Ordering number : ENA0746C

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

2SK4124 — General-Purpose Switching Device Applications

Features

- Low ON-resistance, low input capacitance, ultrahigh-speed switching
- Adoption of high reliability HVP process
- Avalanche resistance guarantee

Specifications

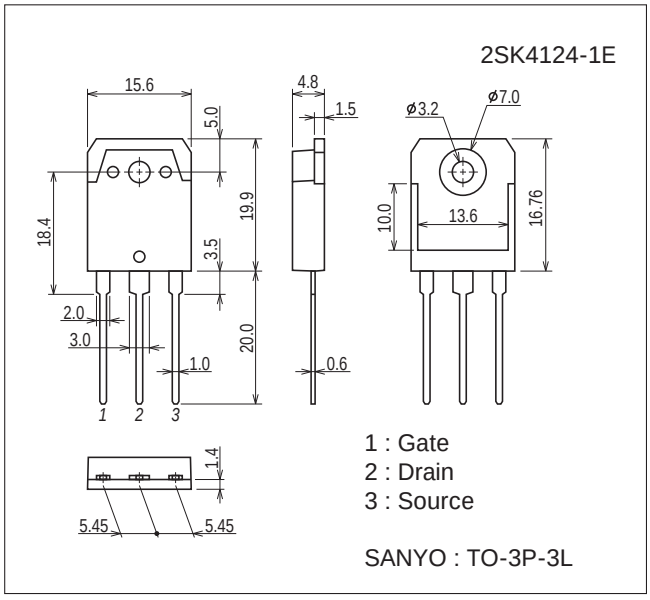
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		500	V
Gate-to-Source Voltage	V_{GSS}		±30	V
Drain Current (DC)	I_D		20	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	60	A
Allowable Power Dissipation	P_D		2.5	W
		Tc=25°C (SANYO's ideal heat dissipation condition)*1	170	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C
Avalanche Energy (Single Pulse) *1	E_{AS}		110	mJ
Avalanche Current *2	I_{AV}		20	A

*1 SANYO's condition is radiation from backside.
The method is applying silicone grease to the backside of the device and attaching the device to water-cooled radiator made of aluminium.
*2 V_{DD}=50V, L=500μH, I_{AV}=20A (Fig.1)
*3 L≤500μH, single pulse

Package Dimensions

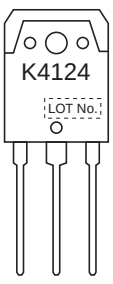
unit : mm (typ)
7539-002



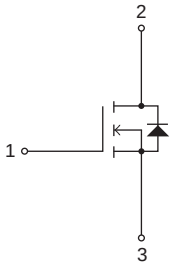
Product & Package Information

- Package : TO-3P-3L
- JEITA, JEDEC : SC-65, TO-247, SOT-199
- 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=10mA, V_{GS}=0V	500			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=400V, V_{GS}=0V			100	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±30V, V_{DS}=0V			±100	nA
Cutoff Voltage	V_{GS}(off)	V_{DS}=10V, I_D=1mA	3		5	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=10A	4.9	9.7		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)	I_D=8A, V_{GS}=10V		0.33	0.43	Ω
Input Capacitance	Ciss	V_{DS}=30V, f=1MHz		1200		pF
Output Capacitance	Coss			250		pF
Reverse Transfer Capacitance	Crss			55		pF
Turn-ON Delay Time	t_d(on)	See Fig.2		26.5		ns
Rise Time	t_r			95		ns
Turn-OFF Delay Time	t_d(off)			145		ns
Fall Time	t_f			58		ns
Total Gate Charge	Qg	V_{DS}=200V, V_{GS}=10V, I_D=20A		46.6		nC
Gate-to-Source Charge	Qgs			8.7		nC
Gate-to-Drain “Miller” Charge	Qgd			27.3		nC
Diode Forward Voltage	V_{SD}	I_S=20A, V_{GS}=0V		1.0	1.3	V

