



# 2SK4124

## N-Channel Power MOSFET 500V, 20A, 430mΩ, TO-3P-3L

ON Semiconductor®

<http://onsemi.com>

### 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 <sub>DSS</sub>		500	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±30	V
Drain Current (DC)	I <sub>D</sub>		20	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	60	A
Allowable Power Dissipation	P <sub>D</sub>		2.5	W
		T <sub>c</sub> =25°C (Our ideal heat dissipation condition)*1	170	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>		110	mJ
Avalanche Current *2	I <sub>AV</sub>		20	A

\*1 Our 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<sub>DD</sub>=50V, L=500μH, I<sub>AV</sub>=20A (Fig.1)

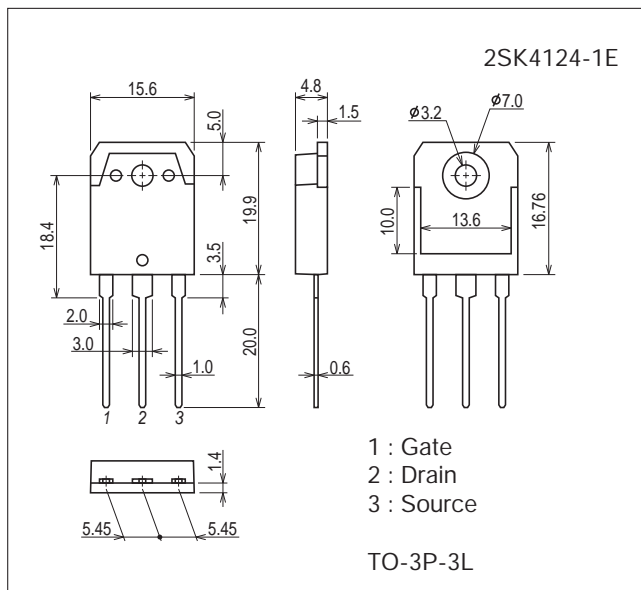
\*3 L≤500μH, single pulse

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)

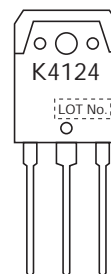
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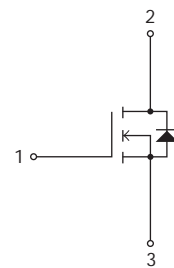
### Product & Package Information

- Package : TO-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	ID=10mA, VGS=0V	500			V	
Zero-Gate Voltage Drain Current	IDSS	VDS=400V, VGS=0V			100	μA	
Gate-to-Source Leakage Current	IGSS	VGS=±30V, VDS=0V			±100	nA	
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	3		5	V	
Forward Transfer Admittance	yfs	VDS=10V, ID=10A	4.9	9.7		S	
Static Drain-to-Source On-State Resistance	RDS(on)	ID=8A, VGS=10V		0.33	0.43	Ω	
Input Capacitance	Ciss	VDS=30V, f=1MHz		1200		pF	
Output Capacitance	Coss				250		pF
Reverse Transfer Capacitance	Crss				55		pF
Turn-ON Delay Time	td(on)	See Fig.2		26.5		ns	
Rise Time	tr				95		ns
Turn-OFF Delay Time	td(off)				145		ns
Fall Time	tf				58		ns
Total Gate Charge	Qg	VDS=200V, VGS=10V, ID=20A		46.6		nC	
Gate-to-Source Charge	Qgs				8.7		nC
Gate-to-Drain "Miller" Charge	Qgd				27.3		nC
Diode Forward Voltage	VSD	IS=20A, VGS=0V		1.0	1.3	V	

