



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 2SK4096LS — N-Channel Silicon MOSFET — General-Purpose Switching Device Applications

### Features

- ON-resistance  $R_{DS(on)}=0.65\Omega$  (typ.)
- 10V drive
- Input capacitance  $C_{iss}=600\text{pF}$

### Specifications

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

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 $T_{ch}=150^\circ\text{C}$	8	A
	$I_{Dpack}^*2$	$T_c=25^\circ\text{C}$ (SANYO's ideal heat dissipation condition)*3	7.1	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	32	A
Allowable Power Dissipation	PD		2.0	W
		$T_c=25^\circ\text{C}$ (SANYO's ideal heat dissipation condition)*3	33	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *4	EAS		354	mJ
Avalanche Current *5	I <sub>AV</sub>		8	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.

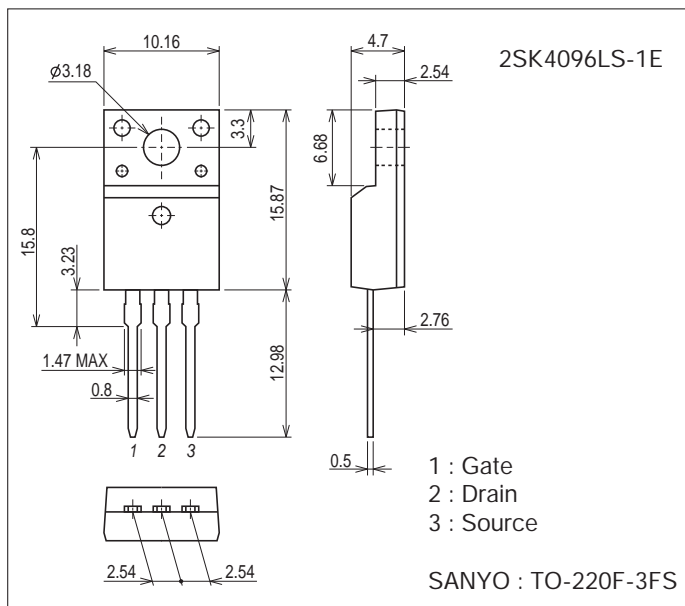
\*4  $V_{DD}=50\text{V}$ ,  $L=10\text{mH}$ ,  $I_{AV}=8\text{A}$  (Fig.1)

\*5  $L \leq 10\text{mH}$ , single pulse

### Package Dimensions

unit : mm (typ)

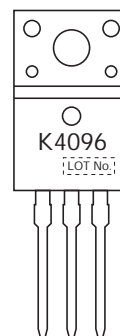
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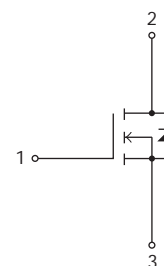
### Product & Package Information

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

### Marking



### Electrical Connection



SANYO Semiconductor Co., Ltd.

<http://www.sanyosemi.com/en/network/>

# 2SK4096LS

## 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} $	$V_{DS}=10V, I_D=4A$	2.2	4.5		S	
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=4A, V_{GS}=10V$		0.65	0.85	$\Omega$	
Input Capacitance	$C_{iss}$	$V_{DS}=30V, f=1MHz$		600		pF	
Output Capacitance	$C_{oss}$				130		pF
Reverse Transfer Capacitance	$C_{rss}$				28		pF
Turn-ON Delay Time	$t_{d(on)}$	See Fig.2		18.5		ns	
Rise Time	$t_r$			46		ns	
Turn-OFF Delay Time	$t_{d(off)}$			75		ns	
Fall Time	$t_f$			33		ns	
Total Gate Charge	$Q_g$	$V_{DS}=200V, V_{GS}=10V, I_D=8A$		24		nC	
Gate-to-Source Charge	$Q_{gs}$			4.5		nC	
Gate-to-Drain "Miller" Charge	$Q_{gd}$			14		nC	
Diode Forward Voltage	$V_{SD}$	$I_S=8A, V_{GS}=0V$		0.9	1.2	V	

