



# 2SJ661

## P-Channel Power MOSFET -60V, -38A, 39mΩ, TO-262-3L/TO-263-2L

ON Semiconductor®

<http://onsemi.com>

### Features

- ON-resistance  $R_{DS(on)1}=29.5m\Omega$ (typ.)
- Input capacitance  $C_{iss}=4360pF$  (typ.)
- 4V drive

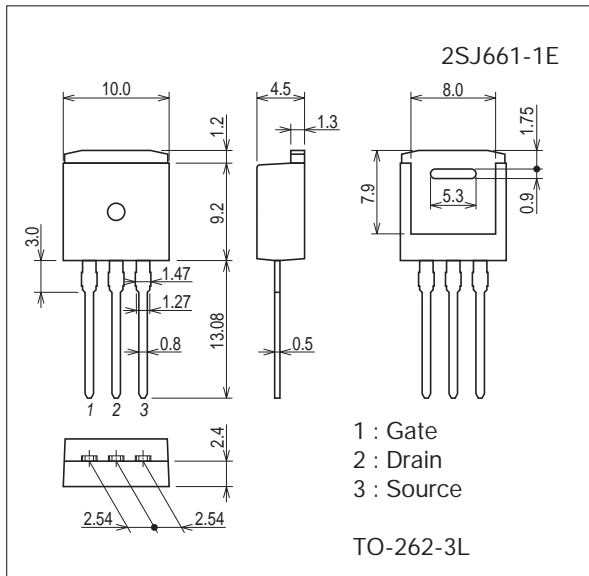
### Specifications

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

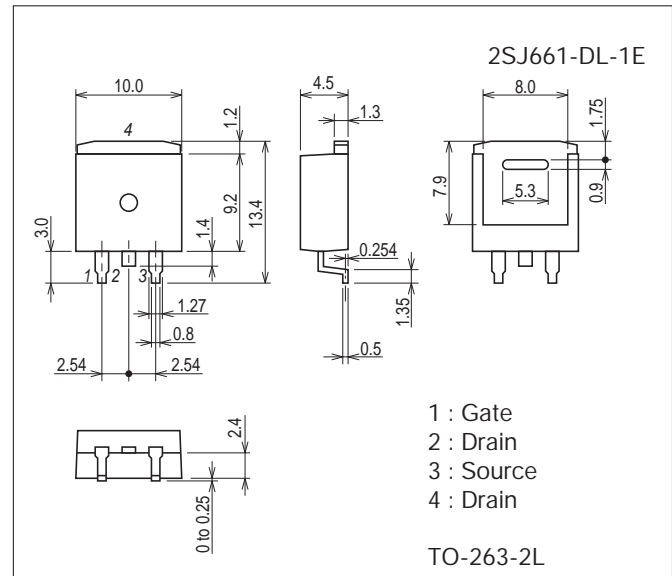
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		-60	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		-38	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu s$ , duty cycle $\leq 1\%$	-152	A
Allowable Power Dissipation	$P_D$		1.65	W
		$T_c=25^\circ C$	65	W

Continued on next page.

Package Dimensions unit : mm (typ)  
7537-001



Package Dimensions unit : mm (typ)  
7535-001

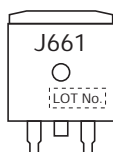


### Product & Package Information

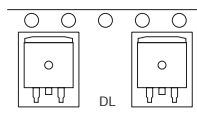
- Package : TO-262-3L
- JEITA, JEDEC : TO-262
- Minimum Packing Quantity : 50pcs./magazine

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

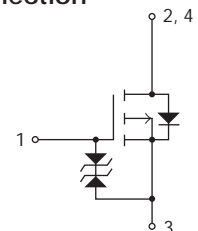
### Marking



### Packing Type : DL



### Electrical Connection



# 2SJ661

Continued from preceding page.

