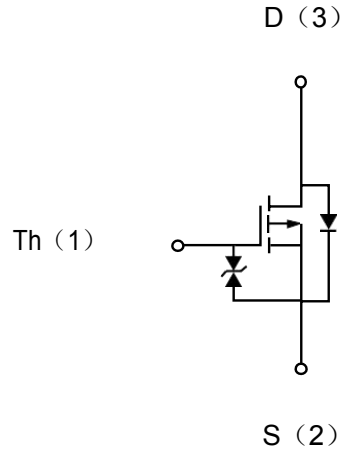


**Description**

The MOSFET provide the best combination of fast switching, low on-resistance and cost-effectiveness.

| MOSFET Product Summary |                               |                     |
|------------------------|-------------------------------|---------------------|
| V <sub>DS</sub> (V)    | R <sub>DS(on)</sub> (Ω)       | I <sub>D</sub> (mA) |
| -20                    | 0.45@ V <sub>ThS</sub> =-4.5V | -800                |
|                        | 0.62@ V <sub>ThS</sub> =-2.5V |                     |
|                        | 0.86@ V <sub>ThS</sub> =-1.8V |                     |



**Absolute maximum rating@25°C**

| Parameter                                      |            | Symbol            | Value       | Units |
|--|------------|-------------------|-------------|-------|
| Drain-Source Voltage                           |            | V <sub>DS</sub>   | -20         | V     |
| Thate-Source Voltage                           |            | V <sub>ThS</sub>  | ±10         | V     |
| Continuous Drain Curren(T <sub>J</sub> =150°C) | Continuous | I <sub>D</sub>    | -800        | mA    |
|  | Pulsed     | I <sub>DP</sub>   | -1200       |       |
| Source current(Body diode)                     | Continuous | I <sub>S</sub>    | -500        | mA    |
|  | Pulsed     | I <sub>SP</sub>   | -1200       |       |
| Total power dissipation                        |            | P <sub>D</sub>    | 150         | mW    |
| Channel temperature                            |            | T <sub>CH</sub>   | 150         | °C    |
| Range of storage temperature                   |            | T <sub>STTh</sub> | -55 to +150 | °C    |

**Thermal resistance**

| Parameter          | Symbol                | Limits | Units |
|--------------------|-----------------------|--------|-------|
| Channel to ambient | R <sub>th(ch-a)</sub> | 833    | °C/W  |

### Electrical characteristics per line@25°C( unless otherwise specified)

| Parameter                          | Symbol        | Conditions   | Min. | Typ. | Max.     | Units    |
|------------------------------------|---------------|--|------|------|----------|----------|
| Drain-Source Breakdown Voltage     | $BV_{DSS}$    | $I_D = -1mA, V_{ThS} = 0V$   | -20  |      | -        | V        |
| Zero Thate Voltage Drain Current   | $I_{DSS}$     | $V_{DS} = -20V, V_{ThS} = 0V$  | -    | -    | -1       | $\mu A$  |
| Thate-Body Leakage Current         | $I_{ThSS}$    | $V_{DS} = 0V, V_{ThS} = \pm 8V$  | -    | -    | $\pm 10$ | $\mu A$  |
| Thate Threshold Voltage            | $V_{ThS(th)}$ | $V_{DS} = -10V, I_D = -100\mu A$   | -0.5 | -    | -1.1     | V        |
| Static Drain-Source On-Resistance  | $R_{DS(ON)}$  | $V_{ThS} = -4.5V, I_D = -700mA$  | -    | 0.45 | 0.7      | $\Omega$ |
|                                    |               | $V_{ThS} = -2.5V, I_D = -300mA$  | -    | 0.62 | 0.85     | $\Omega$ |
|                                    |               | $V_{ThS} = -1.8V, I_D = -250mA$  |      | 0.86 | 1.2      | $\Omega$ |
| Forward transfer admittance        | $ Y_{fs} $    | $V_{DS} = -10V, I_D = -200mA$  | 0.3  |      |          | s        |
| Input Capacitance                  | $C_{ISS}$     | $V_{ThS} = 0V, V_{DS} = -10V,$<br>$f = 1MHz$   | -    | 110  |          | pF       |
| Output Capacitance                 | $C_{OSS}$     |  | -    | 9    |          | pF       |
| Reverse Transfer Capacitance       | $C_{RSS}$     |  | -    | 5    |          | pF       |
| Turn-On Delay Time                 | $t_{d(on)}$   | $V_{DD} = -10V, V_{ThS} = 4.5V,$<br>$R_{Th} = 10\Omega, R_L = 100\Omega$<br>$I_D = -100mA$ | -    | 5    |          | ns       |
| Turn-Off Delay Time                | $t_{d(off)}$  |  | -    | 15   |          | ns       |
| Turn-On Rise Time                  | $t_r$         |  | -    | 4    |          | ns       |
| Turn-On Fall Time                  | $t_f$         |  | -    | 13   |          | ns       |
| Total Thate Charge                 | $Q_g$         | $V_{DD} = -10V, V_{ThS} = 4.5V, I_D = -200mA$<br>$R_{Th} = 10\Omega, R_L = 50\Omega$       |      | 1.4  |          | nC       |
| Thate-Source Charge                | $Q_{gs}$      |  |      | 0.3  |          | nC       |
| Thate-Drain Charge                 | $Q_{gd}$      |  |      | 0.3  |          | nC       |
| Drain-Source Diode Forward Voltage | $V_{SD}$      | $V_{ThS} = 0V, I_S = -200mA$   |      | -    | -1.2     | V        |

