



2SK4094

N-Channel Power MOSFET 60V, 100A, 5mΩ, TO-220-3L

ON Semiconductor®

<http://onsemi.com>

Features

- ON-resistance $R_{DS(on)1}=3.8\text{m}\Omega$ (typ.)
- Input capacitance $C_{iss}=12500\text{pF}$ (typ.)
- 4V drive

Specifications

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}		60	V
Gate-to-Source Voltage	V_{GS}		± 20	V
Drain Current (DC)	I_D		100	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	400	A
Allowable Power Dissipation	P_D		1.75	W
		$T_c=25^\circ\text{C}$	90	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	E_{AS}		850	mJ
Avalanche Current *2	I_{AV}		70	A

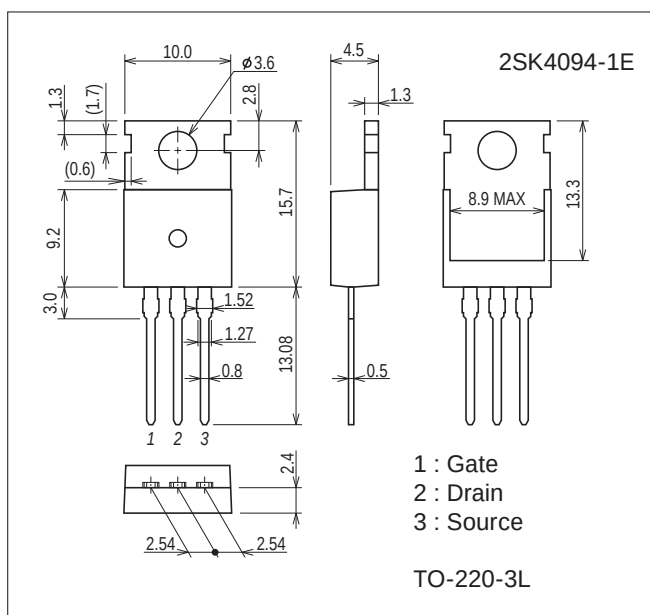
Note : *1 $V_{DD}=30\text{V}$, $L=200\mu\text{H}$, $I_{AV}=70\text{A}$ (Fig.1)*2 $L \leq 200\mu\text{H}$, single pulse

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)

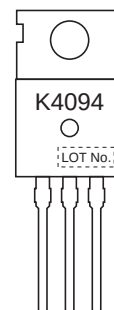
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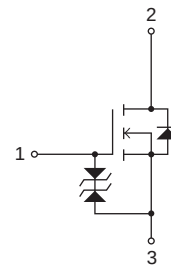
Product & Package Information

- Package : TO-220-3L
- JEITA, JEDEC : SC-46, TO-220AB
- Minimum Packing Quantity : 50 pcs./magazine

Marking



Electrical Connection



Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1mA, V_{GS}=0V$	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=16V, V_{DS}=0V$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=50A$	45	75		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=50A, V_{GS}=10V$		3.8	5.0	$m\Omega$
	$R_{DS(on)2}$	$I_D=50A, V_{GS}=4V$		4.9	7.0	$m\Omega$
Input Capacitance	C_{iss}	$V_{DS}=20V, f=1MHz$		12500		pF
Output Capacitance	C_{oss}			1200		pF
Reverse Transfer Capacitance	C_{rss}			950		pF
Turn-ON Delay Time	$t_d(on)$	See Fig.2		80		ns
Rise Time	t_r			630		ns
Turn-OFF Delay Time	$t_d(off)$			860		ns
Fall Time	t_f			750		ns
Total Gate Charge	Q_g	$V_{DS}=30V, V_{GS}=10V, I_D=100A$		220		nC
Gate-to-Source Charge	Q_{gs}			30		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			55		nC
Diode Forward Voltage	V_{SD}	$I_S=100A, V_{GS}=0V$		1.0	1.2	V

