



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

2SK3748 — 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
		Tc=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

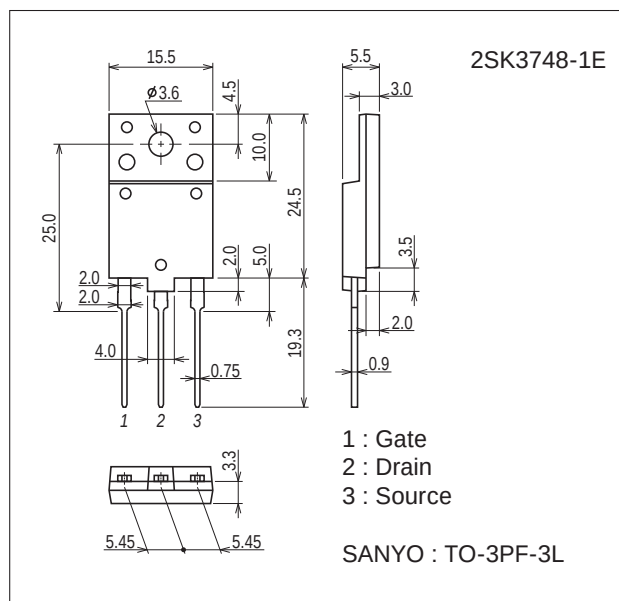
*1 V_{DD}=50V, L=20mH, I_{AV}=4A (Fig.1)

*2 L≤20mH, single pulse

Package Dimensions

unit : mm (typ)

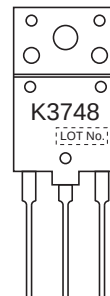
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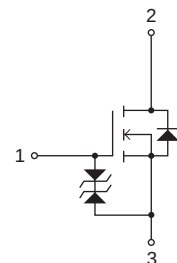
Product & Package Information

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

Marking



Electrical Connection



SANYO Semiconductor Co., Ltd.

