



# 2SK3748 — 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.

### 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> *		4	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	8	A
Allowable Power Dissipation	P <sub>D</sub>		3.0	W
		T <sub>c</sub> =25°C	65	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>		170	mJ
Avalanche Current *2	I <sub>AV</sub>		4	A

\*Shows chip capability

\*1 V<sub>DD</sub>=99V, L=20mH, I<sub>AV</sub>=4A

\*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> =0V	1500			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =1200V, V <sub>GS</sub> =0V			100	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±16V, V <sub>DS</sub> =0V			±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> =2A	1.7	2.8		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =2A, V <sub>GS</sub> =10V		5	7	Ω

Marking : K3748

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# 2SK3748

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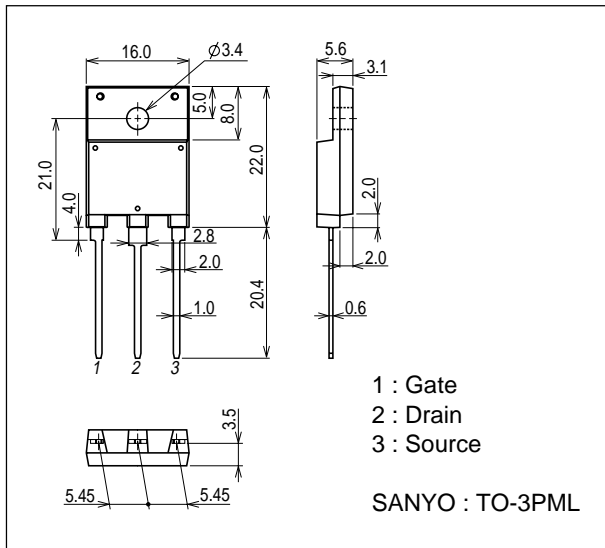
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V <sub>DS</sub> =30V, f=1MHz		790		pF
Output Capacitance	Coss	V <sub>DS</sub> =30V, f=1MHz		140		pF
Reverse Transfer Capacitance	Crss	V <sub>DS</sub> =30V, f=1MHz		70		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit.		17		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		75		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See specified Test Circuit.		360		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		116		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =200V, V <sub>GS</sub> =10V, I <sub>D</sub> =4A		80		nC
Gate-to-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =200V, V <sub>GS</sub> =10V, I <sub>D</sub> =4A		6.4		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>	V <sub>DS</sub> =200V, V <sub>GS</sub> =10V, I <sub>D</sub> =4A		36		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =4A, V <sub>GS</sub> =0V	0.94		1.2	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>S</sub> =4A, V <sub>GS</sub> =0V, dis/dt=100A/μs		340		ns