Fig.1 Avalanche Resistance Test Circuit

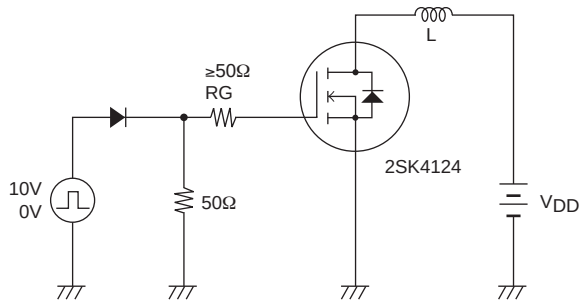
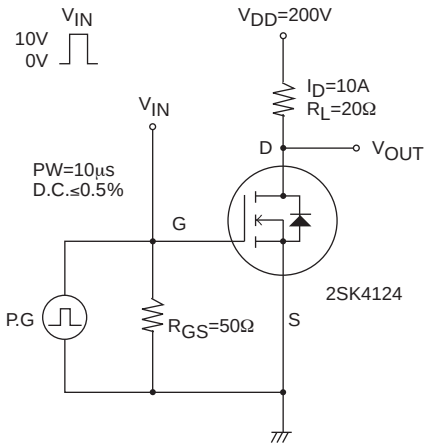
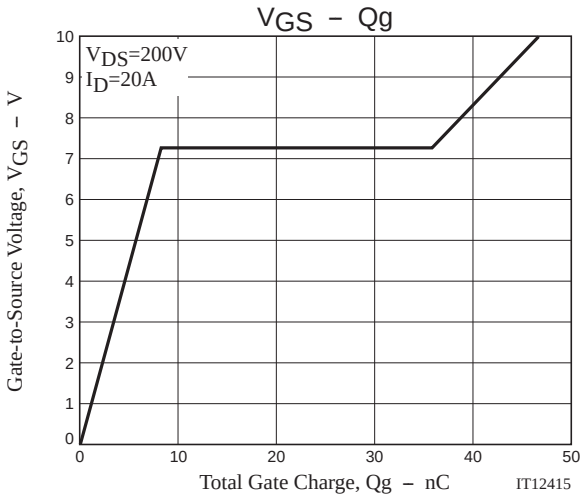


