



SANYO Semiconductors

DATA SHEET

2SK3706 — N-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- 4V drive.
- Motor driver, DC / DC converter.
- Avalanche resistance guarantee.

Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------------|------------------|------------------------|-------------|------|
| Drain-to-Source Voltage | V _{DSS} | | 100 | V |
| Gate-to-Source Voltage | V _{GSS} | | ±20 | V |
| Drain Current (DC) | I _D | | 12 | A |
| Drain Current (Pulse) | I _{DP} | PW≤10μs, duty cycle≤1% | 48 | A |
| Allowable Power Dissipation | P _D | | 2.0 | W |
| | | T _c =25°C | 20 | W |
| Channel Temperature | T _{ch} | | 150 | °C |
| Storage Temperature | T _{stg} | | -55 to +150 | °C |
| Avalanche Energy (Single Pulse) *1 | E _{AS} | | 18 | mJ |
| Avalanche Current *2 | I _{AV} | | 12 | A |

*1 V_{DD}=20V, L=200μH, I_{AV}=12A

*2 L≤200μH, 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 _D =1mA, V _{GS} =0 | 100 | | | V |
| Zero-Gate Voltage Drain Current | I _{DSS} | V _{DS} =100V, V _{GS} =0 | | | 1 | μA |
| Gate-to-Source Leakage Current | I _{GSS} | V _{GS} =±16V, V _{DS} =0 | | | ±10 | μA |
| Cutoff Voltage | V _{GS(off)} | V _{DS} =10V, I _D =1mA | 1.2 | | 2.6 | V |
| Forward Transfer Admittance | y _{fs} | V _{DS} =10V, I _D =6A | 7 | 10 | | S |
| Static Drain-to-Source On-State Resistance | R _{DS(on)1} | I _D =6A, V _{GS} =10V | | 100 | 130 | mΩ |
| | R _{DS(on)2} | I _D =6A, V _{GS} =4V | | 120 | 160 | mΩ |

Marking : K3706

Continued on next page.

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2SK3706

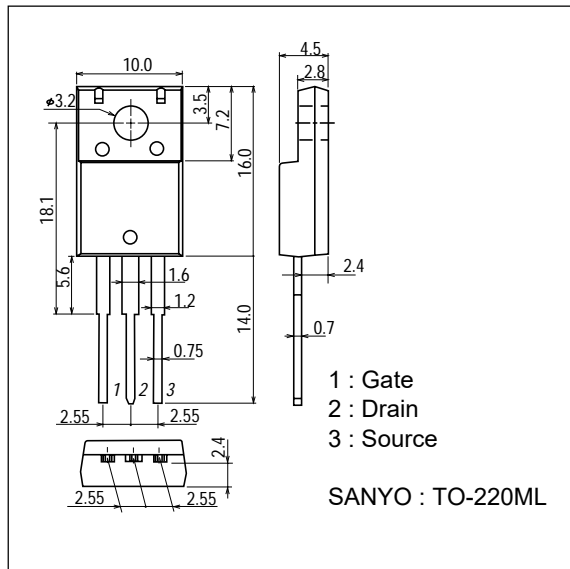
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|-------------------------------|------------|-----------------------------------|---------|------|-----|------|
| | | | min | typ | max | |
| Input Capacitance | Ciss | $V_{DS}=20V, f=1MHz$ | | 880 | | pF |
| Output Capacitance | Coss | $V_{DS}=20V, f=1MHz$ | | 80 | | pF |
| Reverse Transfer Capacitance | Crss | $V_{DS}=20V, f=1MHz$ | | 55 | | pF |
| Turn-ON Delay Time | $t_d(on)$ | See specified Test Circuit. | | 11.5 | | ns |
| Rise Time | t_r | See specified Test Circuit. | | 16 | | ns |
| Turn-OFF Delay Time | $t_d(off)$ | See specified Test Circuit. | | 97 | | ns |
| Fall Time | t_f | See specified Test Circuit. | | 45 | | ns |
| Total Gate Charge | Qg | $V_{DS}=50V, V_{GS}=10V, I_D=12A$ | | 24 | | nC |
| Gate-to-Source Charge | Qgs | $V_{DS}=50V, V_{GS}=10V, I_D=12A$ | | 3.2 | | nC |
| Gate-to-Drain "Miller" Charge | Qgd | $V_{DS}=50V, V_{GS}=10V, I_D=12A$ | | 5.5 | | nC |
| Diode Forward Voltage | VSD | $I_S=12A, V_{GS}=0$ | | 0.92 | 1.2 | V |

