



SANYO Semiconductors

## DATA SHEET

# 2SK3747 — N-Channel Silicon MOSFET

## High-Voltage, High-Speed Switching Applications

### Features

- Low ON-resistance, low input capacitance, ultrahigh-speed switching.
- High reliability (Adoption of HVP process).
- Attachment workability is good by Mica-less package.
- Avalanche resistance guarantee.

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### Specifications

**Absolute Maximum Ratings** at Ta=25°C

| Parameter                          | Symbol           | Conditions             | Ratings     | Unit |
|------------------------------------|------------------|------------------------|-------------|------|
| Drain-to-Source Voltage            | V <sub>DSS</sub> |                        | 1500        | V    |
| Gate-to-Source Voltage             | V <sub>GSS</sub> |                        | ±20         | V    |
| Drain Current (DC)                 | I <sub>D</sub>   |                        | 2           | A    |
| Drain Current (Pulse)              | I <sub>DP</sub>  | PW≤10μs, duty cycle≤1% | 4           | A    |
| Allowable Power Dissipation        | P <sub>D</sub>   |                        | 3.0         | W    |
|                                    |                  | T <sub>c</sub> =25°C   | 50          | W    |
| Channel Temperature                | T <sub>ch</sub>  |                        | 150         | °C   |
| Storage Temperature                | T <sub>stg</sub> |                        | -55 to +150 | °C   |
| Avalanche Energy (Single Pulse) *1 | E <sub>AS</sub>  |                        | 42          | mJ   |
| Avalanche Current *2               | I <sub>AV</sub>  |                        | 2           | A    |

\*1 V<sub>DD</sub>=99V, L=20mH, I<sub>AV</sub>=2A

\*2 L≤20mH, single pulse

**Electrical Characteristics** at Ta=25°C

| Parameter                                  | Symbol               | Conditions                                 | Ratings |     |     | Unit |
|--|----------------------|--|---------|-----|-----|------|
|  |                      |  | min     | typ | max |      |
| Drain-to-Source Breakdown Voltage          | V <sub>(BR)DSS</sub> | I <sub>D</sub> =1mA, V <sub>GS</sub> =0    | 1500    |     |     | V    |
| Zero-Gate Voltage Drain Current            | I <sub>DSS</sub>     | V <sub>DS</sub> =1200V, V <sub>GS</sub> =0 |         |     | 100 | μA   |
| Gate-to-Source Leakage Current             | I <sub>GSS</sub>     | V <sub>GS</sub> =±16V, V <sub>DS</sub> =0  |         |     | ±10 | μA   |
| Cutoff Voltage                             | V <sub>GS(off)</sub> | V <sub>DS</sub> =10V, I <sub>D</sub> =1mA  | 2.5     |     | 3.5 | V    |
| Forward Transfer Admittance                | y <sub>fs</sub>      | V <sub>DS</sub> =20V, I <sub>D</sub> =1A   | 0.7     | 1.4 |     | S    |
| Static Drain-to-Source On-State Resistance | R <sub>DS(on)</sub>  | I <sub>D</sub> =1A, V <sub>GS</sub> =10V   |         | 10  | 13  | Ω    |

Marking : K3747

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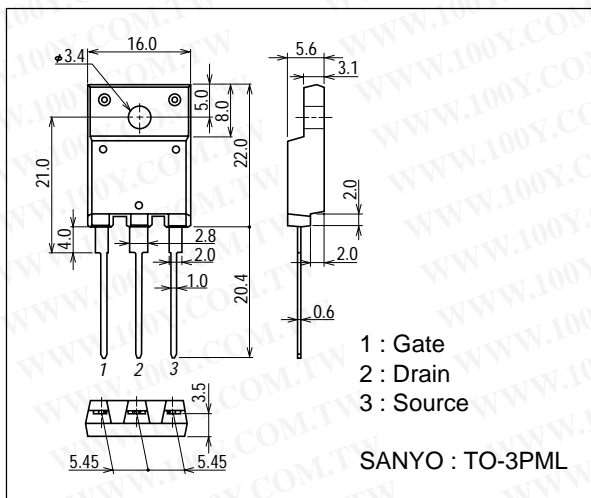
| Parameter                     | Symbol     | Conditions                        | Ratings |      |     | Unit |
|-------------------------------|------------|-----------------------------------|---------|------|-----|------|
|                               |            |                                   | min     | typ  | max |      |
| Input Capacitance             | Ciss       | $V_{DS}=20V, f=1MHz$              |         | 400  |     | pF   |
| Output Capacitance            | Coss       | $V_{DS}=20V, f=1MHz$              |         | 85   |     | pF   |
| Reverse Transfer Capacitance  | Crss       | $V_{DS}=20V, f=1MHz$              |         | 45   |     | pF   |
| Turn-ON Delay Time            | $t_d(on)$  | See specified Test Circuit.       |         | 12.5 |     | ns   |
| Rise Time                     | $t_r$      | See specified Test Circuit.       |         | 30   |     | ns   |
| Turn-OFF Delay Time           | $t_d(off)$ | See specified Test Circuit.       |         | 152  |     | ns   |
| Fall Time                     | $t_f$      | See specified Test Circuit.       |         | 45   |     | ns   |
| Total Gate Charge             | Qg         | $V_{DS}=200V, V_{GS}=10V, I_D=2A$ |         | 37.5 |     | nC   |
| Gate-to-Source Charge         | Qgs        | $V_{DS}=200V, V_{GS}=10V, I_D=2A$ |         | 2.7  |     | nC   |
| Gate-to-Drain "Miller" Charge | Qgd        | $V_{DS}=200V, V_{GS}=10V, I_D=2A$ |         | 20   |     | nC   |
| Diode Forward Voltage         | $V_{SD}$   | $I_S=2A, V_{GS}=0$                | 0.88    | 1.2  |     | V    |

