



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

ATP613 — General-Purpose Switching Device Applications

Features

- Reverse recovery time $t_{rr}=60\text{ns}(\text{typ.})$
- Input Capacitance $C_{iss}=350\text{pF}(\text{typ.})$
- Halogen free compliance
- ON-resistance $R_{DS(on)}=1.55\Omega(\text{typ.})$
- 10V drive

Specifications

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

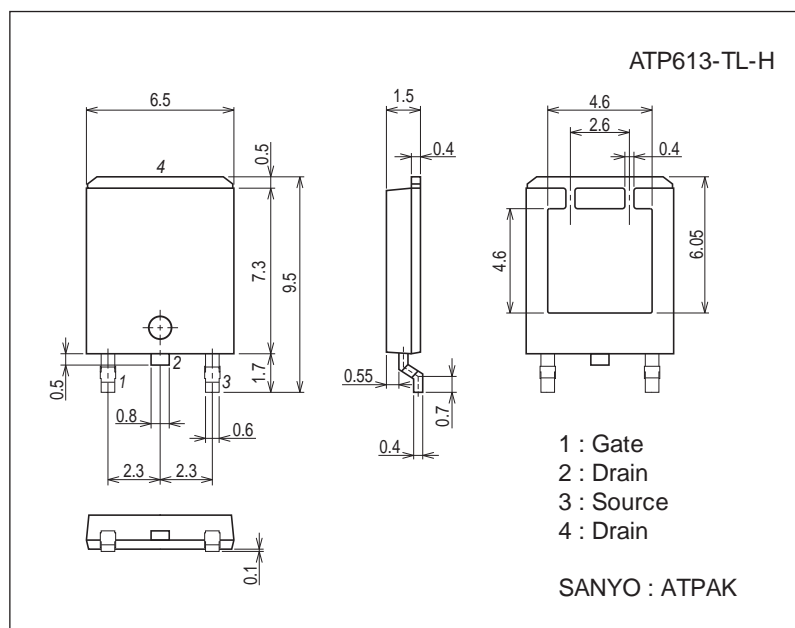
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}		500	V
Gate-to-Source Voltage	V_{GS}		± 30	V
Drain Current (DC)	I_D		5.5	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	19	A
Source-to-Drain Diode Forward Current (DC)	I_S		5.5	A
Source-to-Drain Diode Forward Current (Pulse)	I_{SP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	19	A
Allowable Power Dissipation	P_D	$T_c=25^\circ\text{C}$	70	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}		93	mJ
Avalanche Current *2	I_{AV}		5.5	A

Note : *1 $V_{DD}=99\text{V}$, $L=5\text{mH}$, $I_{AV}=5.5\text{A}$ (Fig.1)*2 $L \leq 5\text{mH}$, Single pulse

Package Dimensions

unit : mm (typ)

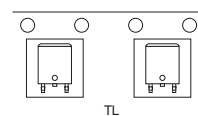
7057-001



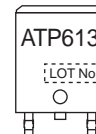
Product & Package Information

- Package : ATPAK
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

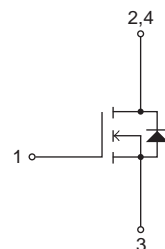
Packing Type: TL



Marking



Electrical Connection



SANYO Semiconductor Co., Ltd.

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

ATP613

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	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$			± 100	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	3		5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=2.75A$	1.5	2.9		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=2.75A, V_{GS}=10V$		1.55	2.0	Ω
Input Capacitance	C_{iss}	$V_{DS}=30V, f=1MHz$		350		pF
Output Capacitance	C_{oss}			68		pF
Reverse Transfer Capacitance	C_{rss}			15		pF
Turn-ON Delay Time	$t_d(on)$	See Fig.2		14.2		ns
Rise Time	t_r			46		ns
Turn-OFF Delay Time	$t_d(off)$			37.6		ns
Fall Time	t_f			20.4		ns
Total Gate Charge	Q_g	$V_{DS}=200V, V_{GS}=10V, I_D=5.5A$		13.8		nC
Gate-to-Source Charge	Q_{gs}			3.2		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			7.6		nC
Diode Forward Voltage	V_{SD}	$I_S=5.5A, V_{GS}=0V$		1.1	1.5	V
Reverse Recovery Time	t_{rr}	See Fig.3		60		ns
Reverse Recovery Charge	Q_{rr}			120		nC

