



2SK4209 — N-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

- Low ON-resistance, ultrahigh-speed switching.
- Adoption of high reliability HVP process.
- Avalanche resistance guarantee.

Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------------|------------------|------------------------|-------------|------|
| Drain-to-Source Voltage | V _{DSS} | | 800 | V |
| Gate-to-Source Voltage | V _{GSS} | | ±30 | V |
| Drain Current (DC) | I _D | | 12 | A |
| Drain Current (Pulse) | I _{DP} | PW≤10μs, duty cycle≤1% | 24 | A |
| Allowable Power Dissipation | P _D | | 2.5 | W |
| | | T _c =25°C | 190 | W |
| Channel Temperature | T _{ch} | | 150 | °C |
| Storage Temperature | T _{stg} | | -55 to +150 | °C |
| Avalanche Energy (Single Pulse) *1 | E _{AS} | | 410 | mJ |
| Avalanche Current *2 | I _{AV} | | 12 | A |

Note : *1 V_{DD}=99V, L=5mH, I_{AV}=12A

*2 L≤5mH, 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 =10mA, V _{GS} =0V | 800 | | | V |
| Zero-Gate Voltage Drain Current | I _{DSS} | V _{DS} =640V, V _{GS} =0V | | | 1.0 | mA |
| Gate-to-Source Leakage Current | I _{GSS} | V _{GS} =±30V, V _{DS} =0V | | | ±100 | nA |
| Cutoff Voltage | V _{GS(off)} | V _{DS} =10V, I _D =1mA | 2.0 | | 4.0 | V |

Marking : K4209

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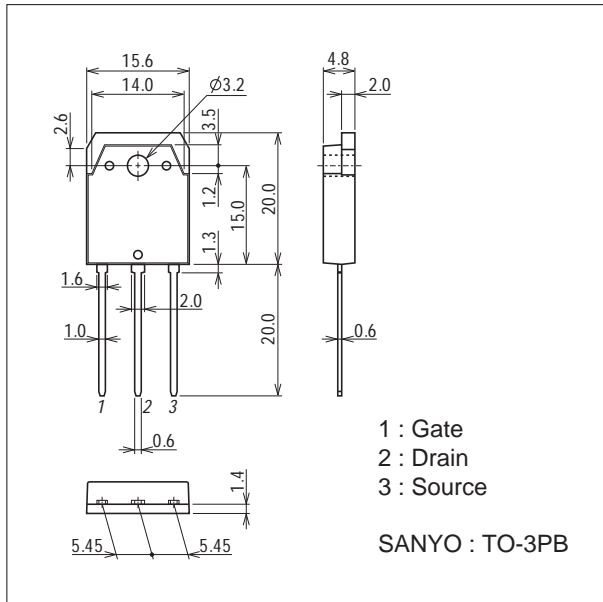
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|--------------|------------------------------------|---------|------|------|----------|
| | | | min | typ | max | |
| Forward Transfer Admittance | $ y_{fs} $ | $V_{DS}=20V, I_D=6A$ | 3.4 | 6.8 | | S |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)}$ | $I_D=6A, V_{GS}=10V$ | | 0.83 | 1.08 | Ω |
| Input Capacitance | C_{iss} | $V_{DS}=30V, f=1MHz$ | | 1500 | | pF |
| Output Capacitance | C_{oss} | $V_{DS}=30V, f=1MHz$ | | 250 | | pF |
| Reverse Transfer Capacitance | C_{rss} | $V_{DS}=30V, f=1MHz$ | | 87 | | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | See specified Test Circuit. | | 27 | | ns |
| Rise Time | t_r | See specified Test Circuit. | | 72 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | See specified Test Circuit. | | 260 | | ns |
| Fall Time | t_f | See specified Test Circuit. | | 77 | | ns |
| Total Gate Charge | Q_g | $V_{DS}=200V, V_{GS}=10V, I_D=12A$ | | 75 | | nC |
| Gate-to-Source Charge | Q_{gs} | $V_{DS}=200V, V_{GS}=10V, I_D=12A$ | | 12 | | nC |
| Gate-to-Drain "Miller" Charge | Q_{gd} | $V_{DS}=200V, V_{GS}=10V, I_D=12A$ | | 38 | | nC |
| Diode Forward Voltage | V_{SD} | $I_S=12A, V_{GS}=0V$ | | 0.85 | 1.2 | V |

