



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

P-Channel Silicon MOSFET

BBS3002 — General-Purpose Switching Device Applications

Features

- ON-resistance $R_{DS(on)1}=4.4\text{m}\Omega$ (typ.)
- Input capacitance $C_{iss}=13200\text{pF}$ (typ.)
- 4V drive

Specifications

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

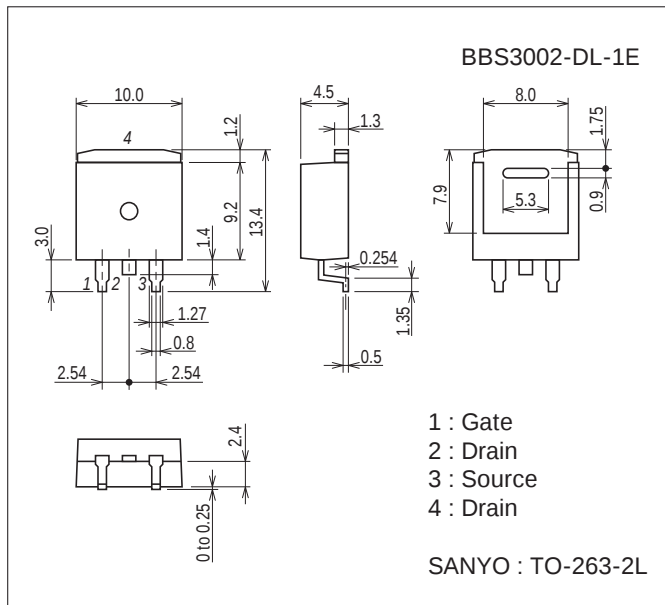
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}		-60	V
Gate-to-Source Voltage	V_{GS}		± 20	V
Drain Current (DC)	I_D		-100	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	-400	A
Allowable Power Dissipation	P_D	$T_c=25^\circ\text{C}$	90	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	E_{AS}		340	mJ
Avalanche Current *2	I_{AV}		-60	A

Note : *1 $V_{DD}=-30\text{V}$, $L=100\mu\text{H}$, $I_{AV}=-60\text{A}$ (Fig.1)*2 $L \leq 100\mu\text{H}$, Single pulse

Package Dimensions

unit : mm (typ)

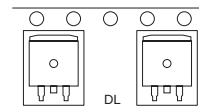
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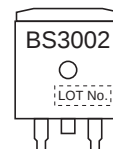
Product & Package Information

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

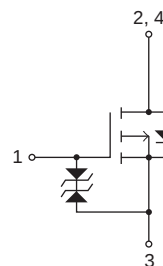
Packing Type: DL



Marking



Electrical Connection



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}	$V_{GS} = \pm 16V, V_{DS} = 0V$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = -10V, I_D = -1mA$	-1.2		-2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -10V, I_D = -50A$	54	90		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -50A, V_{GS} = -10V$		4.4	5.8	m Ω
	$R_{DS(on)2}$	$I_D = -50A, V_{GS} = -4V$		6.4	9.0	m Ω
Input Capacitance	C_{iss}	$V_{DS} = -20V, f = 1MHz$		13200		pF
Output Capacitance	C_{oss}			1300		pF
Reverse Transfer Capacitance	C_{rss}			950		pF
Turn-ON Delay Time	$t_{d(on)}$	See Fig.2		95		ns
Rise Time	t_r			1000		ns
Turn-OFF Delay Time	$t_{d(off)}$			800		ns
Fall Time	t_f			820		ns
Total Gate Charge	Q_g	$V_{DS} = -30V, V_{GS} = -10V, I_D = -100A$		280		nC
Gate-to-Source Charge	Q_{gs}			50		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			55		nC
Diode Forward Voltage	V_{SD}	$I_S = -100A, V_{GS} = 0V$		-1.0	-1.5	V

