



2SK3821 — N-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- 4V drive.
- Ultrahigh-speed switching.
- Motor drive, 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 | | 40 | A |
| Drain Current (Pulse) | I _{DP} | PW≤10μs, duty cycle≤1% | 160 | A |
| Allowable Power Dissipation | P _D | | 1.65 | W |
| | | T _c =25°C | 65 | W |
| Channel Temperature | T _{ch} | | 150 | °C |
| Storage Temperature | T _{stg} | | -55 to +150 | °C |
| Avalanche Energy (Single Pulse) *1 | E _{AS} | | 200 | mJ |
| Avalanche Current *2 | I _{AV} | | 40 | A |

Note : *1 V_{DD}=20V, L=200μH, I_{AV}=40A

*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 =20A | 18.5 | 31 | | S |
| Static Drain-to-Source On-State Resistance | R _{DS(on)1} | I _D =20A, V _{GS} =10V | | 25 | 33 | mΩ |
| | R _{DS(on)2} | I _D =20A, V _{GS} =4V | | 30 | 42 | mΩ |

Marking : K3821

Continued on next page.

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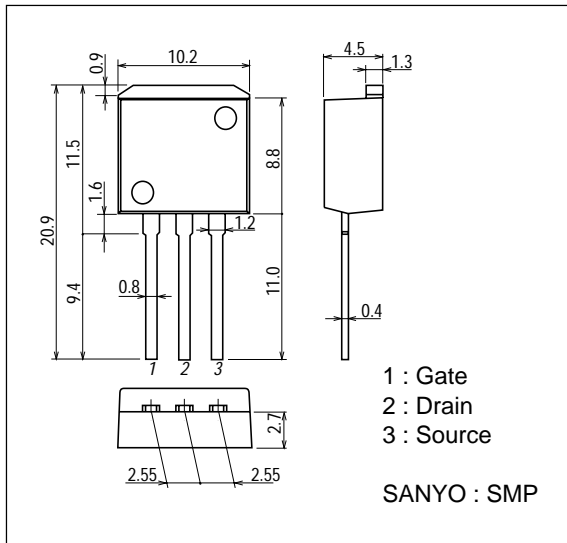
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|-------------------------------|---------------------|---|---------|------|-----|------|
| | | | min | typ | max | |
| Input Capacitance | Ciss | V _{DS} =20V, f=1MHz | | 4200 | | pF |
| Output Capacitance | Coss | V _{DS} =20V, f=1MHz | | 300 | | pF |
| Reverse Transfer Capacitance | Crss | V _{DS} =20V, f=1MHz | | 250 | | pF |
| Turn-ON Delay Time | t _{d(on)} | See specified Test Circuit. | | 30 | | ns |
| Rise Time | t _r | See specified Test Circuit. | | 68 | | ns |
| Turn-OFF Delay Time | t _{d(off)} | See specified Test Circuit. | | 300 | | ns |
| Fall Time | t _f | See specified Test Circuit. | | 110 | | ns |
| Total Gate Charge | Q _g | V _{DS} =50V, V _{GS} =10V, I _D =40A | | 73 | | nC |
| Gate-to-Source Charge | Q _{gs} | V _{DS} =50V, V _{GS} =10V, I _D =40A | | 12.5 | | nC |
| Gate-to-Drain "Miller" Charge | Q _{gd} | V _{DS} =50V, V _{GS} =10V, I _D =40A | | 16 | | nC |
| Diode Forward Voltage | V _{SD} | I _S =40A, V _{GS} =0 | | 1.0 | 1.2 | V |

Package Dimensions

unit : mm

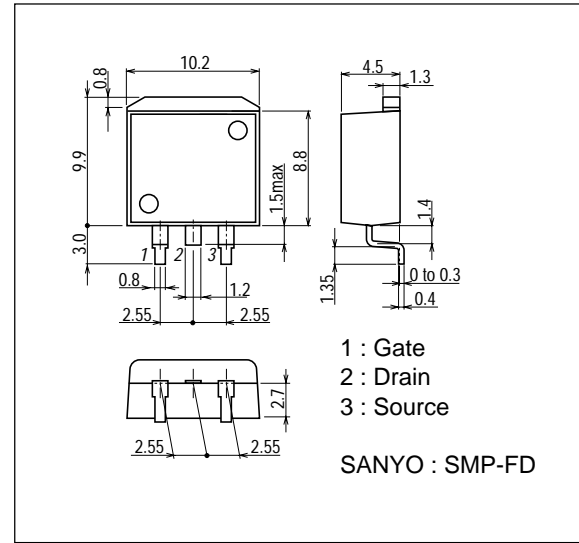
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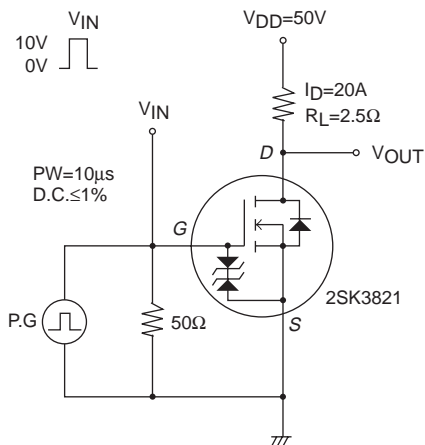
Package Dimensions