Fig.1 Avalanche Resistance Test Circuit

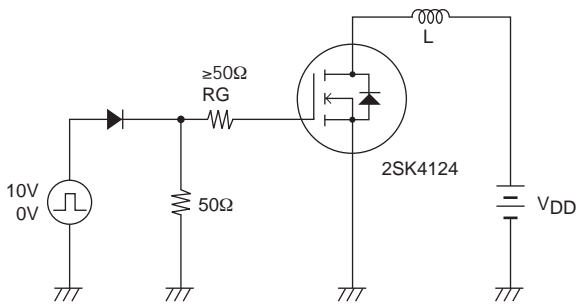
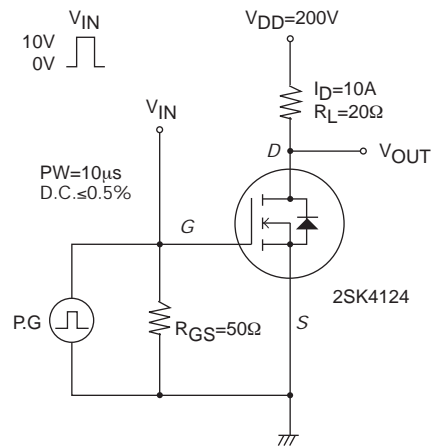
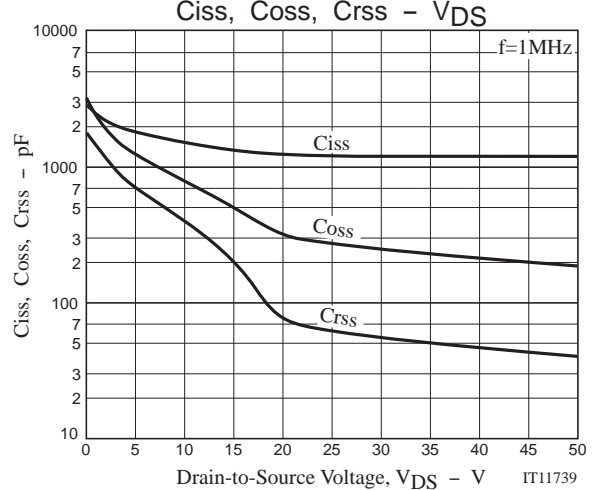
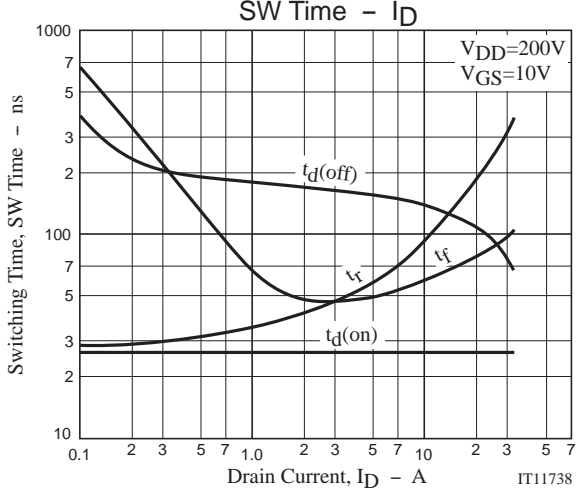
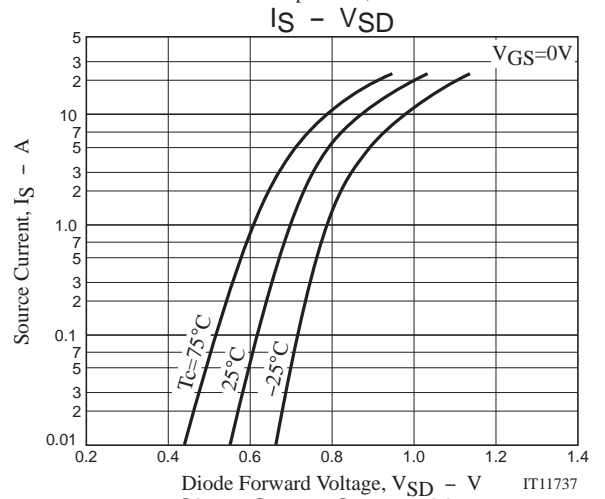