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

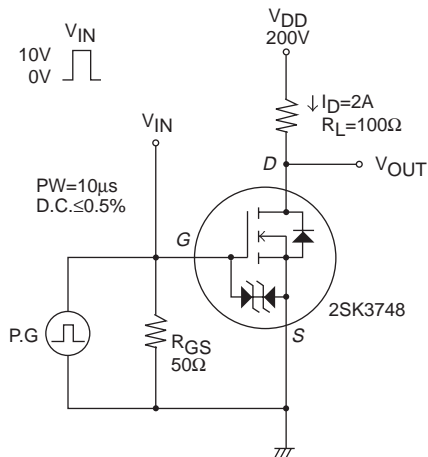
## Package Dimensions

unit : mm

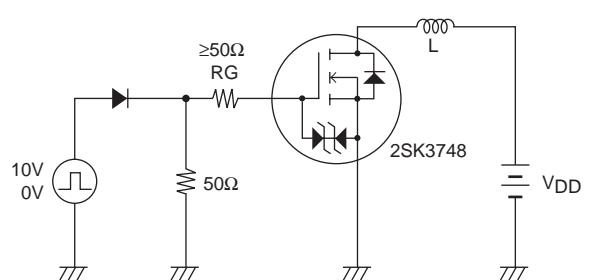
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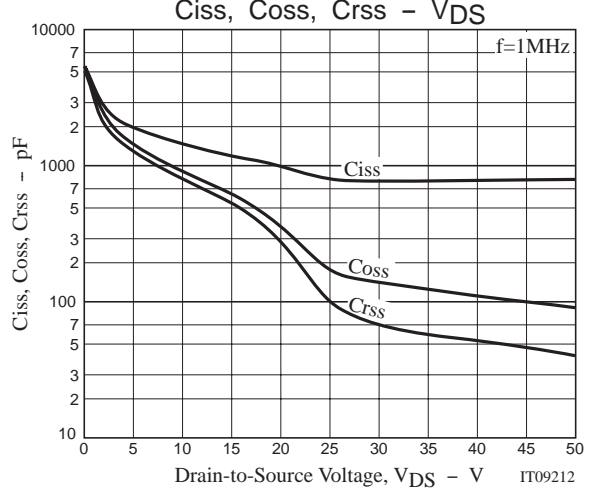
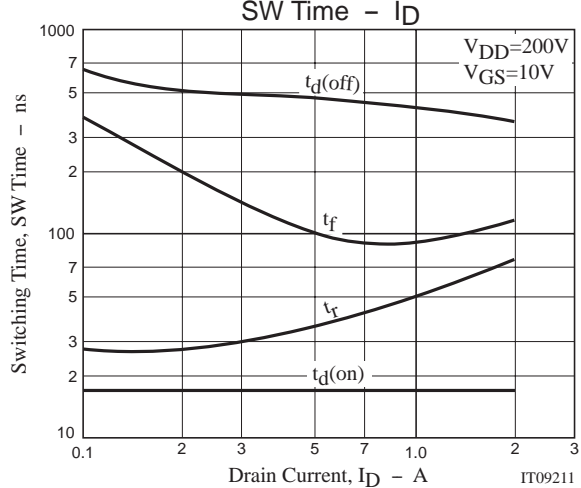
