



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

# 2SK4196LS — N-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- ON-resistance  $R_{DS(on)}=1.2\Omega$  (typ.)
- Input capacitance  $C_{iss}=360pF$
- 10V drive

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		500	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 30$	V
Drain Current (DC)	$I_{DC}^{*1}$	Limited only by maximum temperature $T_{ch}=150^\circ C$	5.5	A
	$I_{Dpack}^{*2}$	$T_c=25^\circ C$ (SANYO's ideal heat dissipation condition)*3	5.0	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu s$ , duty cycle $\leq 1\%$	21	A
Allowable Power Dissipation	PD		2.0	W
		$T_c=25^\circ C$ (SANYO's ideal heat dissipation condition)*3	30	W
Channel Temperature	$T_{ch}$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$
Avalanche Energy (Single Pulse) *4	EAS		83	mJ
Avalanche Current *5	$I_{AV}$		5.5	A

Note : \*1 Shows chip capability

\*2 Package limited

\*3 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.

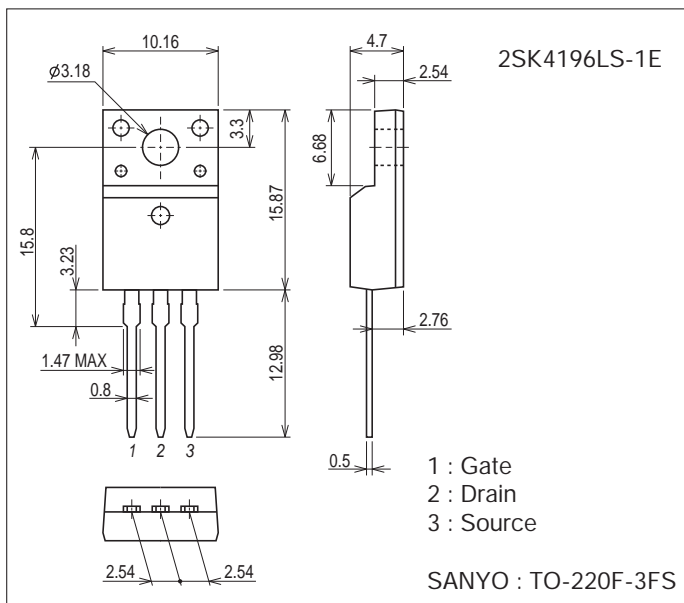
\*4  $V_{DD}=50V$ ,  $L=5mH$ ,  $I_{AV}=5.5A$  (Fig.1)

\*5  $L \leq 5mH$ , single pulse

### Package Dimensions

unit : mm (typ)

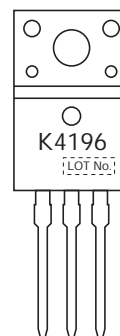
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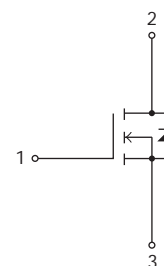
### Product & Package Information

- Package : TO-220F-3FS
- JEITA, JEDEC : SC-67
- Minimum Packing Quantity : 50 pcs./magazine

### Marking



### Electrical Connection



# 2SK4196LS

## 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	$\mu A$	
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 30V, V_{DS}=0V$			$\pm 100$	nA	
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	3		5	V	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=2.8A$	1.3	2.5		S	
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=2.8A, V_{GS}=10V$		1.2	1.56	$\Omega$	
Input Capacitance	$C_{iss}$	$V_{DS}=30V, f=1MHz$		360		pF	
Output Capacitance	$C_{oss}$				77		pF
Reverse Transfer Capacitance	$C_{rss}$				17		pF
Turn-ON Delay Time	$t_{d(on)}$	See Fig.2		13		ns	
Rise Time	$t_r$				32		ns
Turn-OFF Delay Time	$t_{d(off)}$				39		ns
Fall Time	$t_f$				18		ns
Total Gate Charge	$Q_g$	$V_{DS}=200V, V_{GS}=10V, I_D=5.5A$		14.6		nC	
Gate-to-Source Charge	$Q_{gs}$				3.2		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$				8.8		nC
Diode Forward Voltage	$V_{SD}$	$I_S=5.5A, V_{GS}=0V$		0.9	1.2	V	