<http://semicon.sanyo.com/en/network>

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

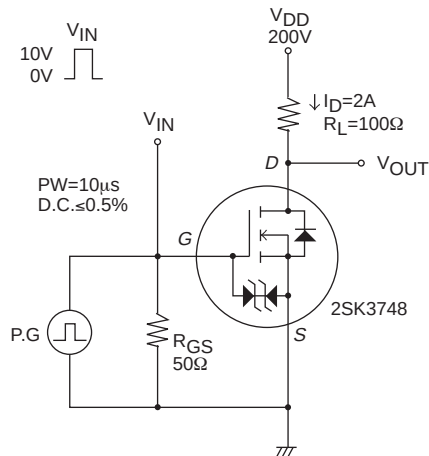
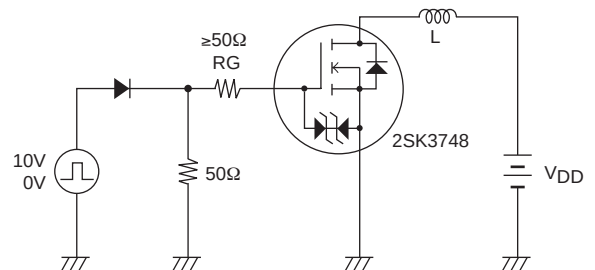
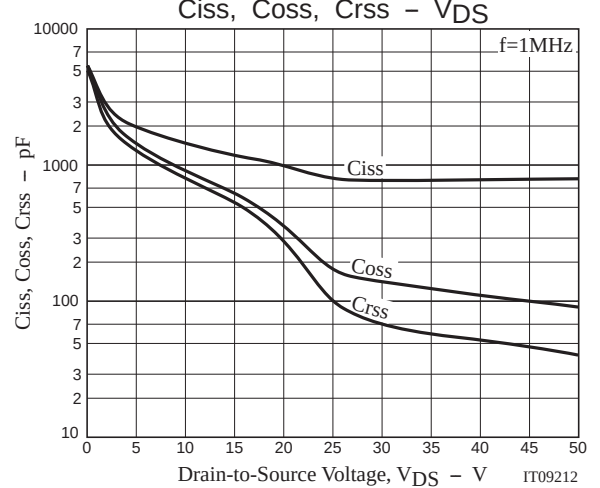
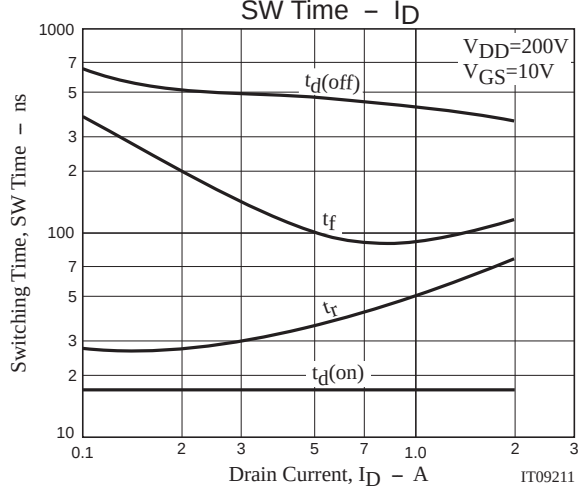