Fig.1 Avalanche Resistance Test Circuit

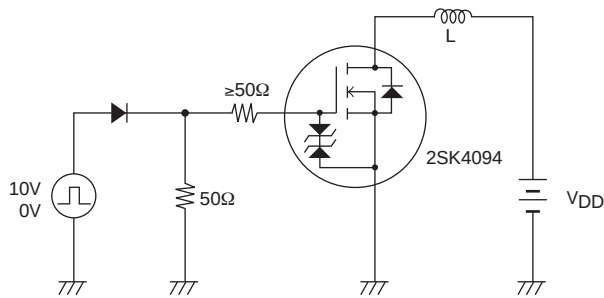
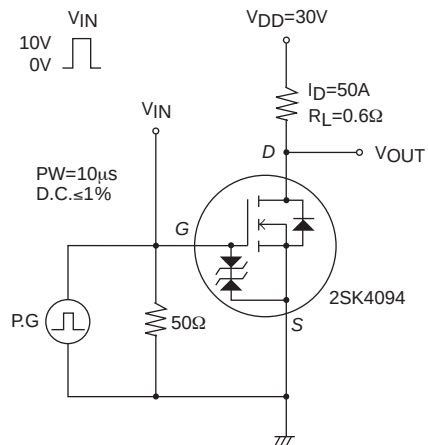
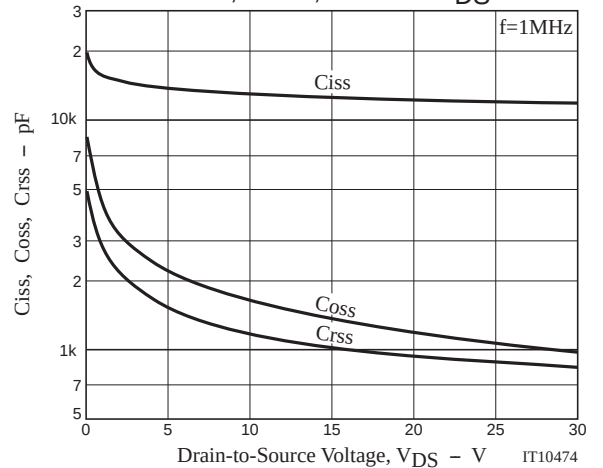