Fig.1 Unclamped Inductive Switching Test Circuit

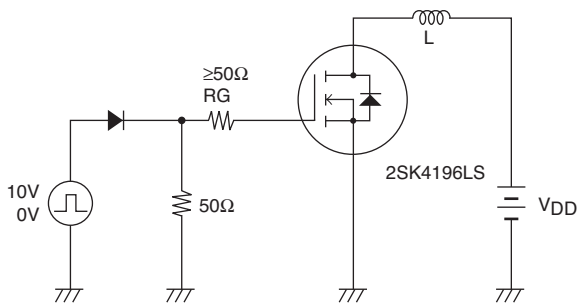
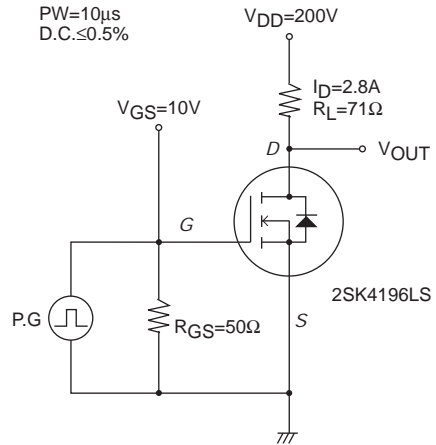