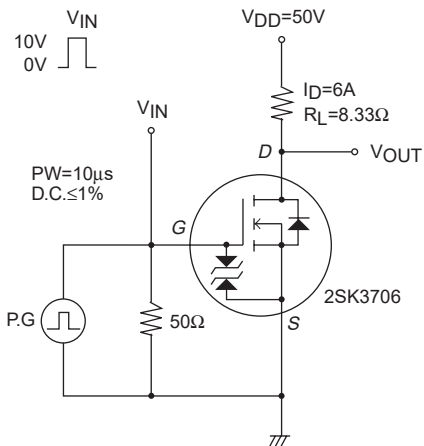
Package Dimensions

unit : mm

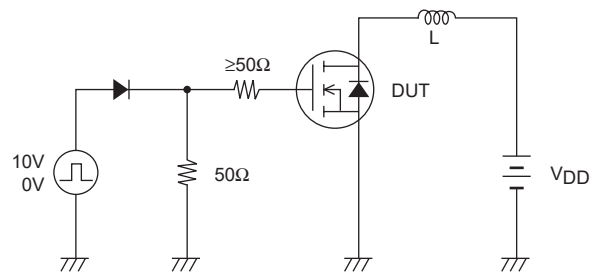
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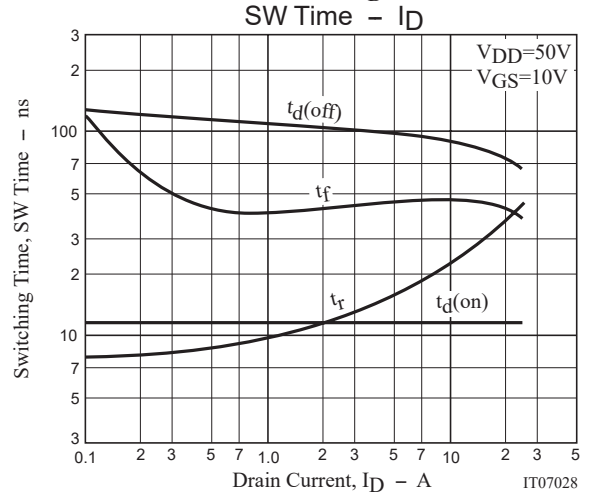
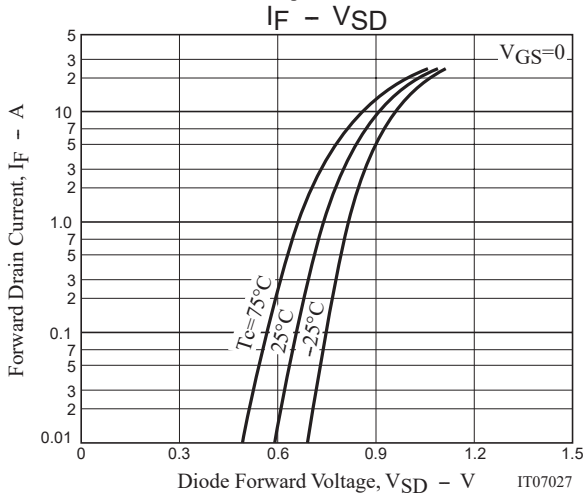