Fig.1 Unclamped Inductive Switching Test Circuit

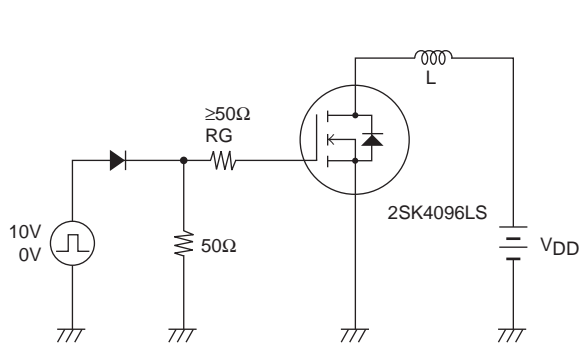
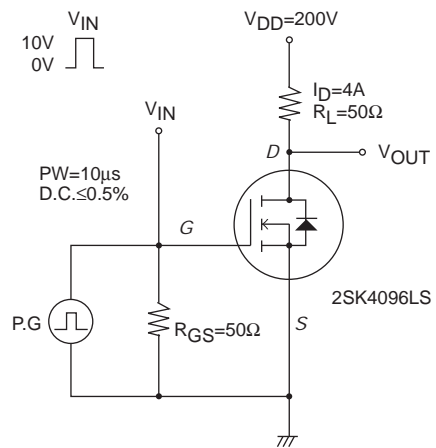