Note) Although the protection diode is contained between gate and source, be careful of handling enough.

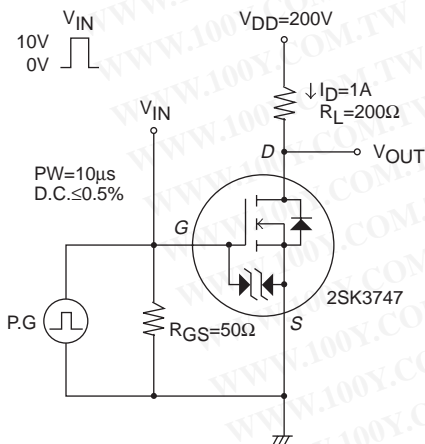
## Package Dimensions

unit : mm

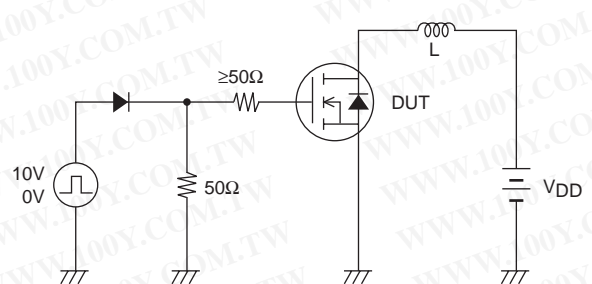
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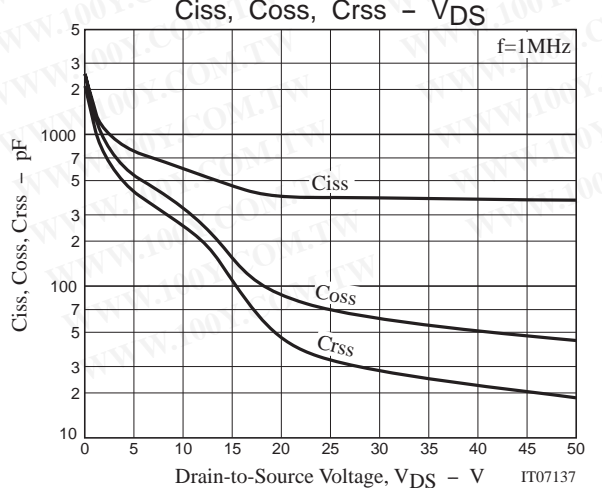