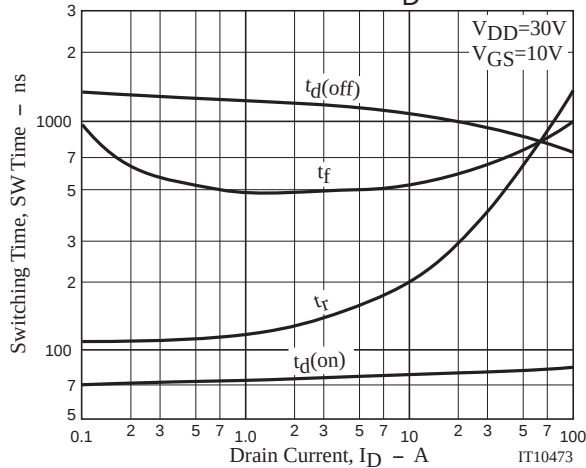
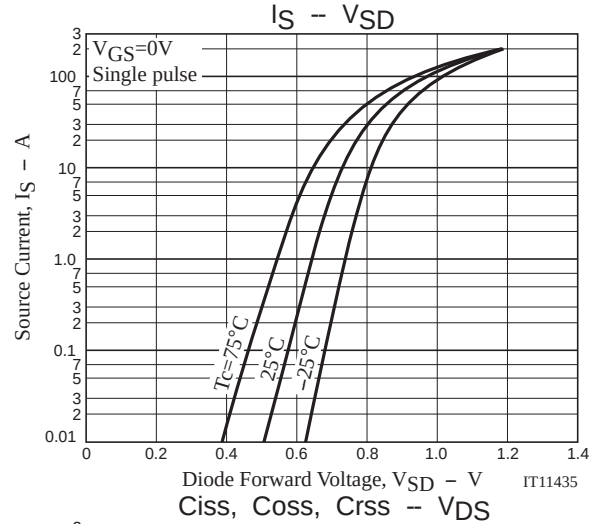
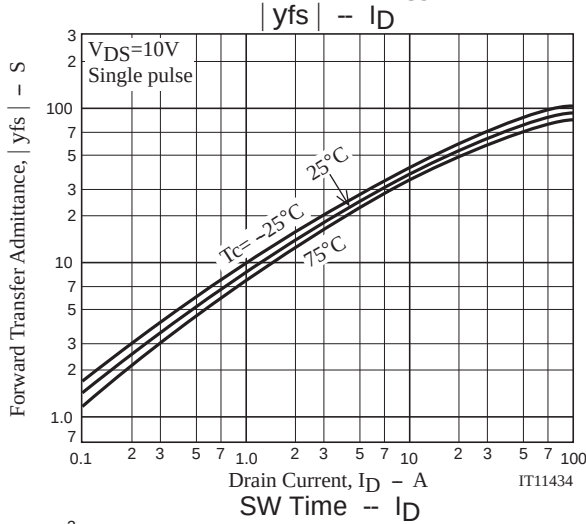
