



ON Semiconductor®

# ON Semiconductor DATA SHEET

## 2SK4043LS — N-Channel Silicon MOSFET General-Purpose Switching Device Applications

### Features

- Low ON-resistance.
- 2.5V drive.
- Avalanche resistance guarantee.

### Specifications

#### Absolute Maximum Ratings at Ta=25°C

| Parameter                          | Symbol           | Conditions             | Ratings     | Unit |
|------------------------------------|------------------|------------------------|-------------|------|
| Drain-to-Source Voltage            | V <sub>DSS</sub> |                        | 30          | V    |
| Gate-to-Source Voltage             | V <sub>GSS</sub> |                        | ±10         | V    |
| Drain Current (DC)                 | I <sub>D</sub>   |                        | 20          | A    |
| Drain Current (Pulse)              | I <sub>DP</sub>  | PW≤10μs, duty cycle≤1% | 80          | A    |
| Allowable Power Dissipation        | P <sub>D</sub>   |                        | 2.0         | W    |
|                                    |                  | T <sub>c</sub> =25°C   | 20          | W    |
| Channel Temperature                | T <sub>ch</sub>  |                        | 150         | °C   |
| Storage Temperature                | T <sub>stg</sub> |                        | -55 to +150 | °C   |
| Avalanche Energy (Single Pulse) *1 | E <sub>AS</sub>  |                        | 147         | mJ   |
| Avalanche Current *2               | I <sub>AV</sub>  |                        | 20          | A    |

Note : \*1 V<sub>DD</sub>=10V, L=500μH, I<sub>AV</sub>=20A

\*2 L≤500μH, Single pulse

#### Electrical Characteristics at Ta=25°C

| Parameter                                  | Symbol               | Conditions                                 | Ratings |     |     | Unit |
|--|----------------------|--|---------|-----|-----|------|
|  |                      |  | min     | typ | max |      |
| Drain-to-Source Breakdown Voltage          | V(BR)DSS             | I <sub>D</sub> =1mA, V <sub>GS</sub> =0V   | 30      |     |     | V    |
| Zero-Gate Voltage Drain Current            | I <sub>DSS</sub>     | V <sub>DS</sub> =30V, V <sub>GS</sub> =0V  |         |     | 1   | μA   |
| Gate-to-Source Leakage Current             | I <sub>GSS</sub>     | V <sub>GS</sub> = ±8V, V <sub>DS</sub> =0V |         |     | ±10 | μA   |
| Cutoff Voltage                             | V <sub>GS(off)</sub> | V <sub>DS</sub> =10V, I <sub>D</sub> =1mA  | 0.4     |     | 1.3 | V    |
| Forward Transfer Admittance                | y <sub>fs</sub>      | V <sub>DS</sub> =10V, I <sub>D</sub> =10A  | 15      | 25  |     | S    |
| Static Drain-to-Source On-State Resistance | R <sub>DS(on)1</sub> | I <sub>D</sub> =10A, V <sub>GS</sub> =4V   |         | 16  | 21  | mΩ   |
|  | R <sub>DS(on)2</sub> | I <sub>D</sub> =10A, V <sub>GS</sub> =2.5V |         | 17  | 24  | mΩ   |