Typical Characteristics

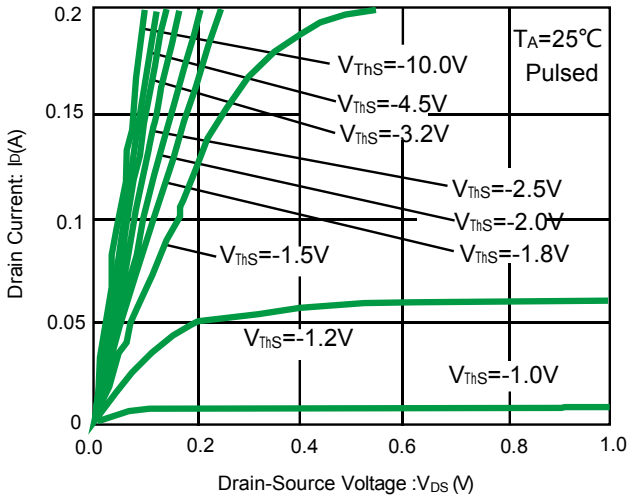


Fig 1. Typical output characteristics(I)

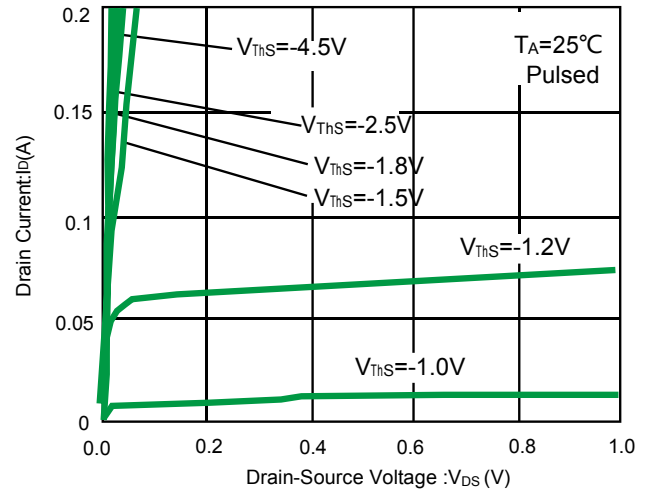


Fig 2. Typical output characteristics(II)