Fig.1 Unclamped Inductive Switching Test Circuit

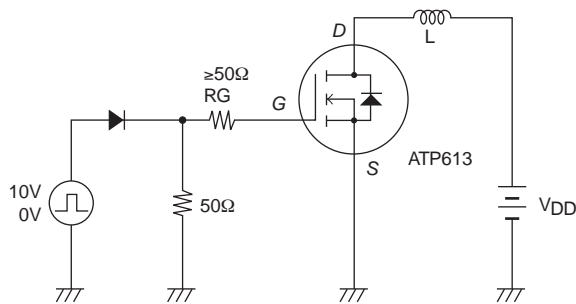


Fig.2 Switching Time Test Circuit

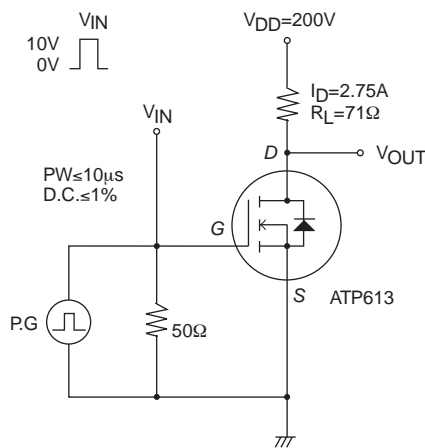