Fig.1 Avalanche Resistance Test Circuit

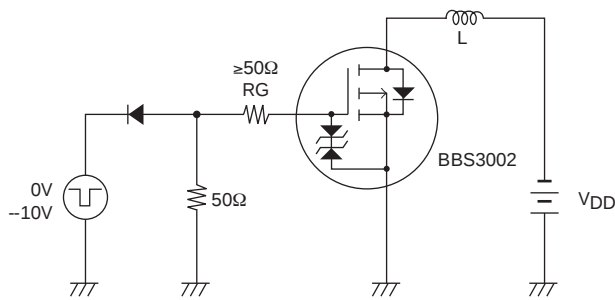
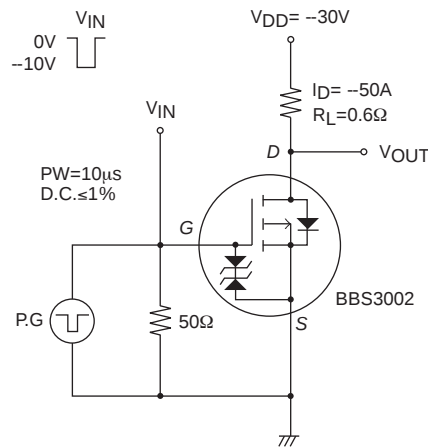
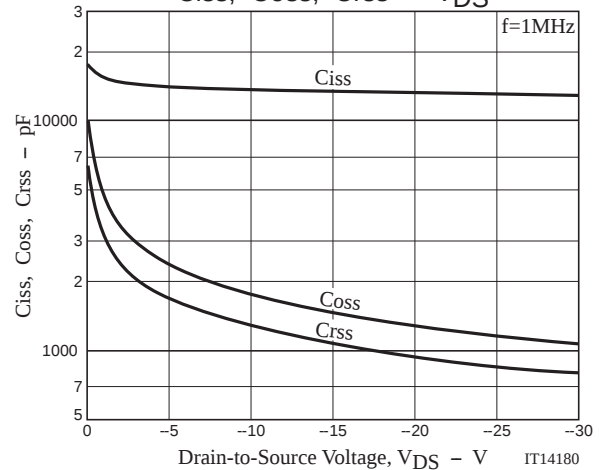
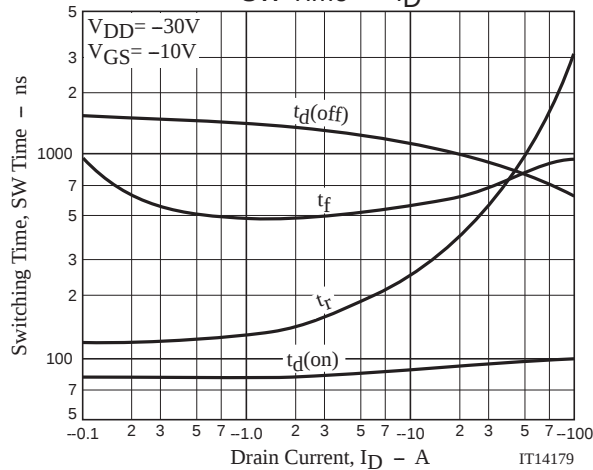
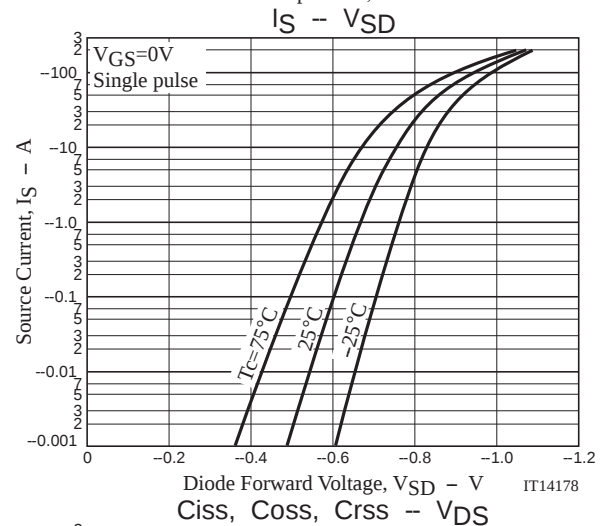
