

RoHS Compliant Product  
A suffix of "-C" specifies halogen and lead-free

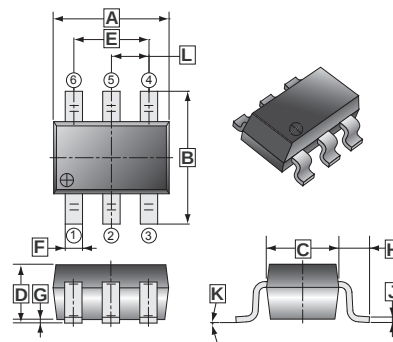
### Key Features:

- Low  $r_{DS(on)}$  trench technology
- Low thermal impedance
- Fast switching speed

### Typical Applications:

- Battery Powered Instruments
- Portable Computing
- Mobile Phones
- Fast switch
- GPS Units and Media Players

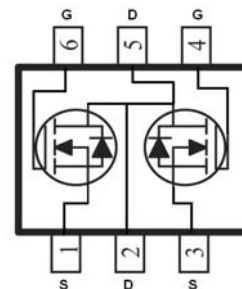
### TSOP-6



### PACKAGE INFORMATION

| Package | MPQ | Leader Size |
|---------|-----|-------------|
| TSOP-6  | 3K  | 7 inch      |

| REF. | Millimeter |      | REF. | Millimeter |      |
|------|------------|------|------|------------|------|
|      | Min.       | Max. |      | Min.       | Max. |
| A    | 2.70       | 3.10 | G    | 0          | 0.10 |
| B    | 2.60       | 3.00 | H    | 0.60       | REF. |
| C    | 1.40       | 1.80 | J    | 0.12       | REF. |
| D    | 1.10       | MAX. | K    | 0°         | 10°  |
| E    | 1.90       | REF. | L    | 0.95       | REF. |
| F    | 0.30       | 0.50 |      |            |      |



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

| Parameter                                                 |                           | Symbol          | Ratings   | Unit                        |
|-----------------------------------------------------------|---------------------------|-----------------|-----------|-----------------------------|
| Drain-Source Voltage                                      |                           | $V_{DS}$        | 20        | V                           |
| Gate-Source Voltage                                       |                           | $V_{GS}$        | $\pm 10$  | V                           |
| Continuous Drain Current <sup>1</sup>                     | $T_A = 25^\circ\text{C}$  | $I_D$           | 6         | A                           |
|                                                           | $T_A = 100^\circ\text{C}$ |                 | 3.6       |                             |
| Pulsed Drain Current <sup>2</sup>                         |                           | $I_{DM}$        | 20        | A                           |
| Continuous Source Current (Diode Conduction) <sup>1</sup> |                           | $I_S$           | 1         | A                           |
| Power Dissipation <sup>1</sup>                            | $T_A = 25^\circ\text{C}$  | $P_D$           | 0.83      | W                           |
|                                                           | $T_A = 100^\circ\text{C}$ |                 | 0.3       |                             |
| Operating Junction and Storage Temperature Range          |                           | $T_J, T_{STG}$  | -55 ~ 150 | $^\circ\text{C}$            |
| <b>Thermal Resistance Ratings</b>                         |                           |                 |           |                             |
| Maximum Junction to Ambient <sup>1</sup>                  | $t \leq 10$ sec           | $R_{\theta JA}$ | 110       | $^\circ\text{C} / \text{W}$ |
|                                                           | Steady State              |                 | 150       |                             |

