Ordering number : EN8586A

2SJ661

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

ON Semiconductor®
http://onsemi.com

Features

- ON-resistance $R_{DS}(on)1$=29.5mΩ(typ.)
- 4V drive
- Input capacitance Ciss=4360pF (typ.)

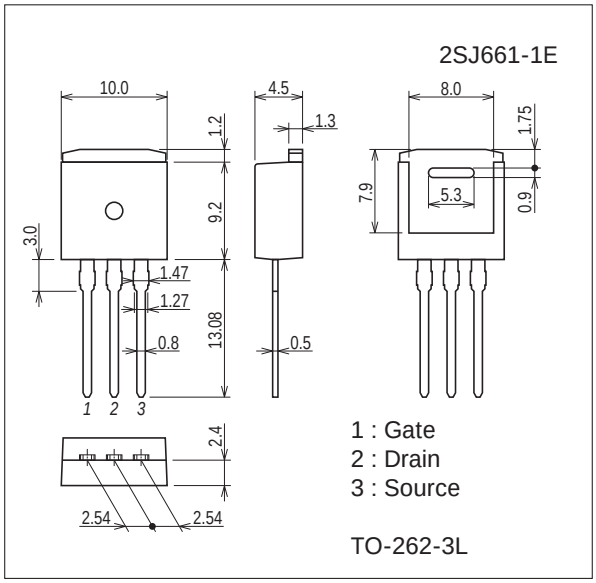
Specifications

Absolute Maximum Ratings at Ta=25°C

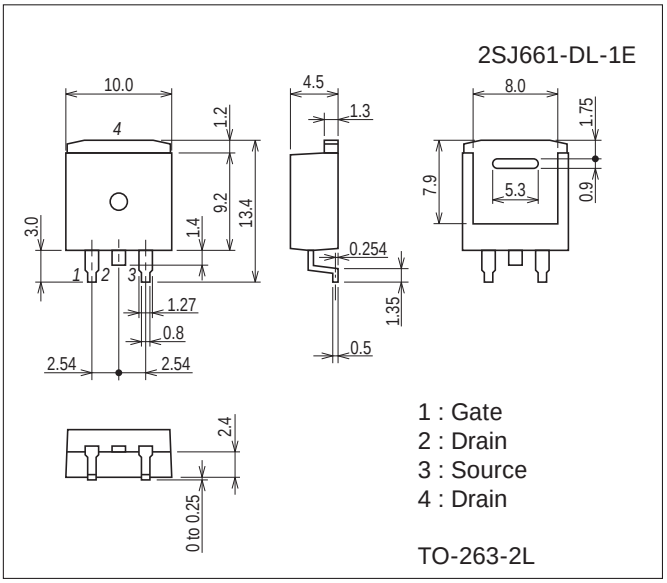
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		−60	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		−38	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−152	A
Allowable Power Dissipation	P_D		1.65	W
		Tc=25°C	65	W

Continued on next page.

Package Dimensions unit : mm (typ)
7537-001



Package Dimensions unit : mm (typ)
7535-001

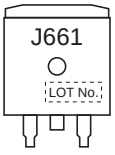


Product & Package Information

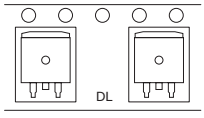
- Package : TO-262-3L
- JEITA, JEDEC : TO-262
- Minimum Packing Quantity : 50pcs./magazine

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

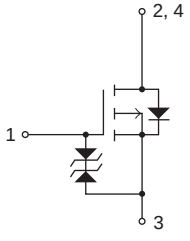
Marking



Packing Type : DL



Electrical Connection



Semiconductor Components Industries, LLC, 2013

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	E_{AS}		250	mJ
Avalanche Current *2	I_{AV}		−38	A