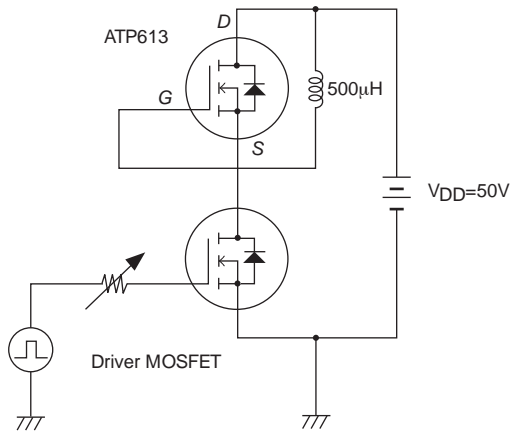
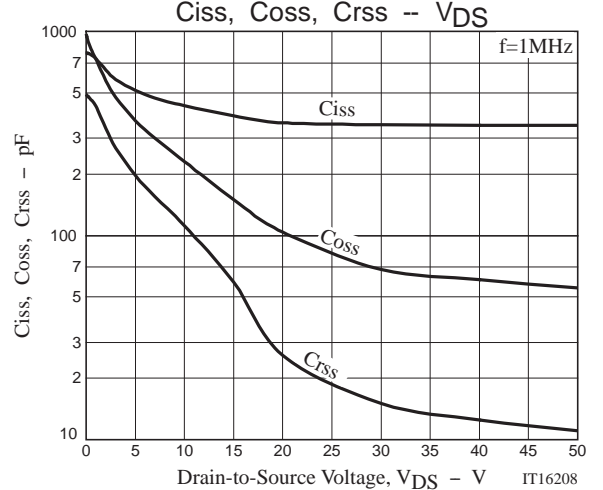
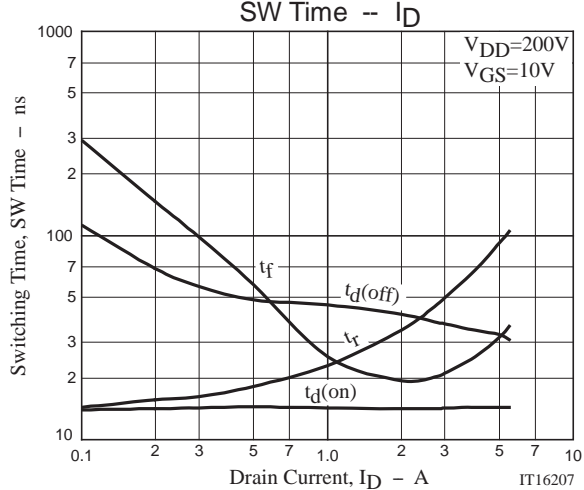
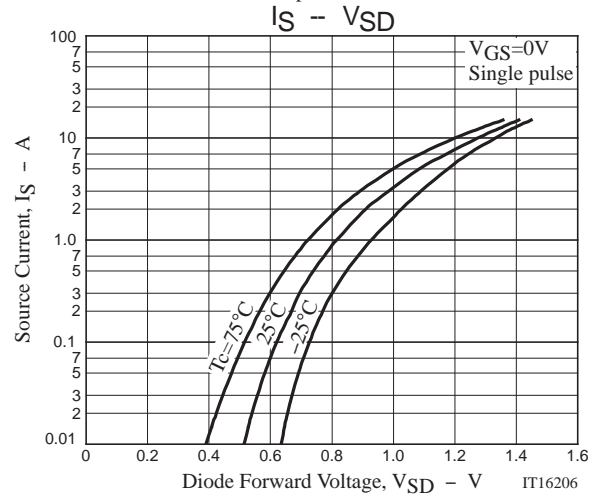
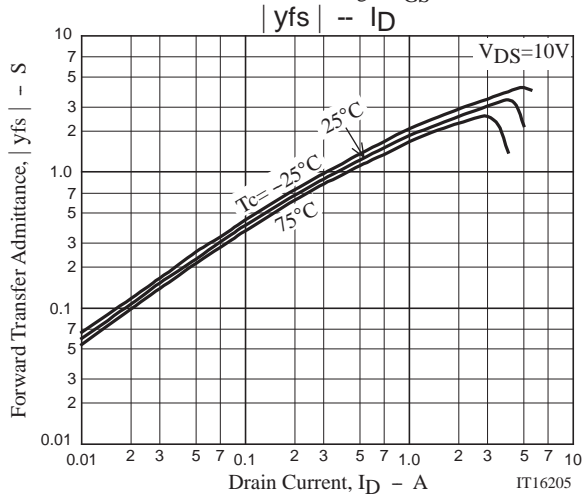