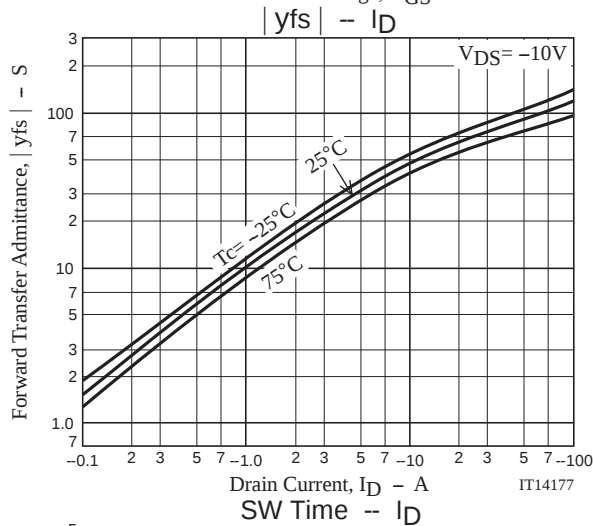
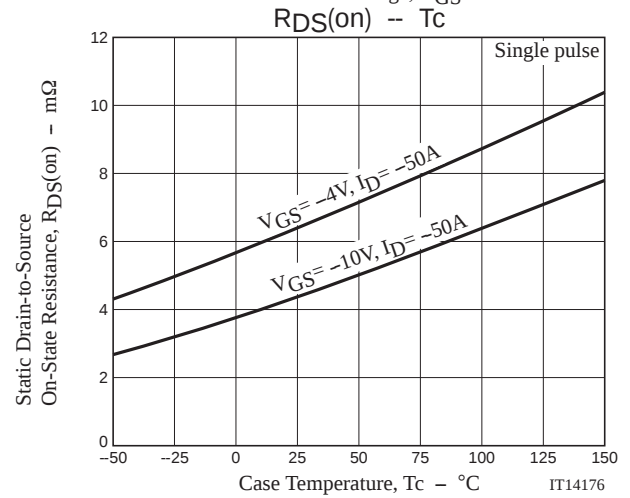
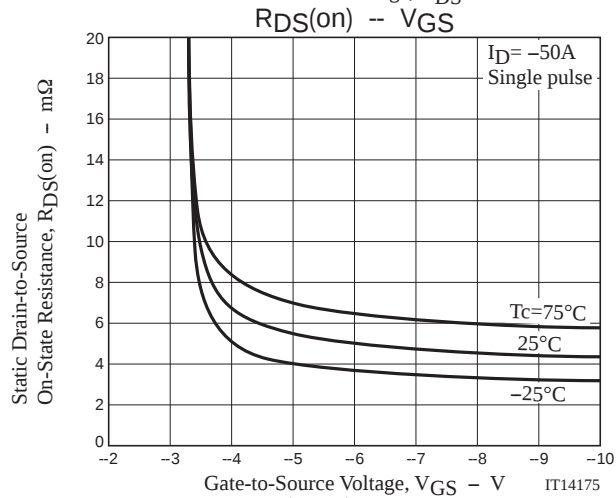
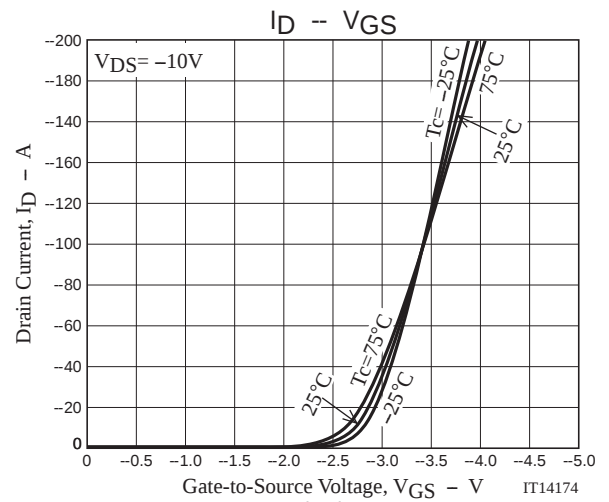
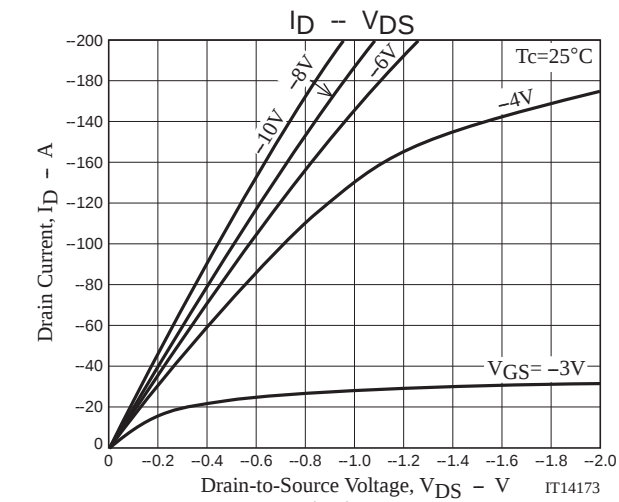