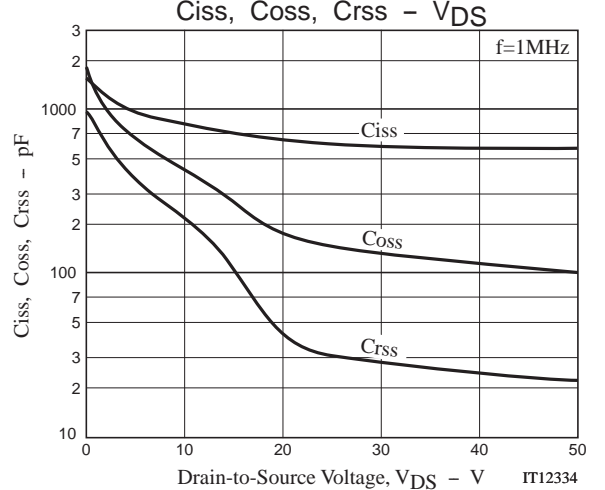
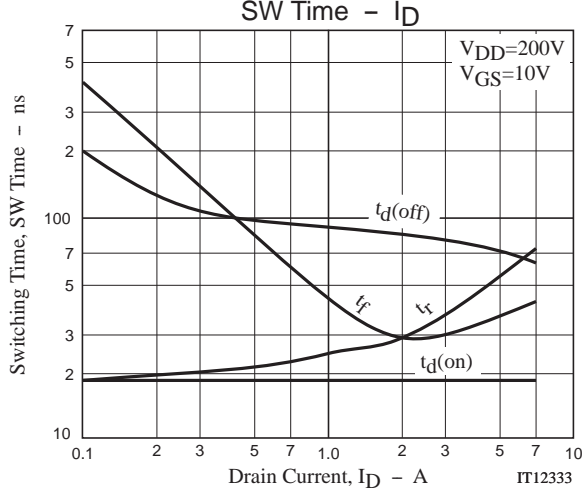
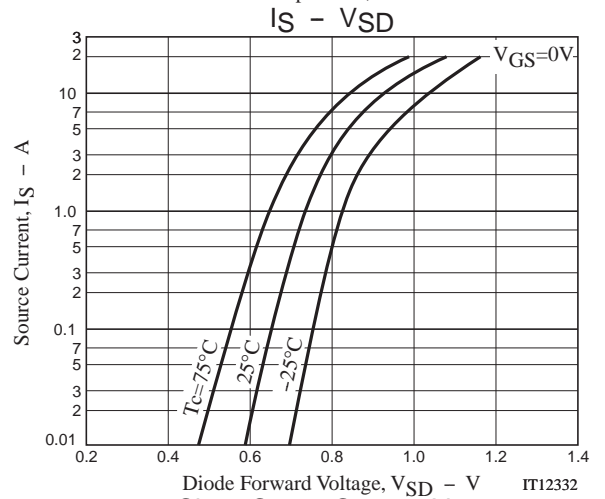
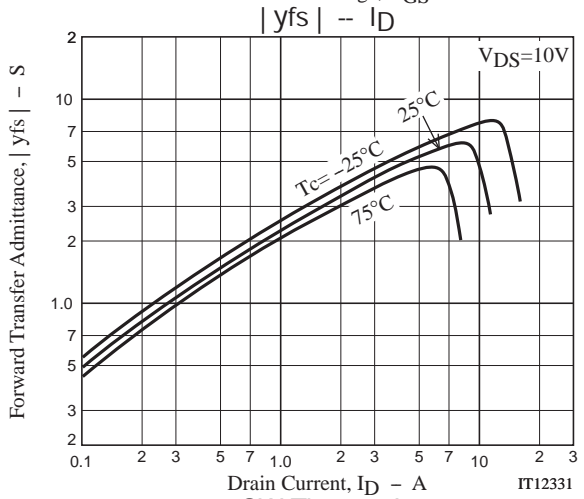
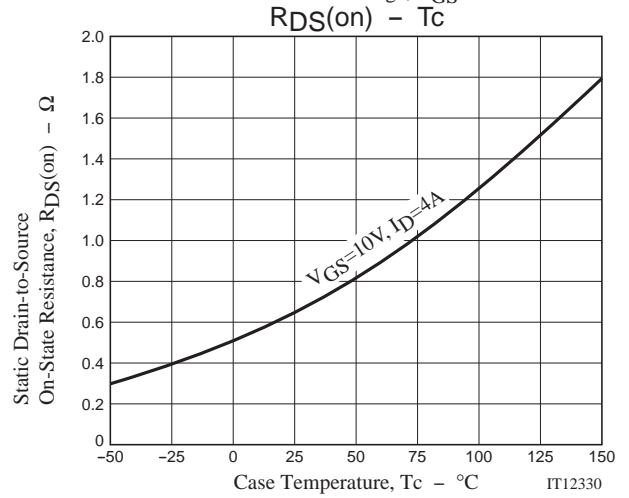
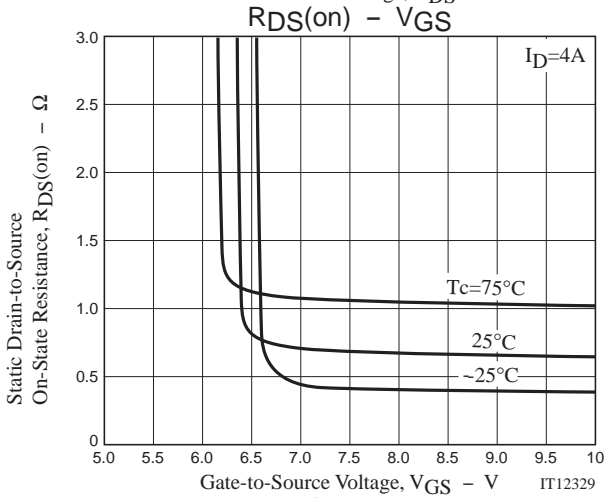
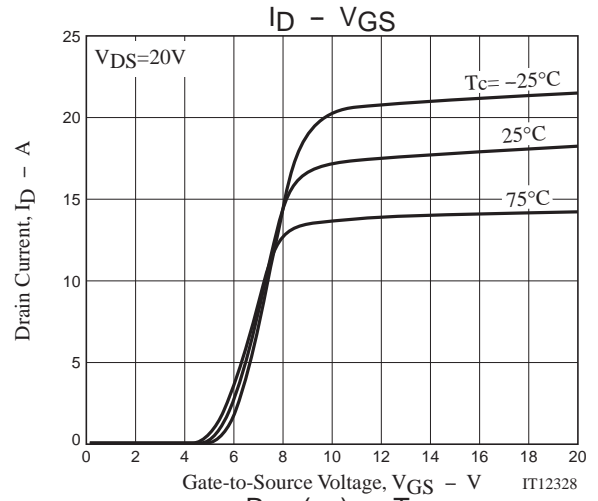
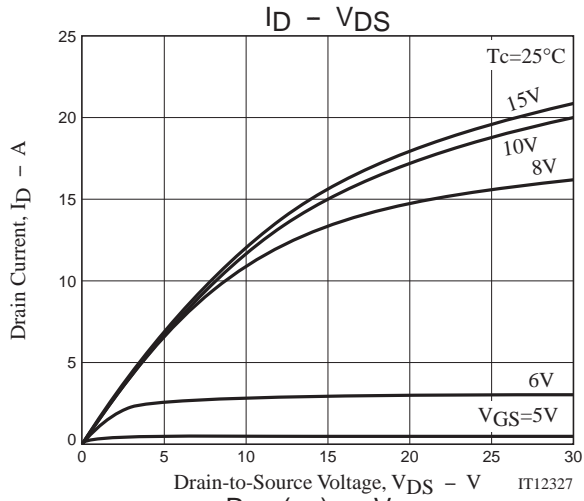
Fig.2 Switching Time Test Circuit