#### Notes

1. Surface Mounted on 1" x 1" FR4 Board.
2. Pulse width limited by maximum junction temperature.

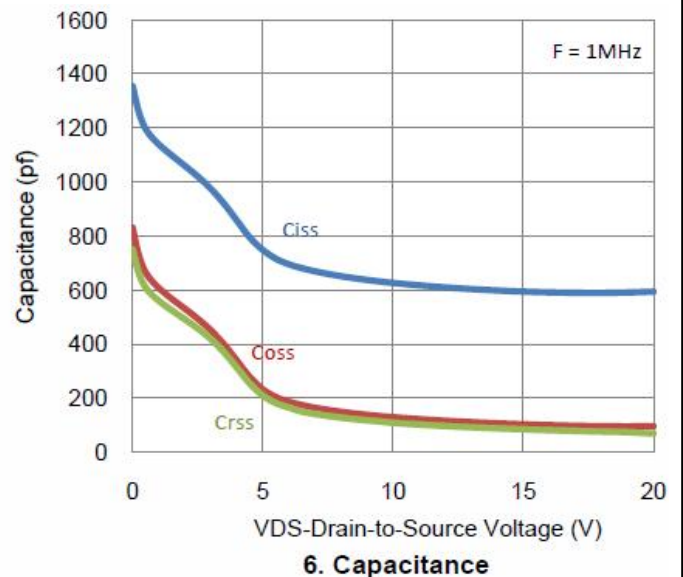
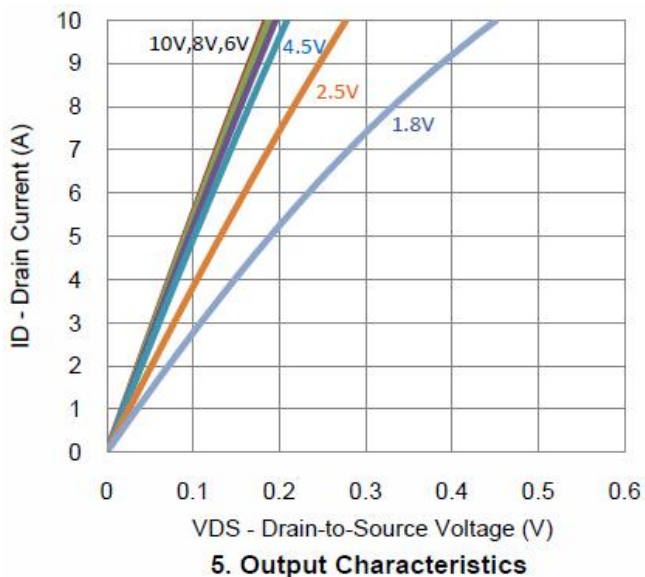
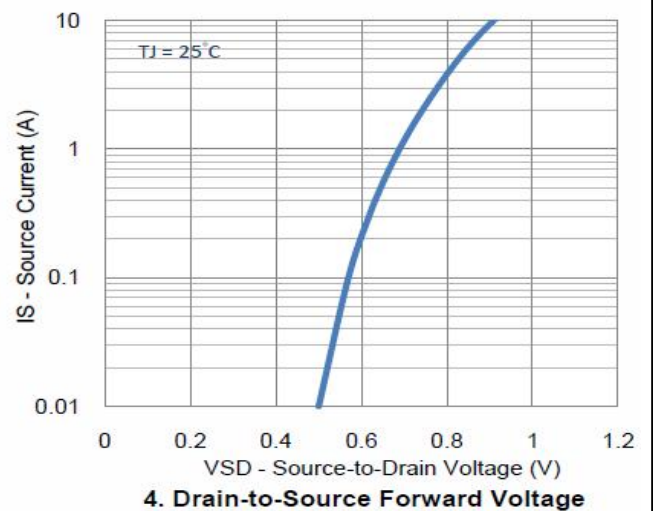
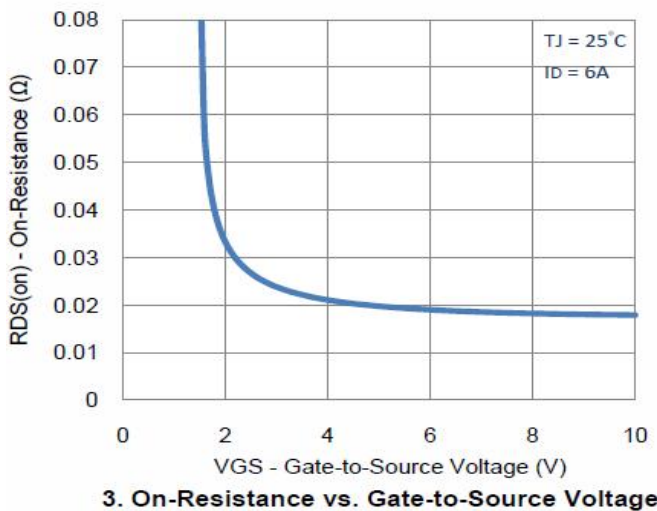
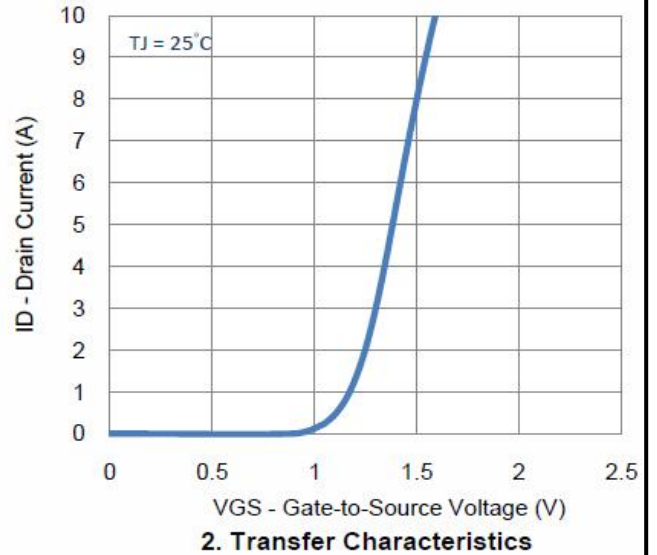
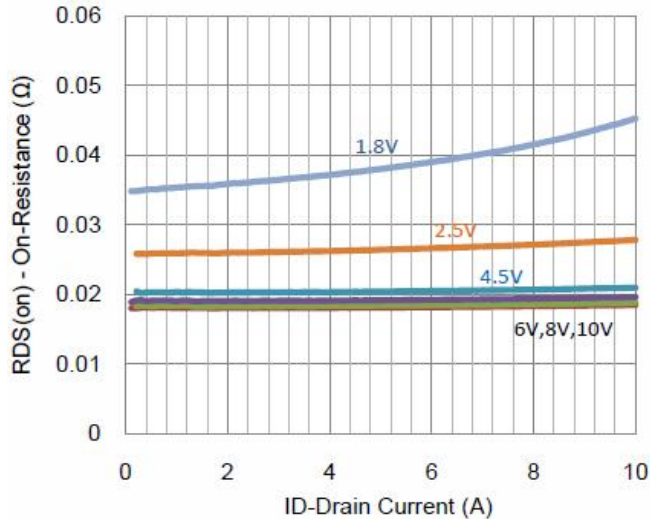
## ELECTRICAL CHARACTERISTICS