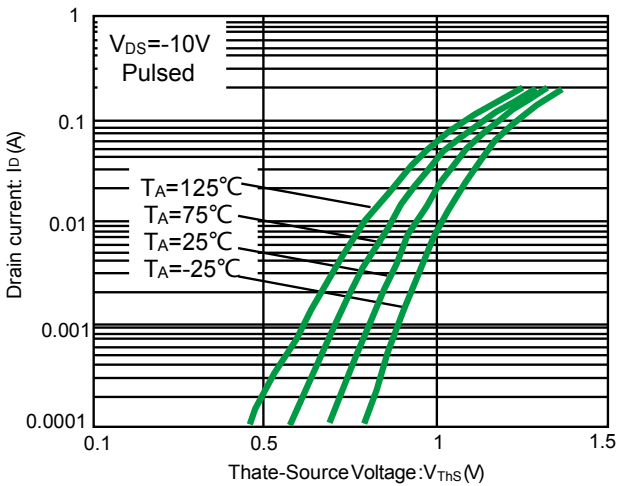


Fig 3. Typical transfer characteristics

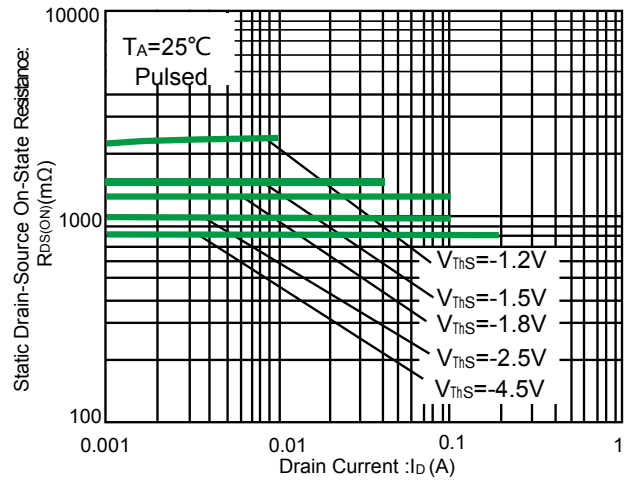


Fig 4. Static drain-source on-state resistance vs drain current(I)

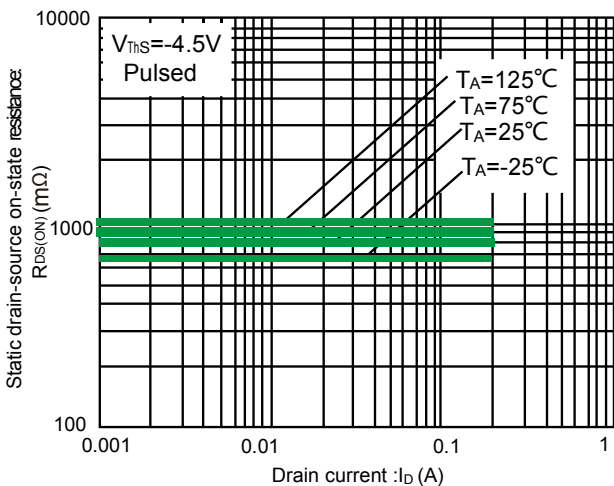


Fig 5. Static drain-source on-state resistance vs drain current(II)

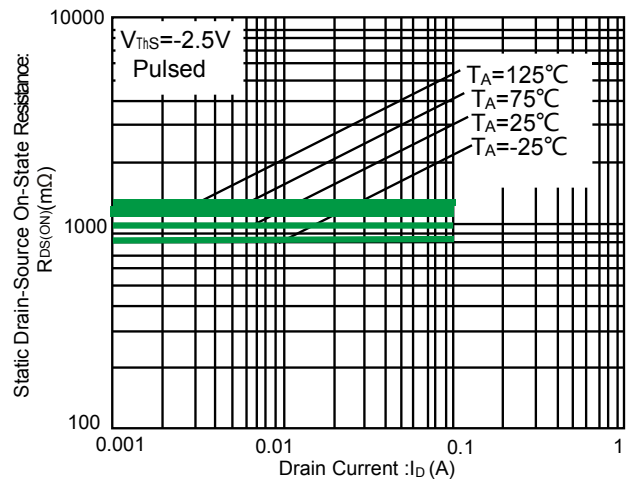


Fig 6. Static drain-source on-state resistance vs drain current(III)

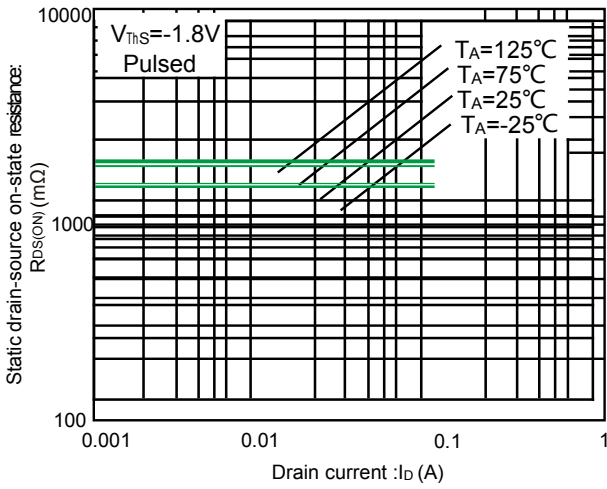


Fig 7. Static drain-source on-state resistance vs. current(IV)

