



2SK3705 — N-Channl Silicon MOSFET

General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 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} | | 60 | V |
| Gate-to-Source Voltage | V _{GSS} | | ±20 | V |
| Drain Current (DC) | I _D * | | 60 | A |
| Drain Current (Pulse) | I _{DP} | PW≤10μs, duty cycle≤1% | 208 | A |
| Allowable Power Dissipation | P _D | | 2.0 | W |
| | | Tc=25°C | 35 | W |
| Channel Temperature | T _{ch} | | 150 | °C |
| Storage Temperature | T _{stg} | | -55 to +150 | °C |
| Avalanche Energy (Single Pulse) *1 | E _{AS} | | 540 | mJ |
| Avalanche Current *2 | I _{AV} | | 60 | A |

*Shows Chip Capability

*1 V_{DD}=20V, I_{AV}=60A, L=200μH

*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 | 60 | | | V |
| Zero-Gate Voltage Drain Current | I _{DSS} | V _{DS} =60V, 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 =26A | 28 | 40 | | S |
| Static Drain-to-Source On-State Resistance | R _{DS(on)1} | I _D =26A, V _{GS} =10V | | 9.0 | 12.5 | mΩ |
| | R _{DS(on)2} | I _D =26A, V _{GS} =4V | | 12 | 17 | mΩ |

Continued on next page.

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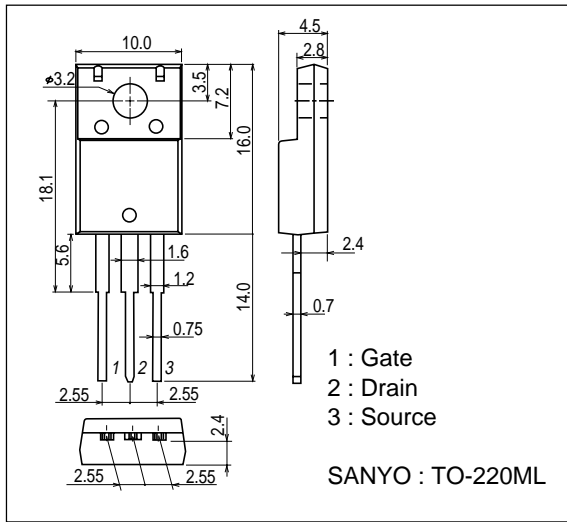
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|-------------------------------|---------------------|---|---------|------|-----|------|
| | | | min | typ | max | |
| Input Capacitance | Ciss | V _{DS} =20V, f=1MHz | | 5500 | | pF |
| Output Capacitance | Coss | V _{DS} =20V, f=1MHz | | 750 | | pF |
| Reverse Transfer Capacitance | Crss | V _{DS} =20V, f=1MHz | | 550 | | pF |
| Turn-ON Delay Time | t _{d(on)} | See specified Test Circuit. | | 38 | | ns |
| Rise Time | t _r | See specified Test Circuit. | | 215 | | ns |
| Turn-OFF Delay Time | t _{d(off)} | See specified Test Circuit. | | 380 | | ns |
| Fall Time | t _f | See specified Test Circuit. | | 280 | | ns |
| Total Gate Charge | Q _g | V _{DS} =30V, V _{GS} =10V, I _D =52A | | 100 | | nC |
| Gate-to-Source Charge | Q _{gs} | V _{DS} =30V, V _{GS} =10V, I _D =52A | | 18 | | nC |
| Gate-to-Drain "Miller" Charge | Q _{gd} | V _{DS} =30V, V _{GS} =10V, I _D =52A | | 16 | | nC |
| Diode Forward Voltage | V _{SD} | I _S =52A, V _{GS} =0 | | 1.0 | 1.2 | V |