unit : mm

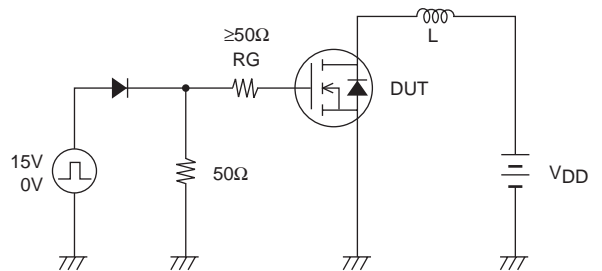
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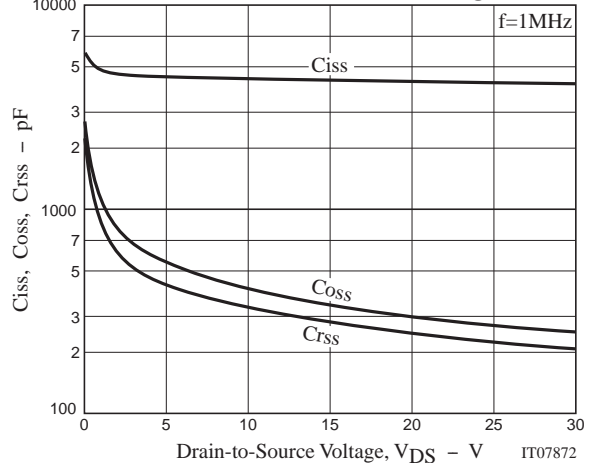
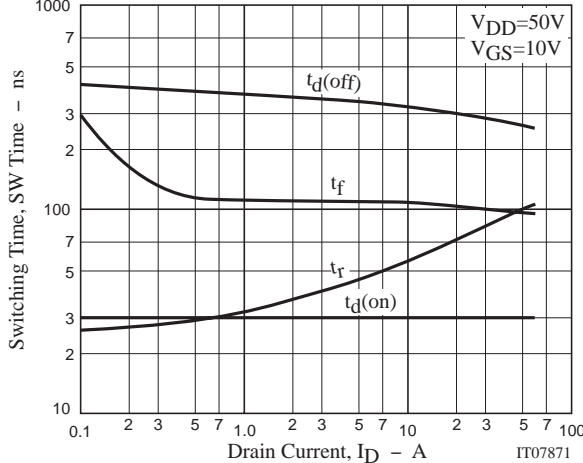
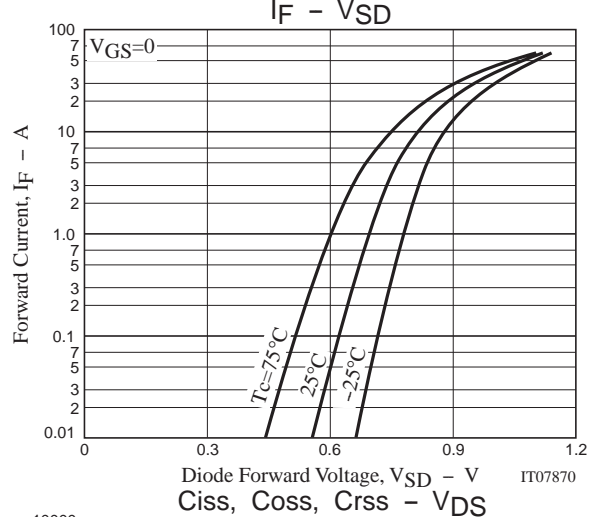