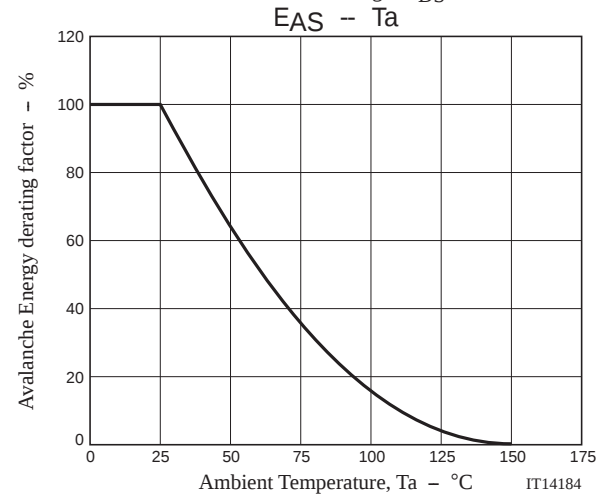
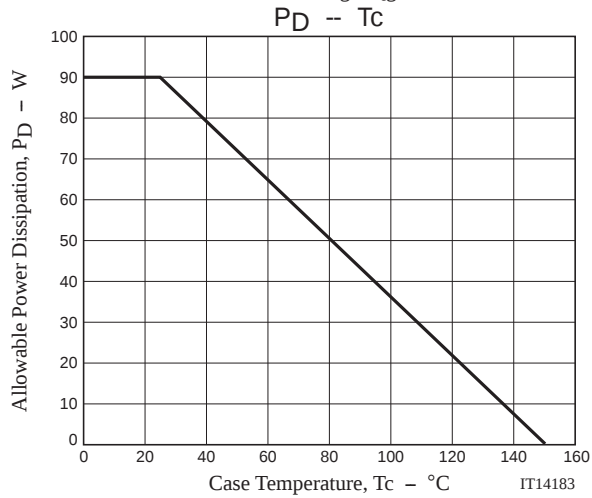
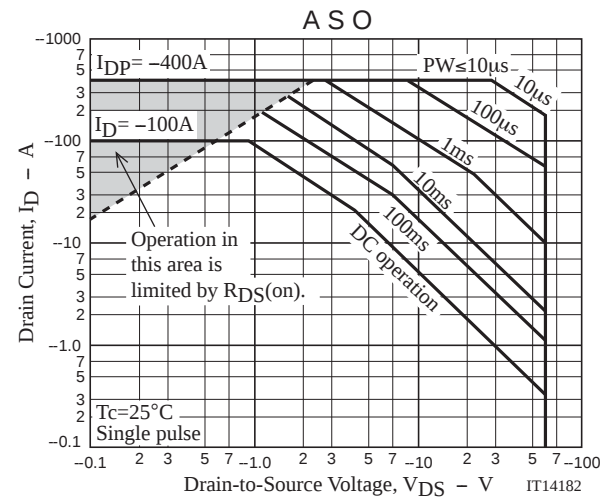
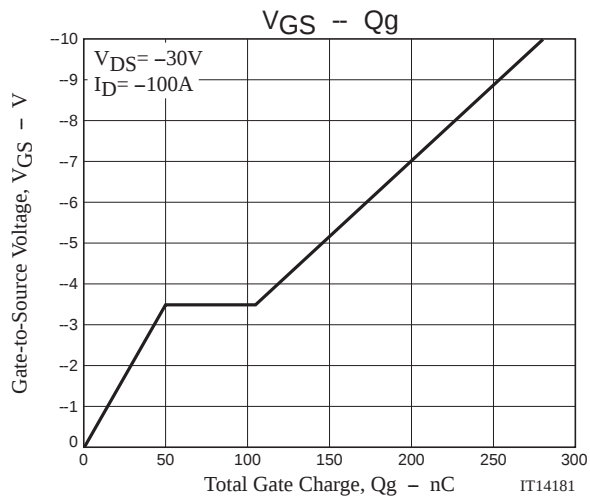
Fig.2 Switching Time Test Circuit