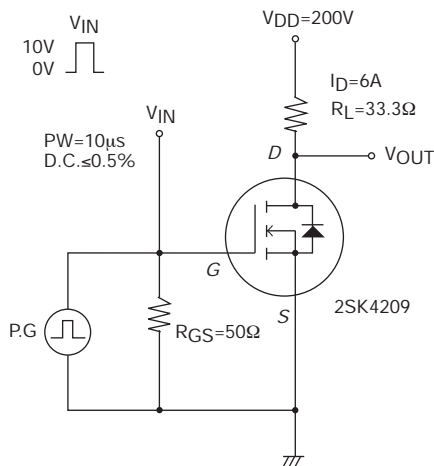
Package Dimensions

unit : mm (typ)

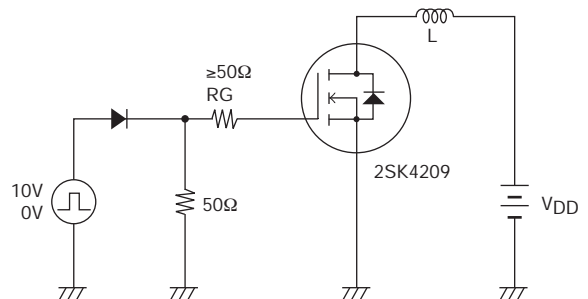
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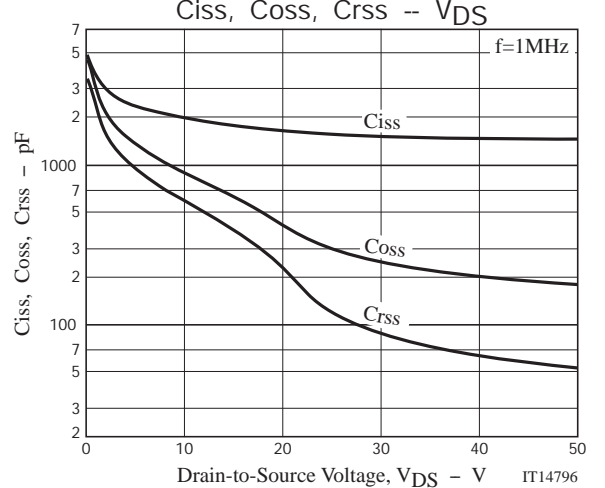
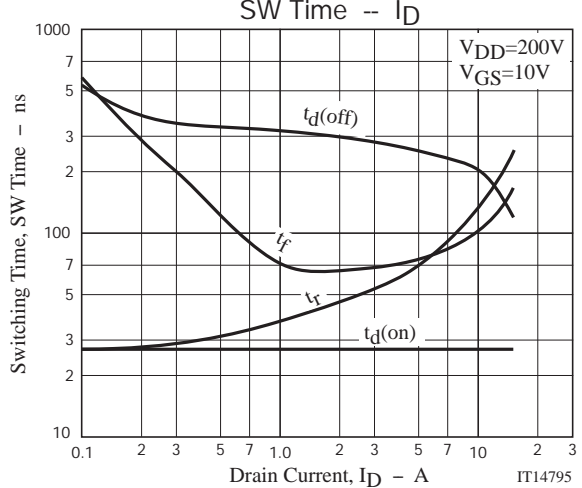