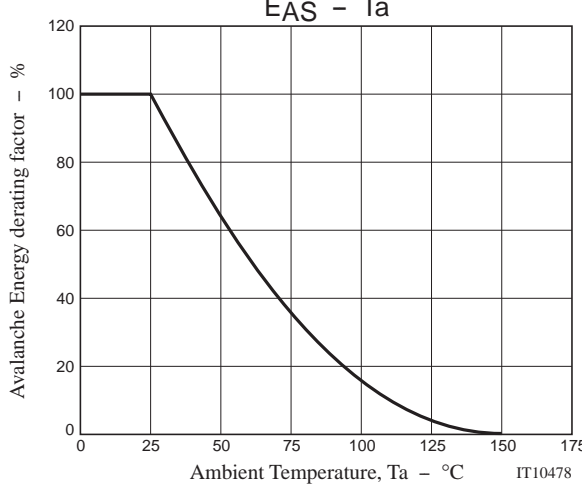
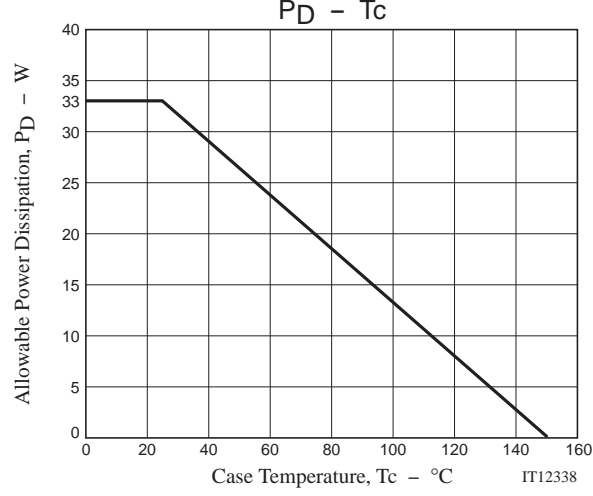
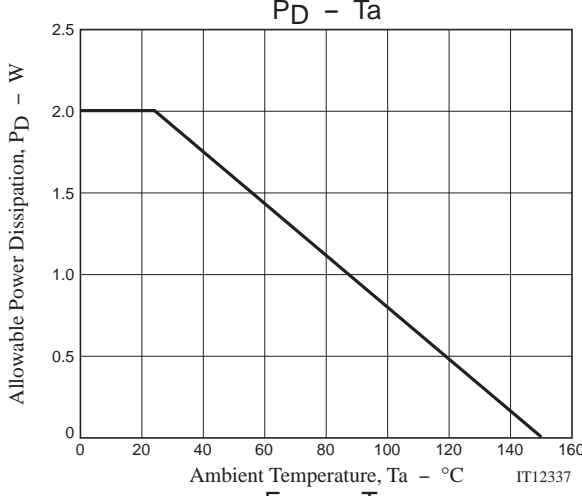
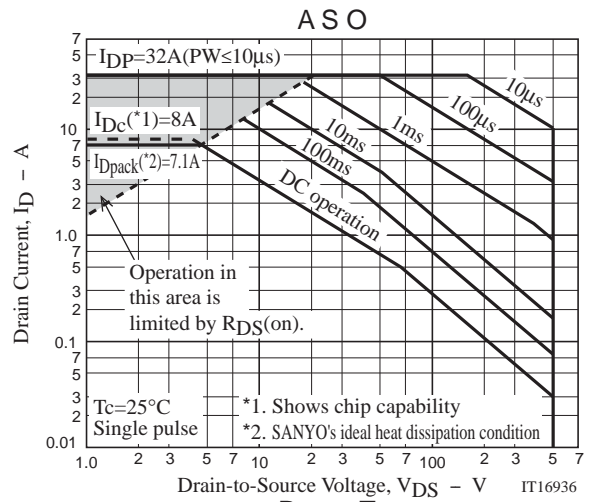
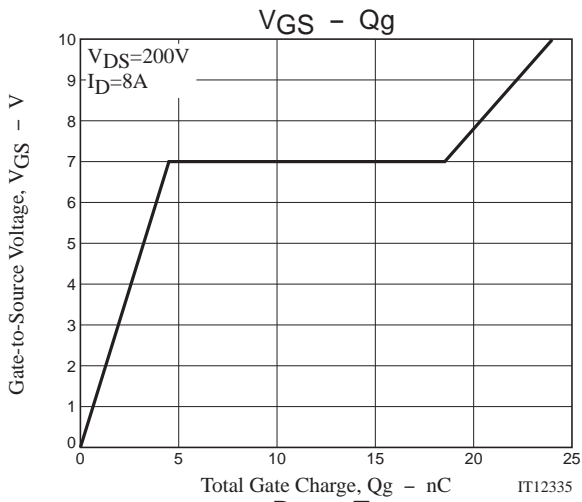
## Ordering Information