Note :*1 V_{DD}=−30V, L=200μH, I_{AV}=−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_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}=±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	| yfs |	V_{DS}=−10V, I_D=−19A	18	31		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=−19A, V_{GS}=−10V		29.5	39	mΩ
	$R_{DS}(on)2$	I_D=−19A, V_{GS}=−4V		40	56	mΩ
Input Capacitance	Ciss	V_{DS}=−20V, f=1MHz		4360		pF
Output Capacitance	Coss			470		pF
Reverse Transfer Capacitance	Crss			335		pF
Turn-ON Delay Time	$t_d(on)$	See Fig.2		33		ns
Rise Time	t_r			285		ns
Turn-OFF Delay Time	$t_d(off)$			295		ns
Fall Time	t_f			195		ns
Total Gate Charge	Qg	V_{DS}=−30V, V_{GS}=−10V, I_D=−38A		80		nC
Gate-to-Source Charge	Qgs			15		nC
Gate-to-Drain “Miller” Charge	Qgd			12		nC
Diode Forward Voltage	V_{SD}	I_S=−38A, V_{GS}=0V		−1.0	−1.2	V

Fig.1 Avalanche Resistance Test Circuit

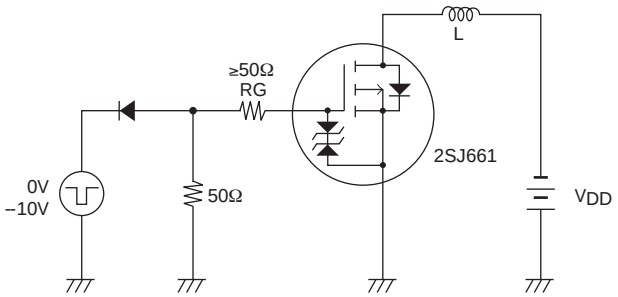
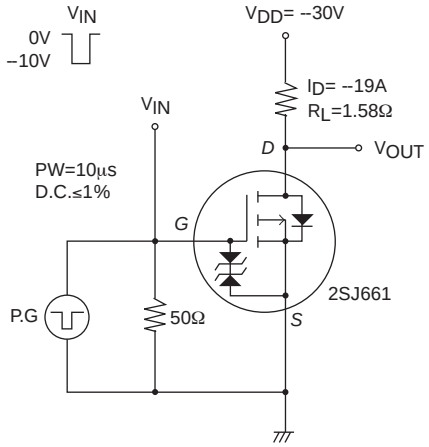
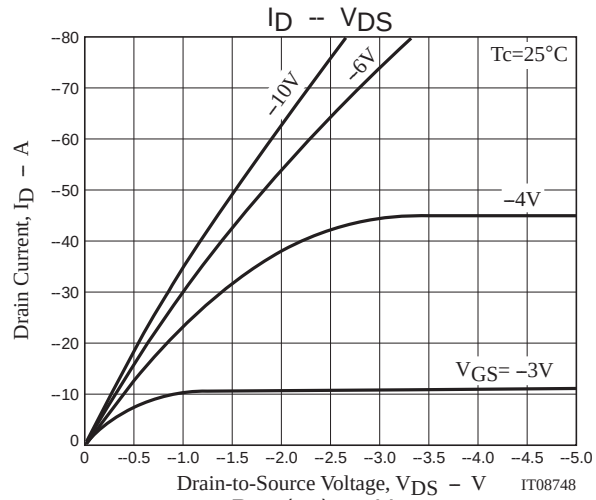