Marking : K4043

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# 2SK4043LS

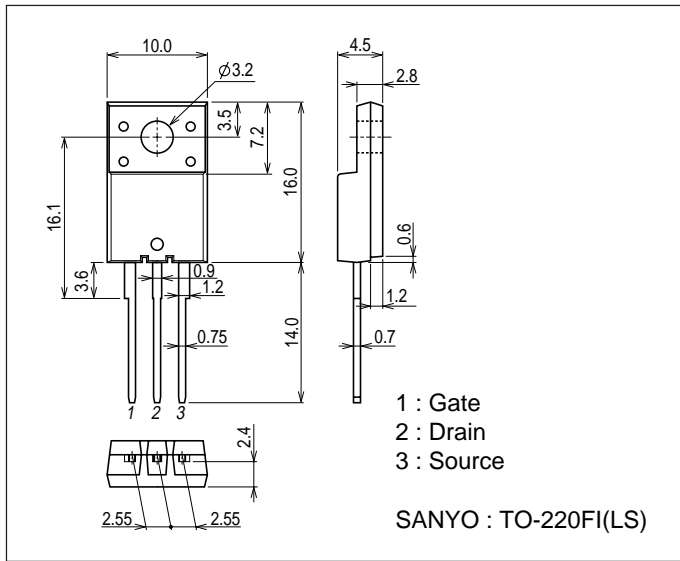
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| Parameter                     | Symbol     | Conditions                       | Ratings |      |     | Unit |
|-------------------------------|------------|----------------------------------|---------|------|-----|------|
|                               |            |                                  | min     | typ  | max |      |
| Input Capacitance             | Ciss       | $V_{DS}=20V, f=1MHz$             |         | 3000 |     | pF   |
| Output Capacitance            | Coss       | $V_{DS}=20V, f=1MHz$             |         | 360  |     | pF   |
| Reverse Transfer Capacitance  | Crss       | $V_{DS}=20V, f=1MHz$             |         | 300  |     | pF   |
| Turn-ON Delay Time            | $t_d(on)$  | See specified Test Circuit.      |         | 27   |     | ns   |
| Rise Time                     | $t_r$      | See specified Test Circuit.      |         | 190  |     | ns   |
| Turn-OFF Delay Time           | $t_d(off)$ | See specified Test Circuit.      |         | 370  |     | ns   |
| Fall Time                     | $t_f$      | See specified Test Circuit.      |         | 280  |     | ns   |
| Total Gate Charge             | Qg         | $V_{DS}=15V, V_{GS}=4V, I_D=20A$ |         | 37   |     | nC   |
| Gate-to-Source Charge         | Qgs        | $V_{DS}=15V, V_{GS}=4V, I_D=20A$ |         | 3.9  |     | nC   |
| Gate-to-Drain "Miller" Charge | Qgd        | $V_{DS}=15V, V_{GS}=4V, I_D=20A$ |         | 12.6 |     | nC   |
| Diode Forward Voltage         | $V_{SD}$   | $I_S=20A, V_{GS}=0V$             |         | 1.0  | 1.2 | V    |