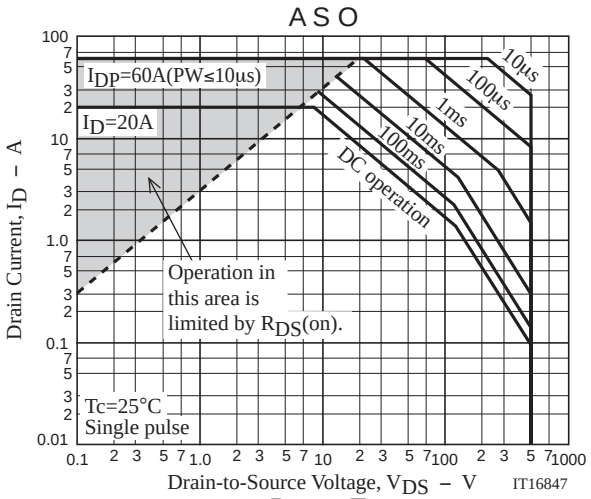
Fig.2 Switching Time Test Circuit

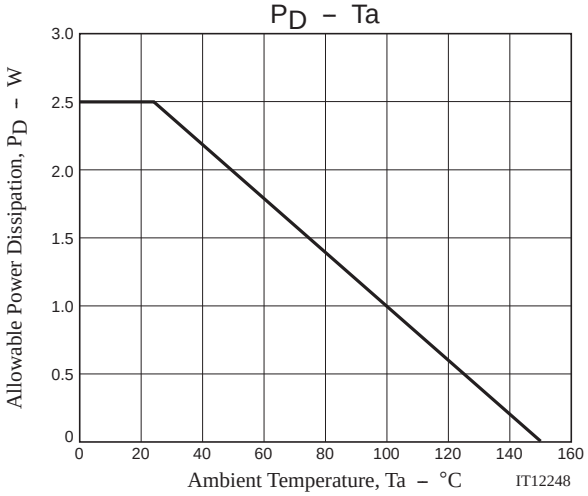


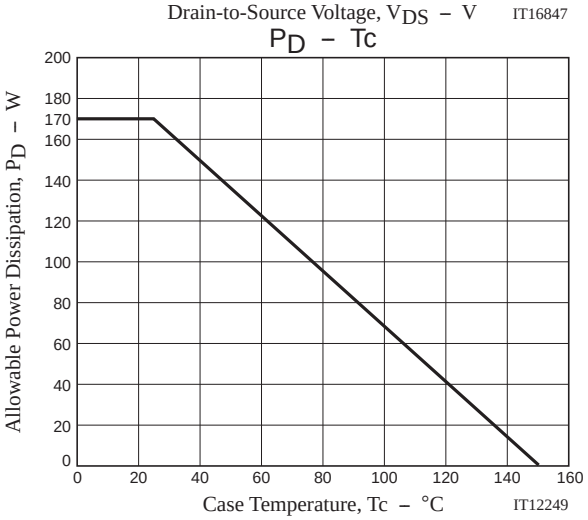
Ordering Information

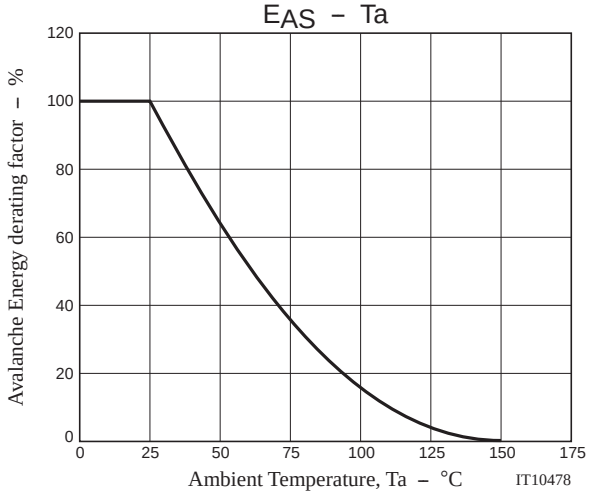
Device	Package	Shipping	memo
2SK4124-1E	TO-3P-3L	30pcs./magazine	Pb Free


VGS – Qg
VDS=200V
ID=20A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT12415


A S O
IDP=60A(PW≤10μs)
ID=20A
10μs
100μs
1ms
10ms
100ms
DC operation
Operation in this area is limited by RDS(on).
Tc=25°C
Single pulse
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT16847


PD – Ta
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT12248


PD – Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
IT12249


EAS – Ta
Avalanche Energy derating factor – %
Ambient Temperature, Ta – °C
IT10478

Magazine Specification

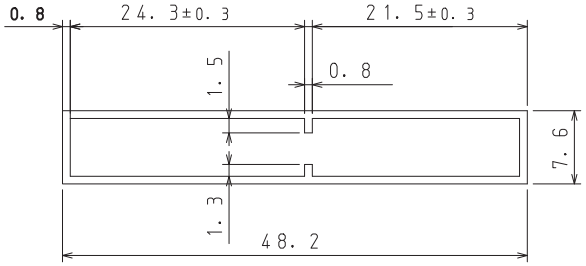
2SK4124-1E

1. Packing Format

Package Name	Maximum Number of devices contained (pcs)			Packing format	
	Magazine	Inner box	Outer box	Inner BOX	Outer BOX
TO-3P-3L	30	450	1800	SPD-0V0001 15 magazines contained Dimensions:mm(external) 568×150×55	SPD-LV0010 4 inner boxes contained Dimensions:mm(external) 590x225x178

