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2SK3748

N-Channel Power MOSFET 1500V, 4A, 7Ω, TO-3PF-3L

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}		165	mJ
Avalanche Current *2	I _{AV}		4	A

*Shows chip capability

*1 V_{DD}=50V, L=20mH, I_{AV}=4A (Fig.1)

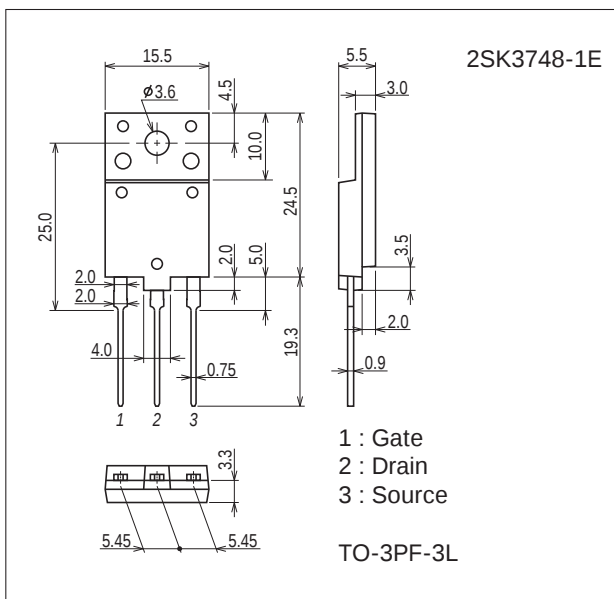
*2 L≤20mH, single pulse

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

unit : mm (typ)

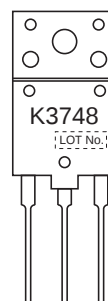
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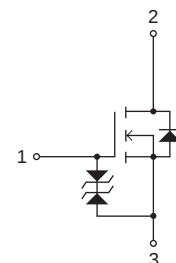
Product & Package Information

- Package : TO-3PF-3L
- JEITA, JEDEC : SC-94
- Minimum Packing Quantity : 30 pcs./magazine

Marking



Electrical Connection



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
Input Capacitance	C_{iss}	$V_{DS}=30V, f=1MHz$		790		pF
Output Capacitance	C_{oss}			140		pF
Reverse Transfer Capacitance	C_{rss}			70		pF
Turn-ON Delay Time	$t_{d(on)}$	See Fig.2		17		ns
Rise Time	t_r			75		ns
Turn-OFF Delay Time	$t_{d(off)}$			360		ns
Fall Time	t_f			116		ns
Total Gate Charge	Q_g	$V_{DS}=200V, V_{GS}=10V, I_D=4A$		80		nC
Gate-to-Source Charge	Q_{gs}			6.4		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			36		nC
Diode Forward Voltage	V_{SD}	$I_S=4A, V_{GS}=0V$		0.94	1.2	V
Reverse Recovery Time	t_{rr}	$I_S=4A, V_{GS}=0V, dis/dt=100A/\mu s$		340		ns