Parameter	Symbol	Conditions	Ratings	Unit
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C
Avalanche Energy (Single Pulse) *1	EAS		250	mJ
Avalanche Current *2	I <sub>AV</sub>		-38	A

Note : \*1 V<sub>DD</sub>=-30V, L=200μH, I<sub>AV</sub>=-38A (Fig.1)

\*2 L≤200μH, 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.

## 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	-60			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-60V, V <sub>GS</sub> =0V			-1	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	-1.2		-2.6	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-19A	18	31		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =-19A, V <sub>GS</sub> =-10V		29.5	39	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =-19A, V <sub>GS</sub> =-4V		40	56	mΩ
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-20V, f=1MHz		4360		pF
Output Capacitance	C <sub>oss</sub>			470		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			335		pF
Turn-ON Delay Time	t <sub>d(on)</sub>			33		ns
Rise Time	t <sub>r</sub>	See Fig.2		285		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>			295		ns
Fall Time	t <sub>f</sub>			195		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-38A		80		nC
Gate-to-Source Charge	Q <sub>gs</sub>			15		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>			12		nC
Diode Forward Voltage	V <sub>SD</sub>		I <sub>S</sub> =-38A, V <sub>GS</sub> =0V	-1.0	-1.2	

Fig.1 Avalanche Resistance Test Circuit

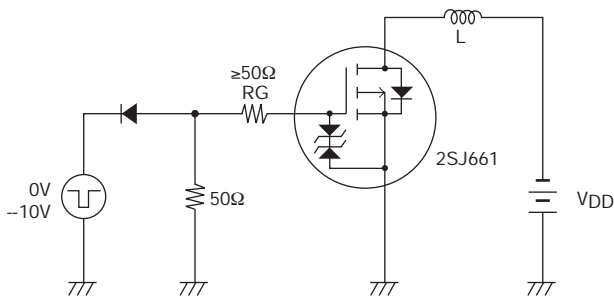
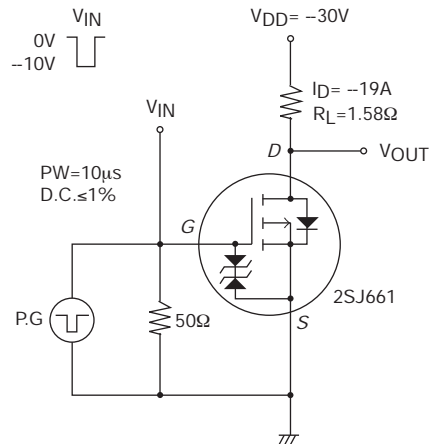
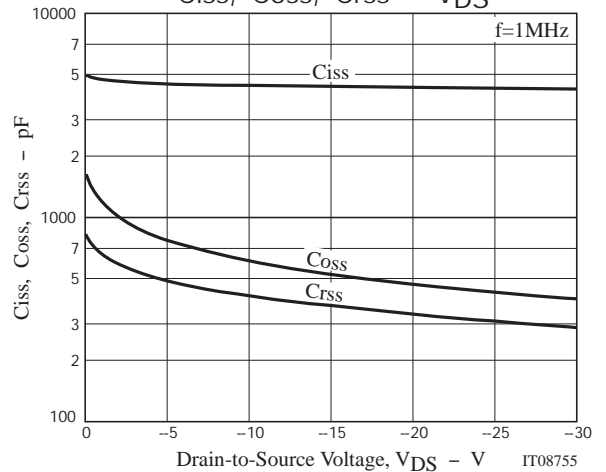
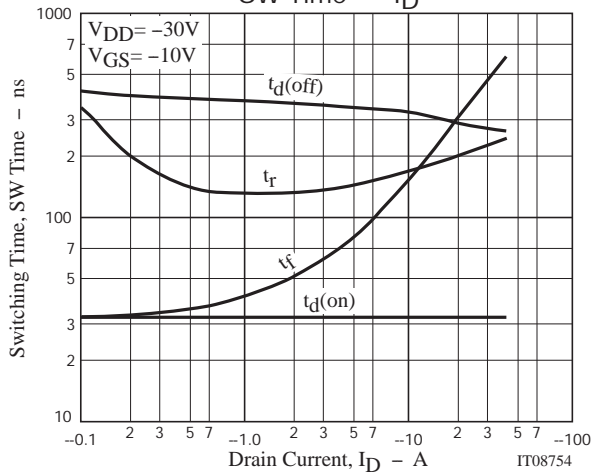
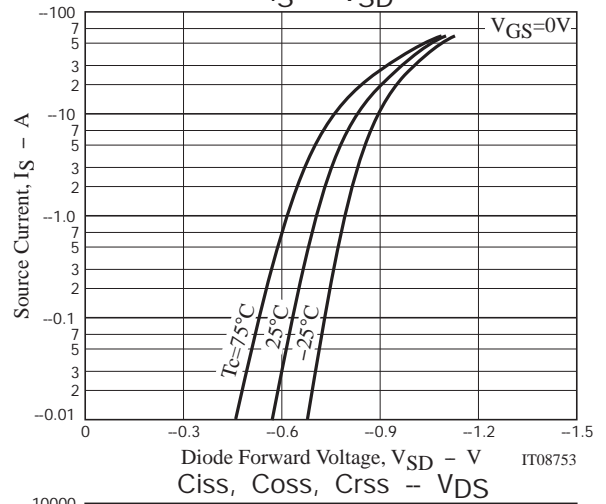
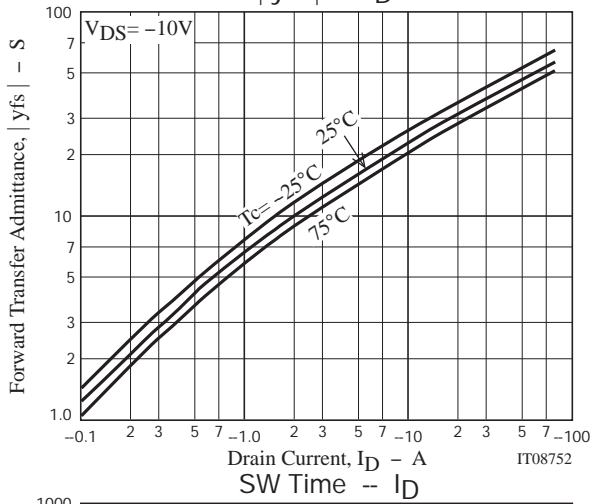
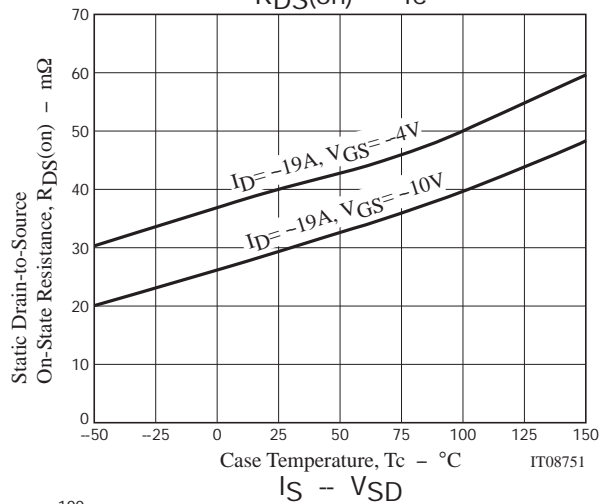
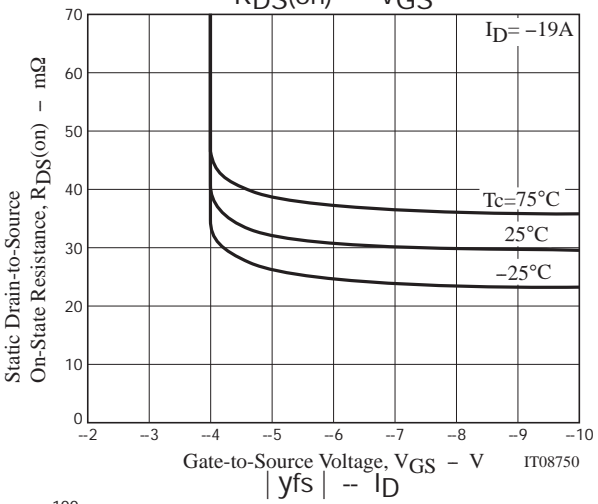
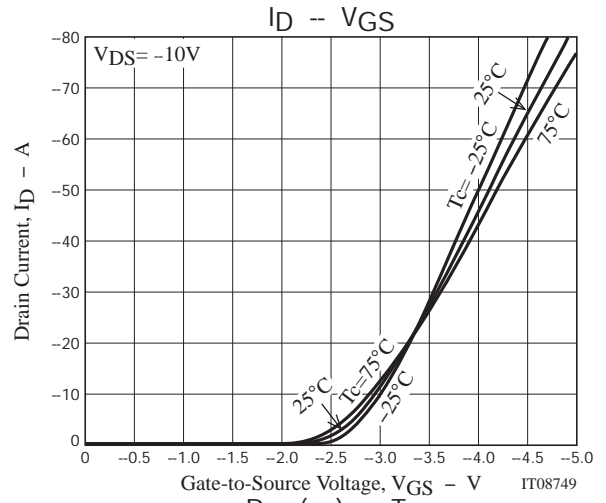
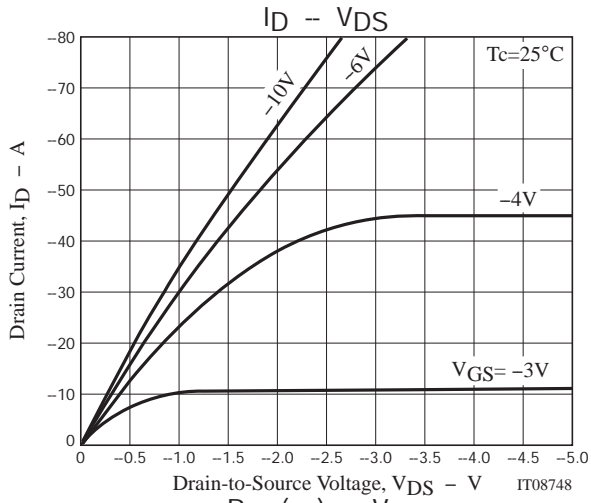