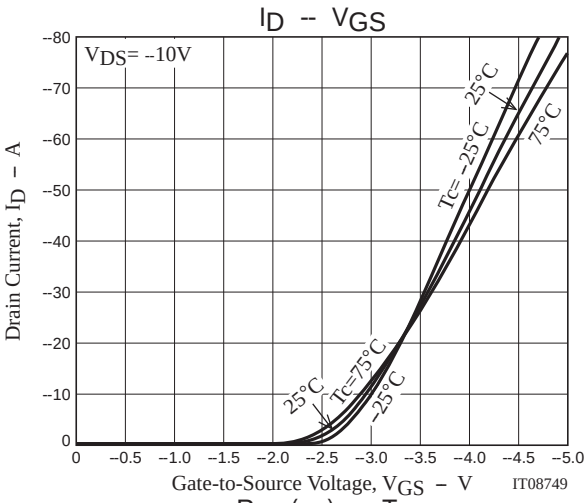
Fig.2 Switching Time Test Circuit

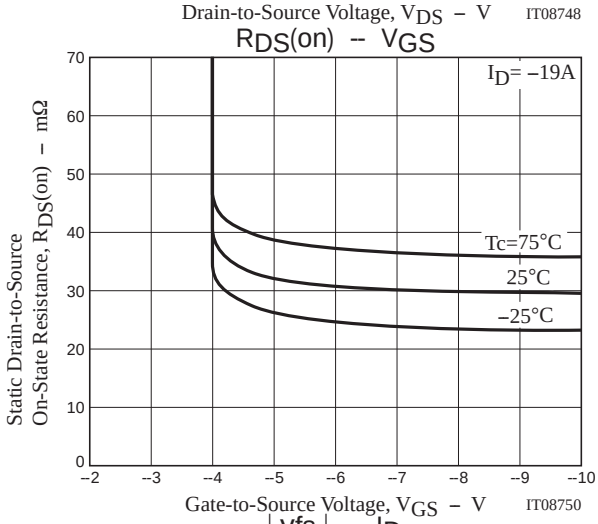


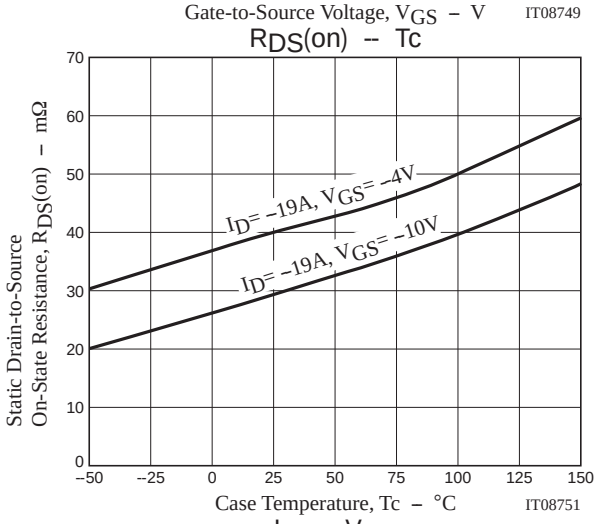
Ordering Information

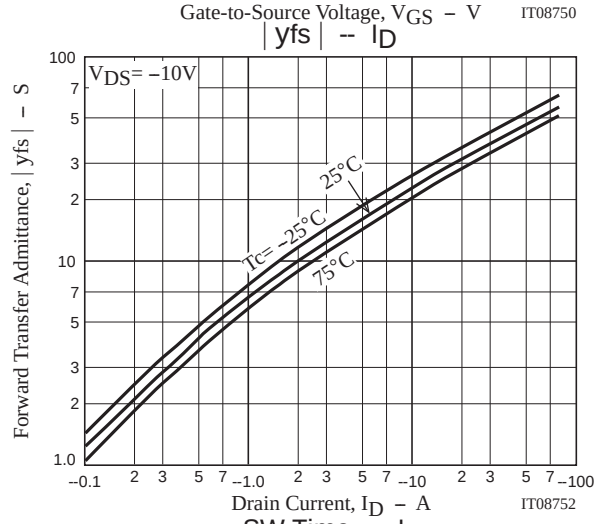
Device	Package	Shipping	memo
2SJ661-1E	TO-262-3L	50pcs./magazine	Pb Free
2SJ661-DL-1E	TO-263-2L	800pcs./reel	