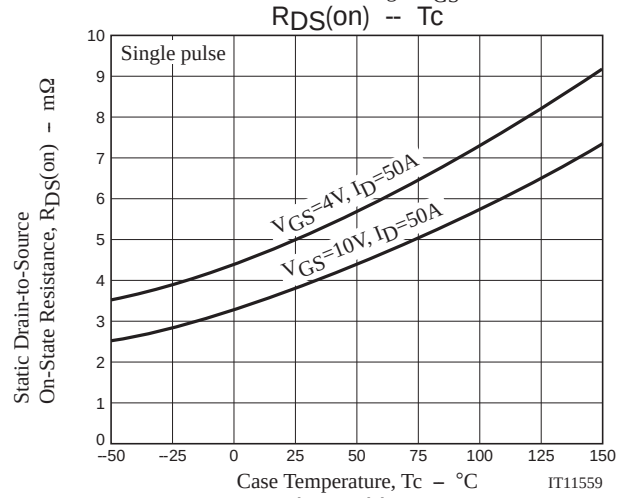
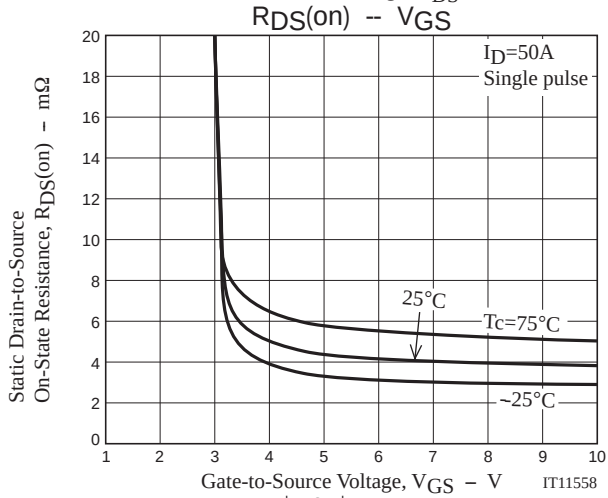
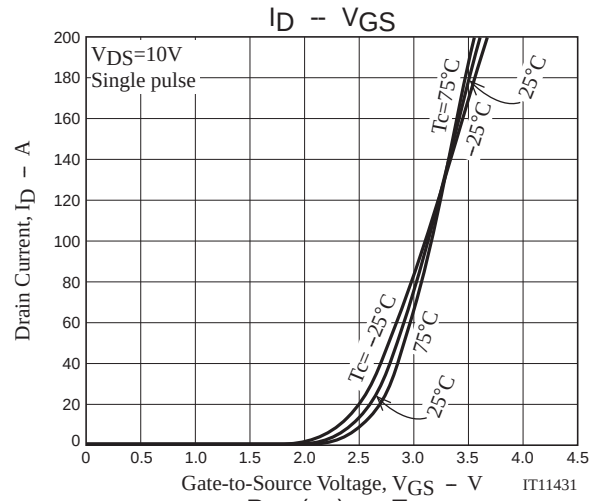
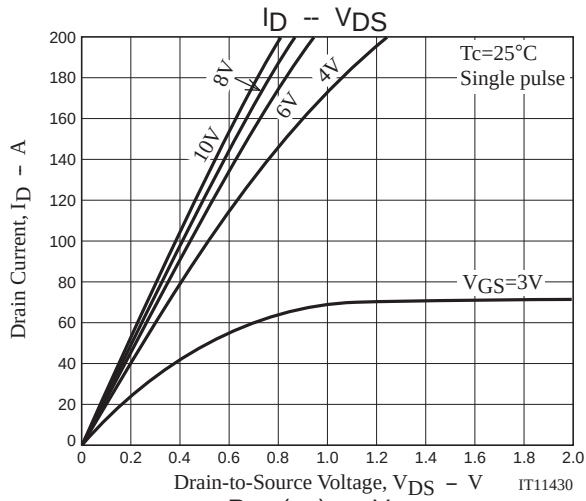