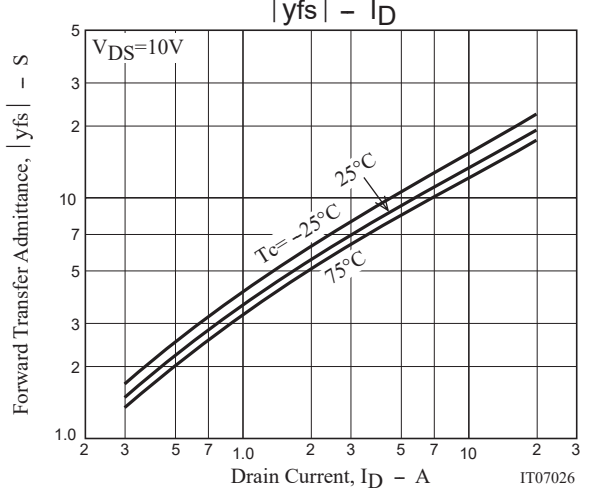
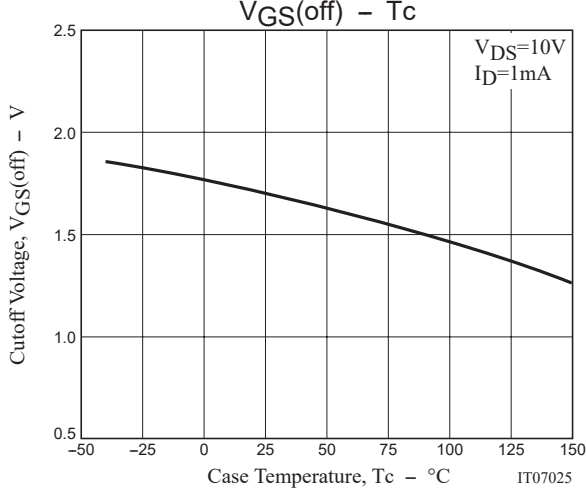
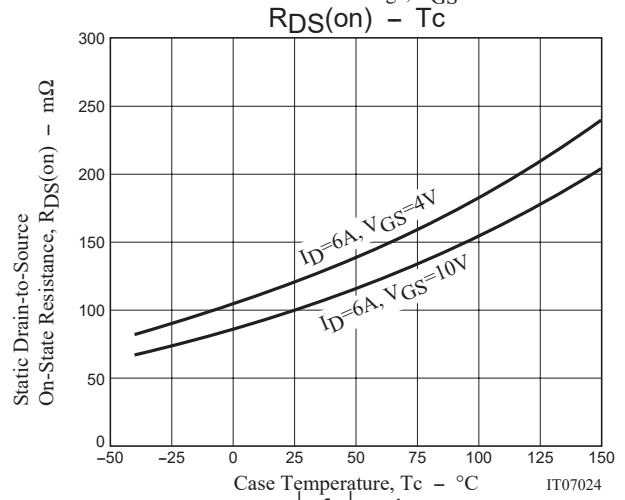
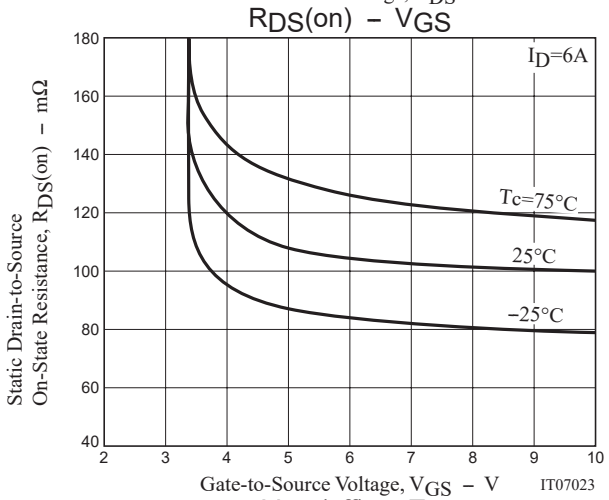
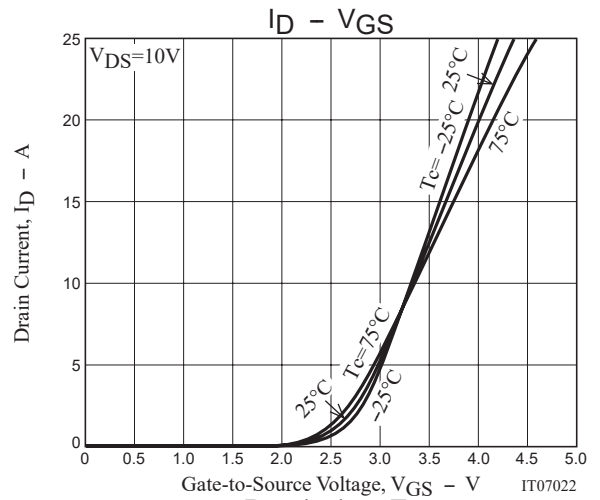
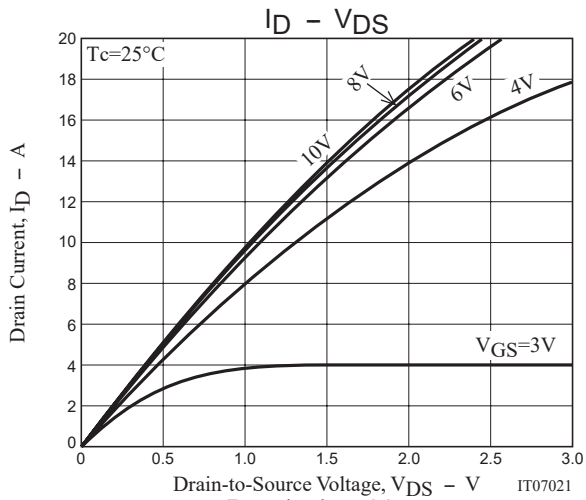
Switching Time Test Circuit