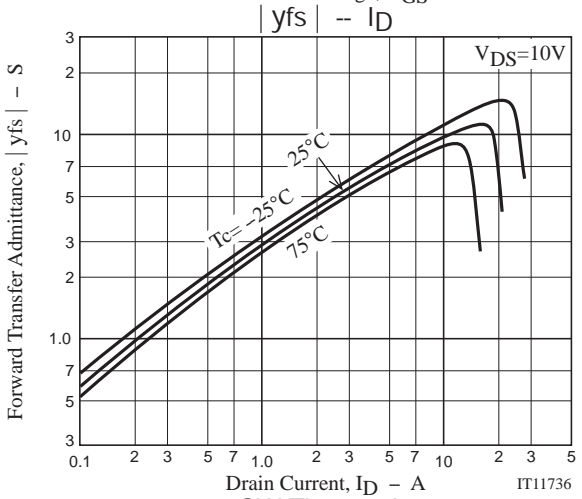
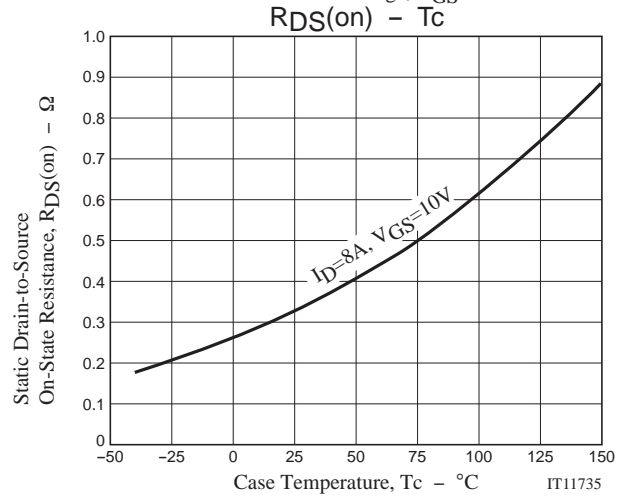
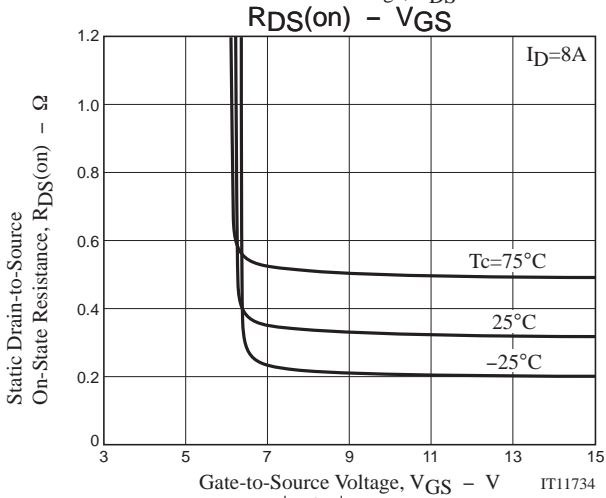
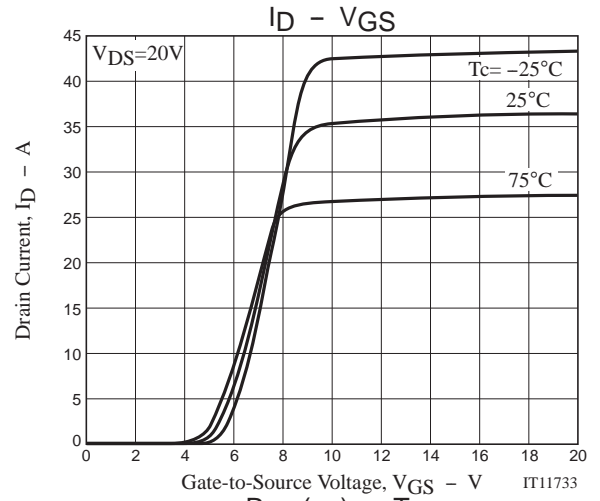
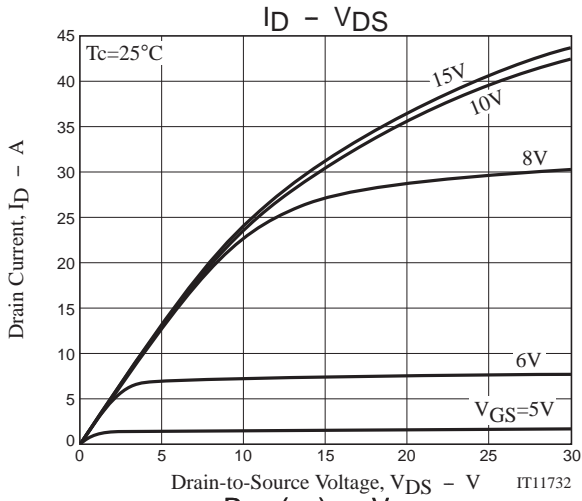