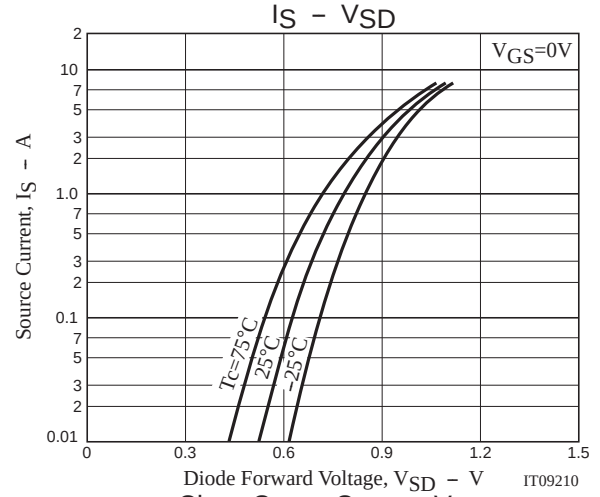
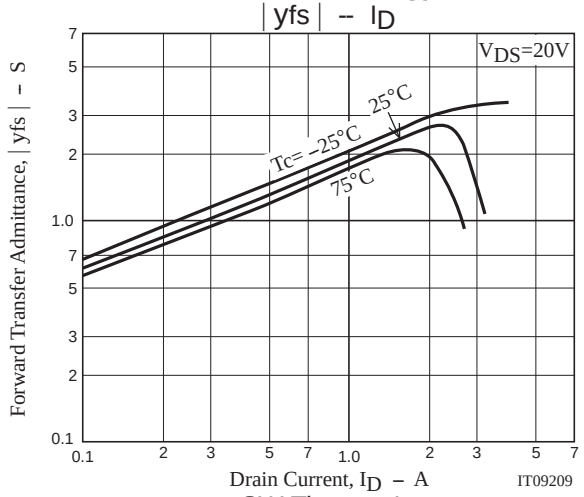
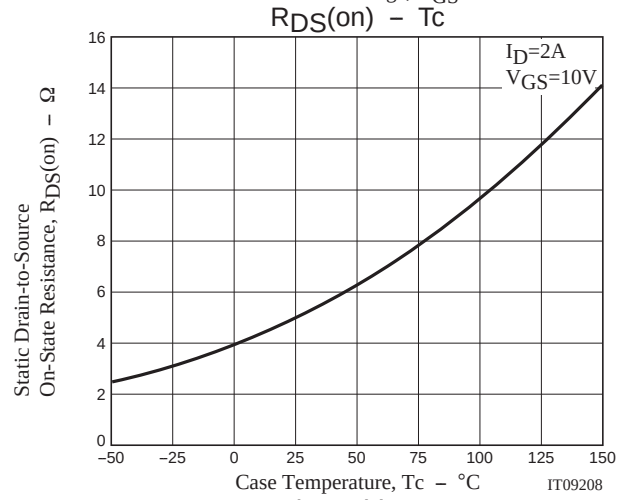
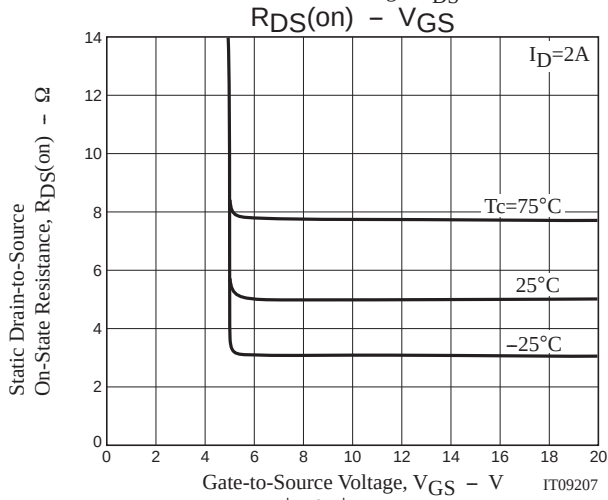
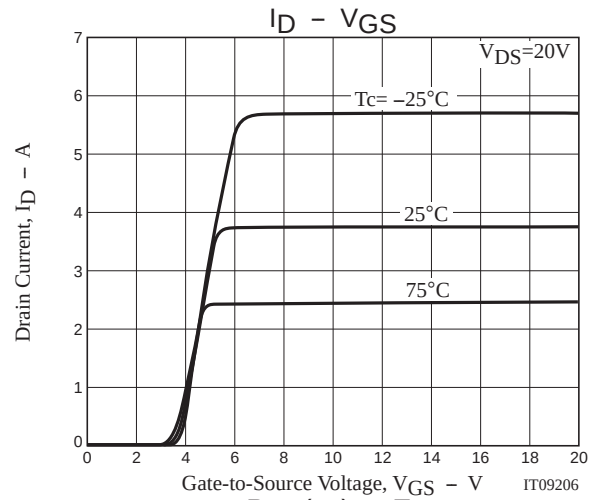
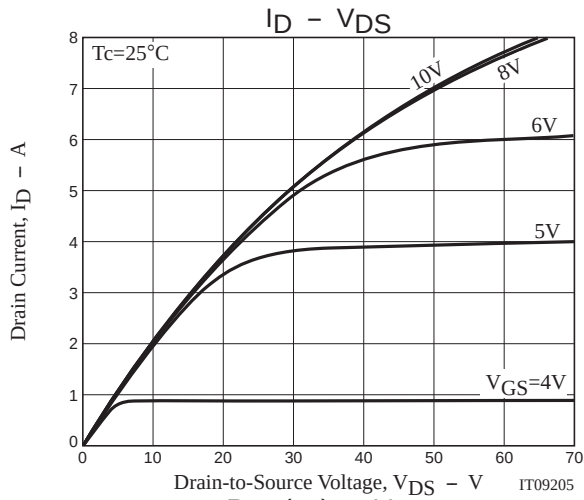