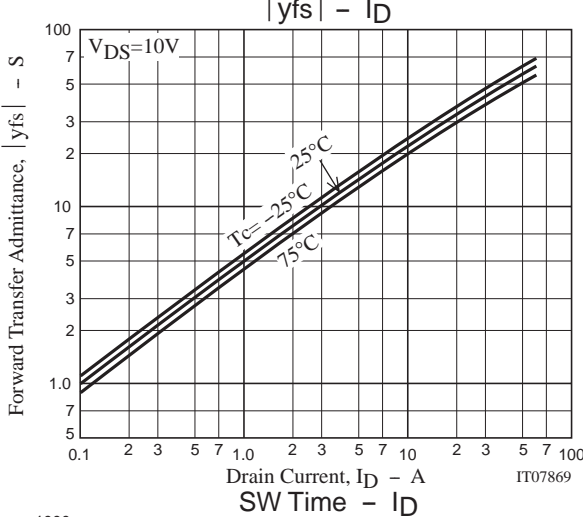
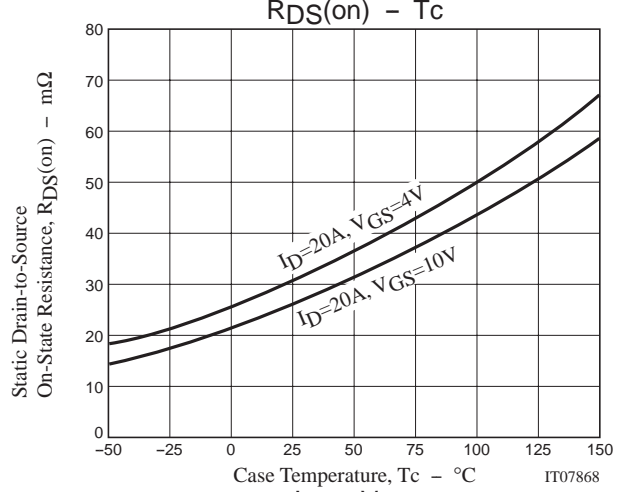
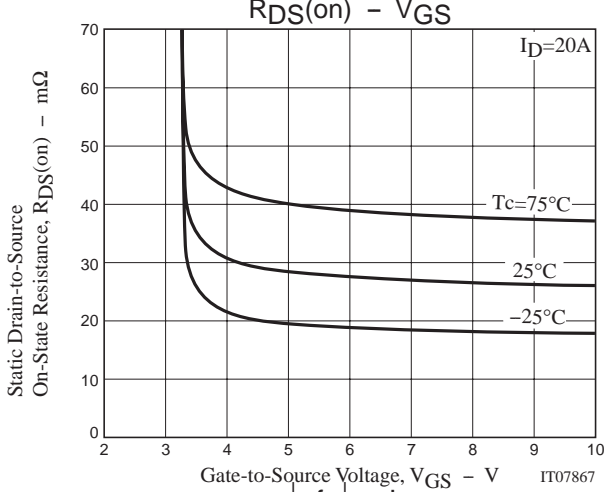
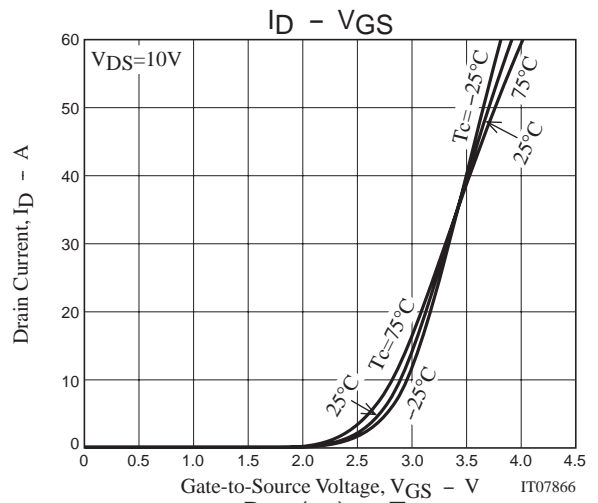
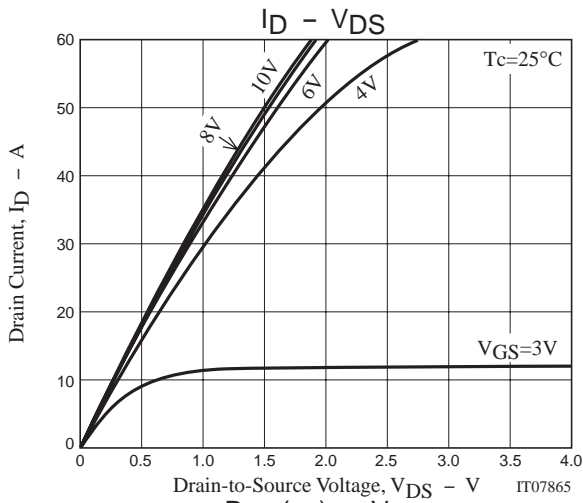
Switching Time Test Circuit