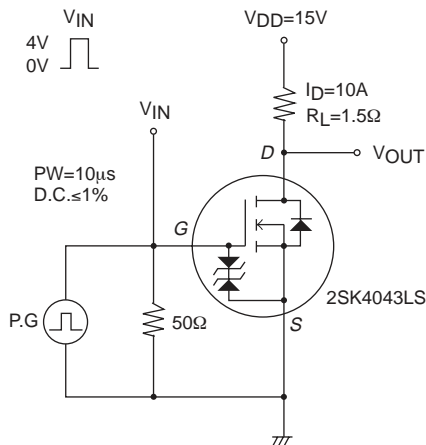
## Package Dimensions

unit : mm

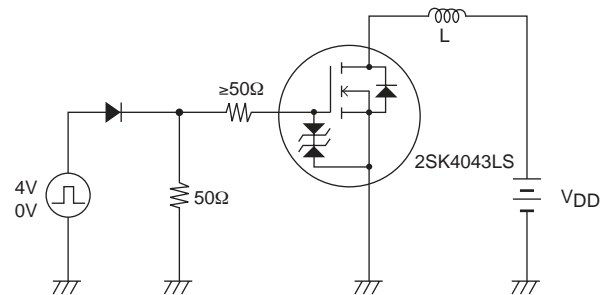
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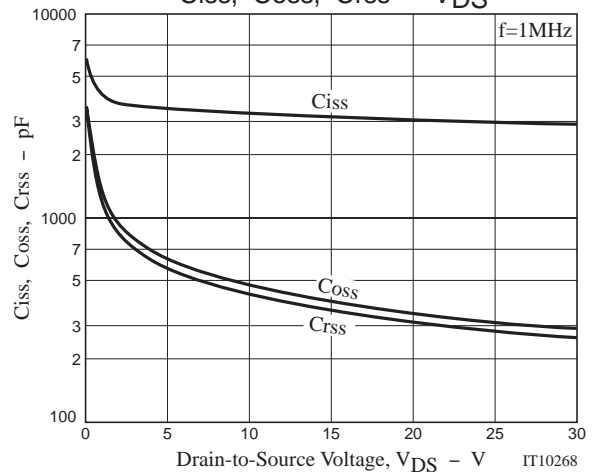
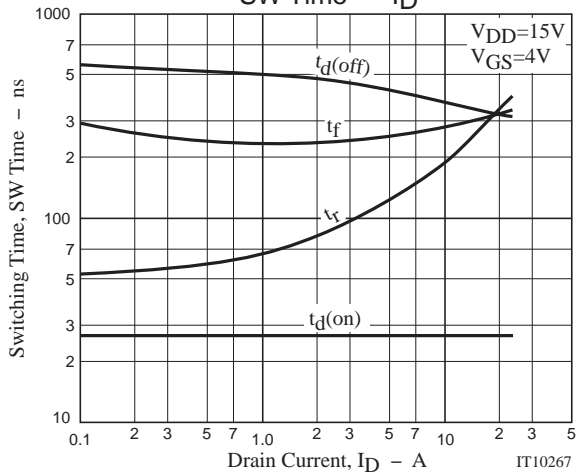