Device	Package	Shipping	memo
2SK4096LS-1E	TO-220F-3FS	50pcs./magazine	Pb Free

# 2SK4096LS



# 2SK4096LS



# 2SK4096LS

## Magazine Specification

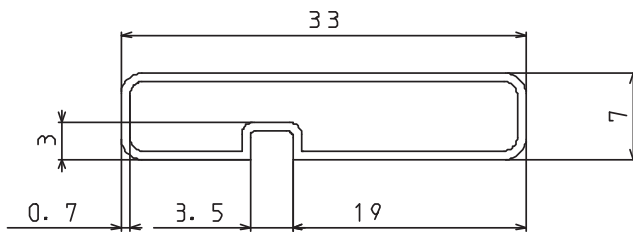
2SK4096LS-1E

### 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

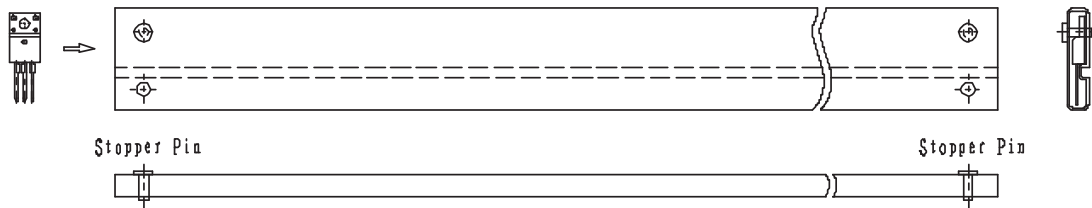
### 2. Magazine dimensions

(unit:mm)