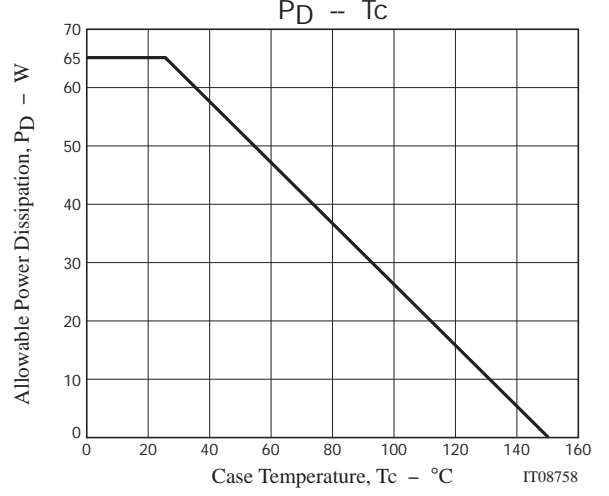
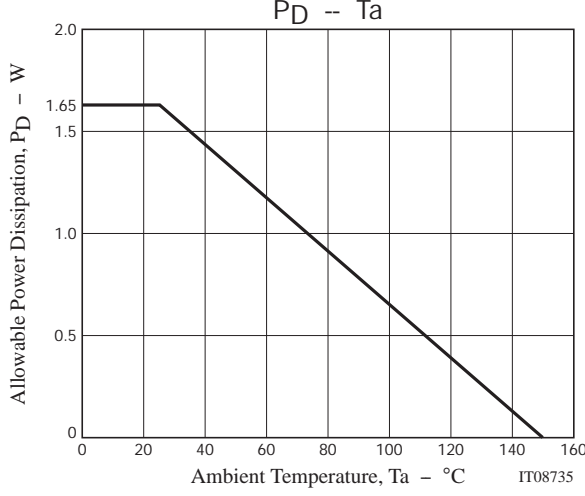
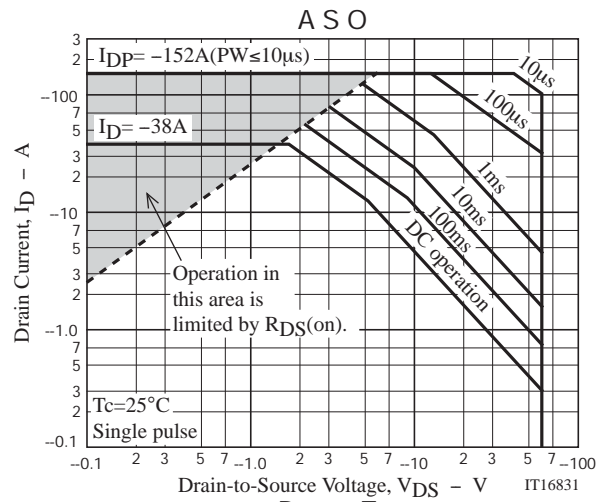
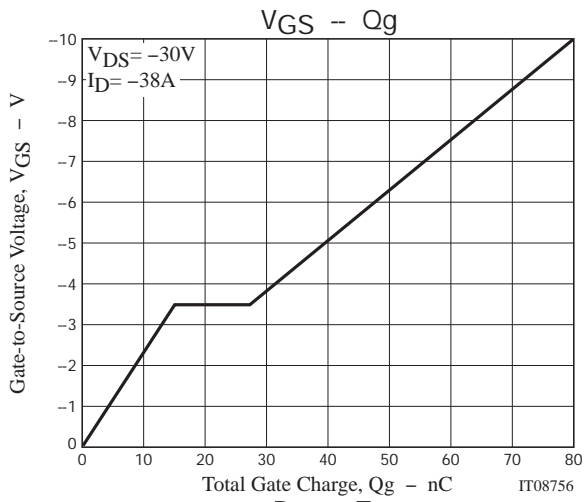
Fig.2 Switching Time Test Circuit