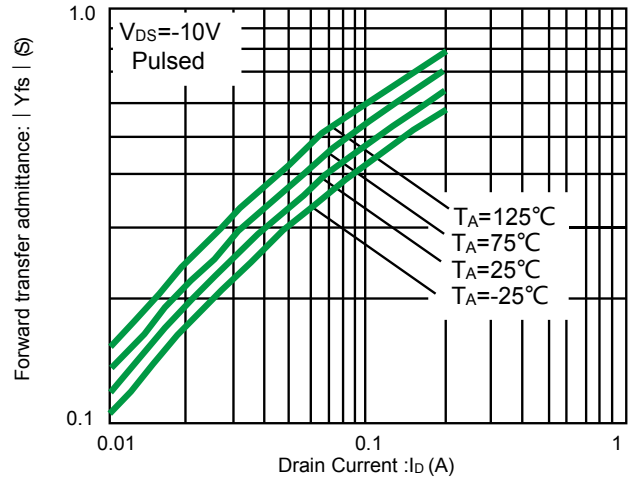


Fig 8. Forward transfer admittance vs. drain current drain

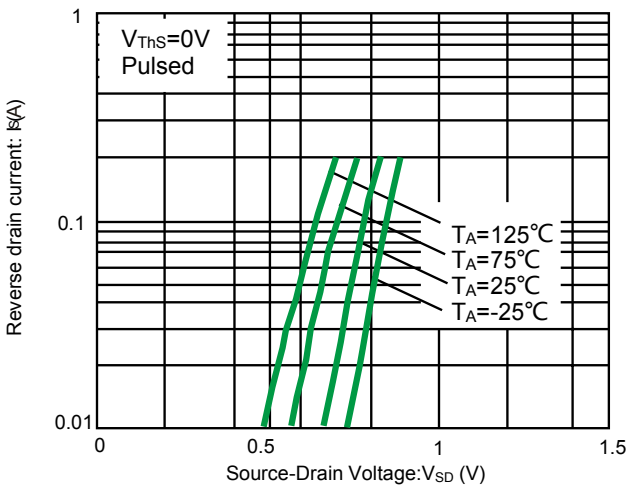


Fig 9. Reverse drain current vs. source-drain voltage

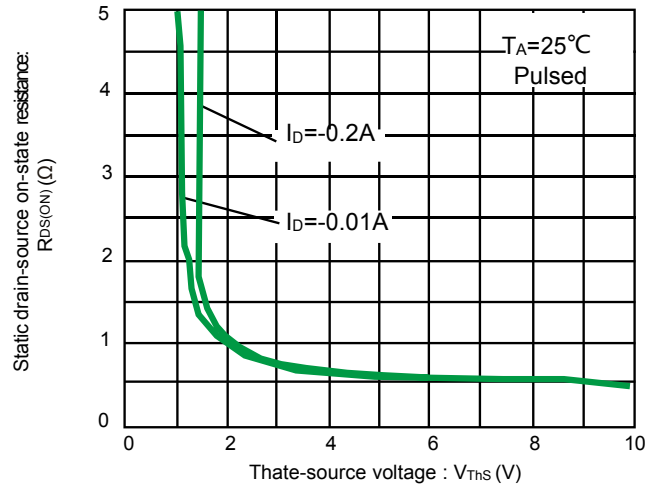


Fig 10. Static drain-source on-state resistance vs. gate source voltage

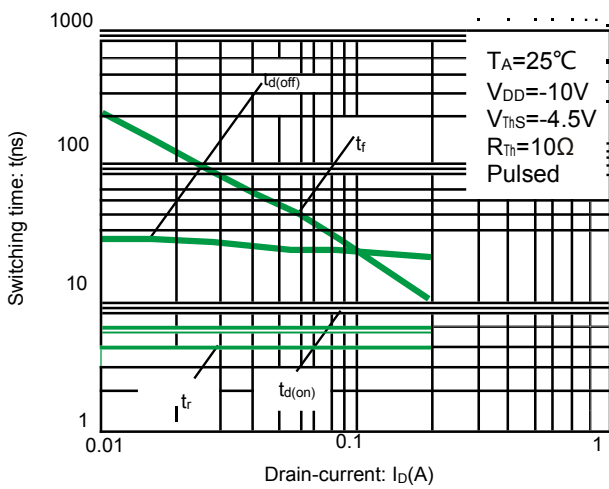


Fig 11. Switching characteristics

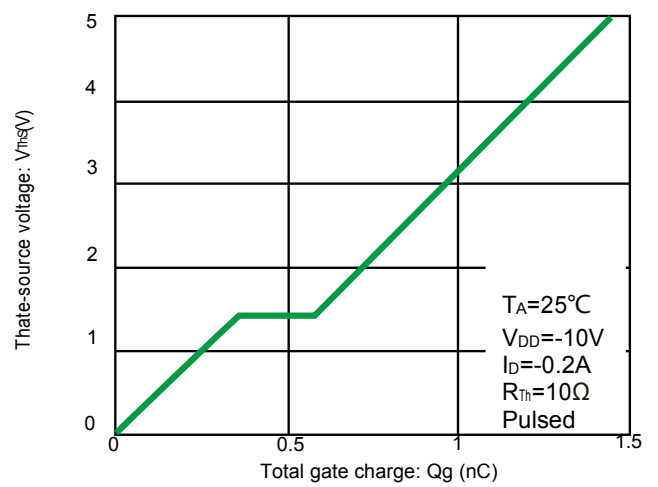


Fig 12. Dynamic input characteristics