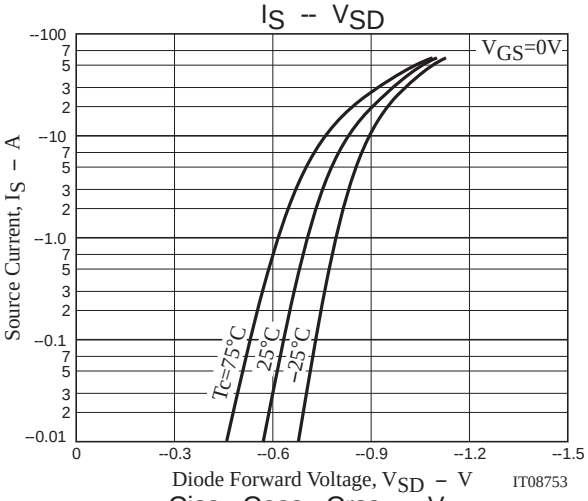

ID -- VDS
Tc=25°C
–10V
–6V
–4V
VGS= –3V
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT08748

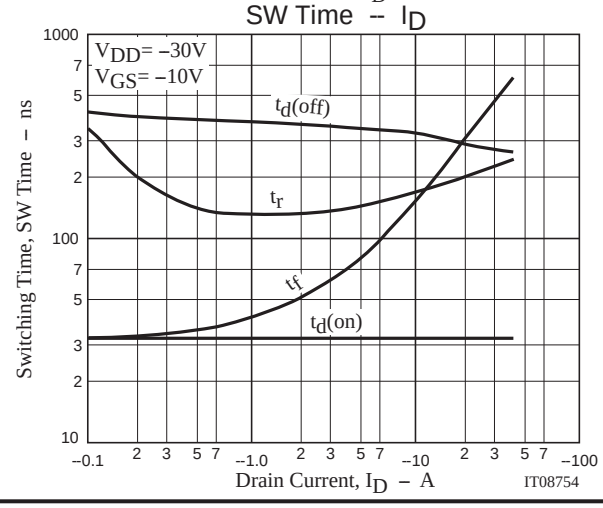

ID -- VGS
VDS= –10V
Tc= –25°C
25°C
75°C
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT08749

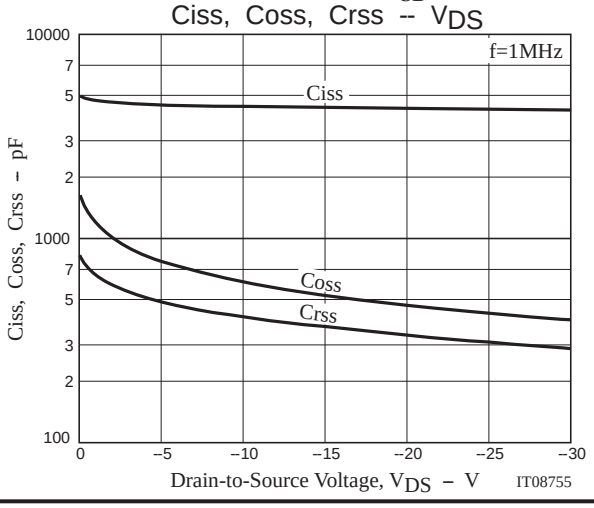

RDS(on) -- VGS
ID= –19A
Tc=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT08750

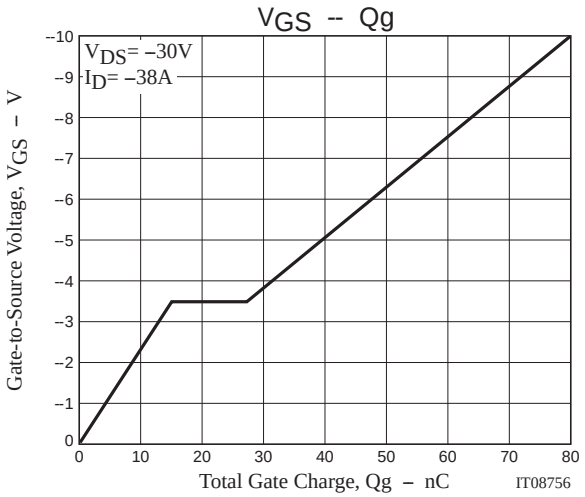

RDS(on) -- Tc
ID= –19A, VGS= –4V
ID= –19A, VGS= –10V
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C
IT08751