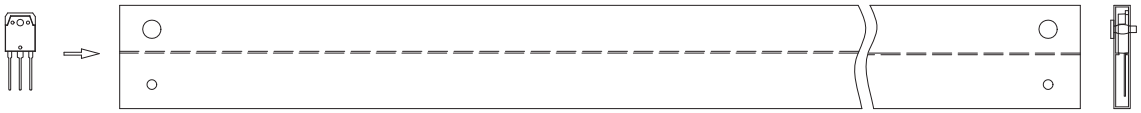
2. Magazine dimensions

(unit:mm)

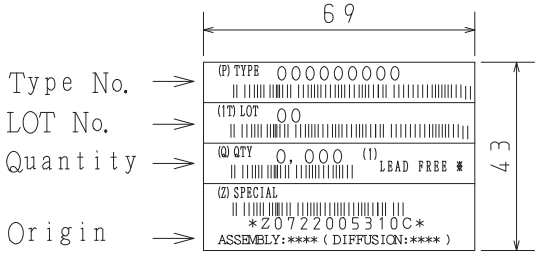


Tolerance=±0.2mm
Thickness=0.8±0.2mm
Length =508.0±1mm
Material =PVC or PET
(Antistatic treatment)

3. Storage method to magazine

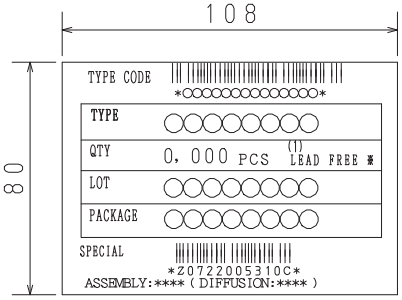


4. Inner box label (unit:mm)



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.

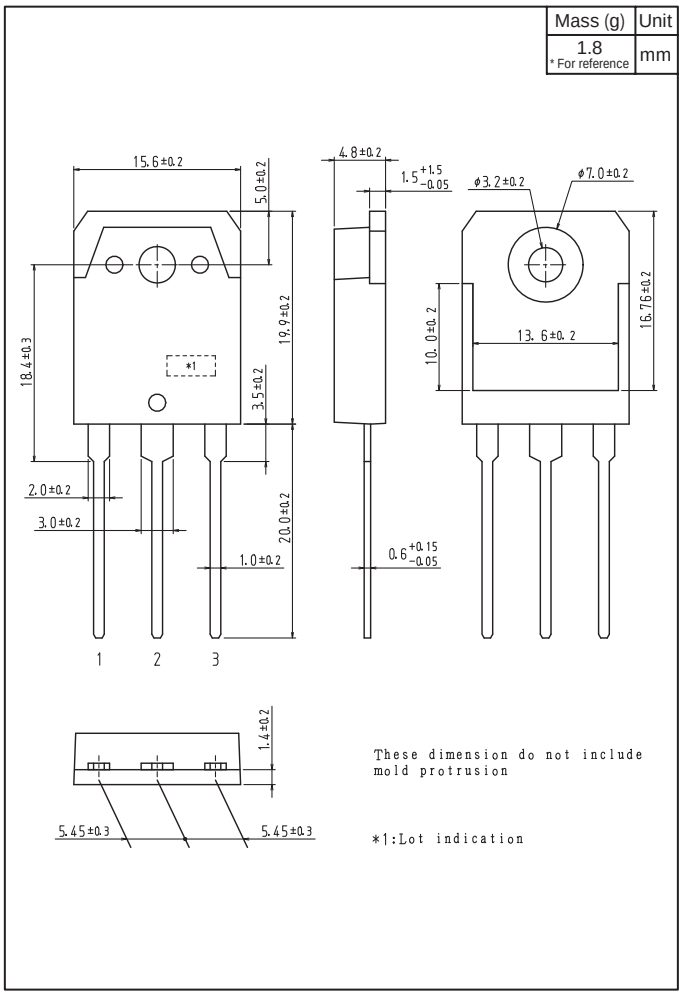


NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

Outline Drawing

2SK4124-1E



Note on usage : Since the 2SK4124 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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