Fig.1 Avalanche Resistance Test Circuit

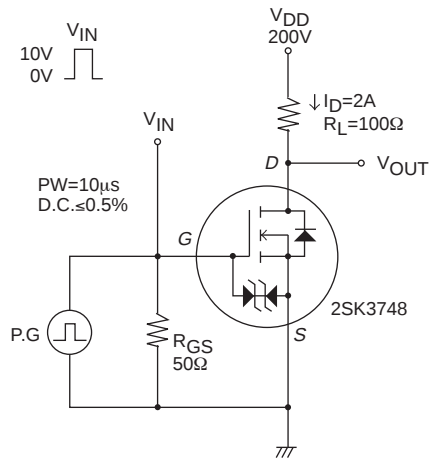
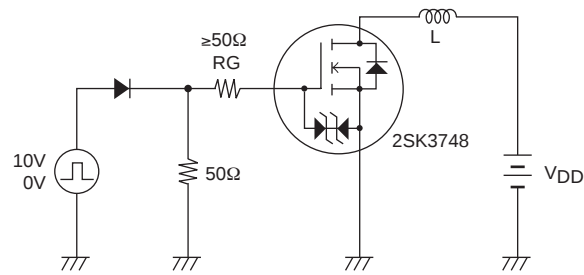
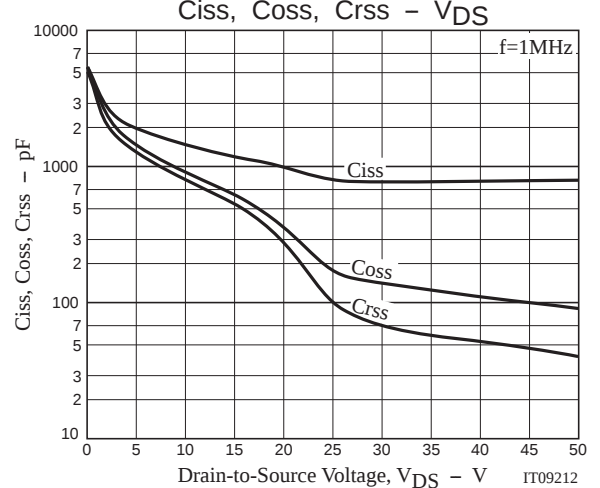
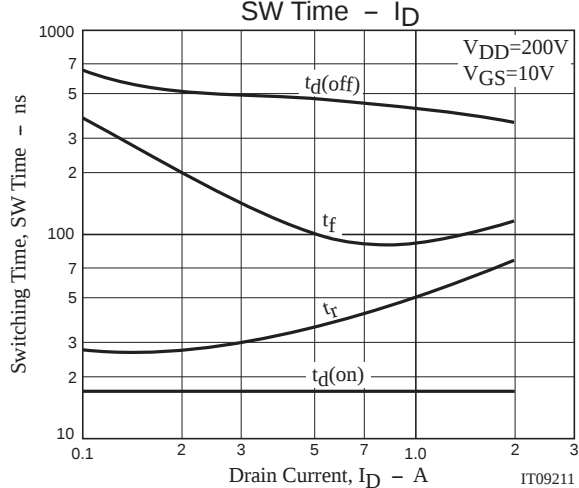
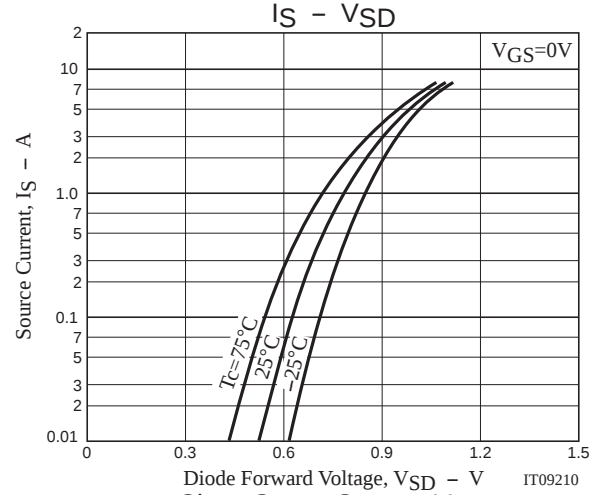
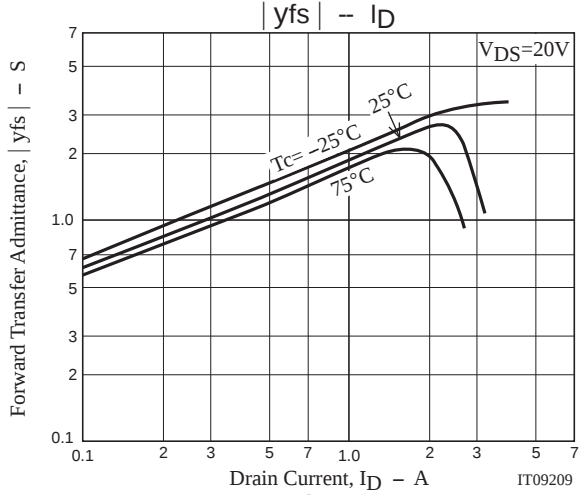
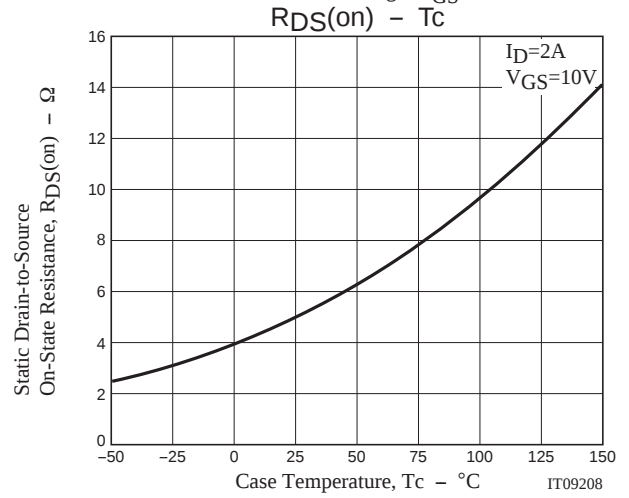
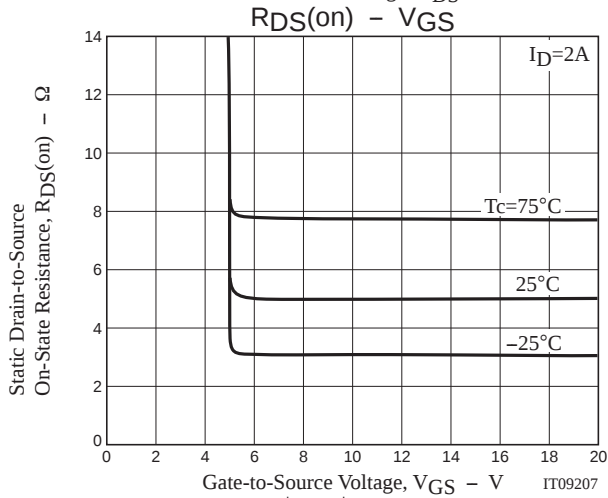
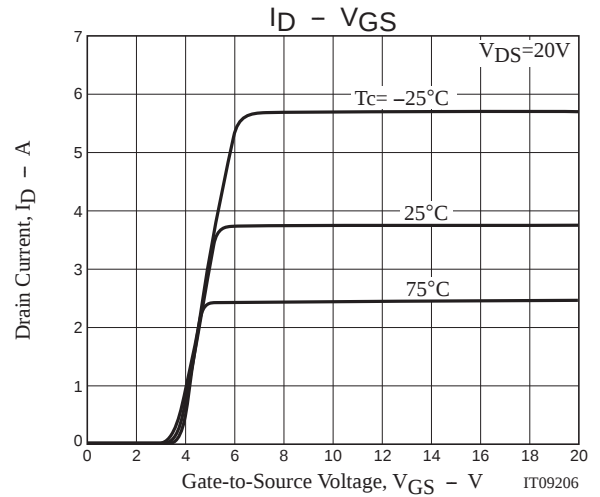
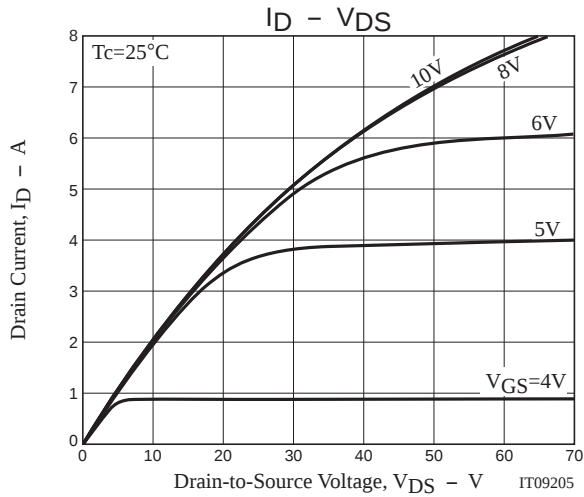


