



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 _{DSS}		1500	V
Gate-to-Source Voltage	V _{GSS}		±20	V
Drain Current (DC)	I _D *		4	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	8	A
Allowable Power Dissipation	P _D		3.0	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}		170	mJ
Avalanche Current *2	I _{AV}		4	A

*Shows chip capability

*1 V_{DD}=99V, L=20mH, I_{AV}=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 _{(BR)DSS}	I _D =1mA, V _{GS} =0V	1500			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =1200V, V _{GS} =0V			100	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±16V, V _{DS} =0V			±10	μA
Cutoff Voltage	V _{GS(off)}	V _{DS} =10V, I _D =1mA	2.5		3.5	V
Forward Transfer Admittance	y _{fs}	V _{DS} =20V, I _D =2A	1.7	2.8		S
Static Drain-to-Source On-State Resistance	R _{DS(on)}	I _D =2A, V _{GS} =10V		5	7	Ω

Marking : K3748

Continued on next page.

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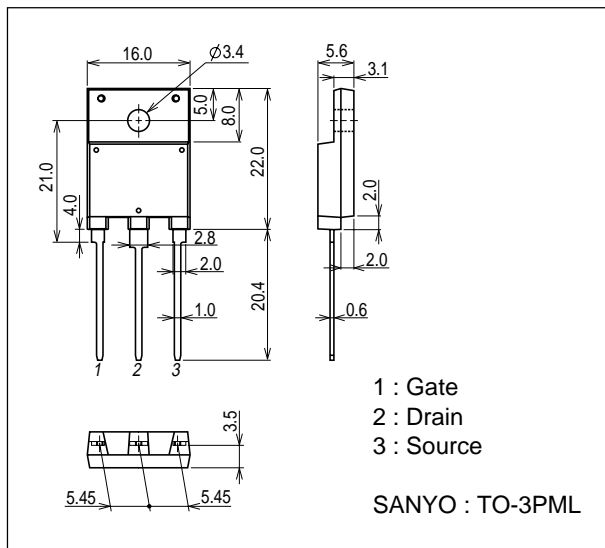
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V _{DS} =30V, f=1MHz		790		pF
Output Capacitance	Coss	V _{DS} =30V, f=1MHz		140		pF
Reverse Transfer Capacitance	Crss	V _{DS} =30V, f=1MHz		70		pF
Turn-ON Delay Time	t _{d(on)}	See specified Test Circuit.		17		ns
Rise Time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

