

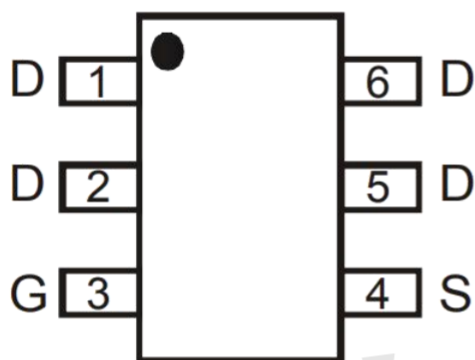
### Product Summary

- $V_{DS}$  -30 V
- $I_{DS}$  (at  $V_{GS}=-10V$ ) -8 A
- $R_{DS(ON)}$  (at  $V_{GS}=-10V$ ) <21m $\Omega$ (TYP)

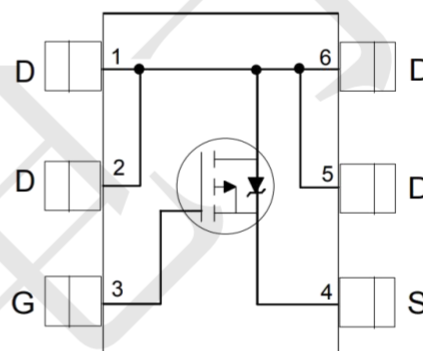
### Application

- Interfacing Switching
- Portable equipment and battery
- Load Switch

### Package and Pin Configuration



### Circuit diagram



### Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                              | SYMBOL    | LIMIT       | UNIT |
|----------------------------------------|-----------|-------------|------|
| Drain-Source Voltage                   | $V_{DS}$  | -30         | V    |
| Gate-Source Voltage                    | $V_{GS}$  | ±20         | V    |
| Continuous Drain Current               | $I_D$     | -8          | A    |
| Pulsed Drain Current (t = 100 $\mu$ s) | $I_{DM}$  | -50         | A    |
| Maximum Power Dissipation              | $P_D$     | 2.5         | W    |
| Operating Junction Temperature Range   | $T_J$     | -55 to +150 | °C   |
| Storage Temperature Range              | $T_{stg}$ | -55 to +150 | °C   |

### Thermal Characteristic

| PARAMETER                                          | Symbol          | Value | Unit |
|----------------------------------------------------|-----------------|-------|------|
| Thermal Resistance from Junction to Ambient(t≤10s) | $R_{\theta JA}$ | 100   | °C/W |