Marking : K3705

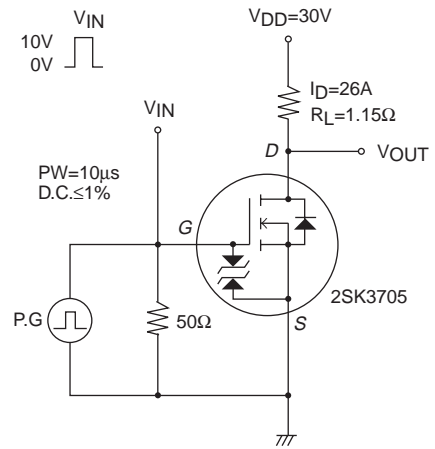
Package Dimensions

unit : mm

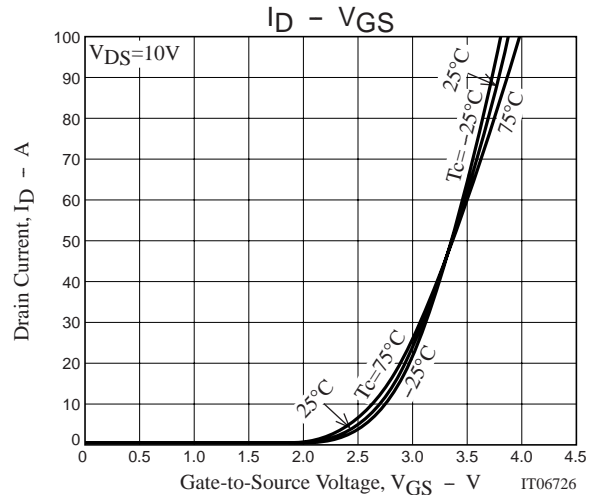
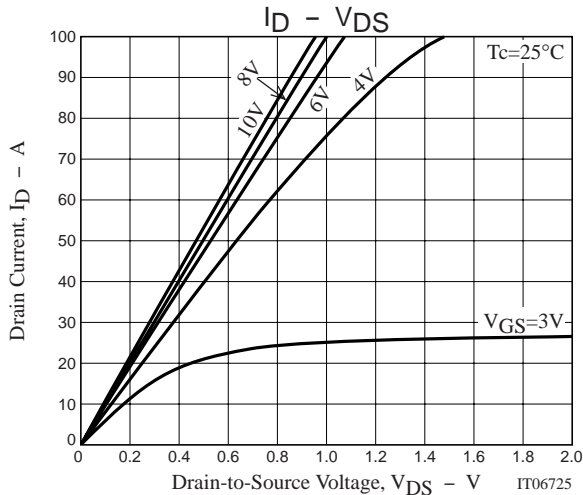
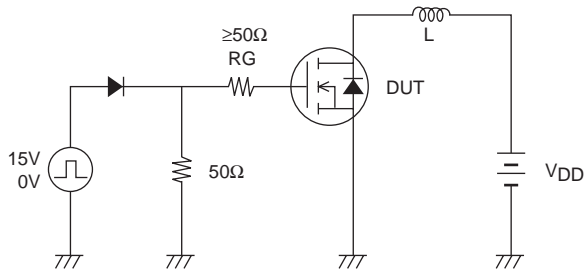
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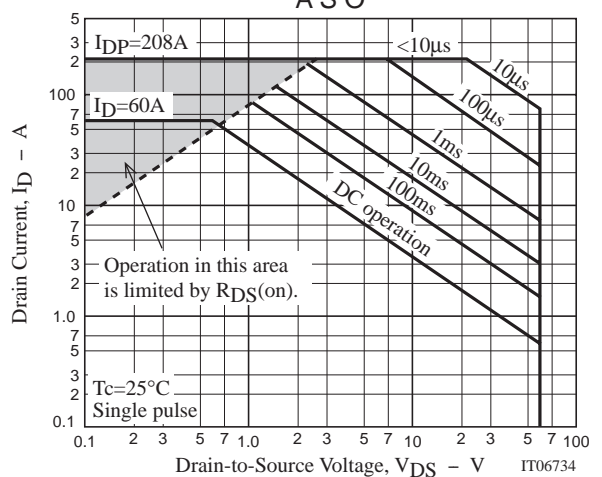