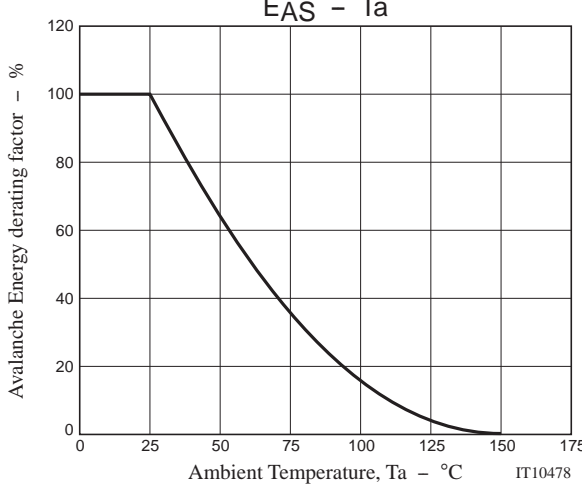
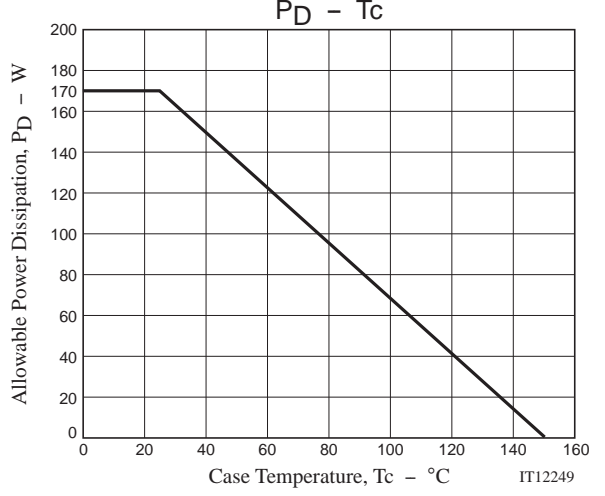
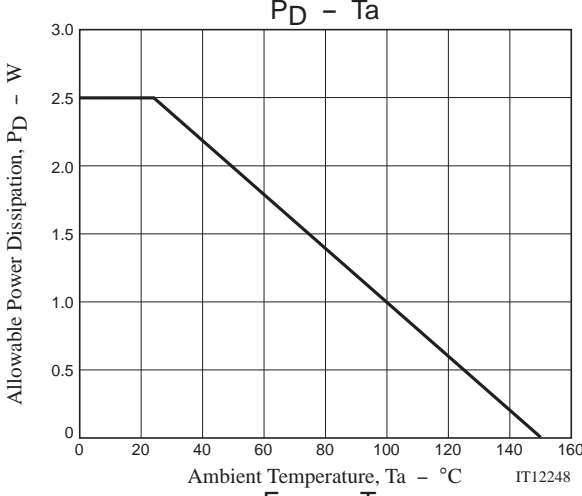
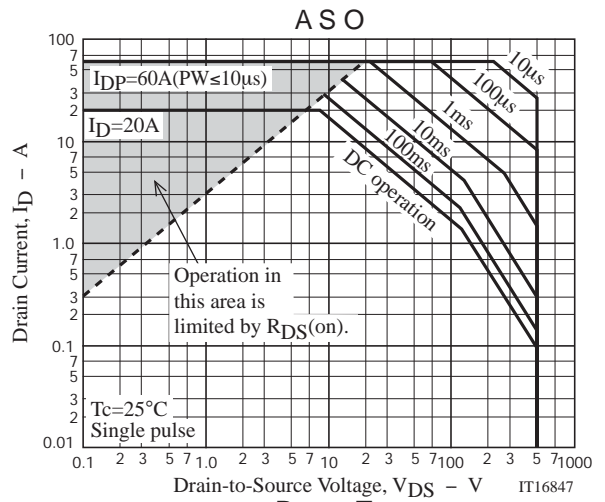
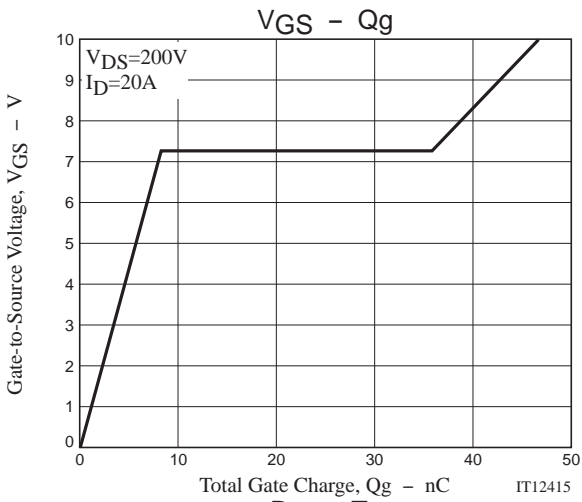
Fig.2 Switching Time Test Circuit