| Parameter                       | Symbol       | Min. | Typ. | Max.      | Unit       | Test Conditions                                                                           |
|---------------------------------|--------------|------|------|-----------|------------|-------------------------------------------------------------------------------------------|
| Gate- Source Threshold Voltage  | $V_{GS(th)}$ | 0.5  | -    | 1         | V          | $V_{DS}=V_{GS}$ , $I_D=250\mu A$                                                          |
| Gate-Body Leakage               | $I_{GSS}$    | -    | -    | $\pm 100$ | nA         | $V_{DS}=0$ , $V_{GS}= \pm 10V$                                                            |
| Zero Gate Voltage Drain Current | $I_{DSS}$    | -    | -    | 1         | $\mu A$    | $V_{DS}=16V$ , $V_{GS}=0 V$                                                               |
|                                 |              | -    | -    | 30        |            | $V_{DS}=16V$ , $V_{GS}=0 V$ , $T_J= 85^{\circ}C$                                          |
| On-State Drain Current          | $I_{D(on)}$  | 10   | -    | -         | A          | $V_{DS}=5V$ , $V_{GS}=10V$                                                                |
| Drain-Source On-Resistance      | $R_{DS(ON)}$ | -    | -    | 24.5      | m $\Omega$ | $V_{GS}=4.5V$ , $I_D=6A$                                                                  |
|                                 |              | -    | -    | 38        |            | $V_{GS}=2.5V$ , $I_D=5A$                                                                  |
| Forward Transconductance        | $g_{fs}$     | -    | 10   | -         | S          | $V_{DS}=10V$ , $I_D=6A$                                                                   |
| Diode Forward Voltage           | $V_{SD}$     | -    | 0.7  | -         | V          | $I_S=1A$ , $V_{GS}=0V$                                                                    |
| <b>Dynamic</b>                  |              |      |      |           |            |                                                                                           |
| Total Gate Charge               | $Q_g$        | -    | 12.5 | -         | nC         | $V_{DS}=10V$ ,<br>$V_{GS}=4.5V$ ,<br>$I_D=5.4A$                                           |
| Gate-Source Charge              | $Q_{gs}$     | -    | 0.7  | -         |            |                                                                                           |
| Gate-Drain Charge               | $Q_{gd}$     | -    | 4.3  | -         |            |                                                                                           |
| Turn-on Delay Time              | $T_{d(on)}$  | -    | 5    | -         | nS         | $V_{DD}=10V$ ,<br>$V_{GEN}=4.5V$ ,<br>$R_{GEN}=6\Omega$ ,<br>$R_L=10\Omega$ ,<br>$I_D=1A$ |
| Rise Time                       | $T_r$        | -    | 14   | -         |            |                                                                                           |
| Turn-off Delay Time             | $T_{d(off)}$ | -    | 30   | -         |            |                                                                                           |
| Fall Time                       | $T_f$        | -    | 5    | -         |            |                                                                                           |
| Input Capacitance               | $C_{iss}$    | -    | 700  | -         | pF         | $V_{DS}=10V$ ,<br>$V_{GS}=0$ ,<br>$f=1MHz$                                                |
| Output Capacitance              | $C_{oss}$    | -    | 125  | -         |            |                                                                                           |
| Reverse Transfer Capacitance    | $C_{rss}$    | -    | 110  | -         |            |                                                                                           |

### Notes

1. Pulse test :  $PW \leq 300\mu s$  duty cycle  $\leq 2\%$ .
2. Guaranteed by design, not subject to production testing.

## Electrical Characteristics



## Typical Electrical Characteristics