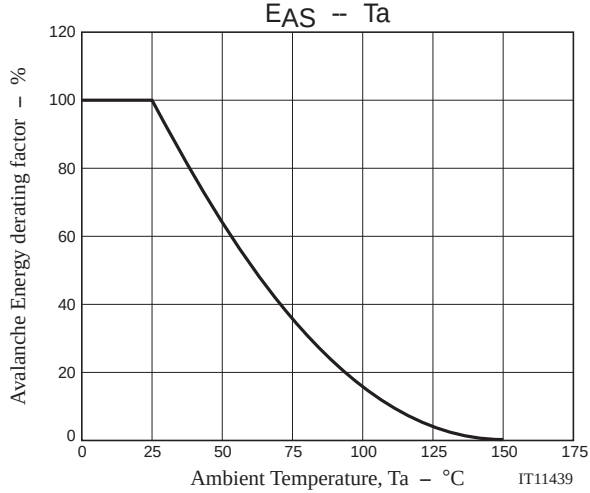
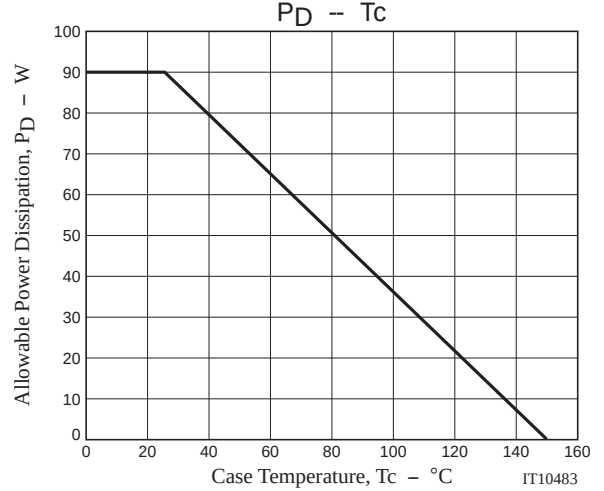
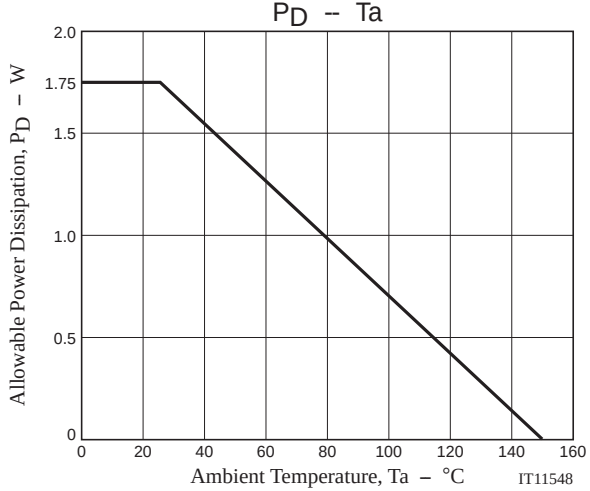
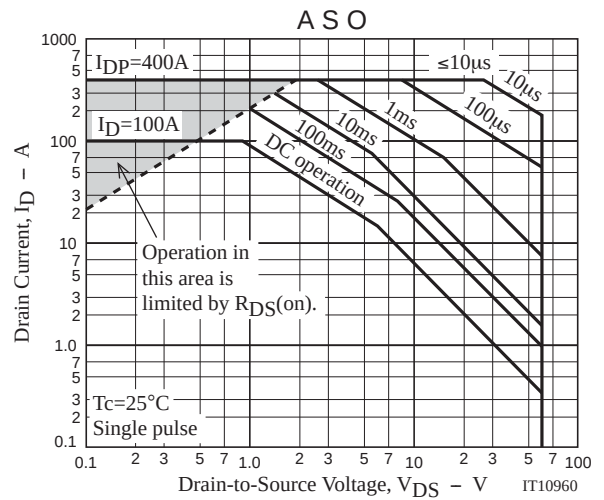
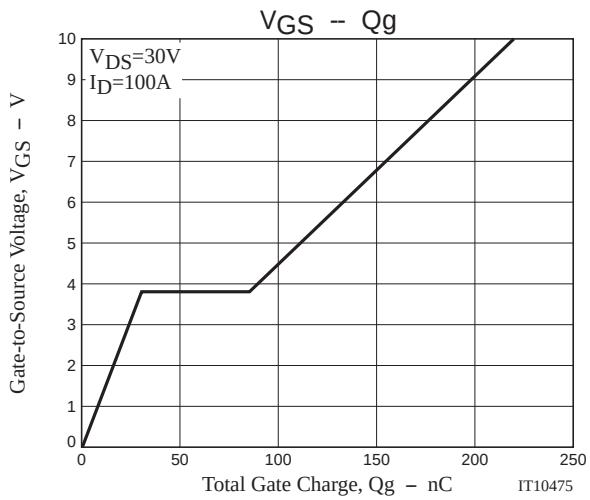
Fig.2 Switching Time Test Circuit