Ordering Information

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





Magazine Specification

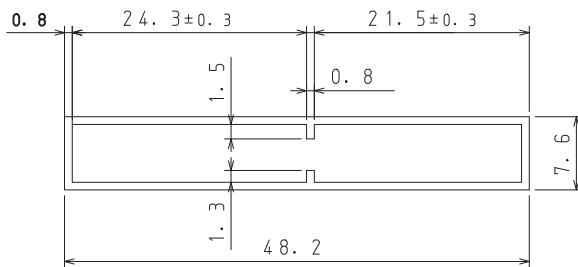
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1. Packing Format

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) 590×225×178

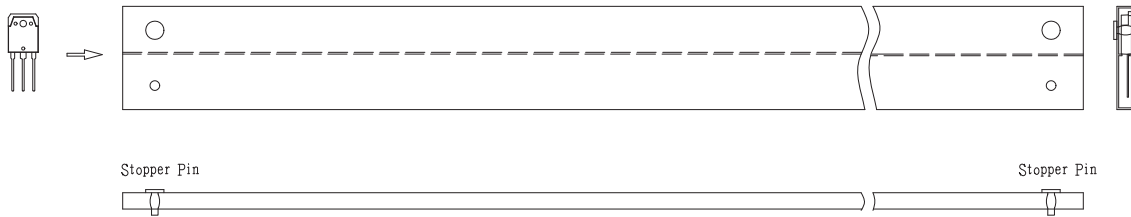
2. Magazine dimensions

(unit:mm)



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

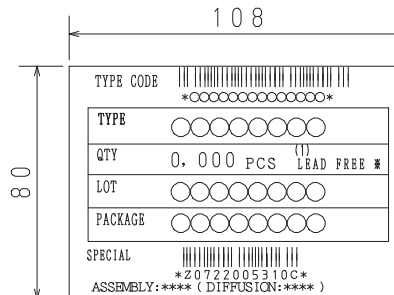
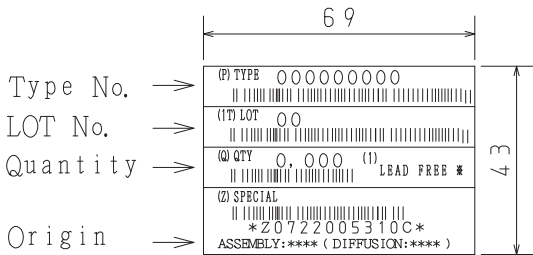
3. Storage method to magazine



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.



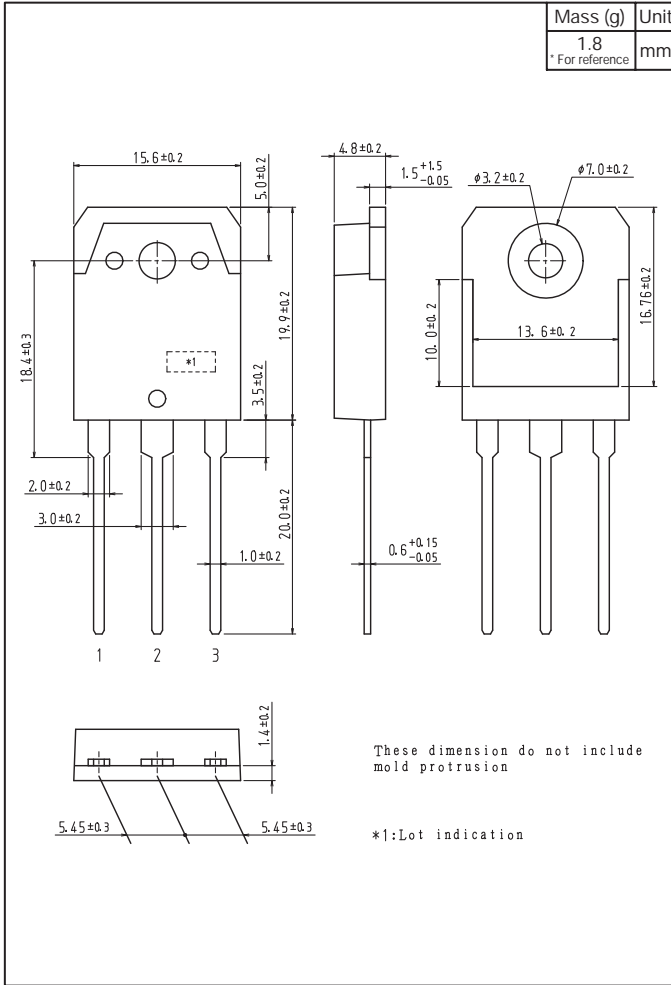
NOTE (1)

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

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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