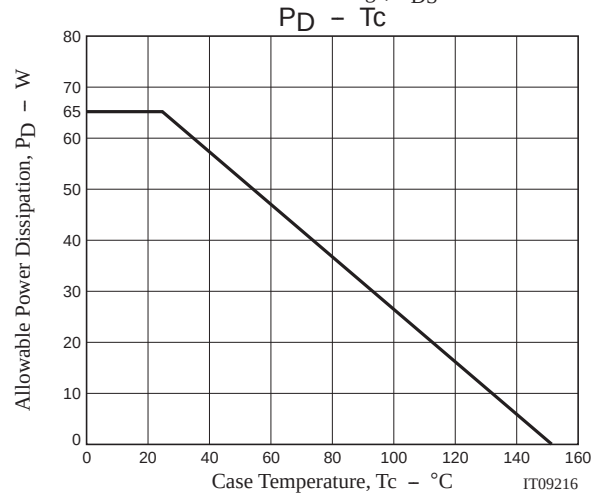
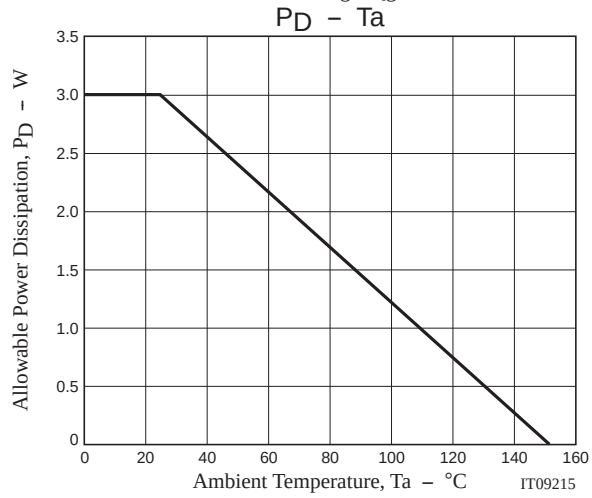
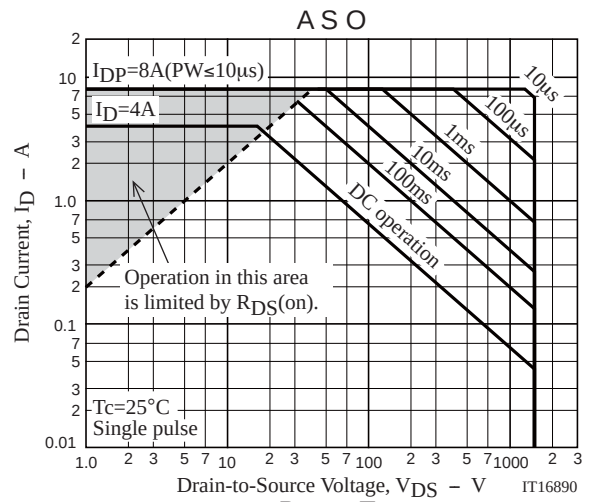
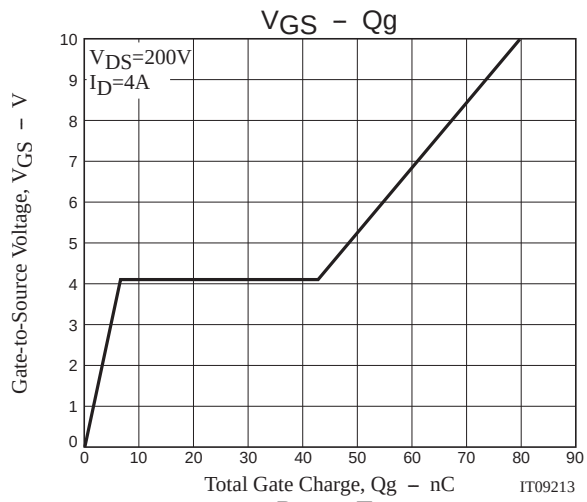
Fig.2 Switching Time Test Circuit