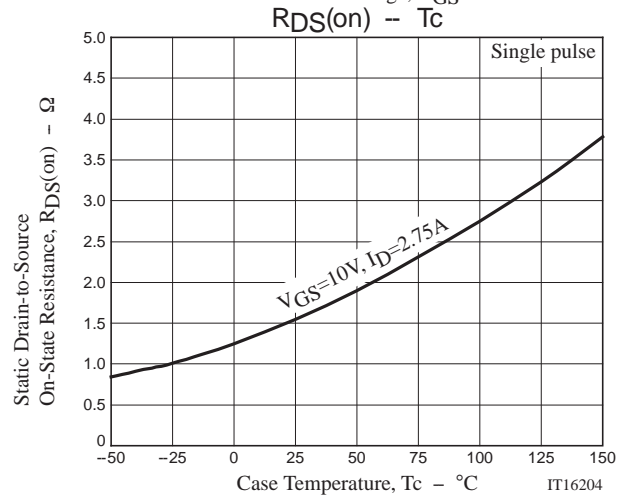
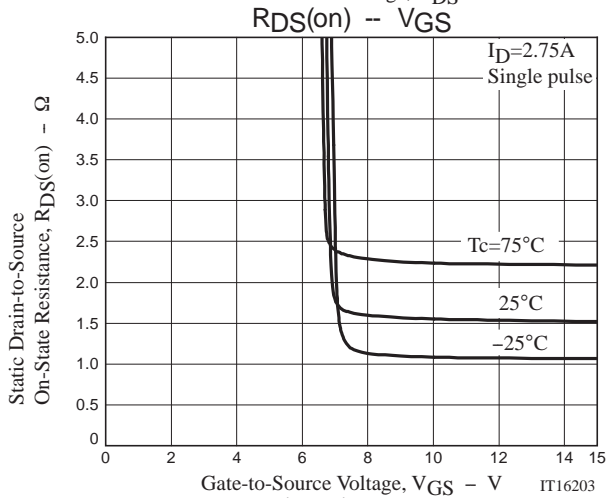
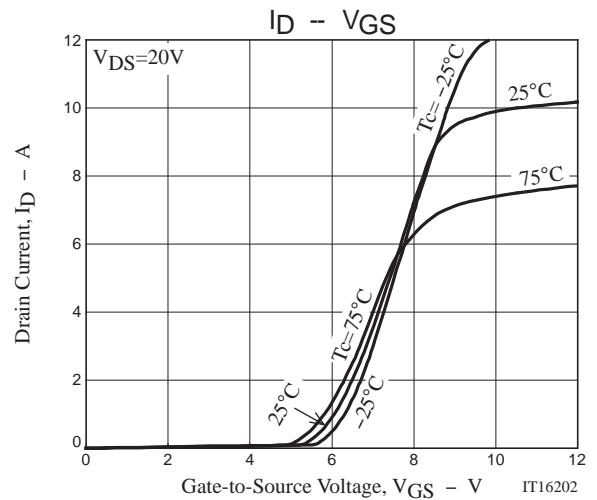
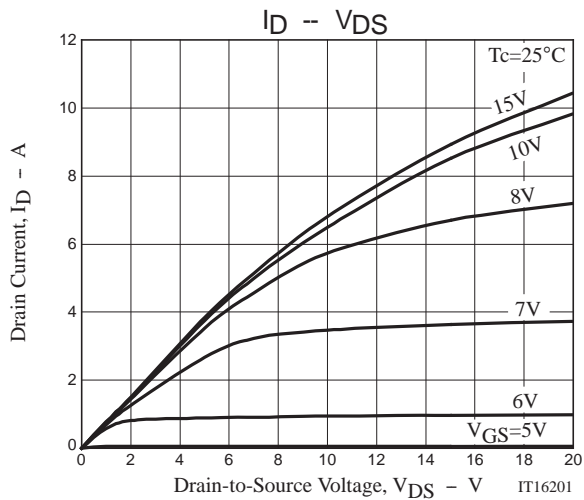