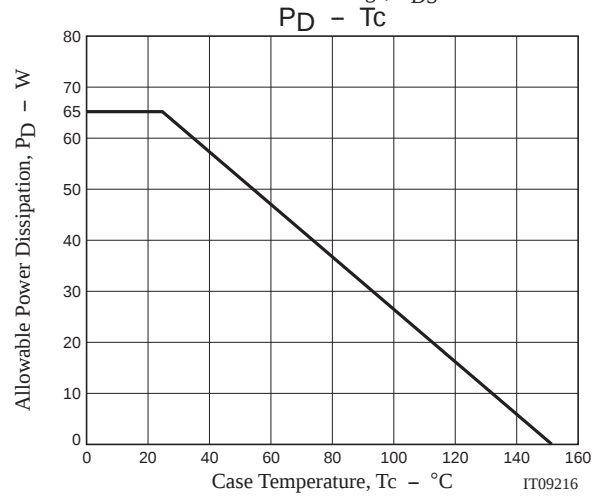
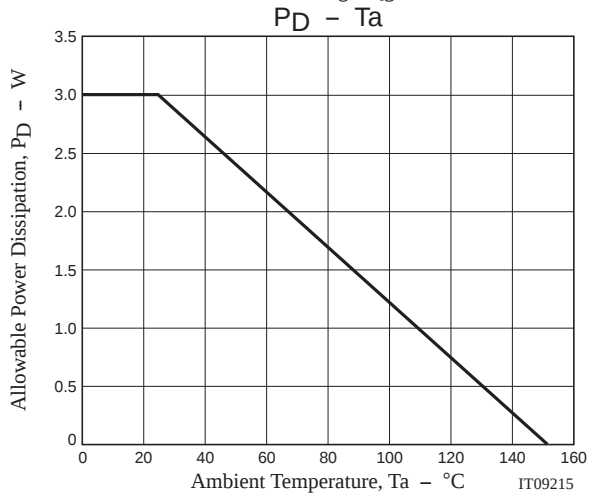
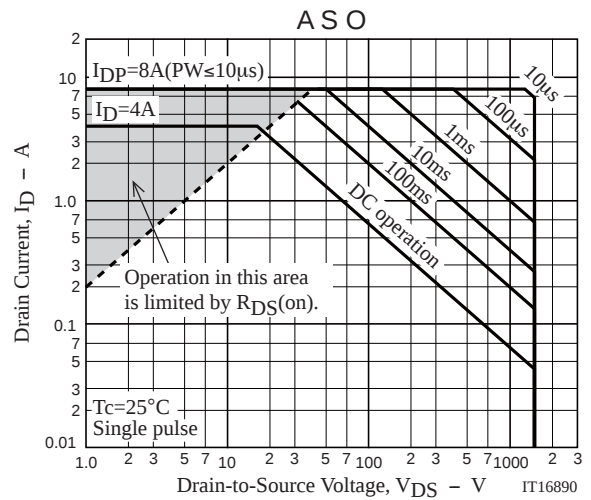
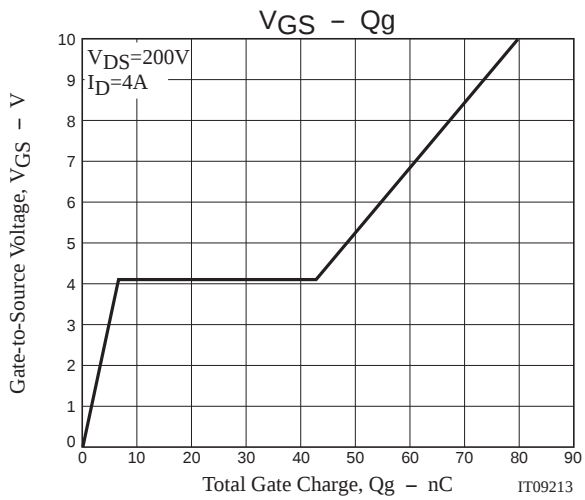
Fig.2 Switching Time Test Circuit