Ordering Information

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





Magazine Specification

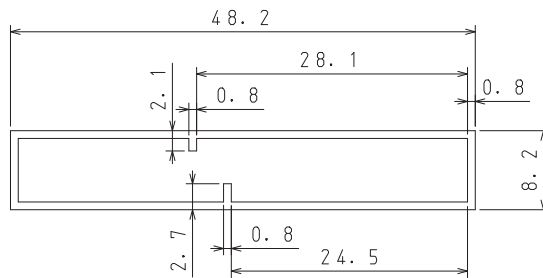
2SK3748-1E

1. Packing Format

Package Name	Maximum Number of devices contained (pcs)			Packing format	
	Magazine	Inner box	Outer box	Inner BOX	Outer BOX
TO-3PF-3L	30	360	1440	SPD-0V0001 12 magazines contained Dimensions:mm (external) 568×150×55	SPD-LV0010 4 inner boxes contained Dimensions:mm (external) 590×225×178

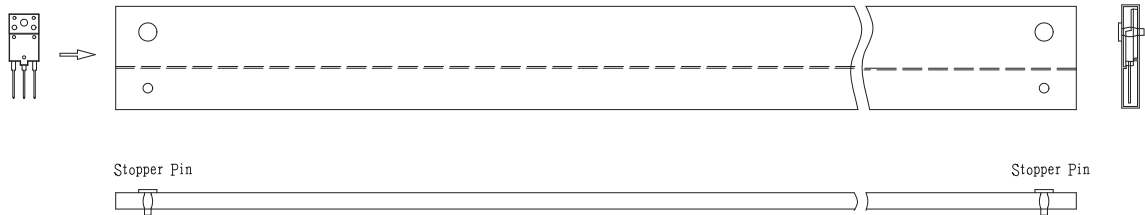
2. Magazine dimensions

(unit:mm)

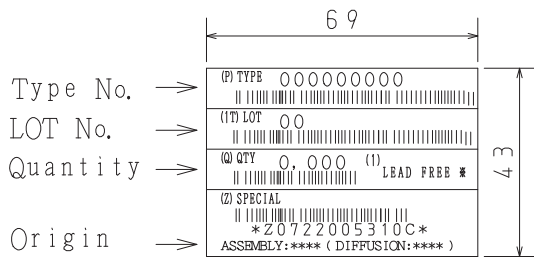


Tolerance=±0.2mm
 Thickness=0.8±0.2mm
 Length =508.0±1mm
 Material =PVC or PET
 (Antistatic treatment)

3. Storage method to magazine

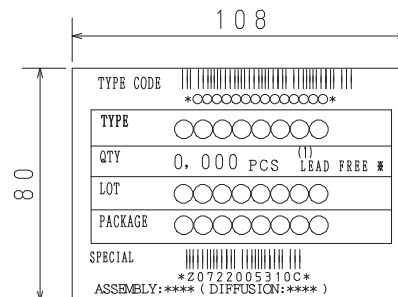


4. Inner box label (unit:mm)



5. Outer box label (unit:mm)

It is a label at the time of factory shipments.
 The form of a label may change in physical
 distribution process.



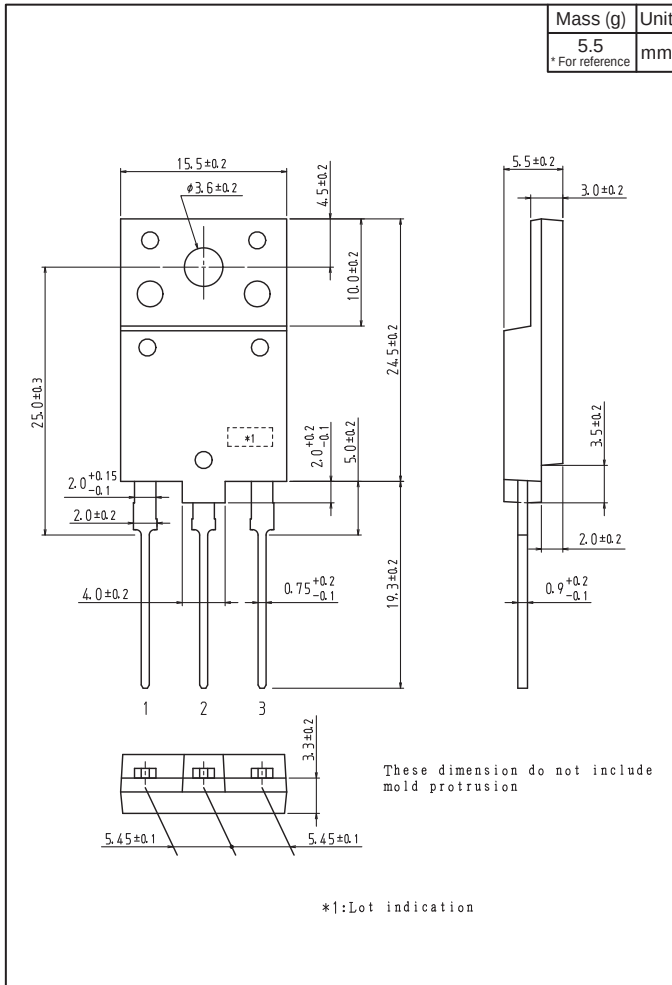
NOTE (1)

The LEAD FREE * description shows that the
 surface treatment of the terminal is lead free.

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

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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