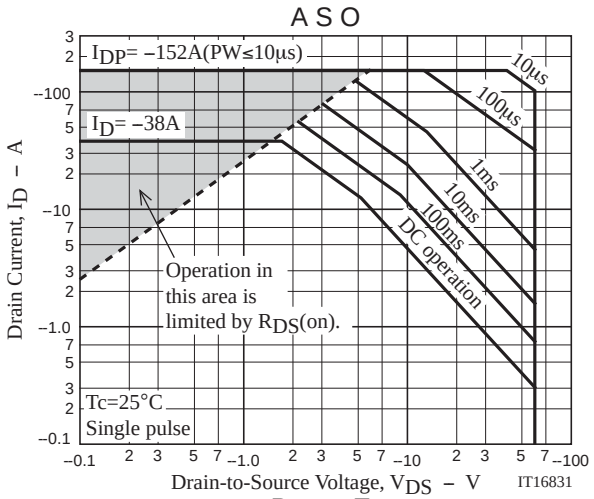

| yfs | -- ID
VDS= –10V
Tc= –25°C
25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT08752

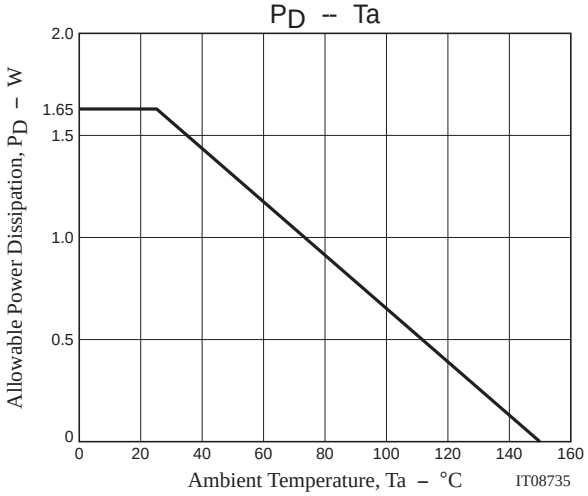

IS -- VSD
VGS=0V
Tc=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT08753

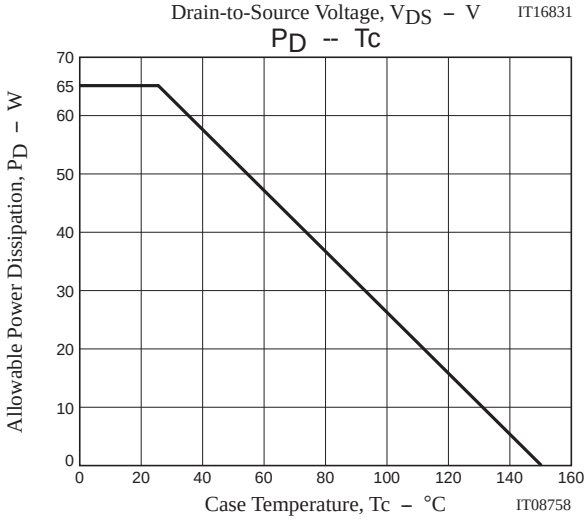

SW Time -- ID
VDD= –30V
VGS= –10V
td(off)
tr
tf
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT08754


Ciss, Coss, Crss -- VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT08755


VGS -- Qg
VDS= −30V
ID= −38A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT08756


A S O
IDP= −152A(PW≤10μs)
ID= −38A
10μs
100μs
1ms
10ms
100ms
DC operation
Operation in this area is limited by RDS(on).
Tc=25°C
Single pulse
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT16831