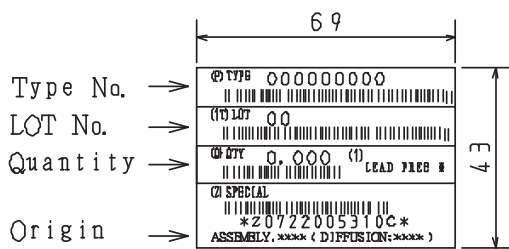


Tolerance=±0.3mm  
 Thickness=0.7±0.2mm  
 Length =532.5±2mm  
 Material =PVC (Antistatic treatment)

### 3. Storage method to magazine

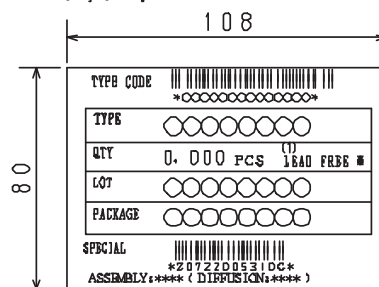


### 4. Inner box label (unit:mm)



### 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.



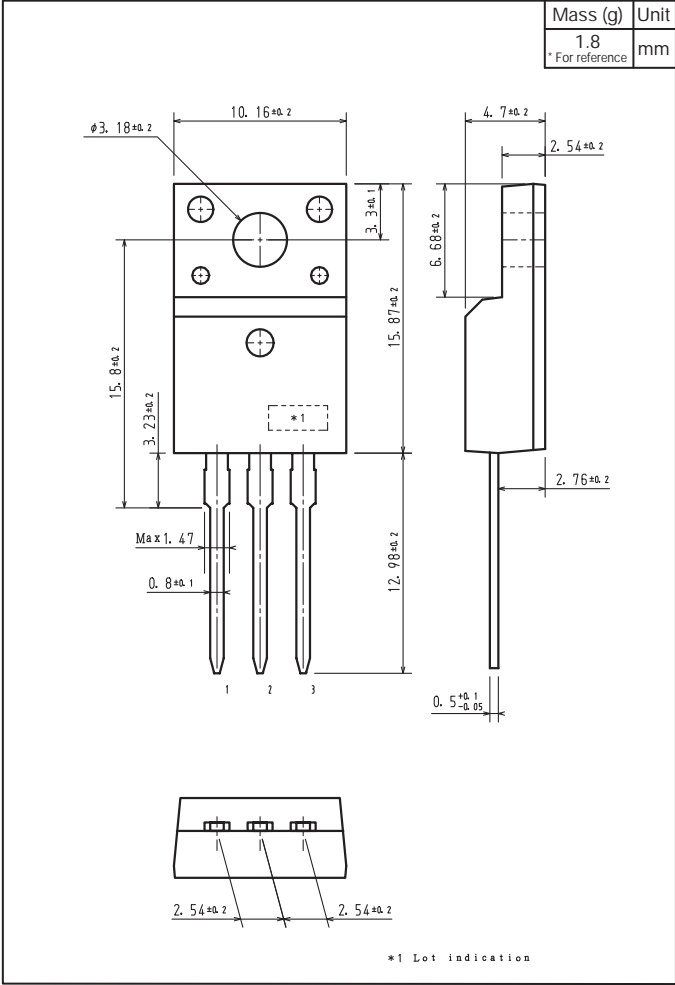
**NOTE (1)**

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

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

2SK4096LS

Outline Drawing  
2SK4096LS-1E



Note on usage : Since the 2SK4096LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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