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

# TPSQ3481EV-T1-GE3

## P-Channel Enhancement Mode MOSFET

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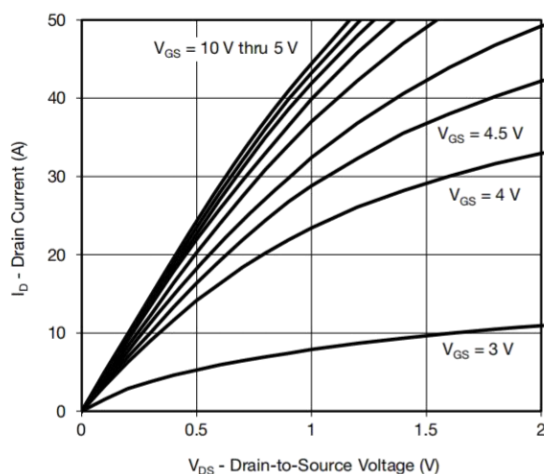
### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                                               | CONDITIONS                                                                | SYMBOL       | MIN  | TYP  | MAX       | UNIT       |
|---------------------------------------------------------|---------------------------------------------------------------------------|--------------|------|------|-----------|------------|
| Static                                                  |                                                                           |              |      |      |           |            |
| Drain-Source Breakdown Voltage                          | $V_{GS}=0V, I_D= -250\mu A$                                               | $BV_{DSS}$   | -30  | --   | --        | V          |
| Gate-Source Threshold Voltage                           | $V_{DS}=V_{GS}, I_D= -250\mu A$                                           | $V_{GS(th)}$ | -1.0 | -1.5 | -2.5      | V          |
| Gate-Source Leakage                                     | $V_{DS}=0V, V_{GS}= \pm 20V$                                              | $I_{GSS}$    | --   | --   | $\pm 100$ | nA         |
| Zero Gate Voltage Drain Current                         | $V_{DS}= -30V, V_{GS}=0V$                                                 | $I_{DSS}$    | --   | -0.1 | -1        | $\mu A$    |
|                                                         | $V_{DS}= -30V, T_J=125^{\circ}C$                                          |              | --   | -10  | -100      | $\mu A$    |
| Drain-Source On-State Resistance<br>(Note 1)            | $V_{GS}= -10V, I_D= -7A$                                                  | $R_{DS(on)}$ | --   | 21   | 27        | m $\Omega$ |
|                                                         | $V_{GS}= -4.5V, I_D= -4A$                                                 |              | --   | 29   | 37        |            |
| Forward Transconductance (Note 2)                       | $V_{DS}= -15V, I_D= -5A$                                                  | $g_{fs}$     | --   | 16   | --        | S          |
| Dynamic (Note 2)                                        |                                                                           |              |      |      |           |            |
| Total Gate Charge (Note 3)                              | $V_{DS}= -15V,$<br>$I_D= -5A,$<br>$V_{GS}= -4.5V$                         | $Q_g$        | --   | 12   | --        | nC         |
| Gate-Source Charge (Note 3)                             |                                                                           | $Q_{gs}$     | --   | 3.5  | --        |            |
| Gate-Drain Charge (Note 3)                              |                                                                           | $Q_{gd}$     | --   | 3.8  | --        |            |
| Input Capacitance                                       | $V_{DS}= -15V, V_{GS}= 0V,$<br>$F= 1.0MHz$                                | $C_{iss}$    | --   | 1030 | --        | pF         |
| Output Capacitance                                      |                                                                           | $C_{oss}$    | --   | 125  | --        |            |
| Reverse Transfer Capacitance                            |                                                                           | $C_{rss}$    | --   | 100  | --        |            |
| Switching                                               |                                                                           |              |      |      |           |            |
| Turn-On Delay Time (Note 3)                             | $V_{DS}= -10V,$<br>$I_D= -5A,$<br>$V_{GS}= -4.5V,$<br>$R_{GEN}= 10\Omega$ | $t_{d(on)}$  | --   | 28   | --        | nS         |
| Rise Time (Note 3)                                      |                                                                           | $t_r$        | --   | 16   | --        |            |
| Turn-Off Delay Time (Note 3)                            |                                                                           | $t_{d(off)}$ | --   | 30   | --        |            |
| Fall Time (Note 3)                                      |                                                                           | $t_f$        | --   | 10   | --        |            |
| Source-Drain Diode Ratings and Characteristics (Note 2) |                                                                           |              |      |      |           |            |
| Forward Voltage                                         | $V_{GS}= 0V, I_F= -1A$                                                    | $V_{SD}$     | --   | -0.8 | -1.2      | V          |
| Continuous Source Current                               | Integral reverse diode<br>in the MOSFET                                   | $I_S$        | --   | --   | -8        | A          |
| Pulsed Current (Note 1)                                 |                                                                           | $I_{SM}$     | --   | --   | -50       | A          |

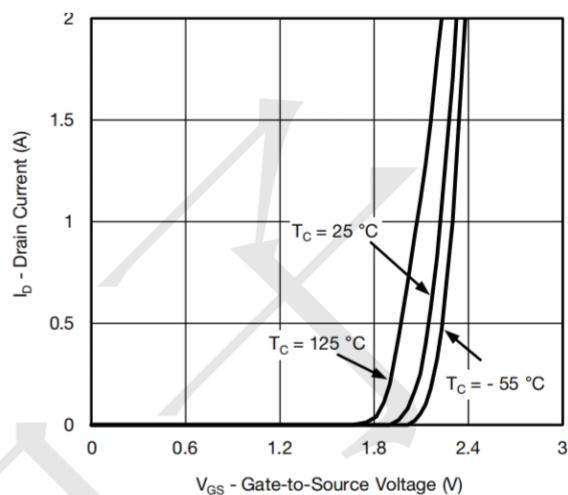
Notes:

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

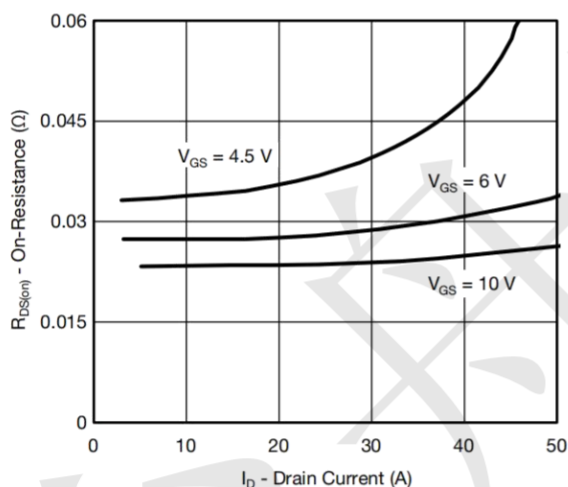
### TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



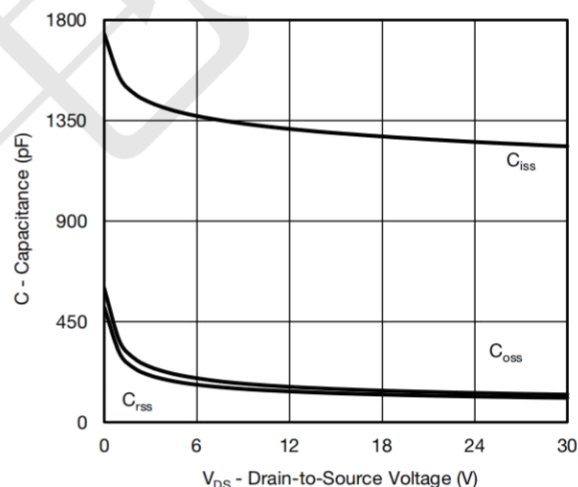
Output Characteristics



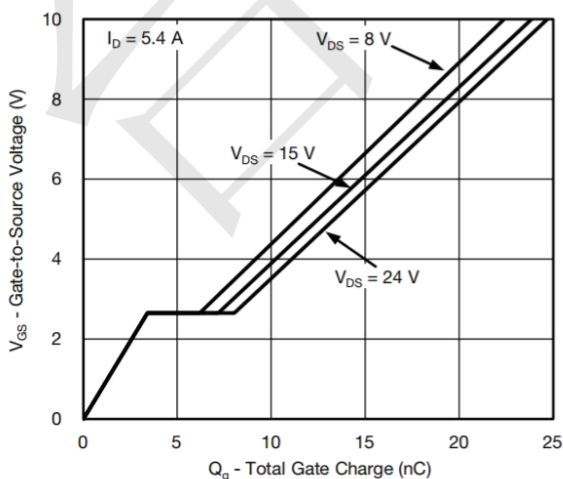
Transfer Characteristics



