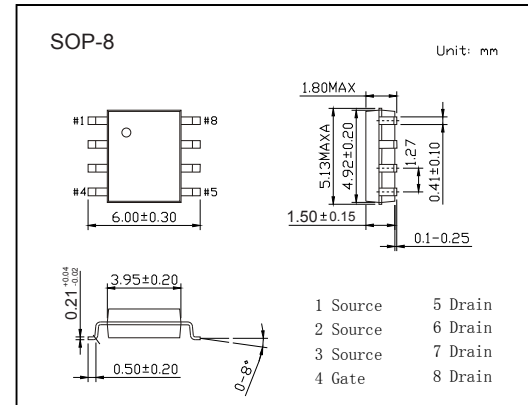
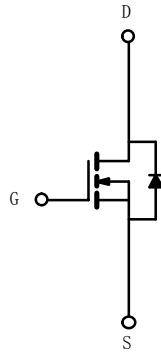


## N-Channel MOSFET

### SI4410DY (KI4410DY)

#### ■ Features

- $V_{DS} (V) = 30V$
- $I_D = 10 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 13.5m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 20m\Omega (V_{GS} = 4.5V)$



#### ■ Absolute Maximum Ratings $T_a = 25^\circ C$

| Parameter  | Symbol     | Rating           | Unit         |
|--|------------|------------------|--------------|
| Drain-Source Voltage                             | $V_{DS}$   | 30               | V            |
| Gate-Source Voltage                              | $V_{GS}$   | $\pm 20$         |              |
| Continuous Drain Current (Note.1)                | $I_D$      | $T_A=25^\circ C$ | 10           |
|  |            | $T_A=70^\circ C$ | 8            |
| Pulsed Drain Current                             | $I_{DM}$   | 50               | A            |
| Power Dissipation                                | $P_D$      | $T_A=25^\circ C$ | 2.5          |
|  |            | $T_A=70^\circ C$ | 1.6          |
| Thermal Resistance.Junction- to-Ambient (Note.1) | $R_{thJA}$ | 50               | $^\circ C/W$ |
| Thermal Resistance.Junction- to-Case             | $R_{thJC}$ | 22               |              |
| Junction Temperature                             | $T_J$      | 150              | $^\circ C$   |
| Storage Temperature Range                        | $T_{stg}$  | -55 to 150       |              |

Note.1:Surface Mounted on FR4 Board,  $t \leq 10$  sec.

## N-Channel MOSFET

### SI4410DY (KI4410DY)

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

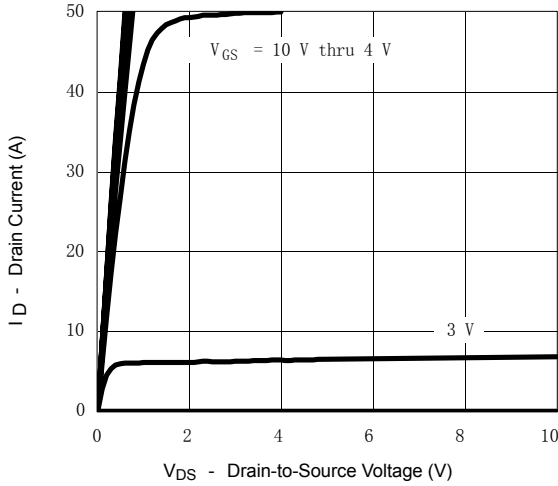
| Parameter                             | Symbol              | Test Conditions   | Min | Typ | Max  | Unit |
|---------------------------------------|---------------------|---|-----|-----|------|------|
| Drain-Source Breakdown Voltage        | V <sub>DSS</sub>    | I <sub>D</sub> =250 μA, V <sub>GS</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   |
|                                       |                     | V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C   |     |     | 25   |      |
| Gate-Body Leakage Current             | I <sub>GSS</sub>    | V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V  |     |     | ±100 | nA   |
| Gate Threshold Voltage                | V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μA   | 1   |     | 3    | V    |
| Static Drain-Source On-Resistance     | R <sub>DS(on)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =10A (Note.1)  |     |     | 13.5 | mΩ   |
|                                       |                     | V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A (Note.1)  |     |     | 20   |      |
| On State Drain Current                | I <sub>D(ON)</sub>  | V <sub>GS</sub> =5V, V <sub>DS</sub> =10V (Note.1)  | 20  |     |      | A    |
| Forward Transconductance              | g <sub>FS</sub>     | V <sub>DS</sub> =15V, I <sub>D</sub> =5A (Note.1)   |     | 38  |      | S    |
| Gate Resistance                       | R <sub>g</sub>      | V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz  | 0.5 |     | 2.6  | Ω    |
| Gate Charge                           | Q <sub>g</sub>      | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 5 V, I <sub>D</sub> = 10 A  |     | 20  | 34   | nC   |
| Total Gate Charge                     | Q <sub>gt</sub>     |   |     | 37  | 60   |      |
| Gate Source Charge                    | Q <sub>gs</sub>     | V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, I <sub>D</sub> =10A   |     | 7   |      |      |
| Gate Drain Charge                     | Q <sub>gd</sub>     |   |     | 7   |      |      |
| Turn-On DelayTime                     | t <sub>d(on)</sub>  | V <sub>GS</sub> =10V, V <sub>DS</sub> =25V, I <sub>D</sub> =1A<br>R <sub>L</sub> =25Ω, R <sub>GEN</sub> =6Ω |     |     | 30   | ns   |
| Turn-On Rise Time                     | t <sub>r</sub>      |   |     |     | 20   |      |
| Turn-Off DelayTime                    | t <sub>d(off)</sub> |   |     |     | 100  |      |
| Turn-Off Fall Time                    | t <sub>f</sub>      |   |     |     | 80   |      |
| Body Diode Reverse Recovery Time      | t <sub>rr</sub>     | I <sub>F</sub> = 2.3A, di/dt= 100A/μs   |     |     | 80   |      |
| Maximum Body-Diode Continuous Current | I <sub>S</sub>      |   |     |     | 2.3  | A    |
| Diode Forward Voltage                 | V <sub>SD</sub>     | I <sub>S</sub> =2.3A, V <sub>GS</sub> =0V (Note.1)  |     |     | 1.1  | V    |

Note.1: Pulse test; pulse width ≤ 300us, duty cycle ≤ 2%.