Ordering Information

Device	Package	Shipping	memo
2SK4094-1E	TO-220-3L	50pcs./magazine	Pb Free





Magazine Specification

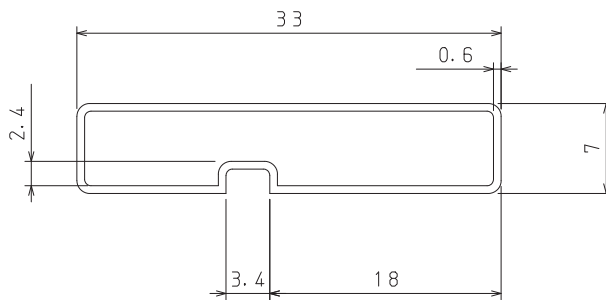
2SK4094-1E

1. Packing Format

Package Name	Maximum Number of devices contained (pcs)			Packing format	
	Magazine	Inner box	Outer box	Inner BOX	Outer BOX
TO-220-3L	50	1,000	4000	SPD-0V0001 20 magazines contained Dimensions:mm (external) 568×150×55	SPD-LV0010 4 inner boxes contained Dimensions:mm (external) 590×225×178

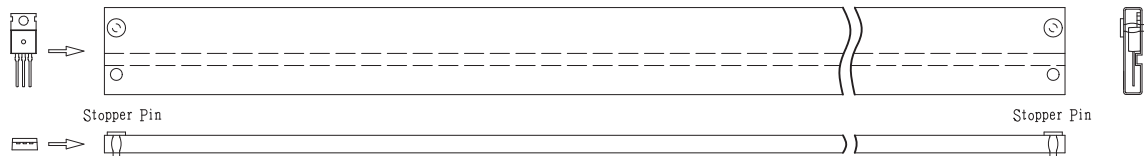
2. Magazine dimensions

(unit:mm)



Tolerance=±0.2mm
 Thickness=0.6+0.2/-0mm
 Length =512.6±1mm
 Material =PVC (Antistatic treatment)

3. Storage method to magazine



4. Inner box label (unit:mm)

Type No.	→	(P) TYPE 000000000
LOT No.	→	(T) LOT 00
Quantity	→	(Q) QTY 0,000 (1) LEAD FREE *
Origin	→	(Z) SPECIAL *Z0722005310C* ASSEMBLY:**** (DIFFUSION:****)

NOTE (1)

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

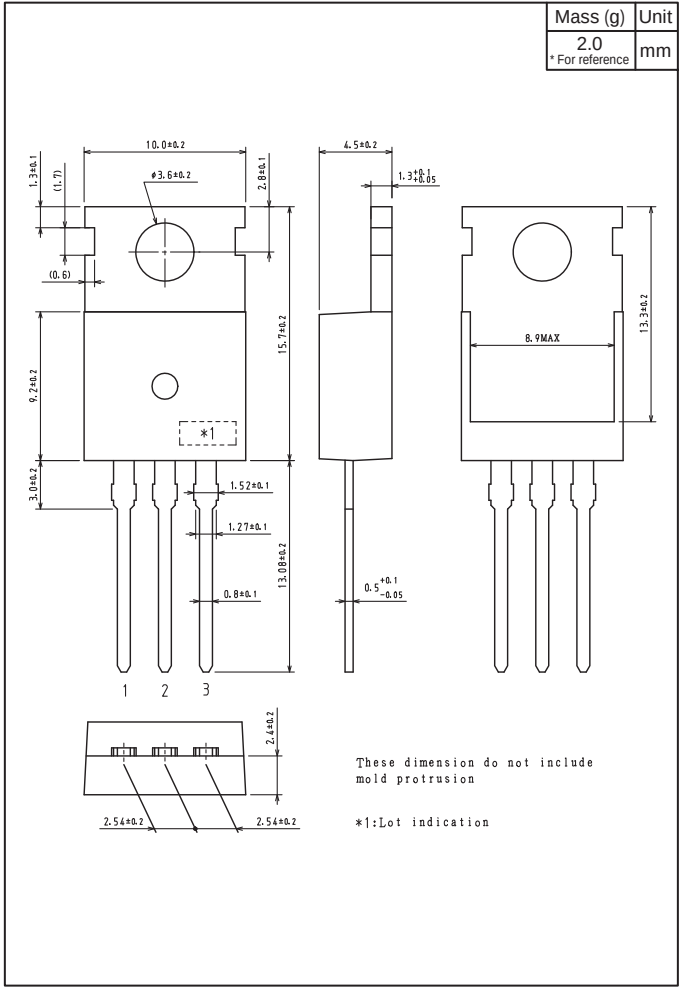
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

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.

TYPE CODE	
TYPE	00000000
QTY	0,000 PCS (1) LEAD FREE *
LOT	00000000
PACKAGE	00000000
SPECIAL	
ASSEMBLY:**** (DIFFUSION:****)	

Outline Drawing
2SK4094-1E



Note on usage : Since the 2SK4094 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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