



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 2SK4177 — N-Channel Silicon MOSFET General-Purpose Switching Device Applications

### Features

- ON-resistance  $R_{DS(on)}=10\Omega$ (typ.)
- 10V drive
- Input capacitance  $C_{iss}=380pF$  (typ.)

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		1500	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		2	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu s$ , duty cycle $\leq 1\%$	4	A
Allowable Power Dissipation	$P_D$	$T_c=25^\circ C$	80	W
Channel Temperature	$T_{ch}$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$
Avalanche Energy (Single Pulse) *1	$E_{AS}$		41	mJ
Avalanche Current *2	$I_{AV}$		2	A

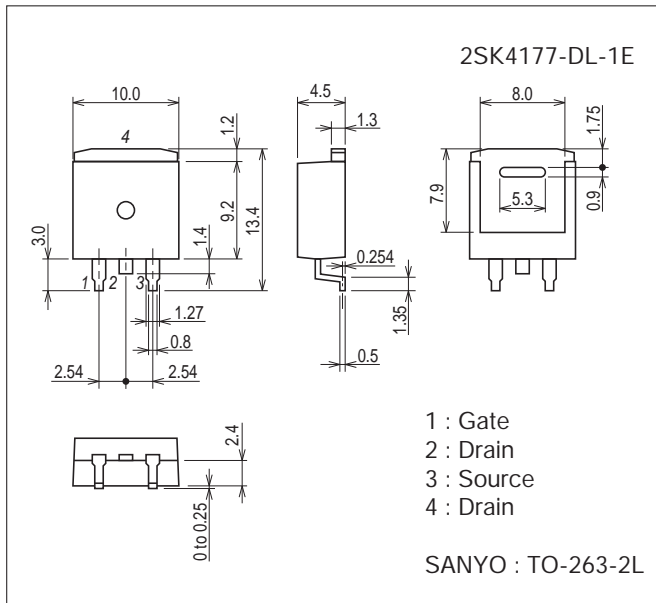
Note : \*1  $V_{DD}=50V$ ,  $L=20mH$ ,  $I_{AV}=2A$  (Fig.1)

\*2  $L \leq 20mH$ , single pulse

### Package Dimensions

unit : mm (typ)

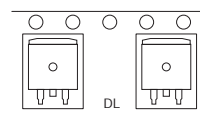
7535-001



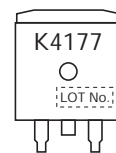
### Product & Package Information

- Package : TO-263-2L
- JEITA, JEDEC : SC-83, TO-263
- Minimum Packing Quantity : 800 pcs./reel

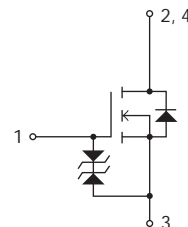
### Packing Type: DL



### Marking



### Electrical Connection



# 2SK4177

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit	
			min	typ	max		
Drain-to-Source Breakdown Voltage	V(BR)DSS	I <sub>D</sub> =1mA, V <sub>GS</sub> =0V	1500			V	
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =1200V, V <sub>GS</sub> =0V			100	μA	
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±16V, V <sub>DS</sub> =0V			±10	μA	
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	2.5		3.5	V	
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =20V, I <sub>D</sub> =1A	0.7	1.4		S	
Static Drain-to-Source On-State Resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =1A, V <sub>GS</sub> =10V		10	13	Ω	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =30V, f=1MHz		380		pF	
Output Capacitance	C <sub>oss</sub>				70		pF
Reverse Transfer Capacitance	C <sub>rss</sub>				40		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See Fig.2		12		ns	
Rise Time	t <sub>r</sub>				37		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>				152		ns
Fall Time	t <sub>f</sub>				59		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =200V, V <sub>GS</sub> =10V, I <sub>D</sub> =2A		37.5		nC	
Gate-to-Source Charge	Q <sub>gs</sub>				2.7		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>				20		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =2A, V <sub>GS</sub> =0V		0.88	1.2	V	