## Ordering Information

Device	Package	Shipping	memo
2SJ661-1E	TO-262-3L	50pcs./magazine	Pb Free
2SJ661-DL-1E	TO-263-2L	800pcs./reel	





Taping Specification

2SJ661-DL-1E

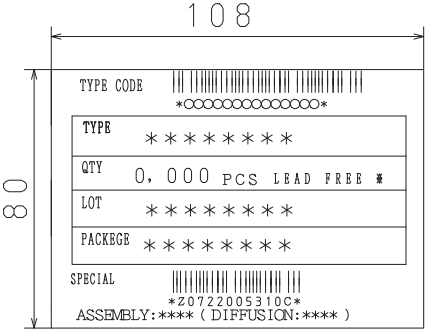
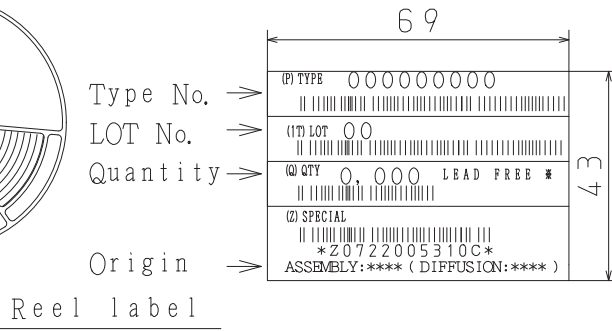
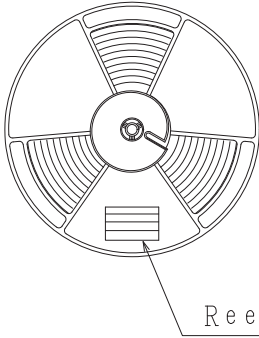
1. Packing Format