Ordering Information

Device	Package	Shipping	memo
BBS3002-DL-1E	TO-263-2L	800pcs./reel	Pb Free





Taping Specification

BBS3002-DL-1E

1. Packing Format

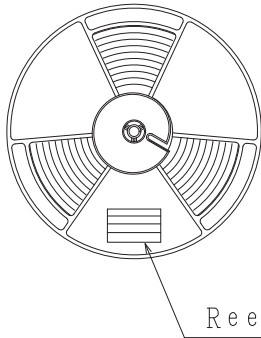
Package Name	Maximum Number of devices contained (pcs)			Packing format	
	Reel	Inner box	Outer box	Inner BOX	Outer BOX
TO-263-2L	800	1600	6400	SPD-0V0011 2 reel contained Dimensions:mm (external) 351×340×68	SPD-0V0009 4 inner boxes contained Dimensions:mm (external) 390×370×318

Reel label, Inner box label

Outer box label

(unit:mm)

Packing method



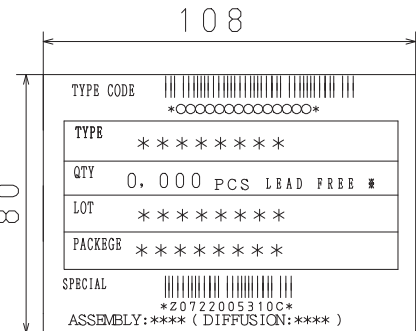
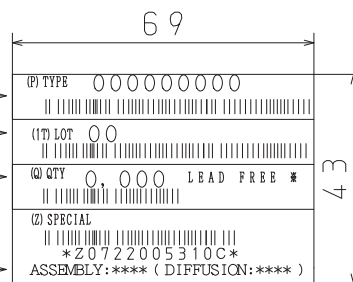
Type No. →

LOT No. →

Quantity →

Origin →

Reel label



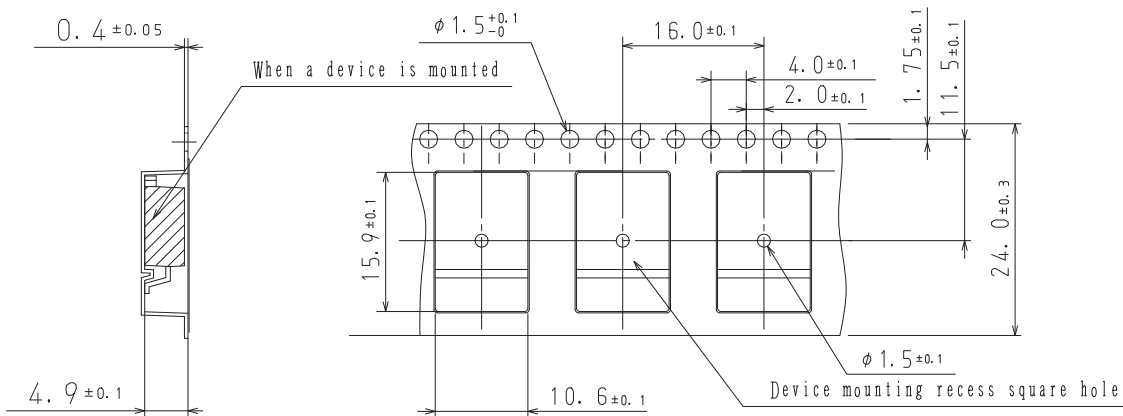
NOTE (1)