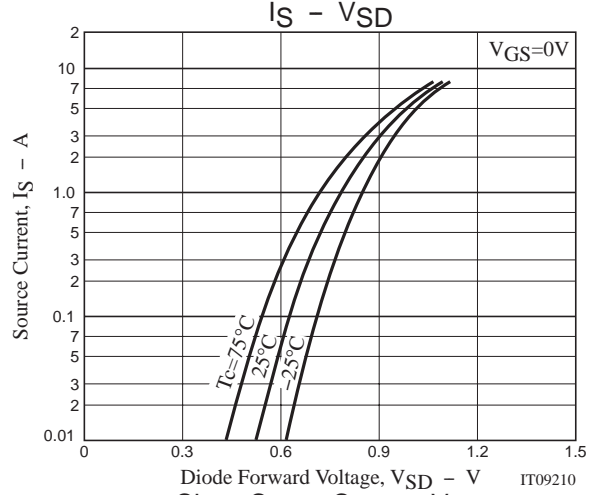
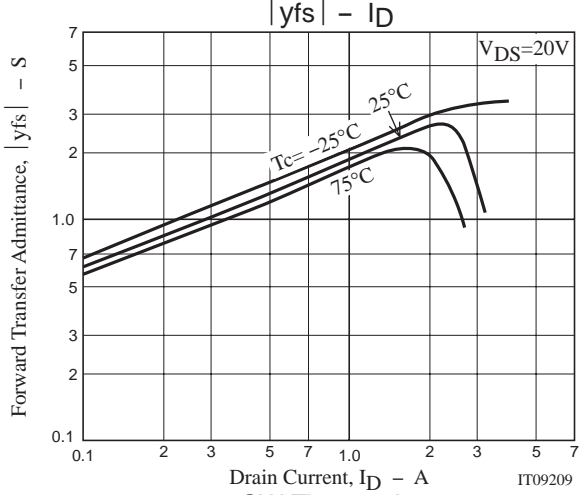
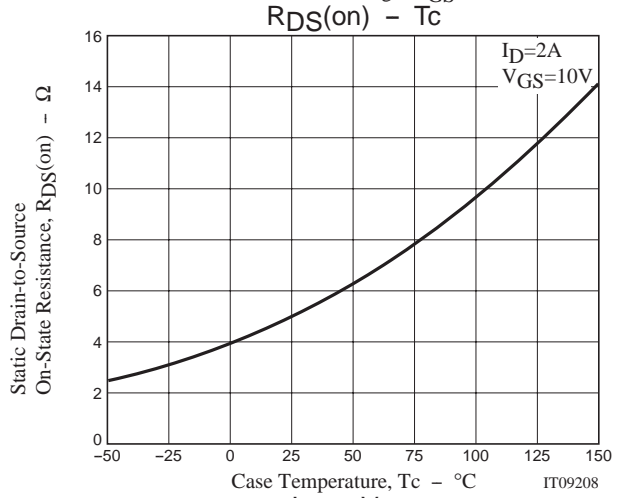
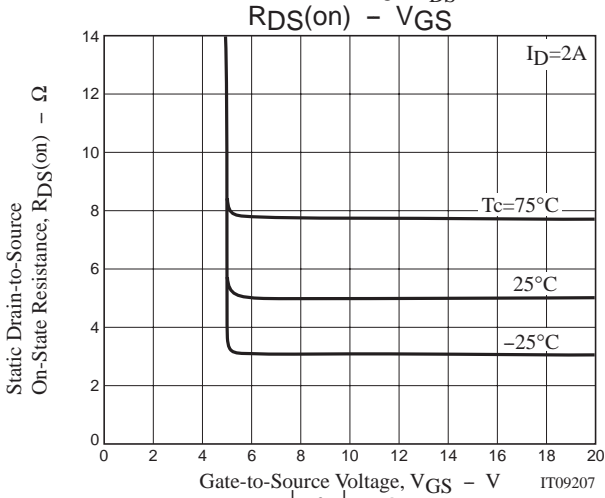
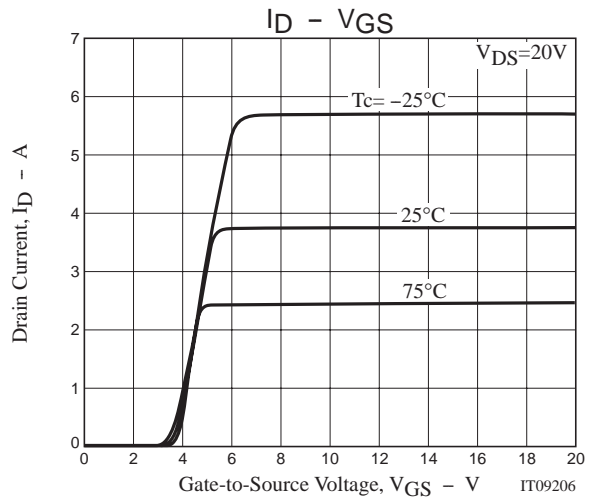
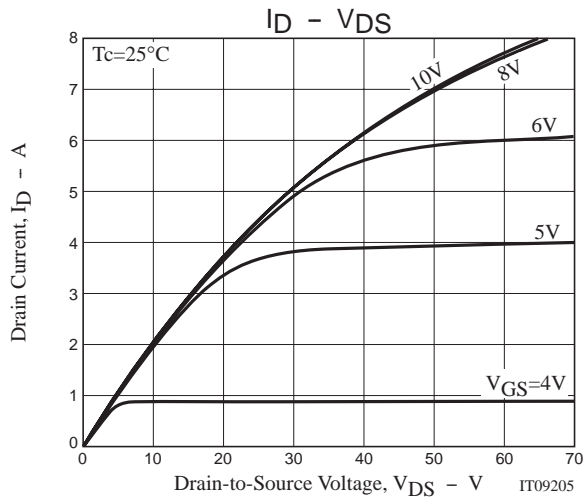
## Switching Time Test Circuit