Fig.1 Unclamped Inductive Switching Test Circuit

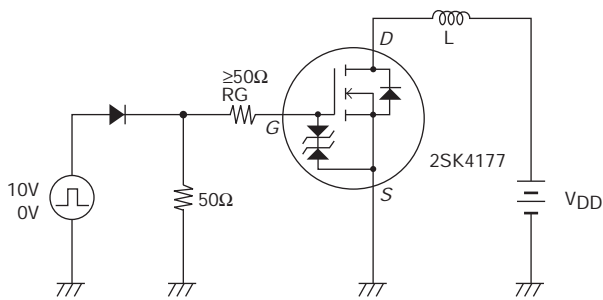
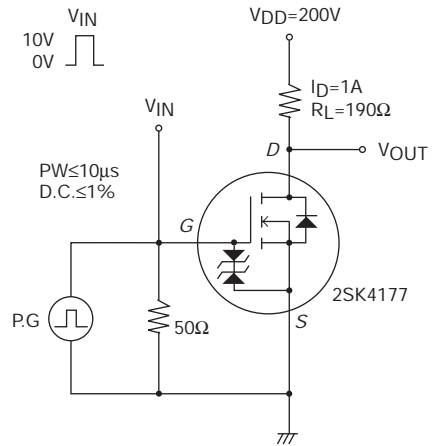
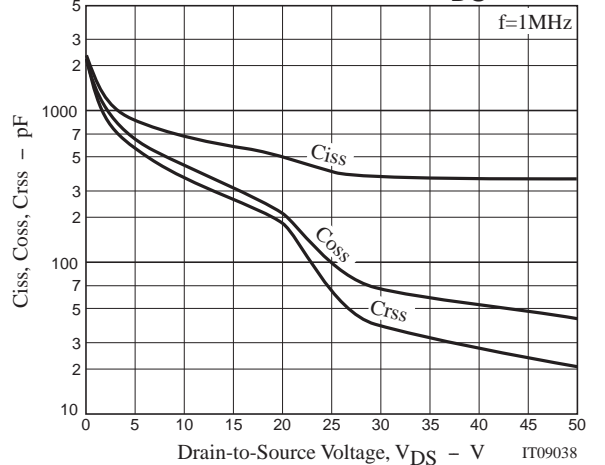
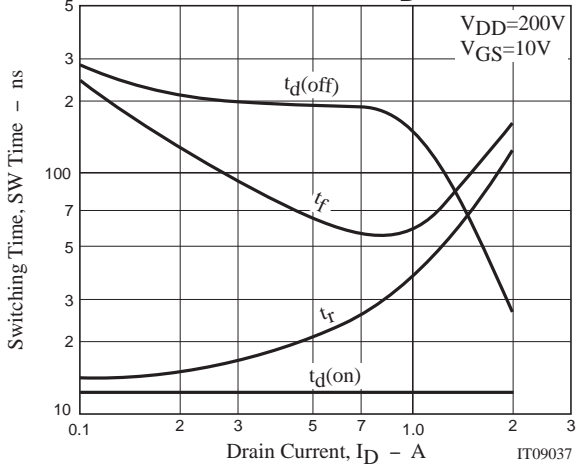