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

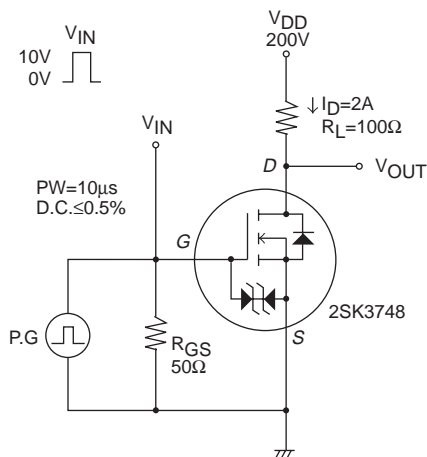
Package Dimensions

unit : mm

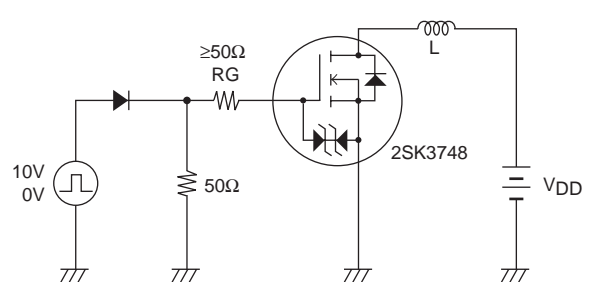
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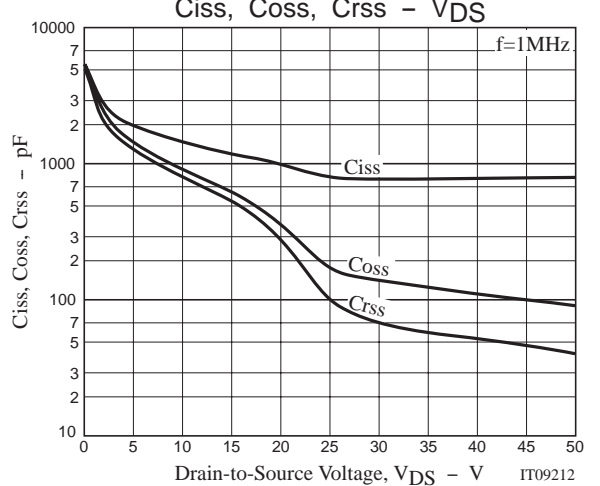
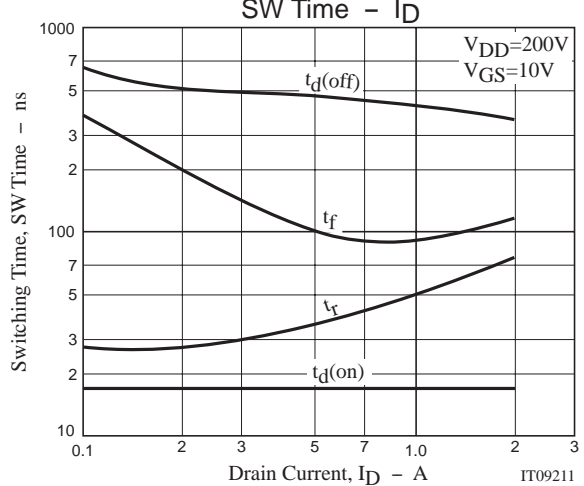