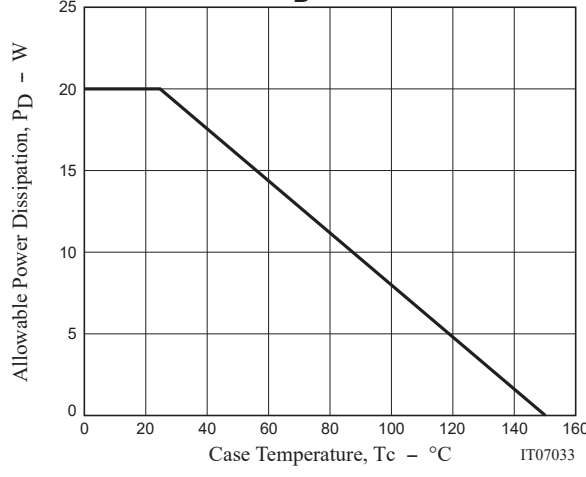
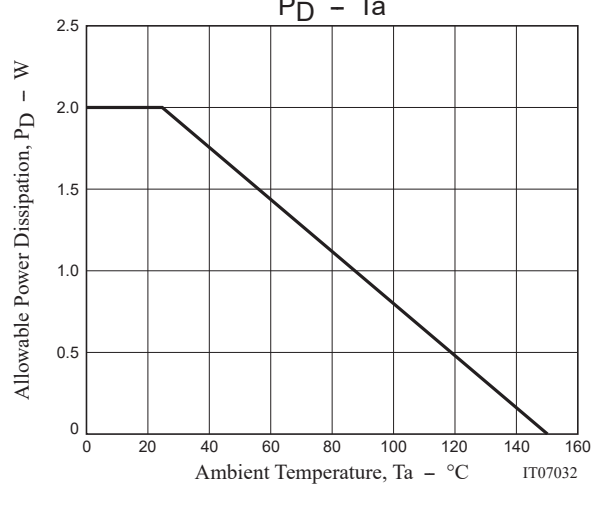
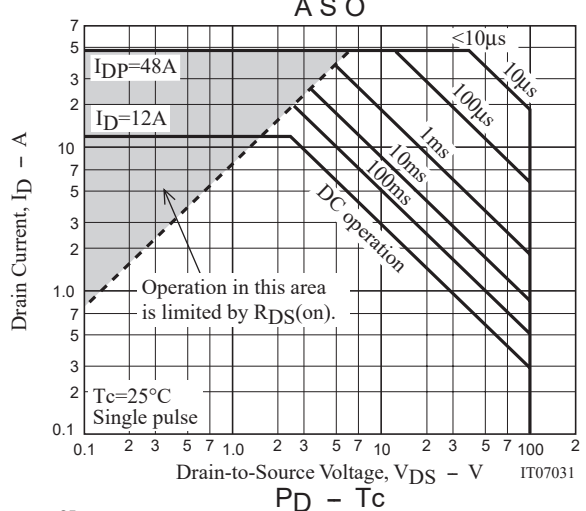
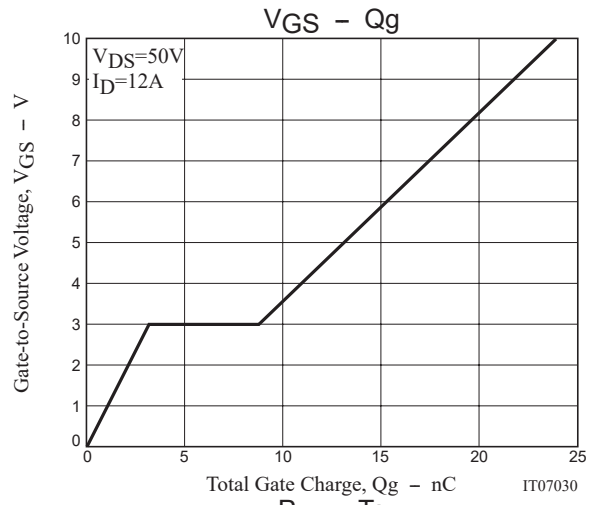
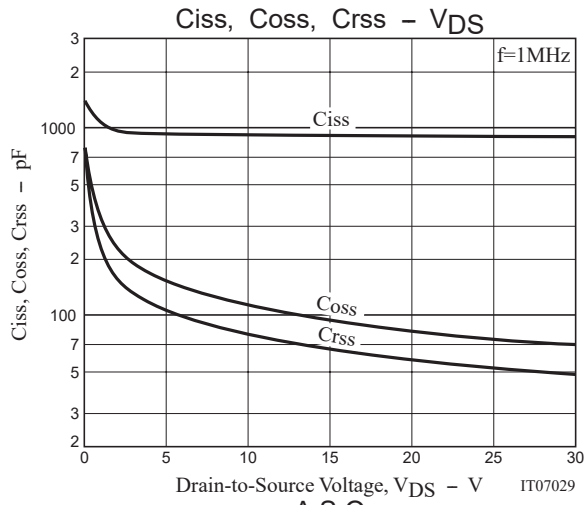
Unclamped Inductive Test Circuit



2SK3706



2SK3706



Note on usage : Since the 2SK3706 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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