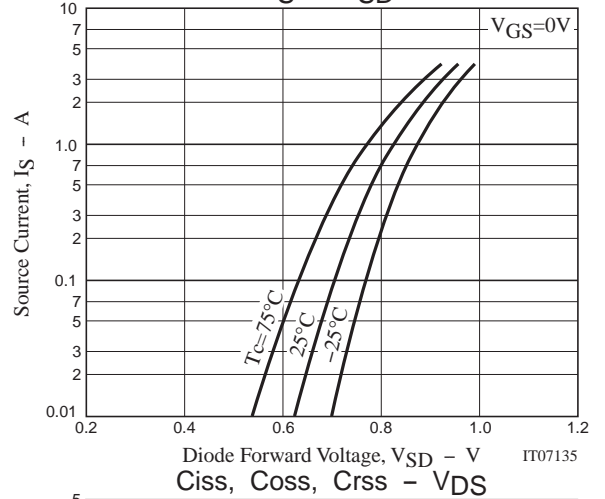
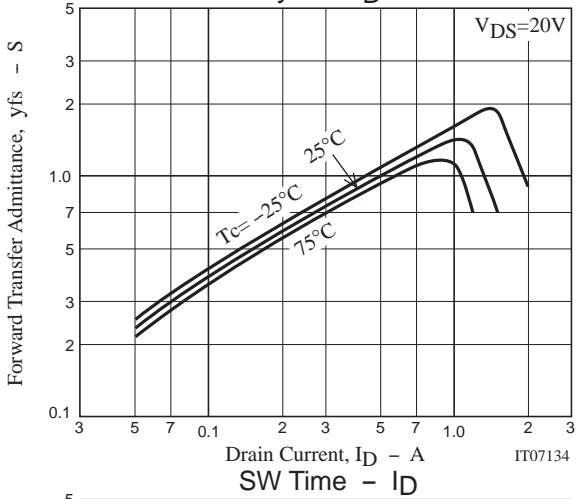
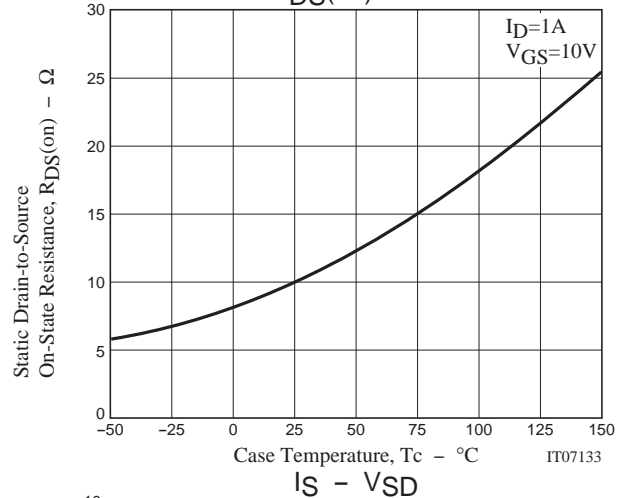
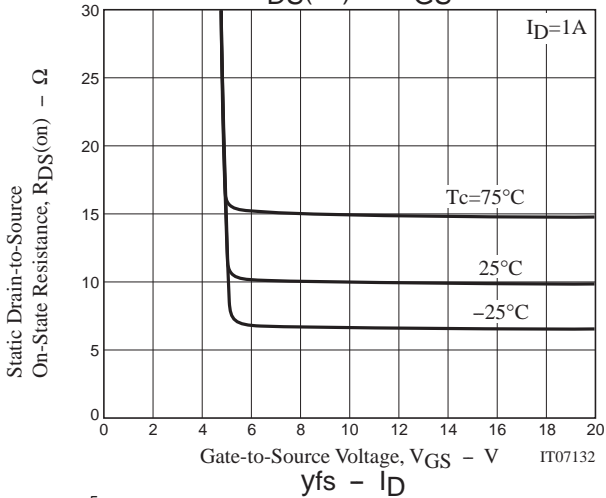
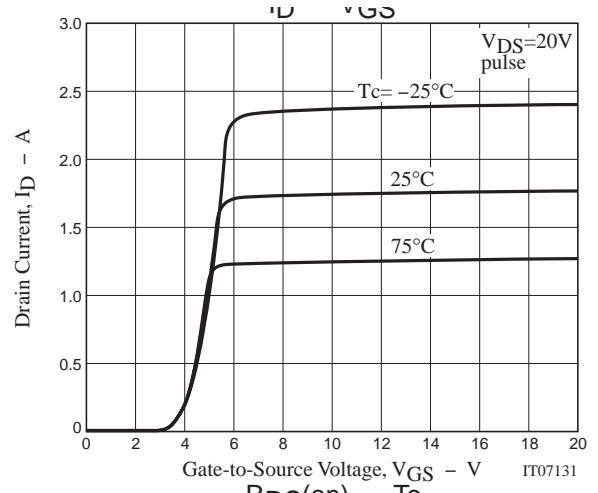
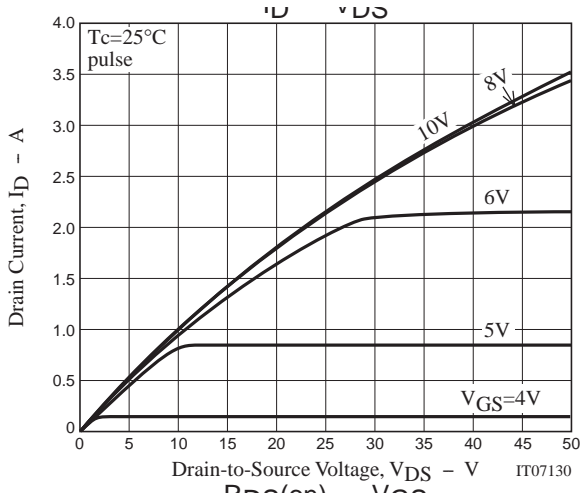