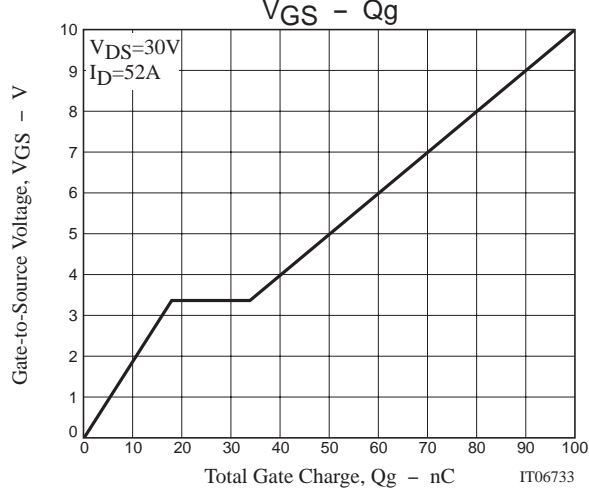
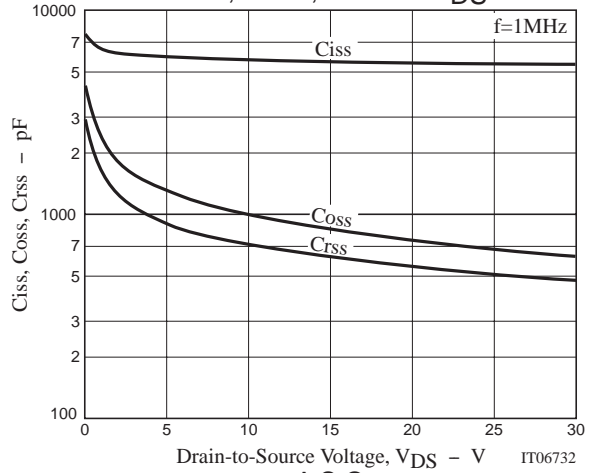
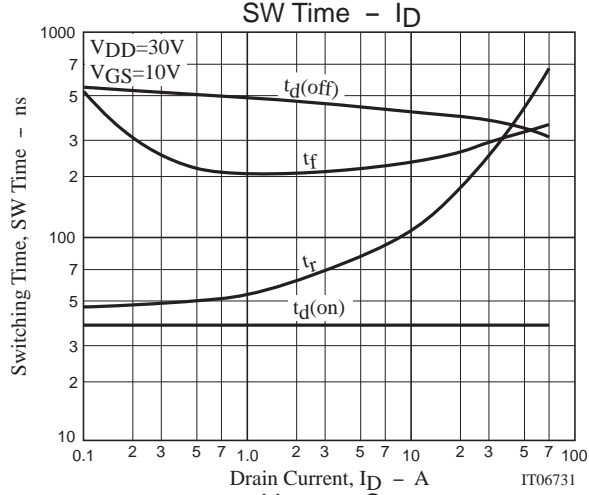
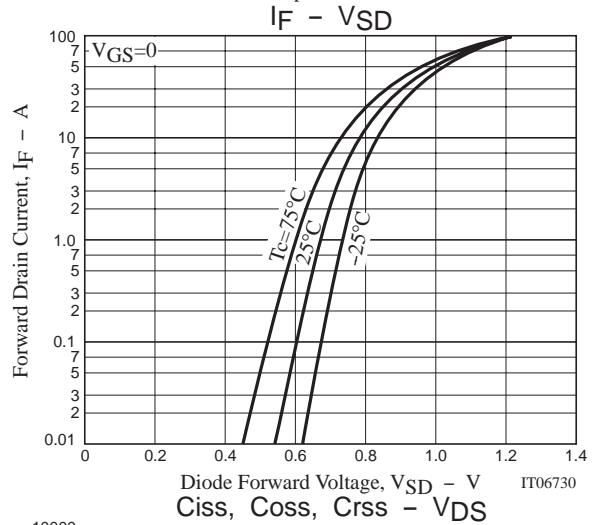
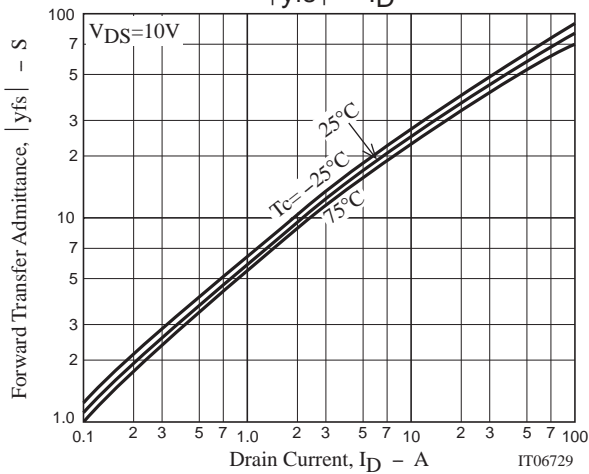
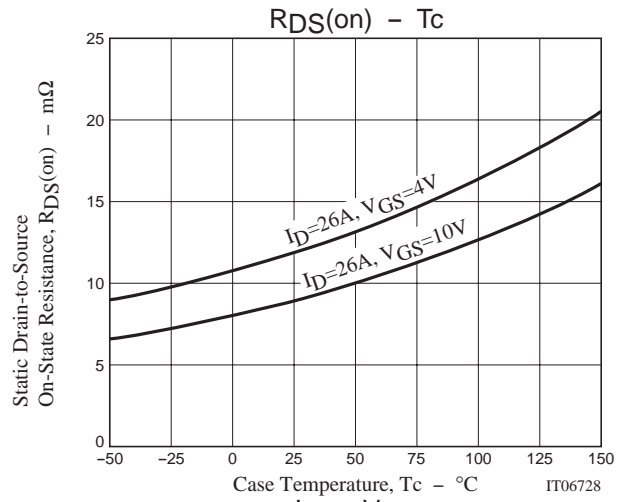
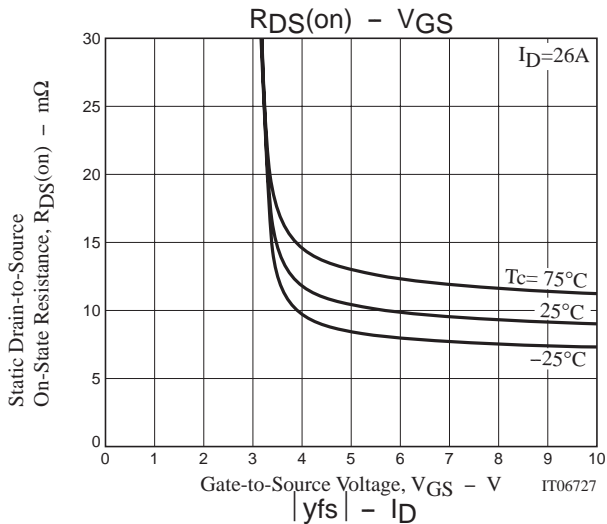
Switching Time Test Circuit