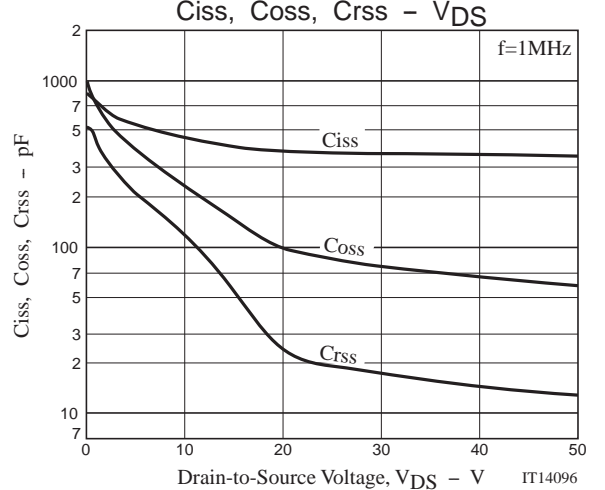
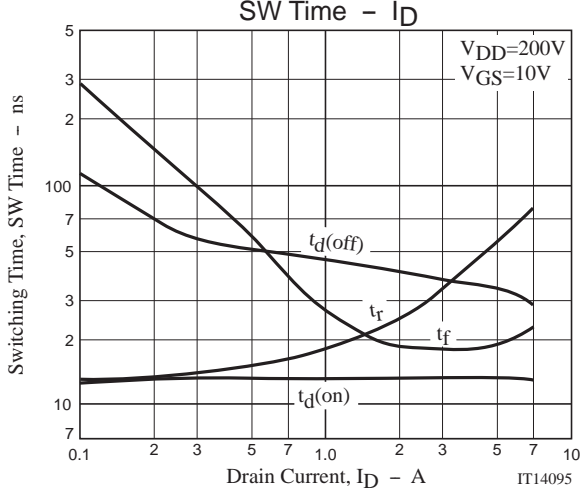
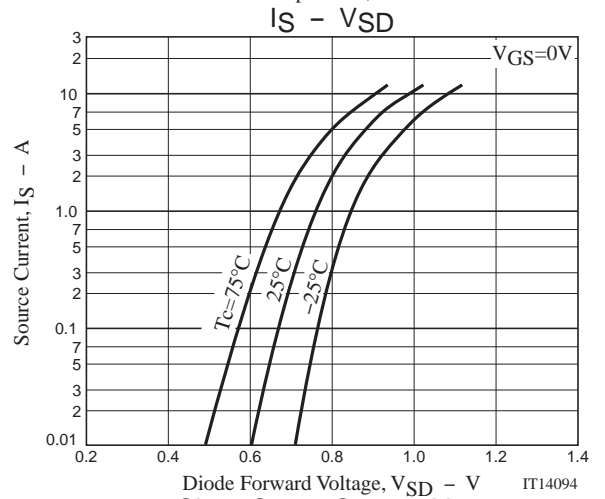
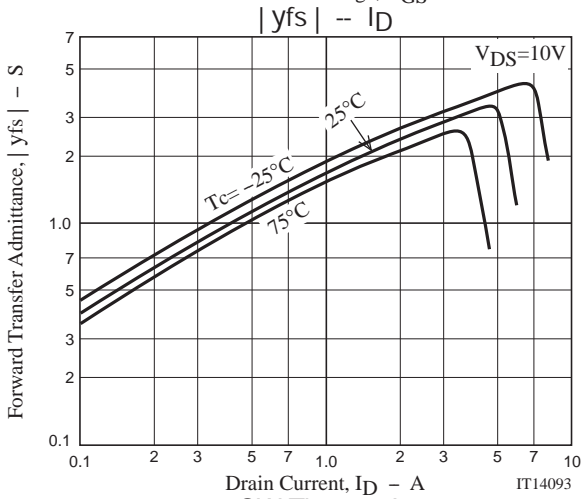