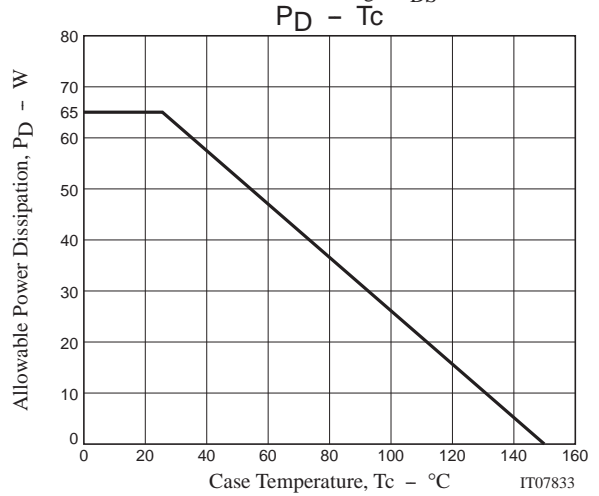
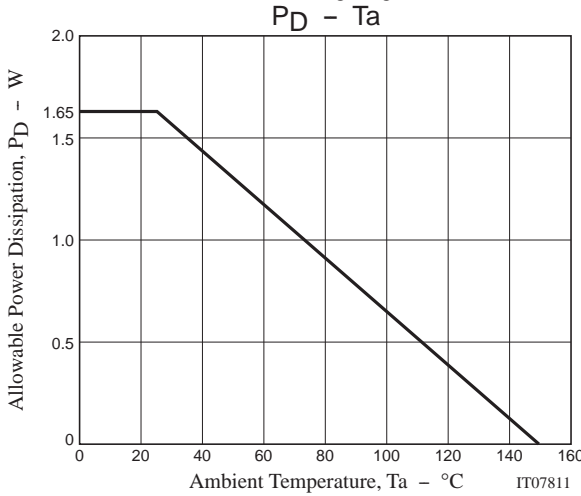
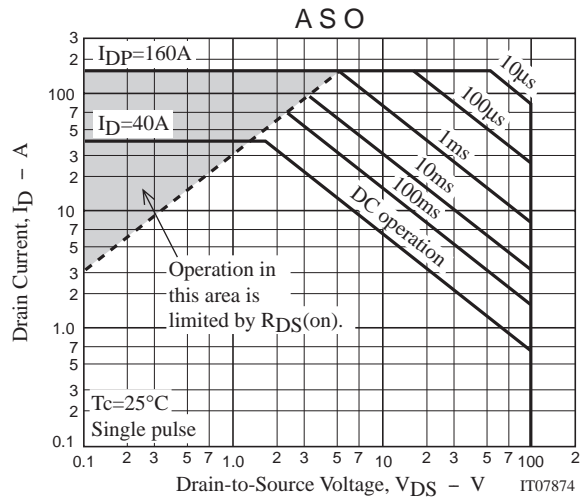
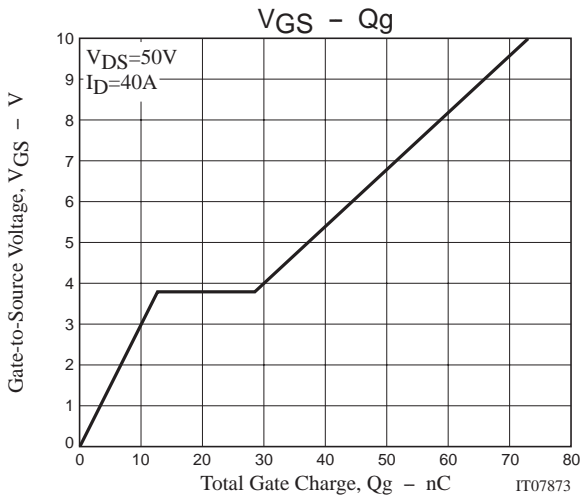


Unclamped Inductive Test Circuit



2SK3821





Note on usage : Since the 2SK3821 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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