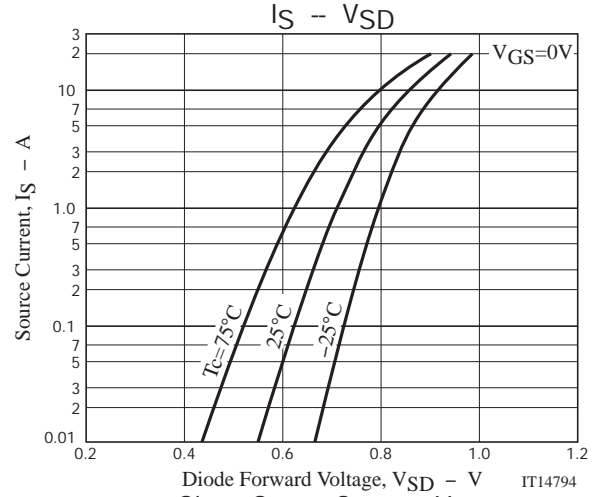
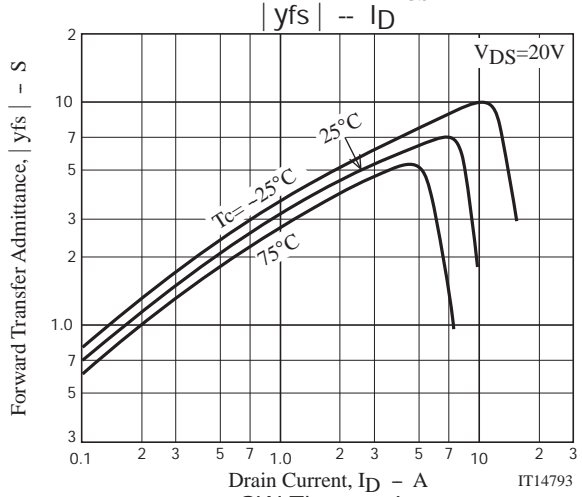
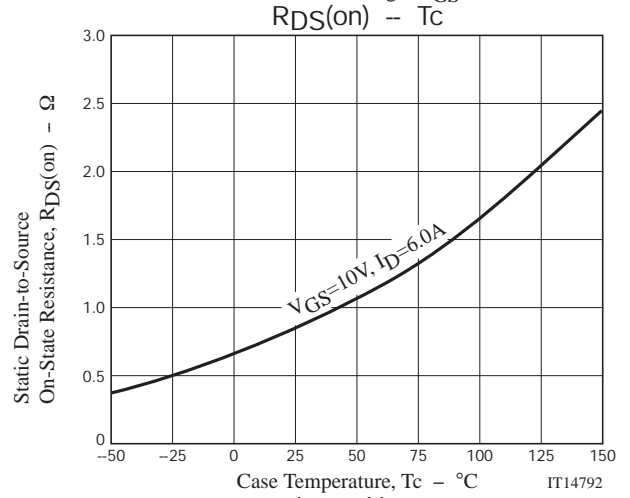
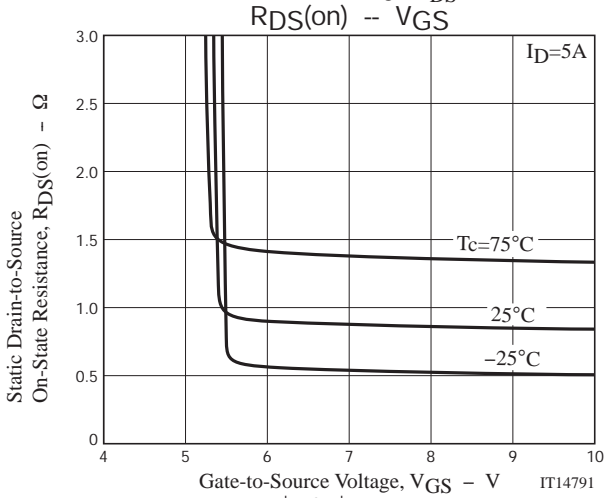
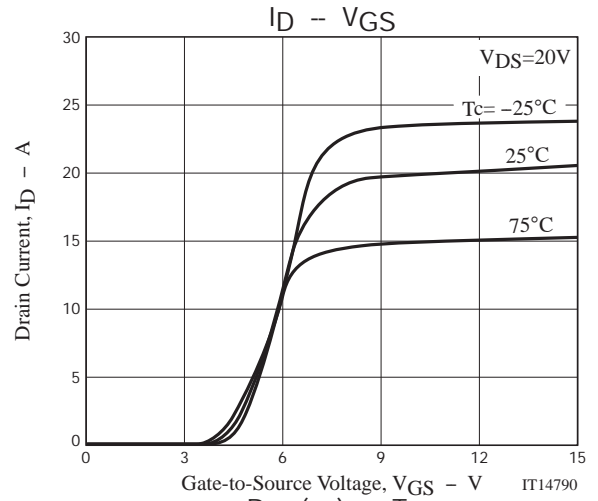
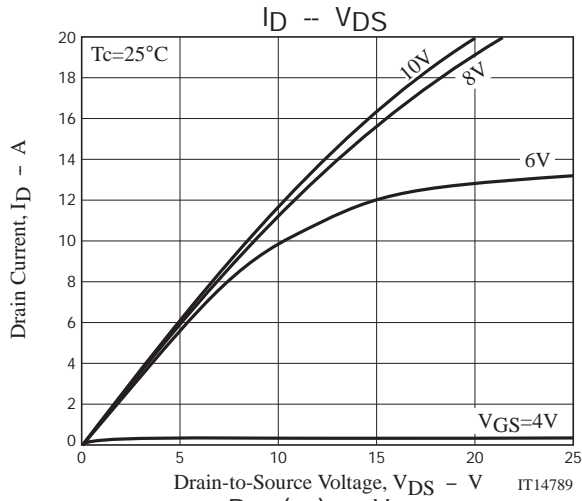