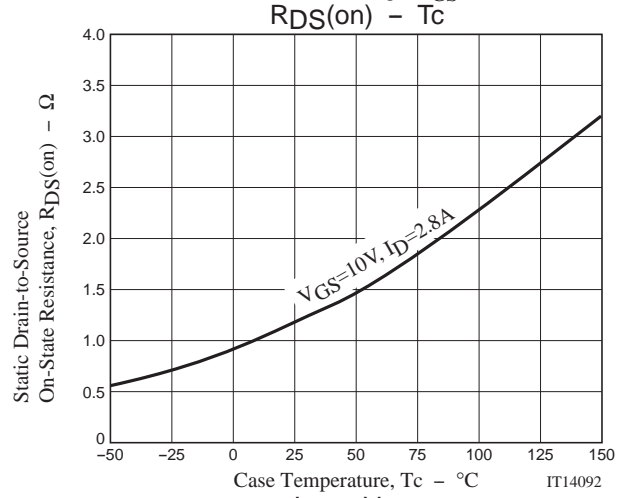
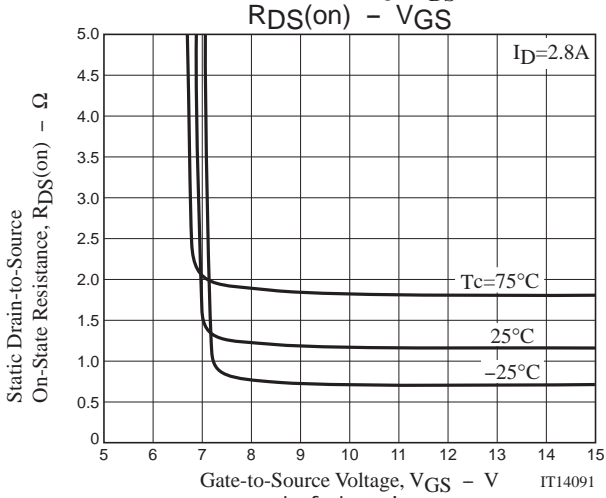
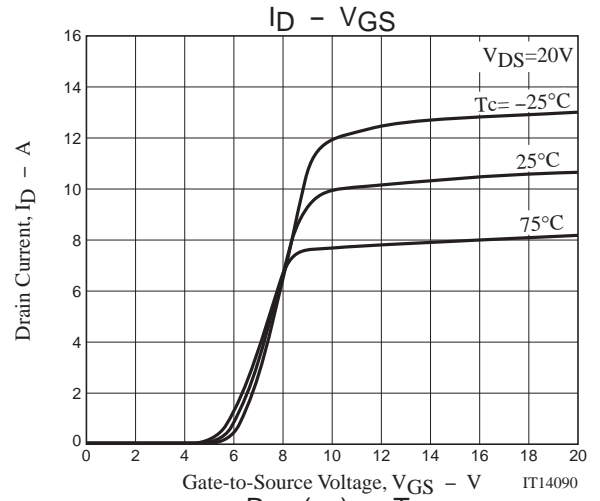
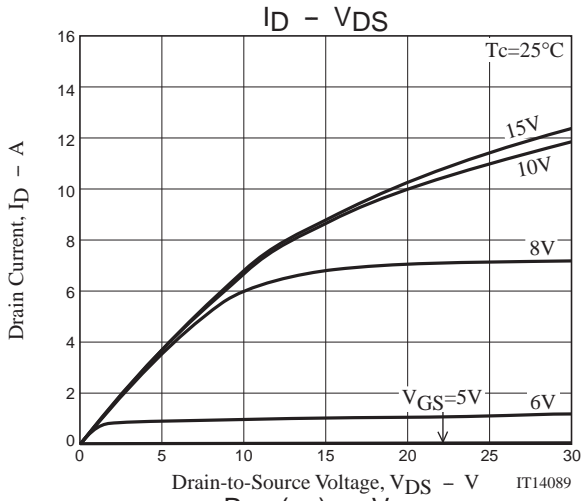
Fig.2 Switching Time Test Circuit