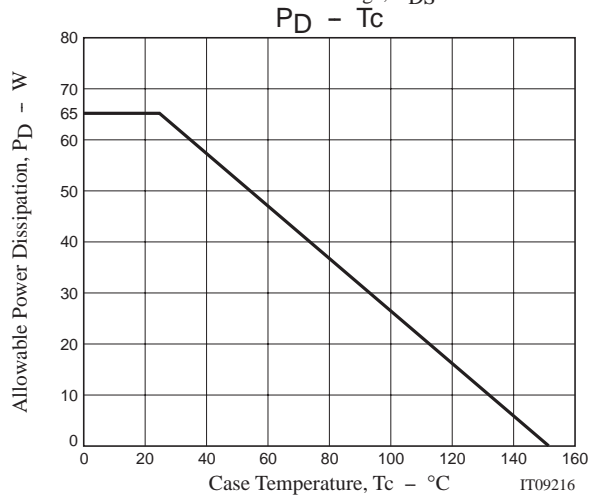
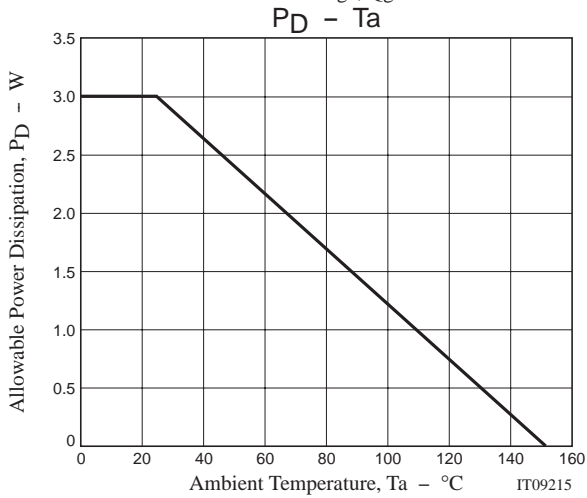
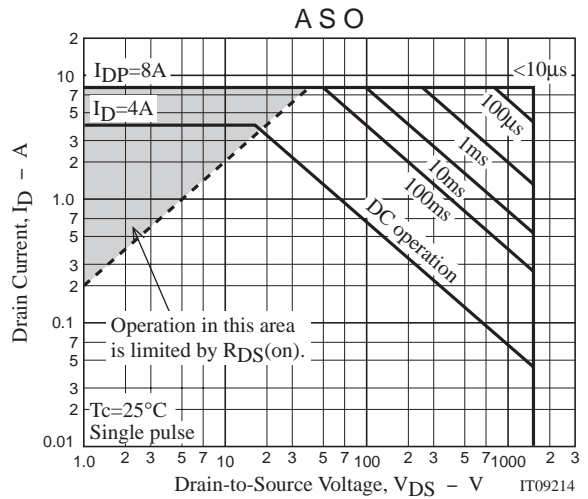
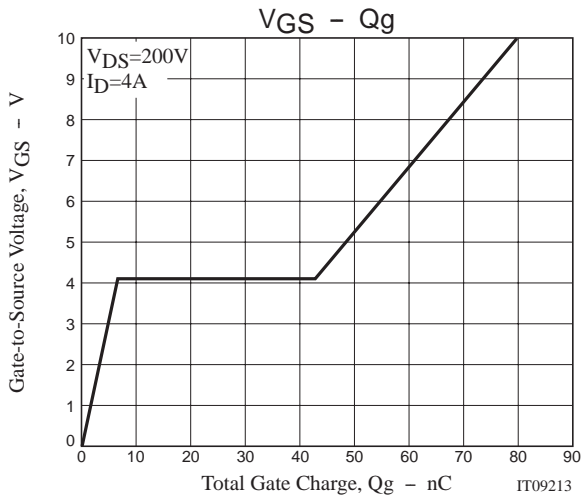


## Avalanche Resistance Test Circuit



# 2SK3748





Note on usage : Since the 2SK3748 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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