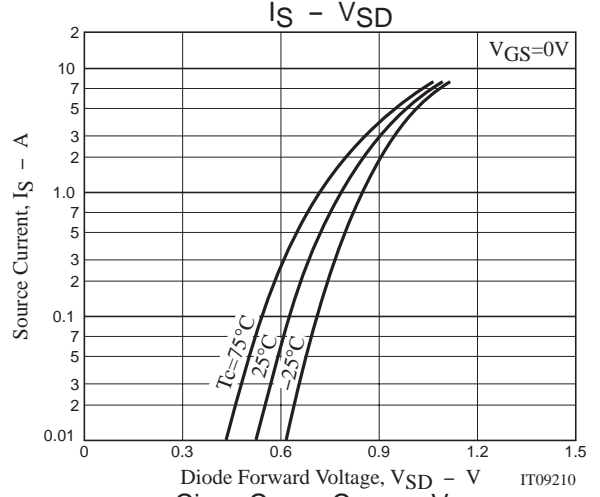
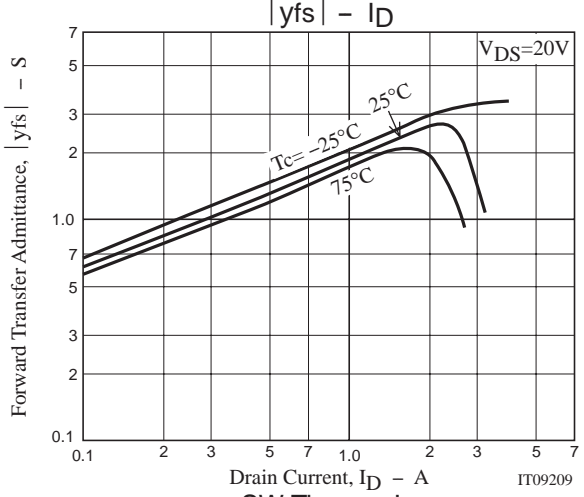
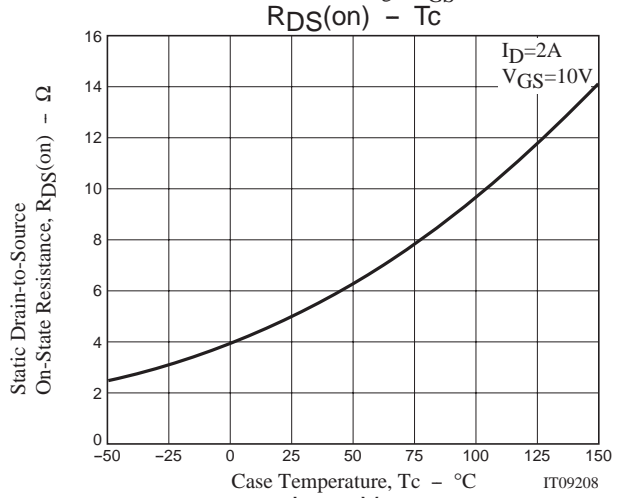
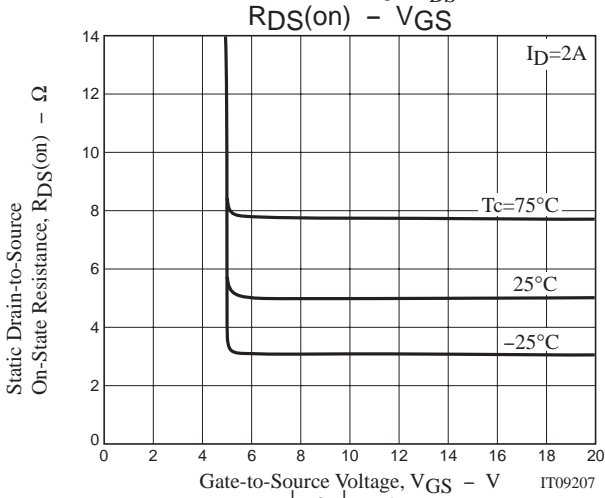
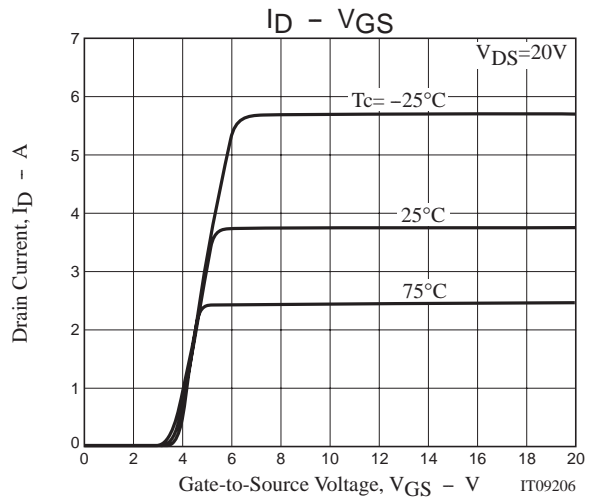
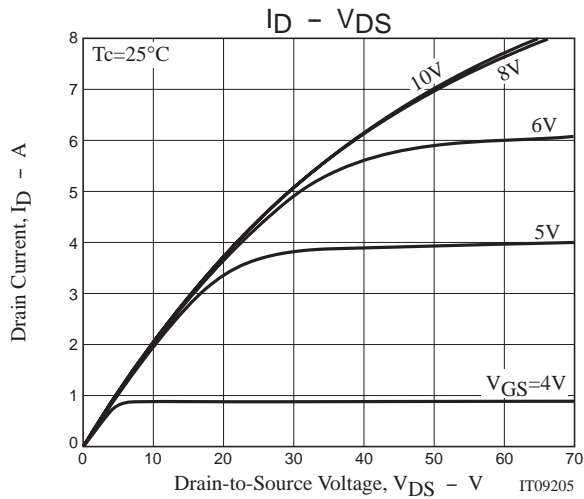
Switching Time Test Circuit