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  
(unit:mm)

Outer box label

Packing method



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

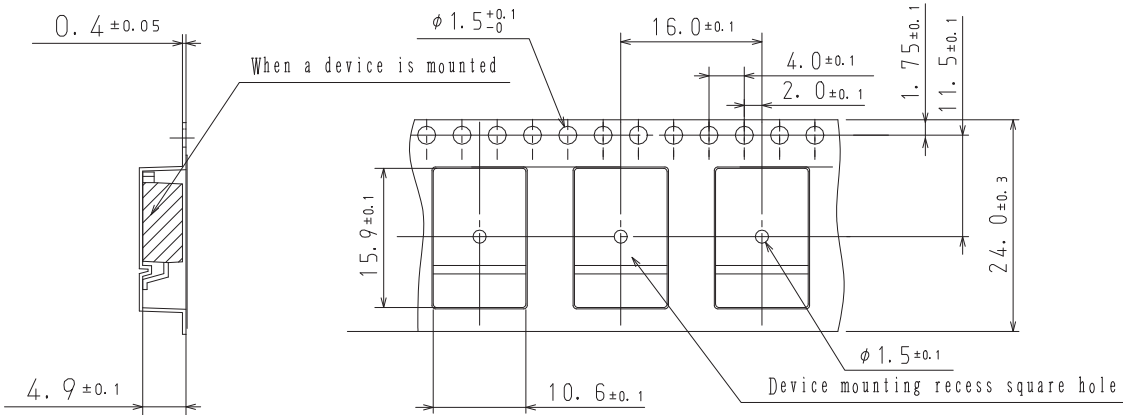
NOTE (1)

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

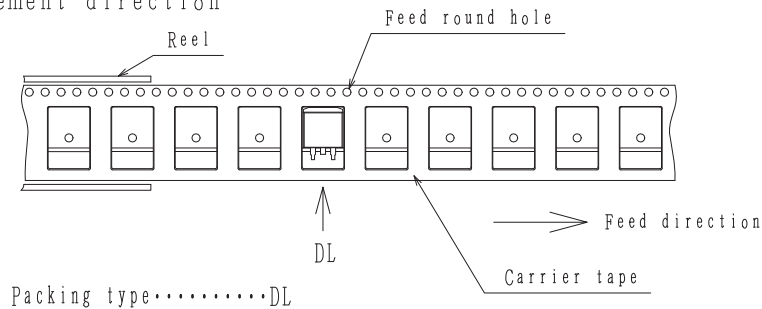
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