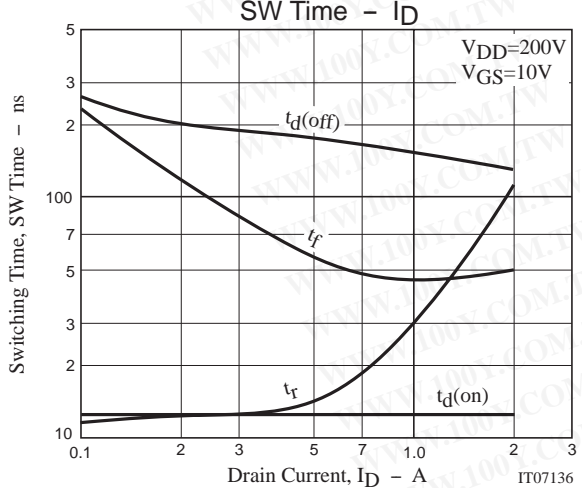
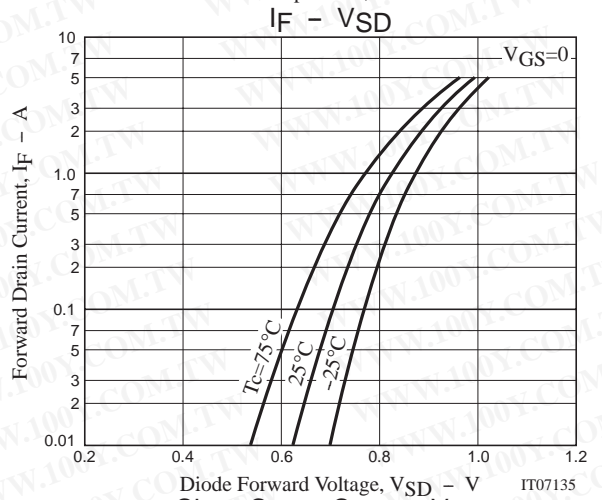
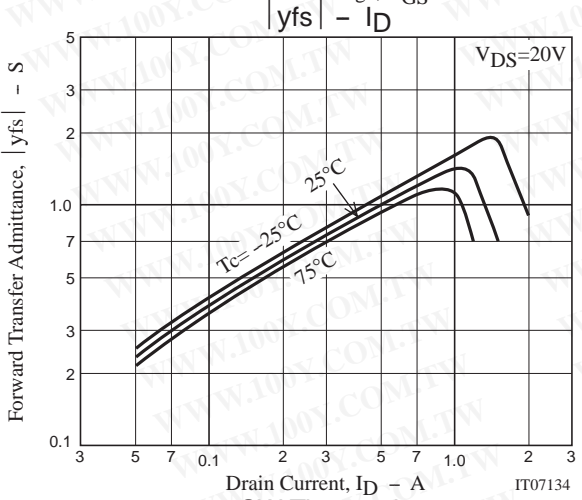
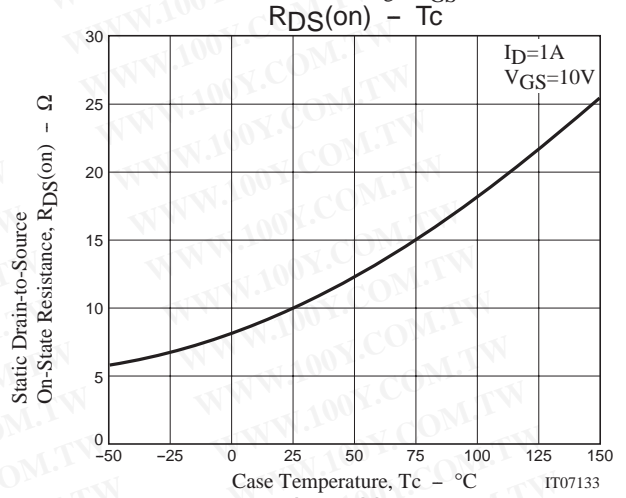
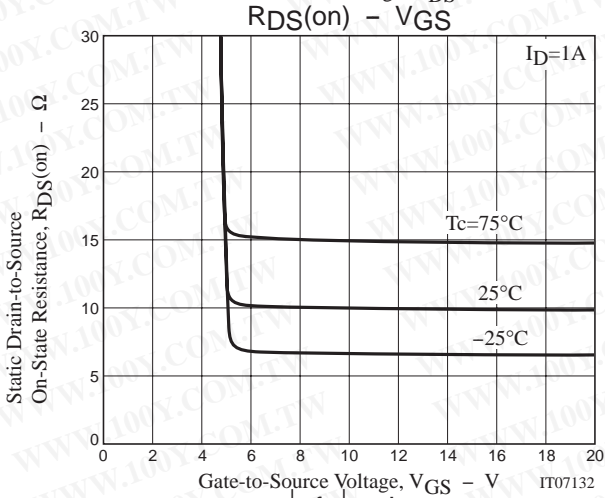
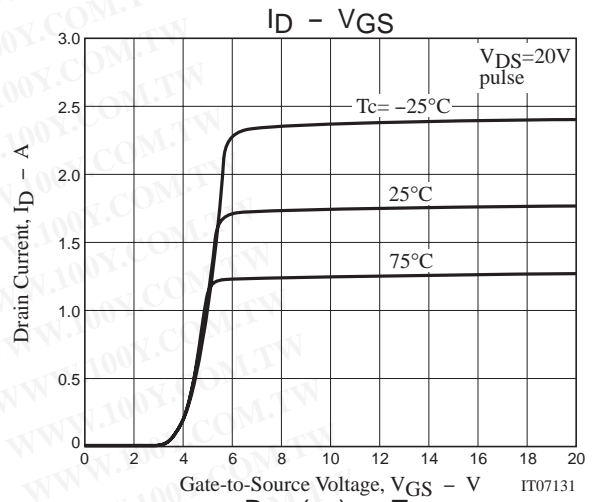
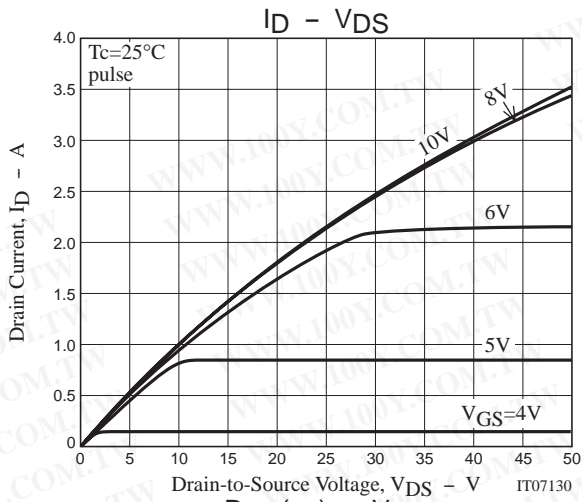
## Switching Time Test Circuit