PD -- Ta
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT08735


PD -- Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
IT08758

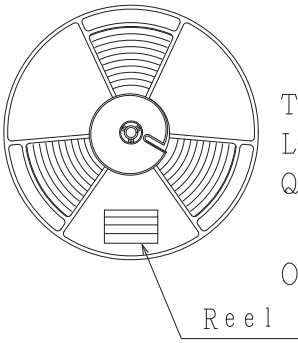
Taping Specification

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

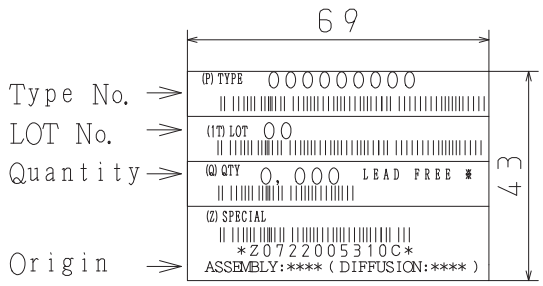
Packing method



Reel label

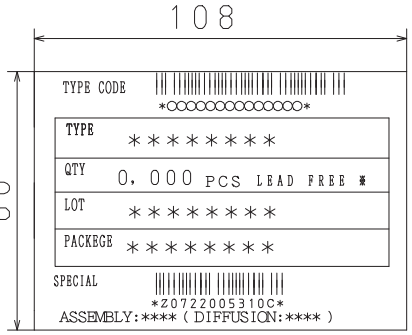
Reel label, Inner box label

(unit:mm)



Outer box label

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

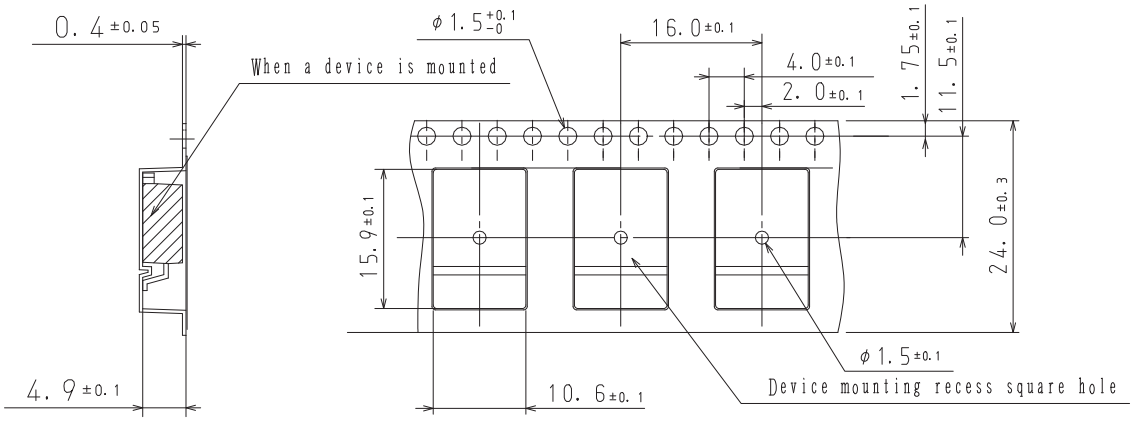


NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

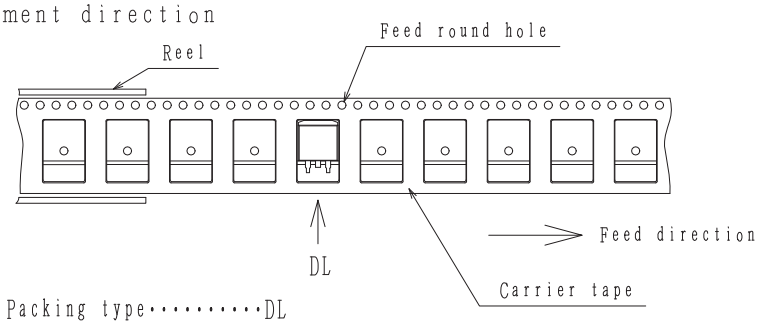
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