2. Taping configuration

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

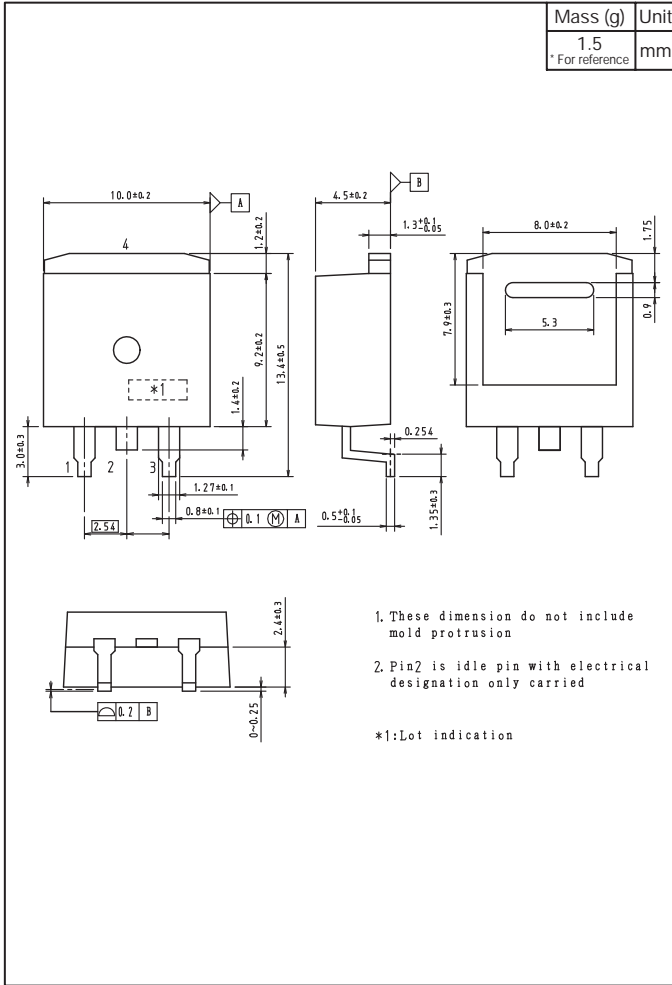


2-2. Device placement direction

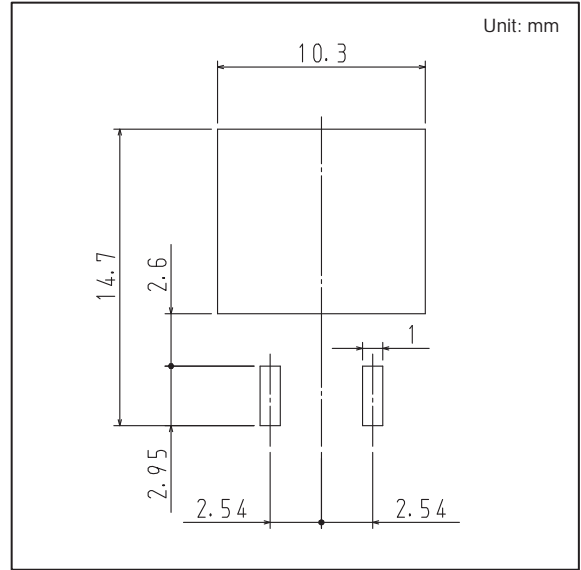


Outline Drawing

2SJ661-DL-1E



Land Pattern Example



Magazine Specification

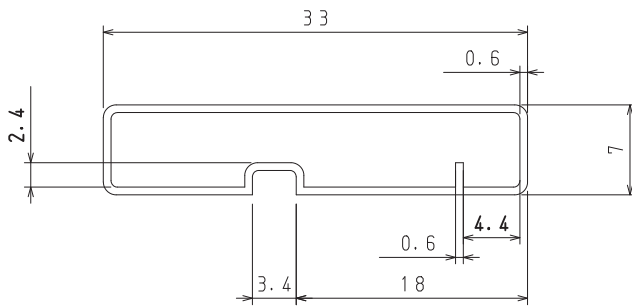
2SJ661-1E

1. Packing Format

Package Name	Maximum Number of devices contained (pcs)			Packing format	
	Magazine	Inner box	Outer box	Inner BOX	Outer BOX
TO-262-3L	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