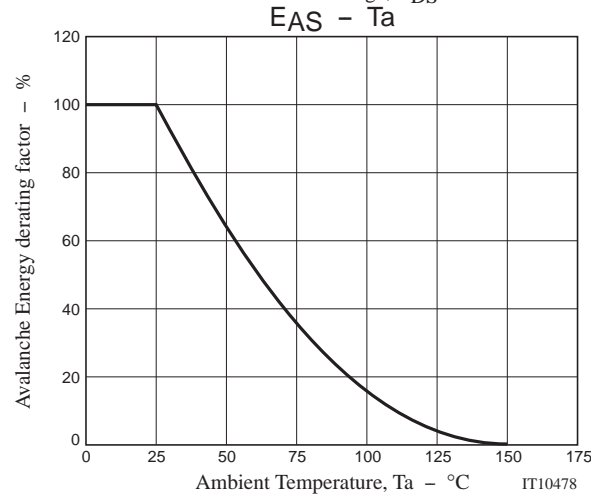
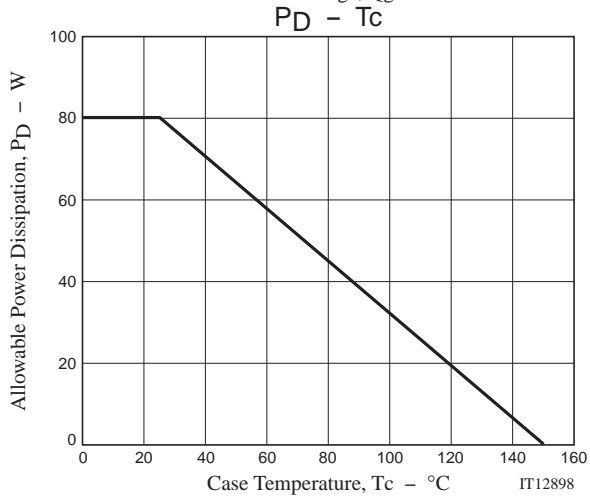
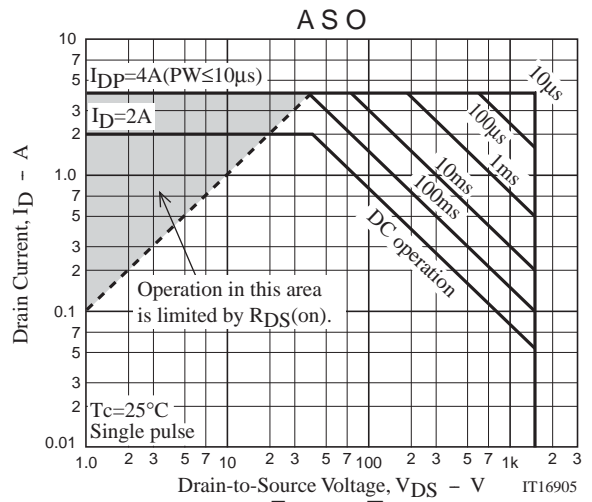
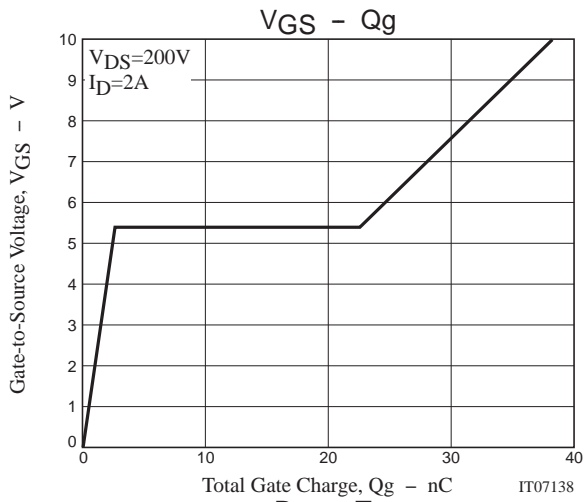
Fig.2 Switching Time Test Circuit