2. Taping configuration

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

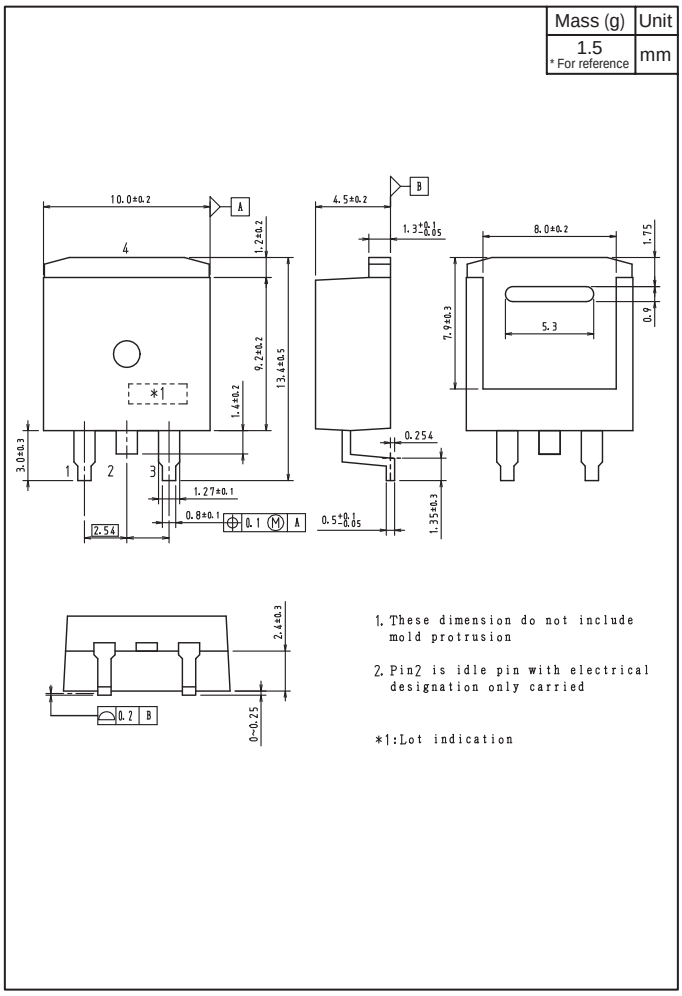


2-2. Device placement direction

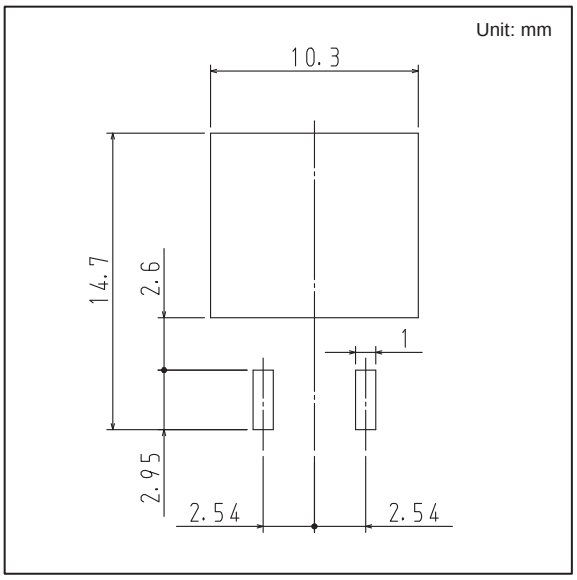


Outline Drawing

2SJ661-DL-1E



Land Pattern Example



Magazine Specification

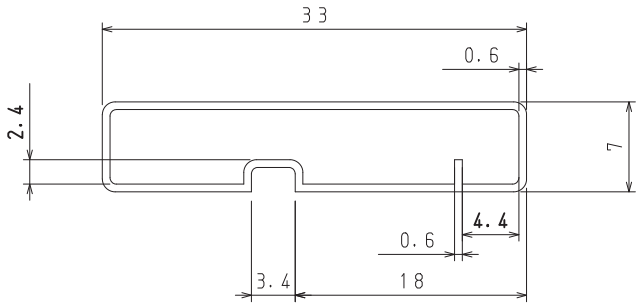
2SJ661-1E

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) 590x225x178

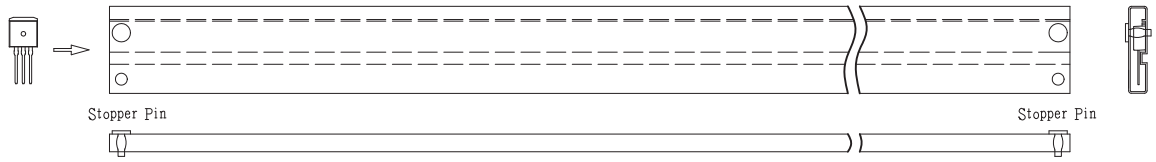
2. Magazine dimensions

(unit:mm)