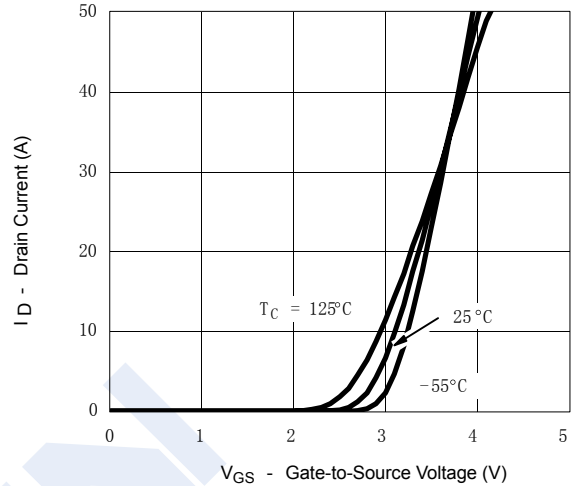
# N-Channel MOSFET SI4410DY (KI4410DY)

■ Typical Characteristics

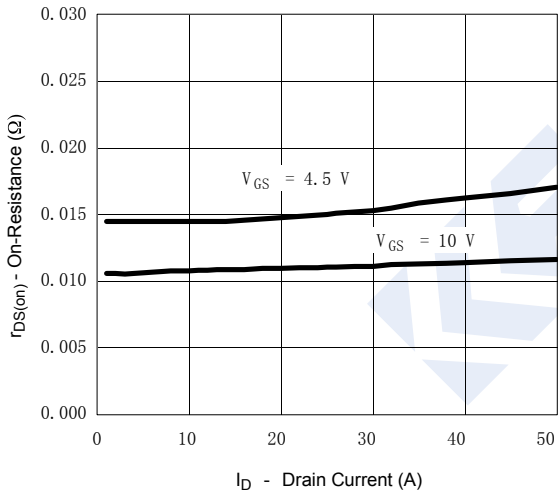
Output Characteristics



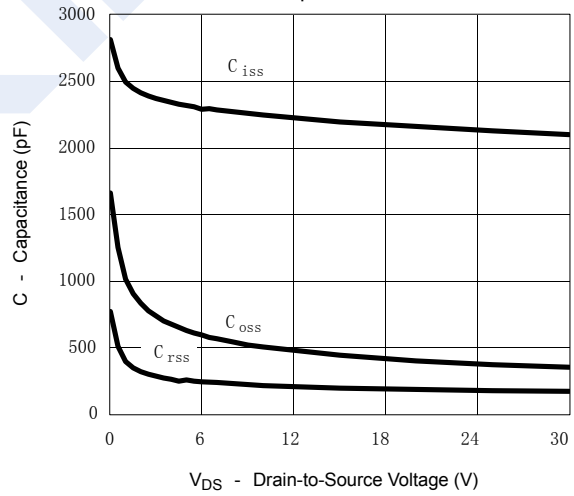
Transfer Characteristics



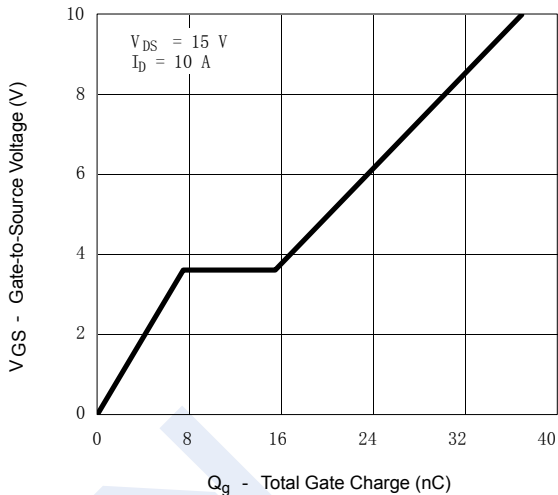
On-Resistance vs. Drain Current



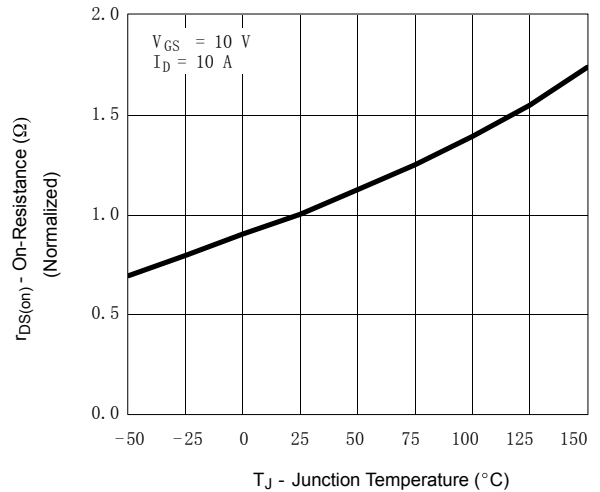
Capacitance



Gate Charge



On-Resistance vs. Junction Temperature



# N-Channel MOSFET

## SI4410DY (KI4410DY)

■ Typical Characteristics