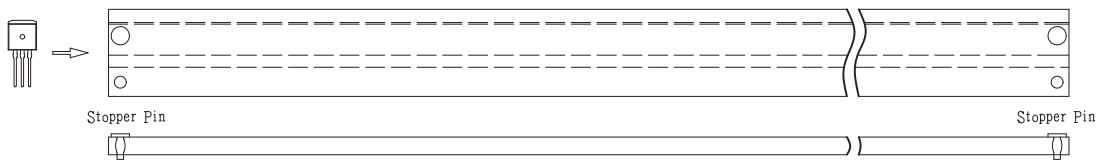
2. Magazine dimensions

(unit:mm)

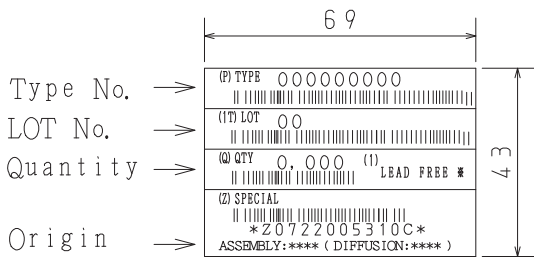


Tolerance=±0.2mm  
 Thickness=0.6+0.2/-0mm  
 Length =512.6±1mm  
 Material =PVC (Antistatic treatment)

3. Storage method to magazine

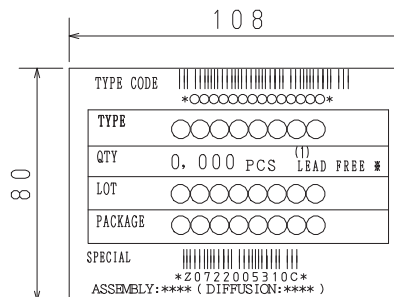


4. Inner box label (unit:mm)



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.



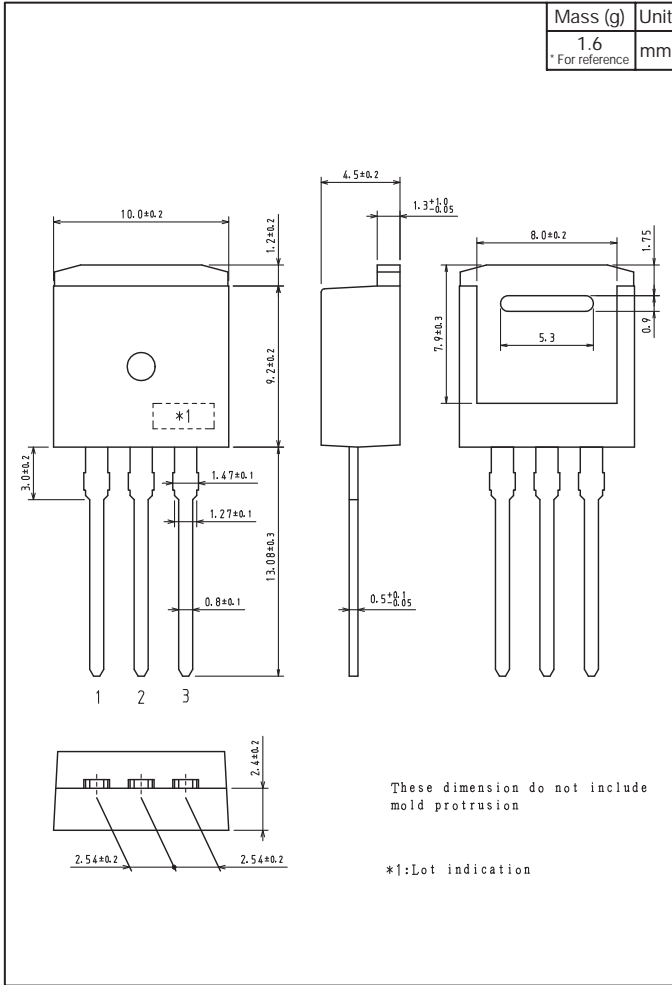
NOTE (1)

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

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

Outline Drawing

2SJ661-1E





Note on usage : Since the 2SJ661 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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