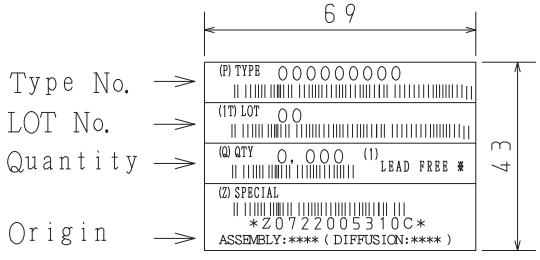


Tolerance=±0.2mm
Thickness=0.6+0.2/-0mm
Length =512.6±1mm
Material =PVC(Antistatic treatment)

3. Storage method to magazine

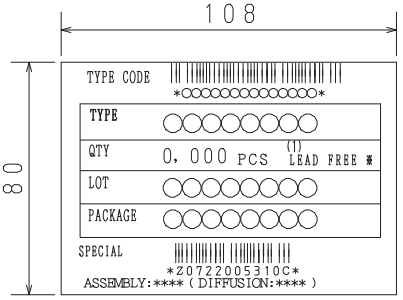


4. Inner box label (unit:mm)



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.

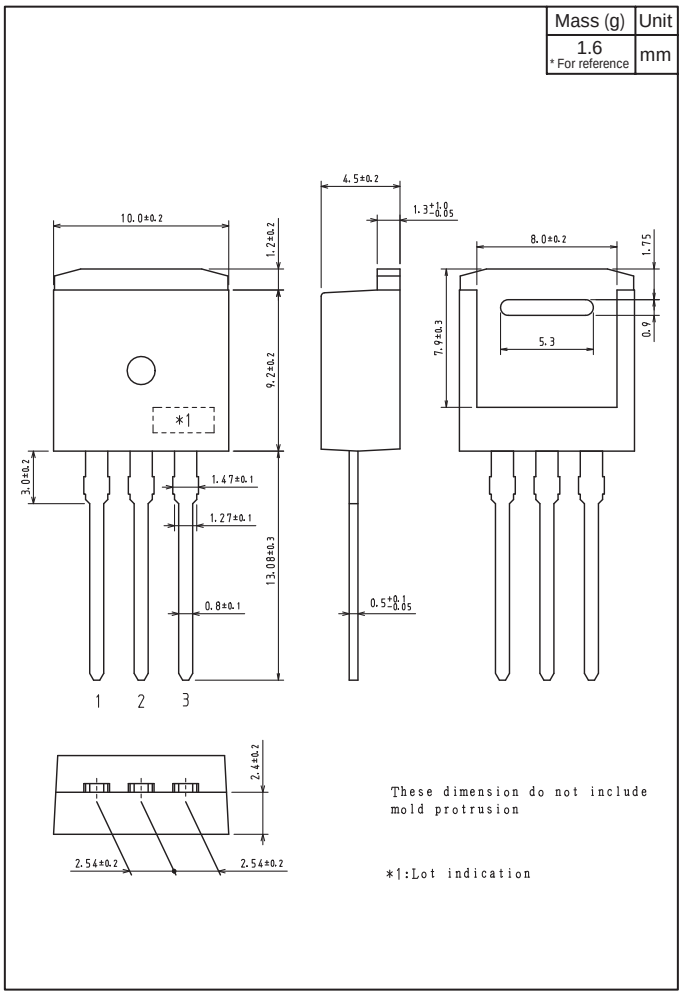


NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

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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