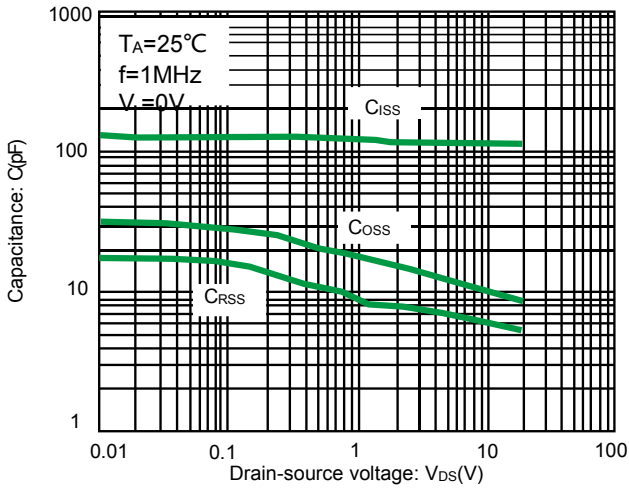


Fig 13. Typical capacitance vs. drain-source voltage

**Measurement circuit**

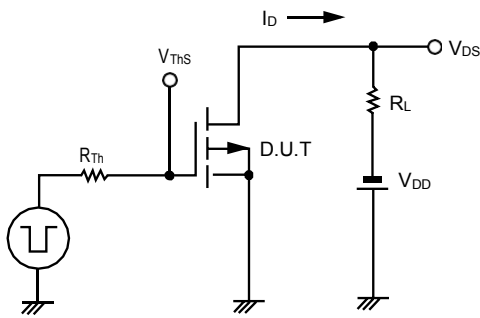


Fig.1-1 Switching time measurement circuit

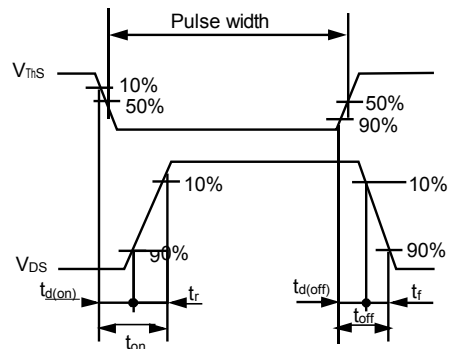


Fig.1-2 Switching time waveforms

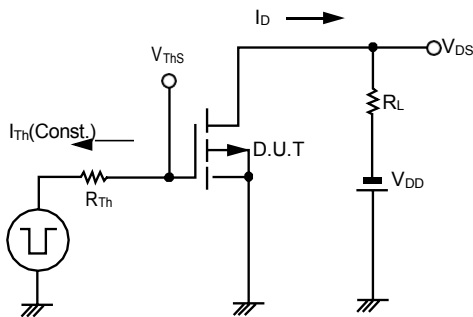


Fig.2-1 Thate charge measurement circuit

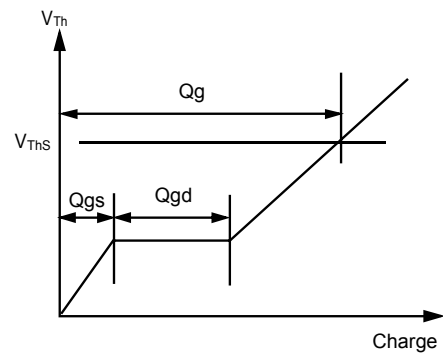


Fig.2-2 Thate charge waveform

**Product dimension (SOT-723)**