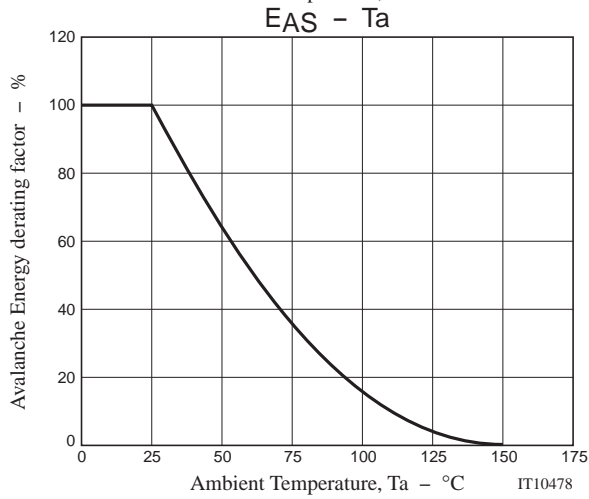
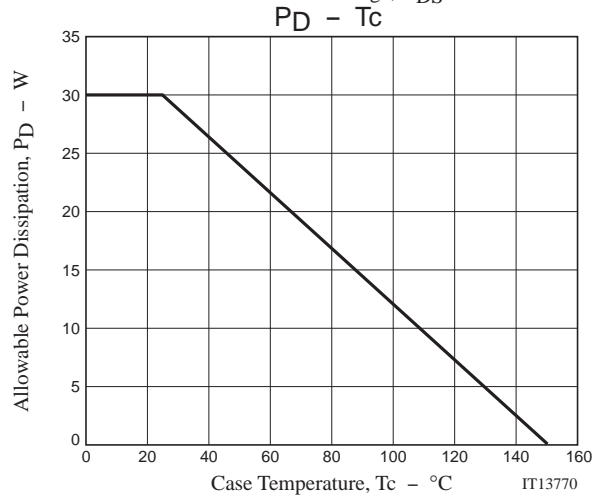
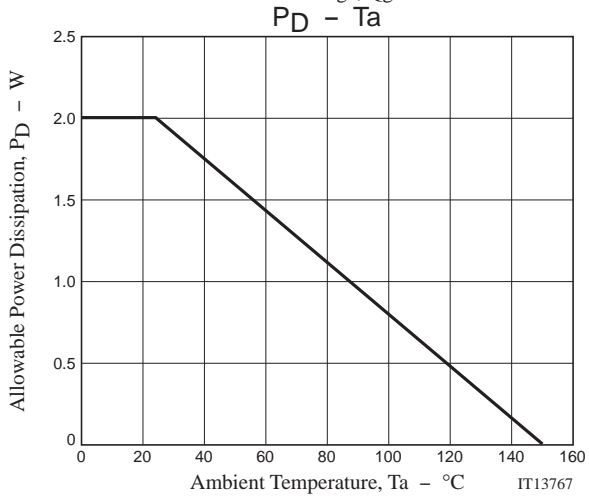
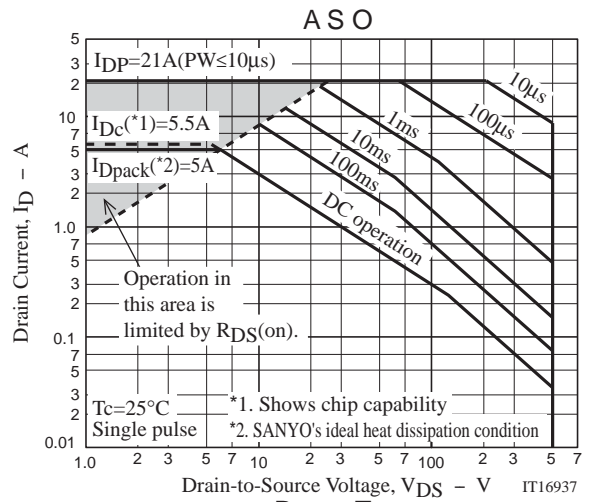
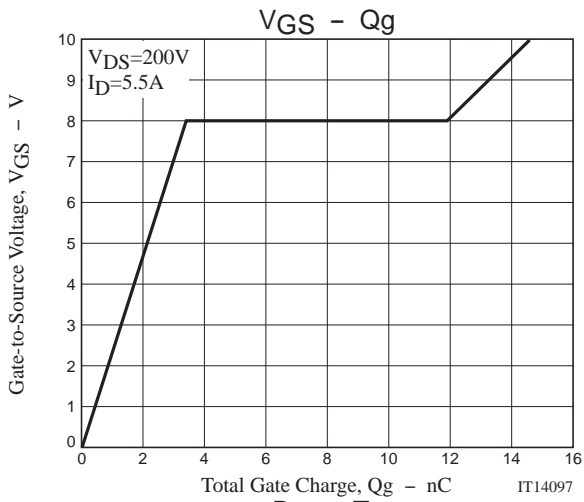
## Ordering Information