## Ordering Information

Device	Package	Shipping	memo
2SK4177-DL-1E	TO-263-2L	800pcs./reel	Pb Free





Taping Specification

2SK4177-DL-1E

1. Packing Format

Package Name	Maximum Number of devices contained (pcs)			Packing format	
	Reel	Inner box	Outer box	Inner BOX	Outer BOX
TO-263-2L	800	1600	6400	SPD-0V0011 2 reel contained Dimensions:mm (external) 351×340×68	SPD-0V0009 4 inner boxes contained Dimensions:mm (external) 390×370×318

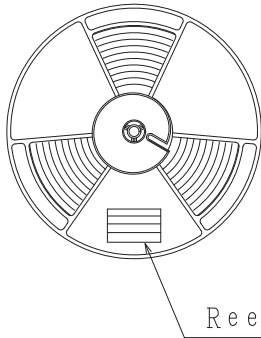
Reel label, Inner box label

Outer box label

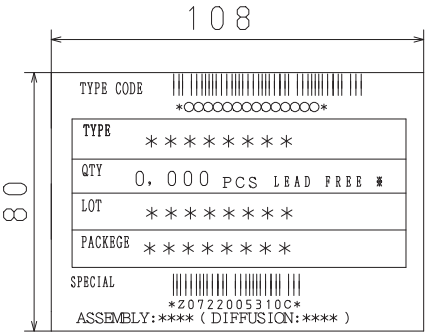
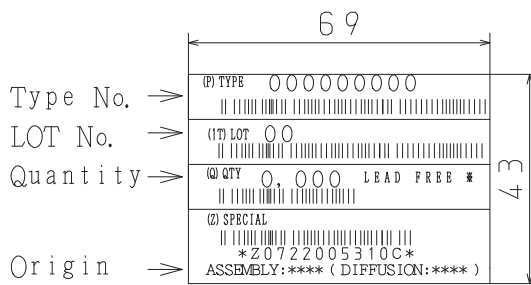
Packing method

(unit:mm)

It is a label at the time of factory shipments. The form of a label may change in physical distribution process.



Reel label



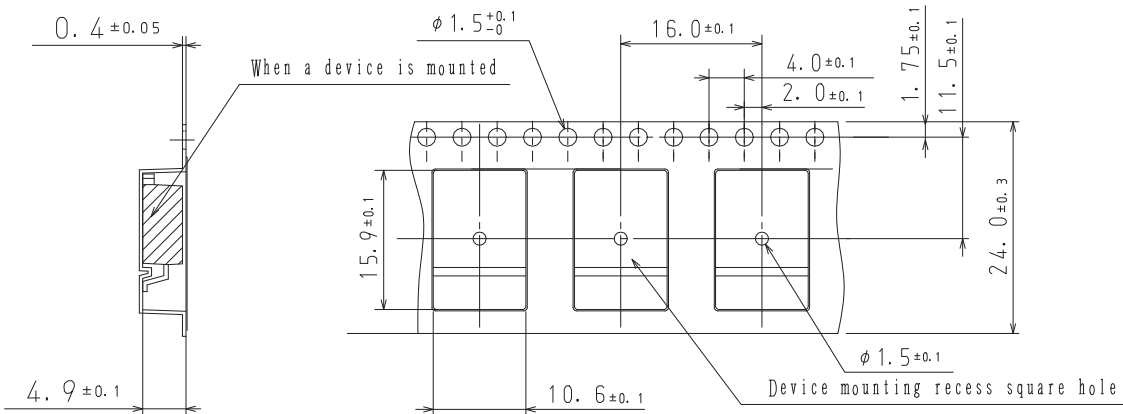
NOTE (1)

