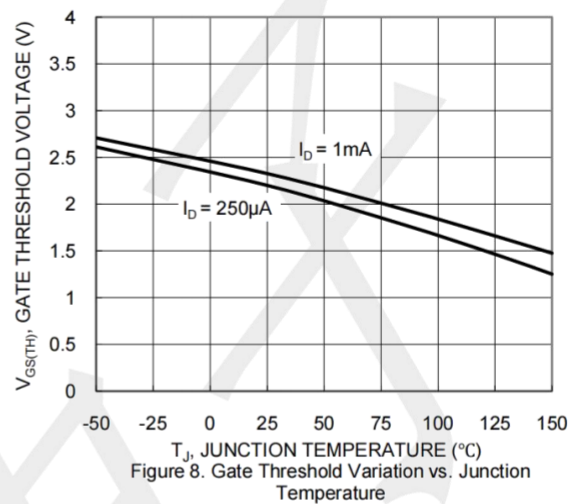
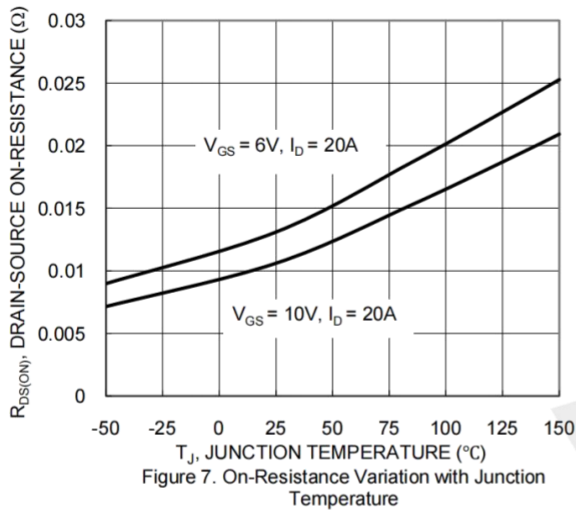
Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

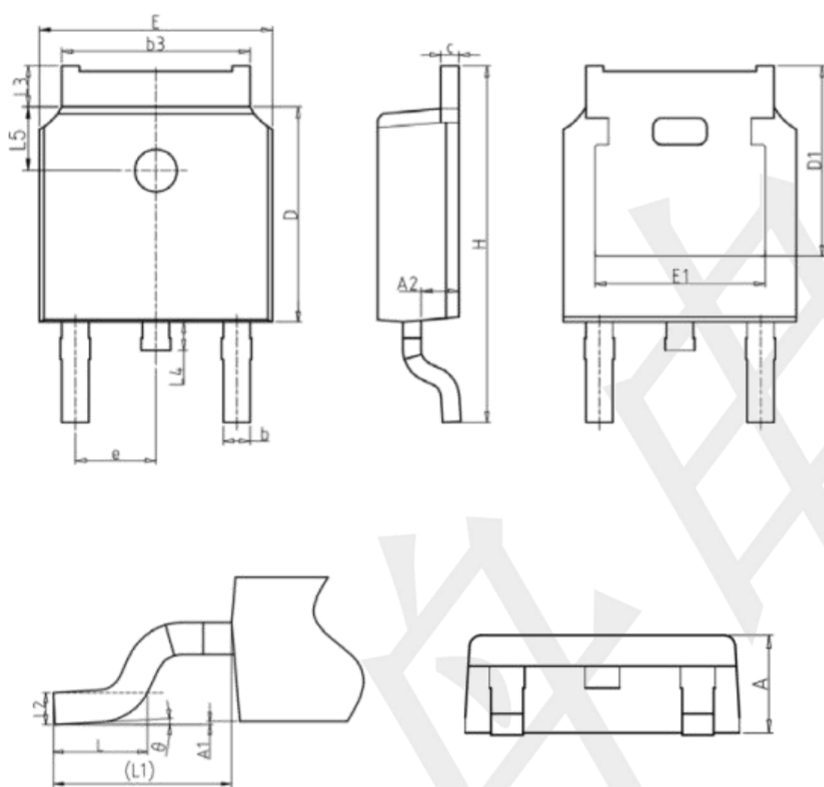
## TYPICAL CHARACTERISTICS



**TYPICAL CHARACTERISTICS**



Outline Drawing - TO-252



COMMON DIMENSIONS

| SYMBOL | mm       |       |       |
|--------|----------|-------|-------|
|        | MIN      | NOM   | MAX   |
| A      | 2.20     | 2.30  | 2.40  |
| A1     | 0.00     | -     | 0.20  |
| A2     | 0.97     | 1.07  | 1.17  |
| b      | 0.68     | 0.78  | 0.90  |
| b3     | 5.20     | 5.33  | 5.50  |
| c      | 0.43     | 0.53  | 0.63  |
| D      | 5.98     | 6.10  | 6.22  |
| D1     | 5.30REF  |       |       |
| E      | 6.40     | 6.60  | 6.80  |
| E1     | 4.63     | -     | -     |
| e      | 2.286BSC |       |       |
| H      | 9.40     | 10.10 | 10.50 |
| L      | 1.38     | 1.50  | 1.75  |
| L1     | 2.90REF  |       |       |
| L2     | 0.51BSC  |       |       |
| L3     | 0.88     | -     | 1.28  |
| L4     | -        | -     | 1.00  |
| L5     | 1.65     | 1.80  | 1.95  |
| θ      | 0°       | -     | 8°    |