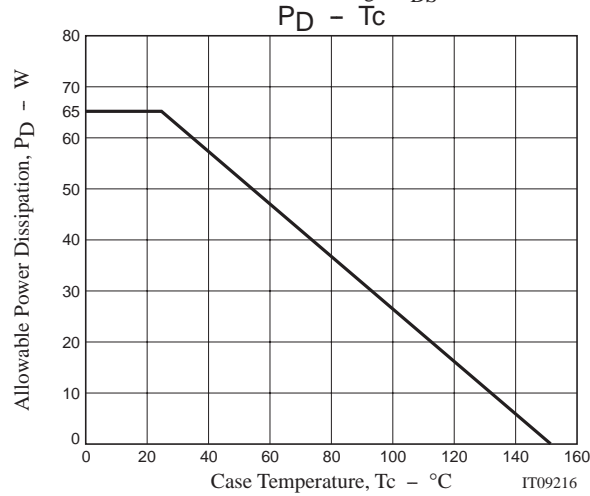
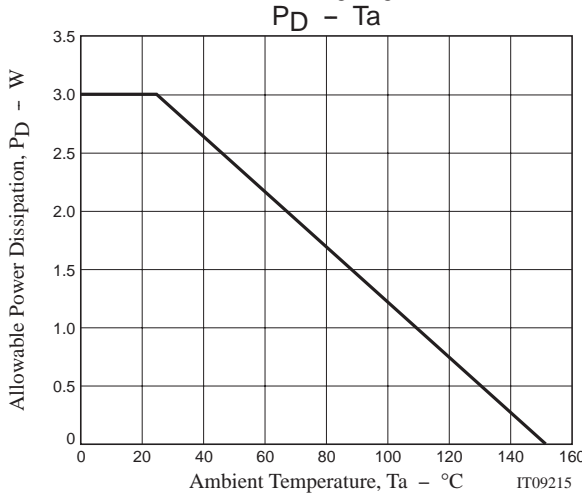
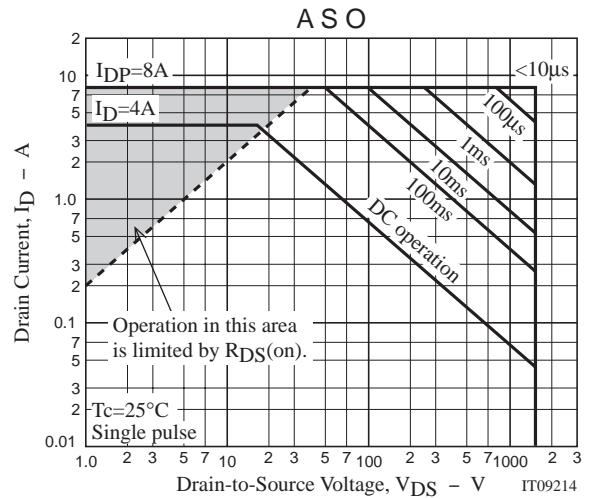
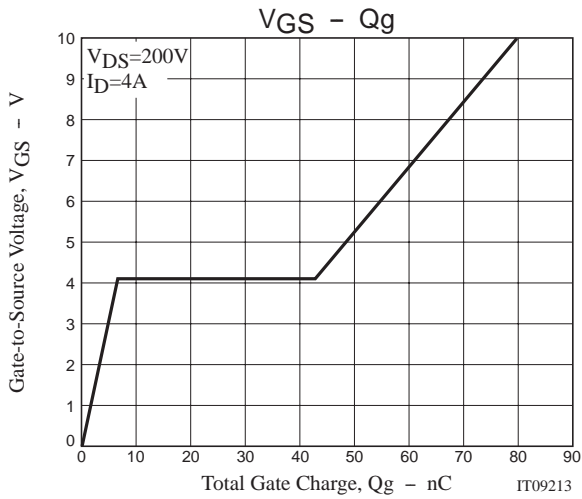


Avalanche Resistance Test Circuit



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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