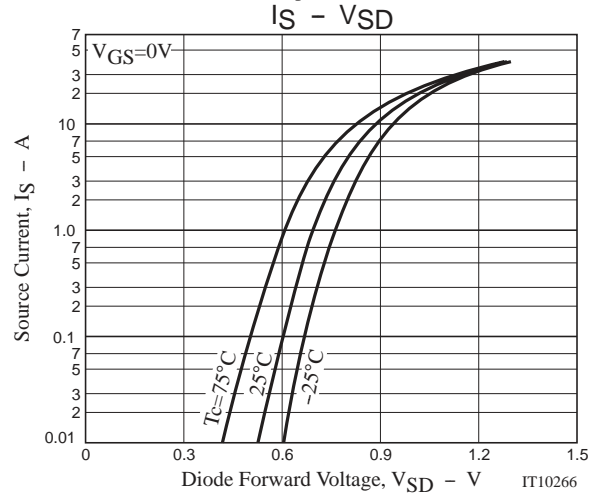
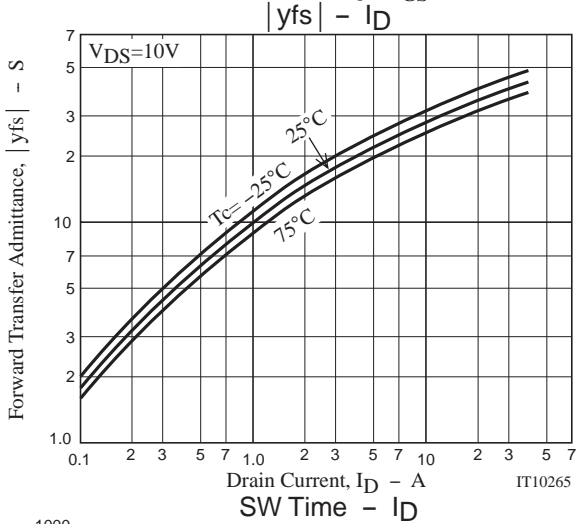
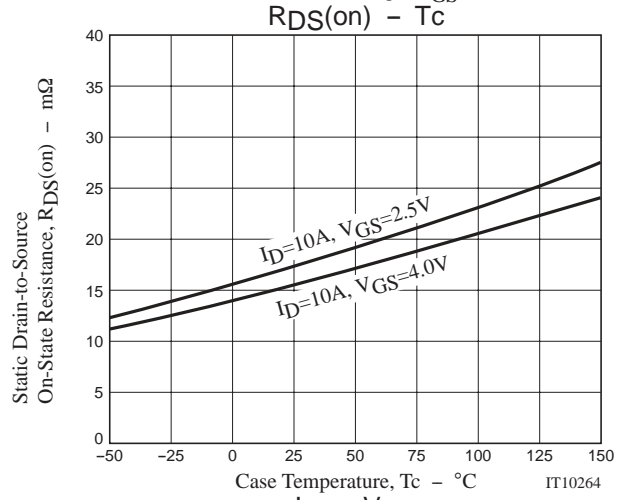
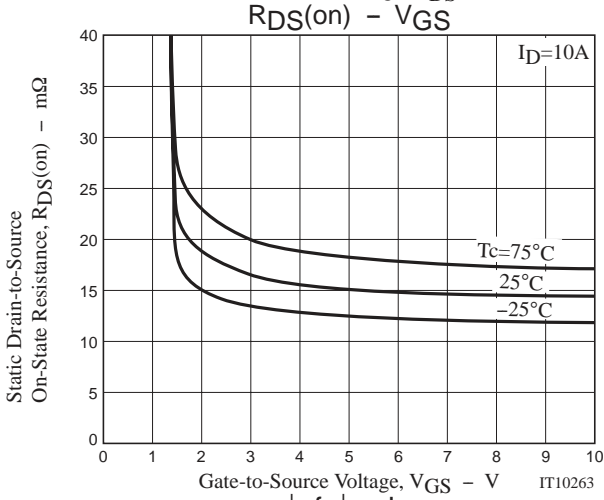
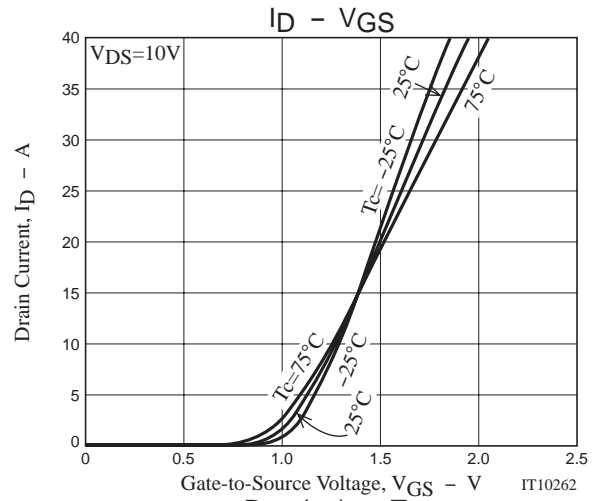
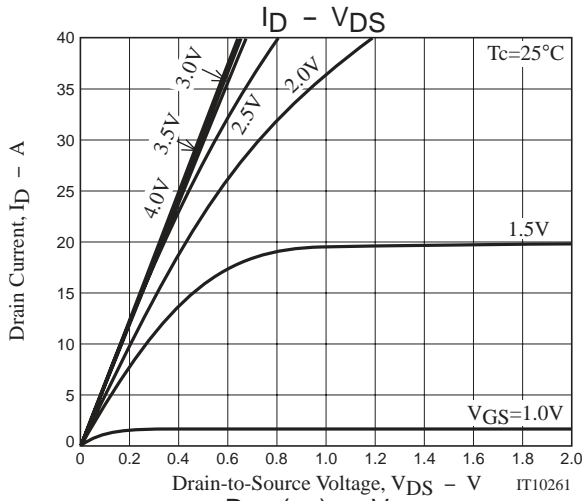
## Switching Time Test Circuit