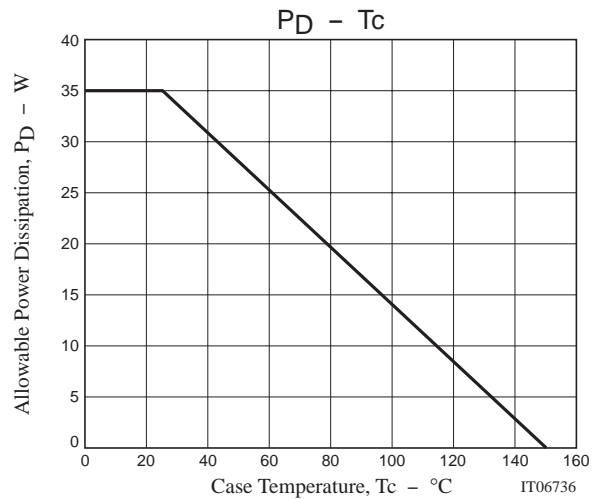
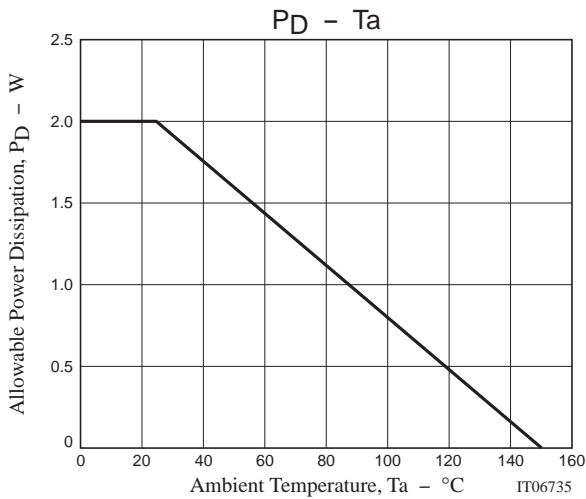


Unclamped Inductive Test Circuit



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