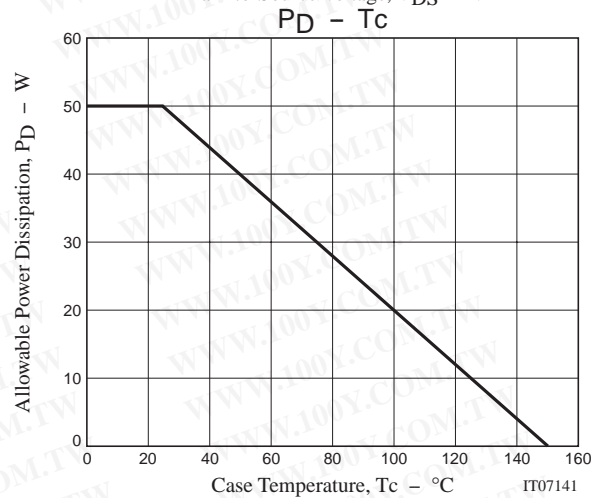
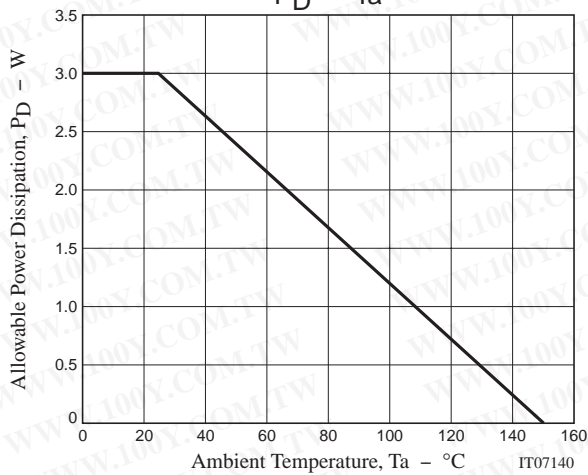
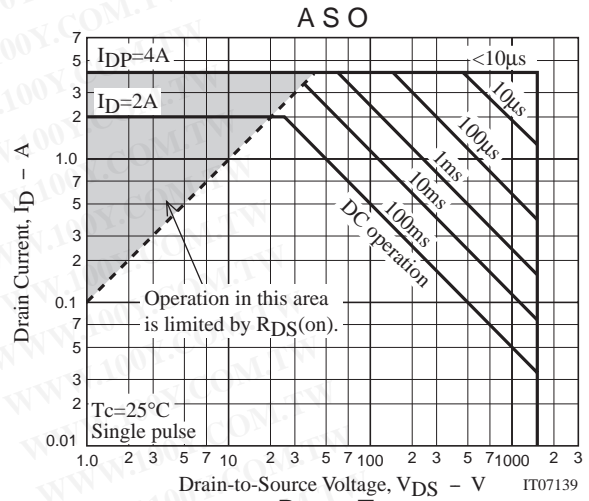
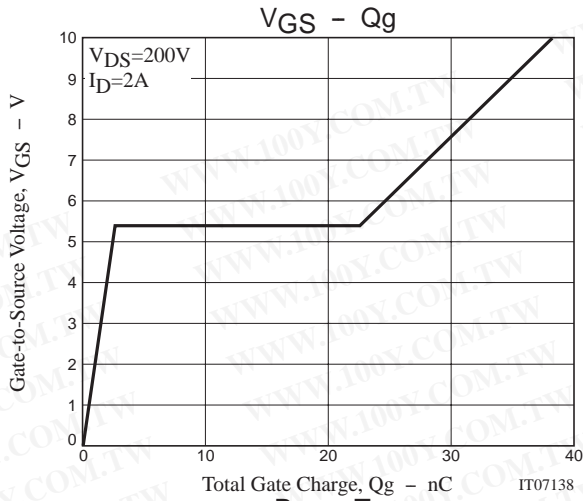


## Unclamped Inductive Test Circuit



# 2SK3747





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