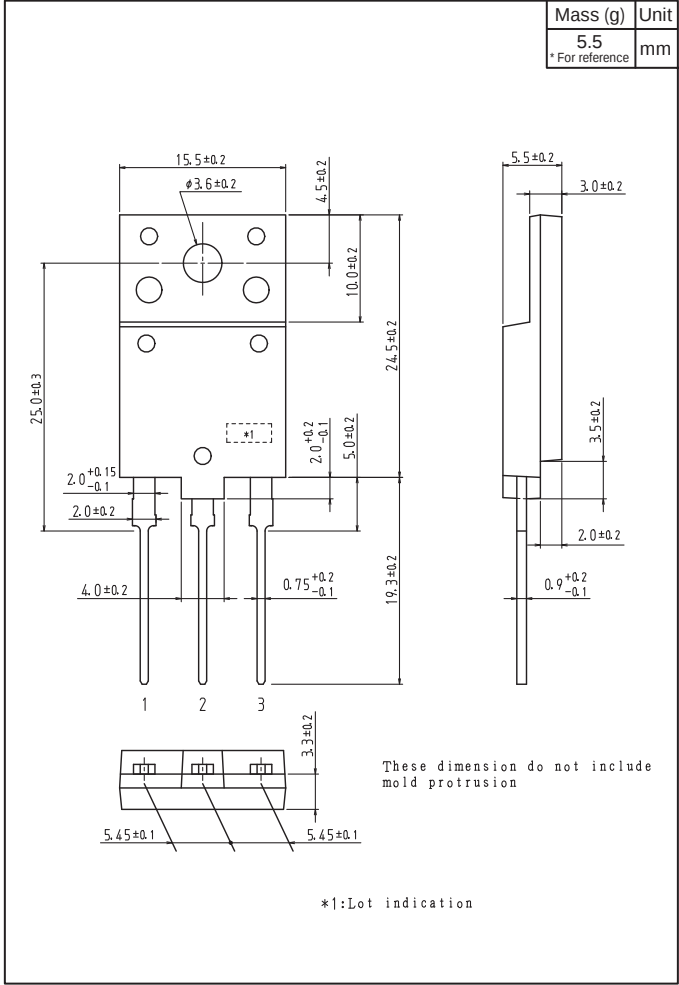
Ordering Information

Device	Package	Shipping	memo
2SK3748-1E	TO-3PF-3L	30pcs./magazine	Pb Free





Outline Drawing
2SK3748-1E



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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