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

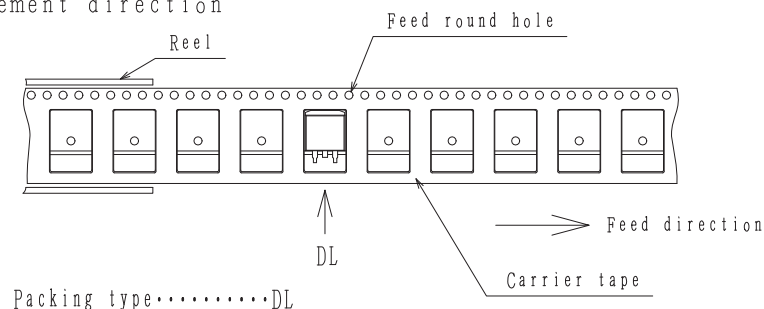
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

2. Taping configuration

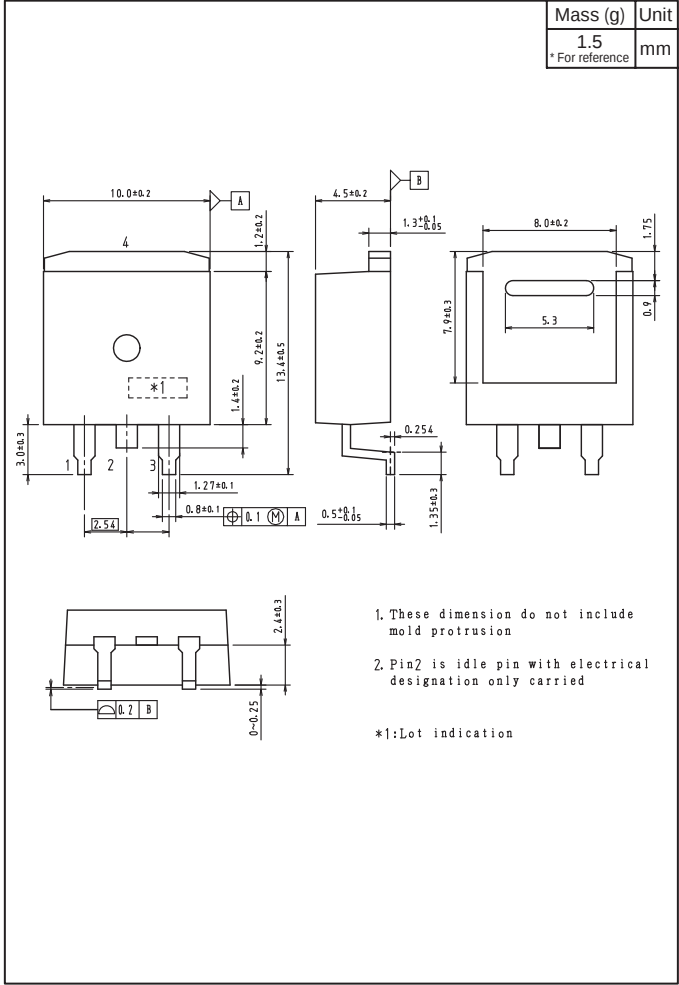
2-1. Carrier tape size (unit:mm)



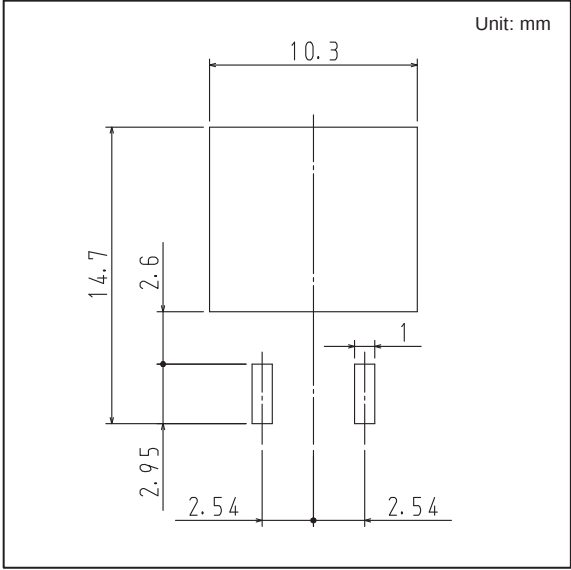
2-2. Device placement direction



Outline Drawing
BBS3002-DL-1E



Land Pattern Example



Note on usage : Since the BBS3002 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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