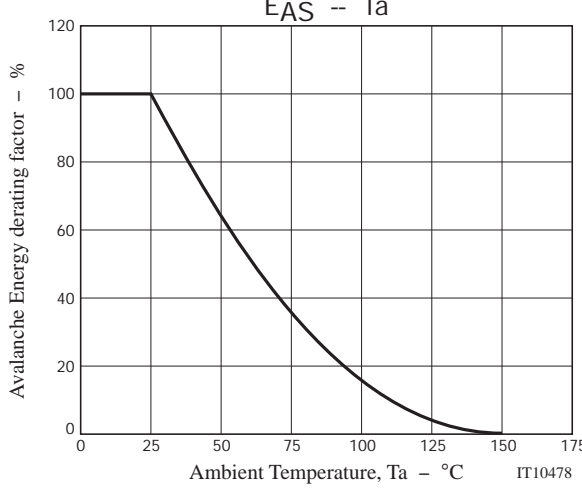
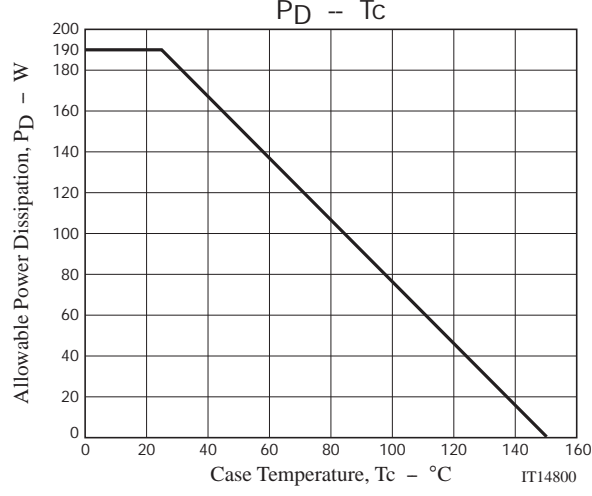
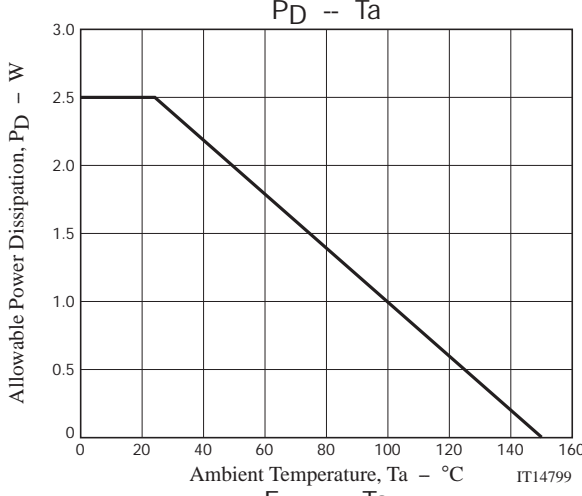
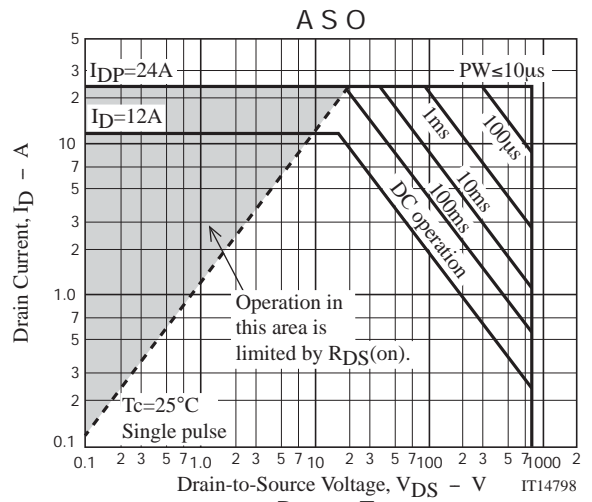
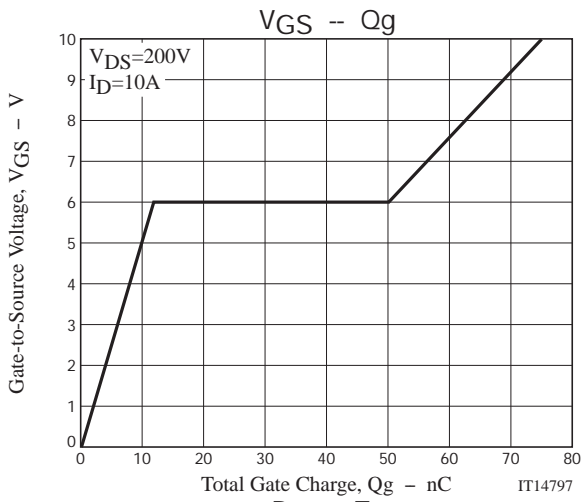
Switching Time Test Circuit



Avalanche Resistance Test Circuit







Note on usage : Since the 2SK4209 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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