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

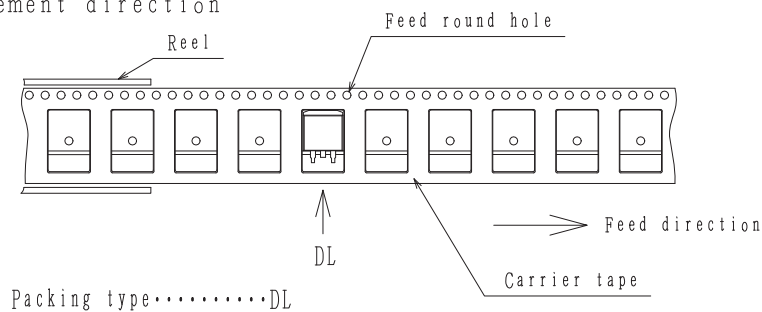
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

2. Taping configuration

2-1. Carrier tape size (unit:mm)



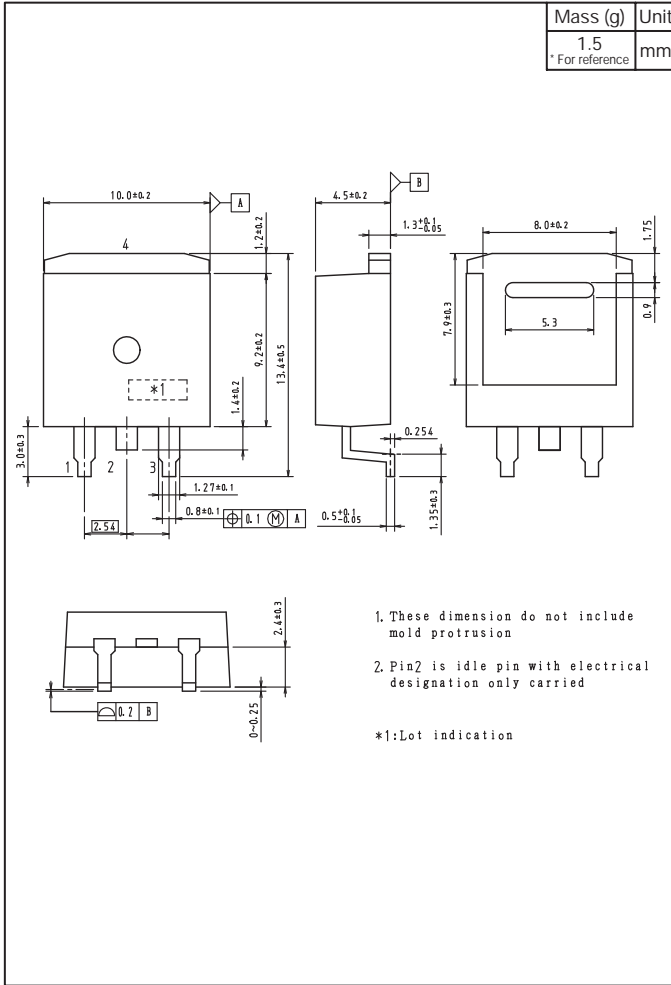
2-2. Device placement direction



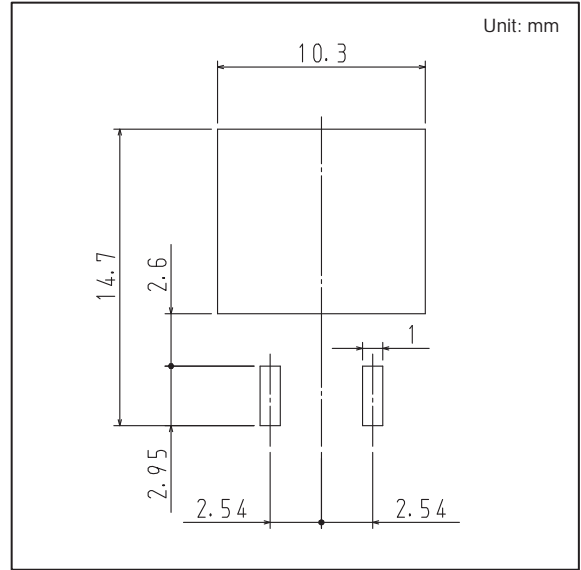
# 2SK4177

## Outline Drawing

2SK4177-DL-1E



## Land Pattern Example



Note on usage : Since the 2SK4177 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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