Device	Package	Shipping	memo
2SK4196LS-1E	TO-220F-3FS	50pcs./magazine	Pb Free

# 2SK4196LS



# 2SK4196LS



# 2SK4196LS

## Magazine Specification

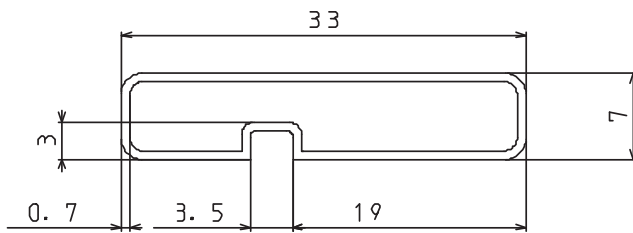
2SK4196LS-1E

### 1. Packing Format

Package Name	Magazine Name	Maximum Number of devices contained (pcs)			Packing format	
		Magazine	Inner box	Outer box	Inner BOX	Outer BOX
TO-220F-3FS	TO-220F	50	1,000	4,000	SPD-0V0001 20 magazines contained Dimensions:mm (external) 568×150×55	SPT-081029 4 inner boxes contained Dimensions:mm (external) 590×225×178

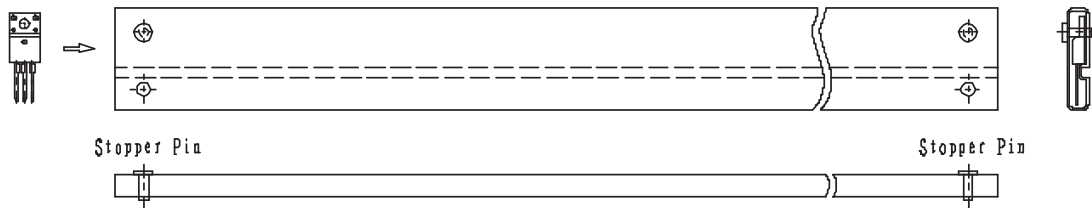
### 2. Magazine dimensions

(unit:mm)

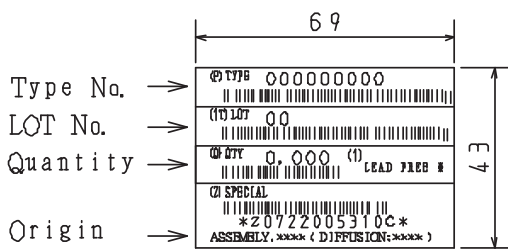


Tolerance=±0.3mm  
 Thickness=0.7±0.2mm  
 Length =532.5±2mm  
 Material =PVC (Antistatic treatment)

### 3. Storage method to magazine

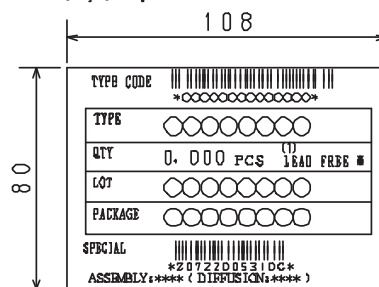


### 4. Inner box label (unit:mm)



### 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.



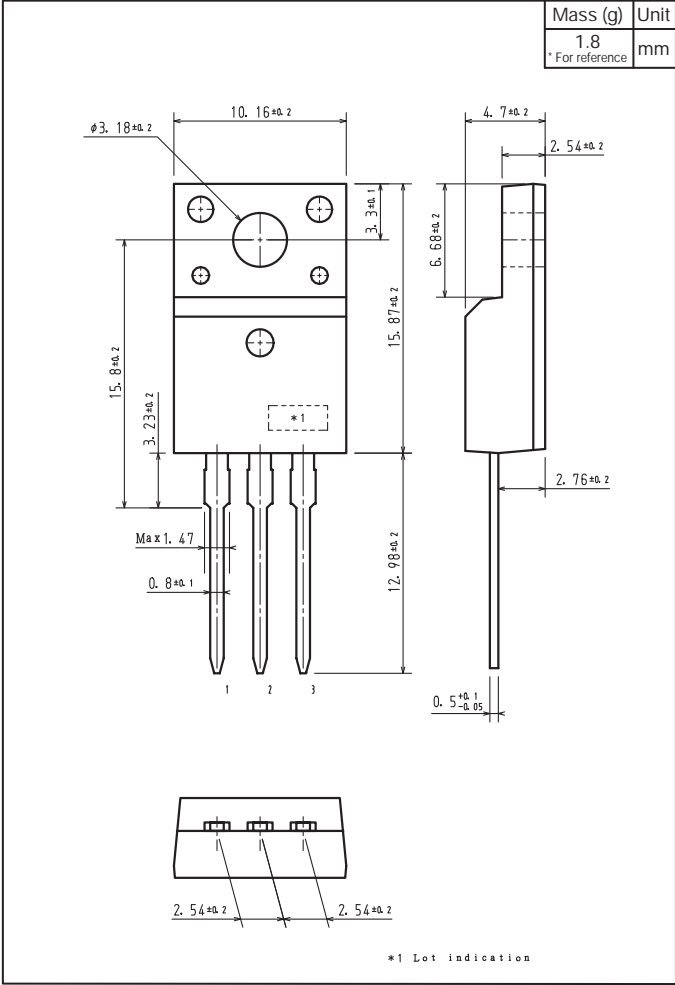
#### NOTE (1)

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

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

2SK4196LS

Outline Drawing  
2SK4196LS-1E



Note on usage : Since the 2SK4196LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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