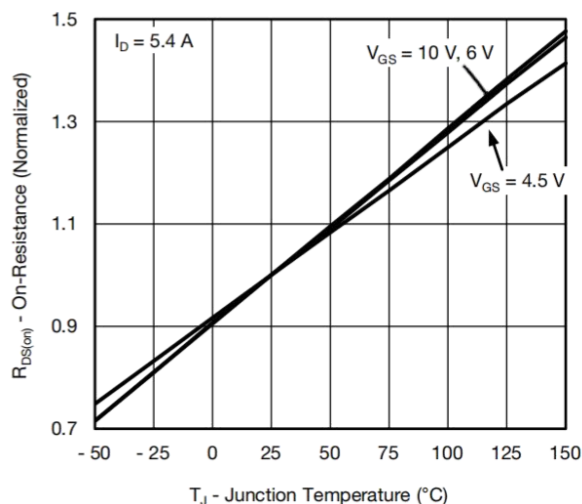
On-Resistance vs. Drain Current



Capacitance



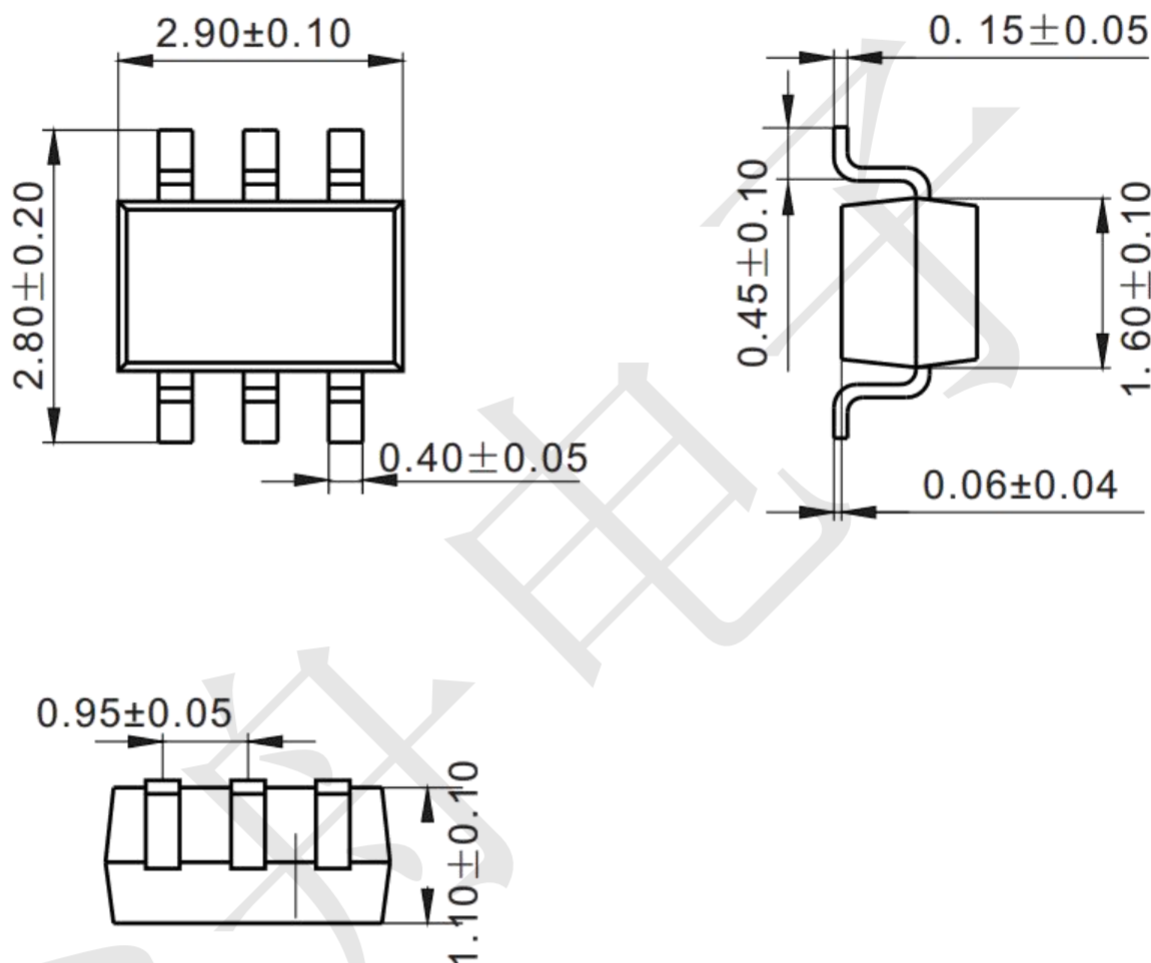
Gate Charge



On-Resistance vs. Junction Temperature

**Package information (Unit: mm)**

SOT23-6



**Mounting Pad Layout (unit: mm)**