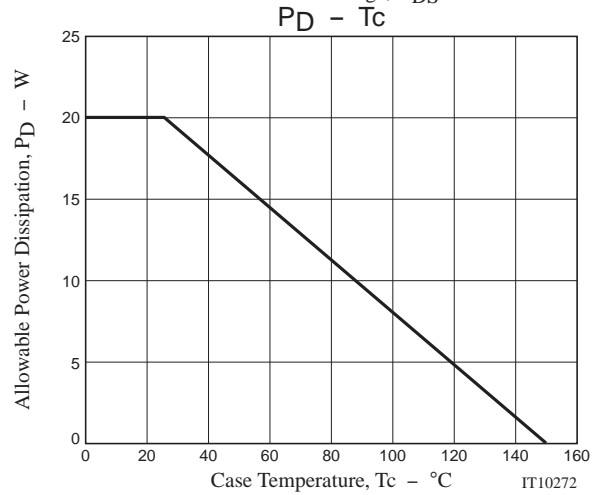
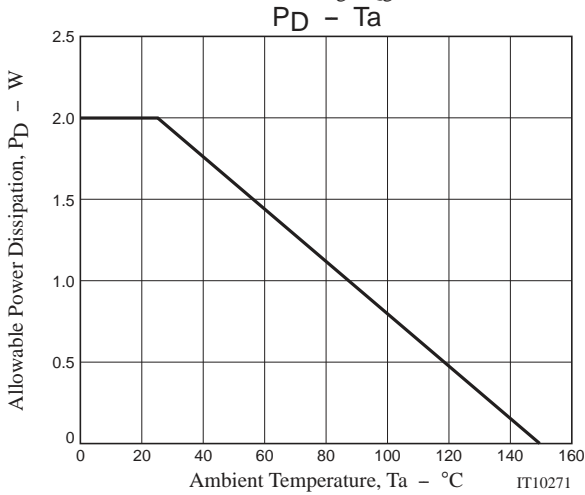
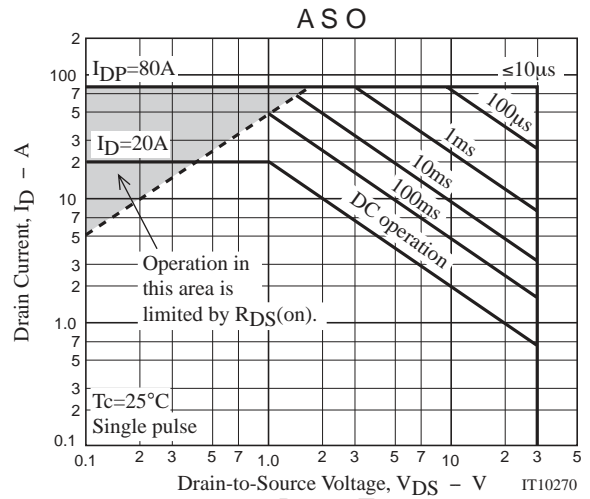
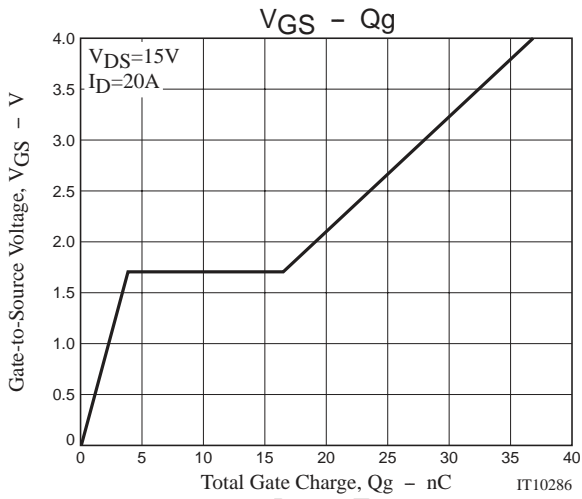
## Avalanche Resistance Test Circuit



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