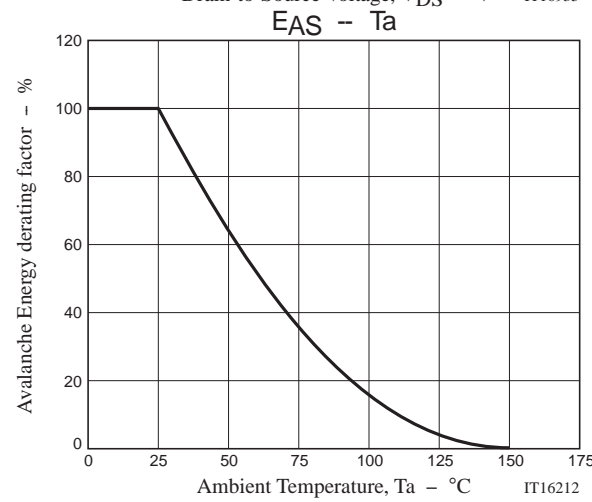
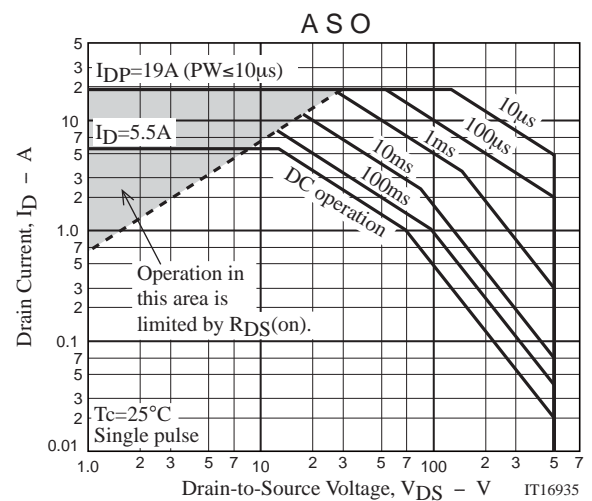
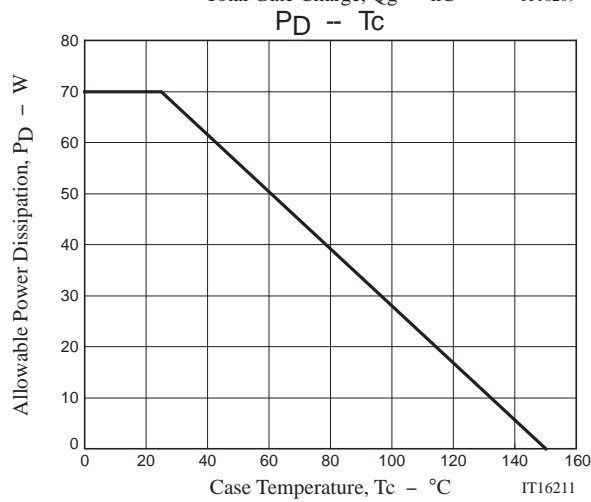
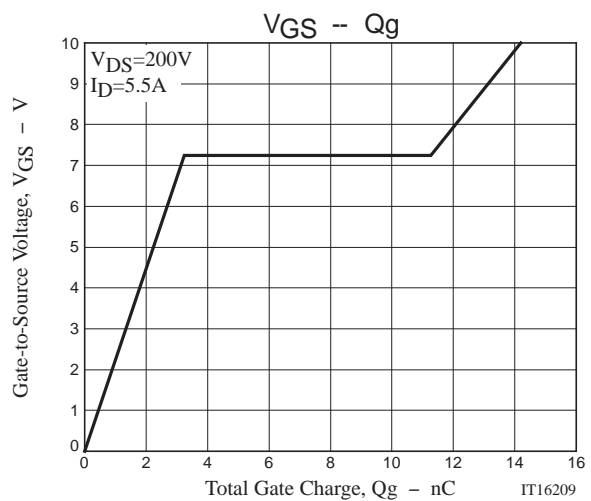
Fig.3 Reverse Recovery Time Test Circuit



Ordering Information

Device	Package	Shipping	memo
ATP613-TL-H	ATPAK	3,000pcs./reel	Pb Free and Halogen Free





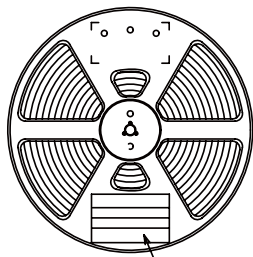
Taping Specification

ATP613-TL-H

1. Packing Format (TL)

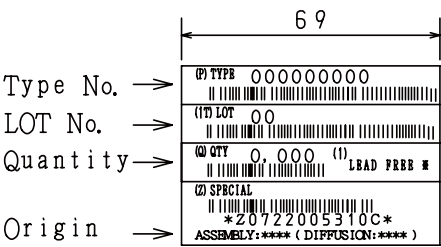
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	INNER BOX SD-C-18	OUTER BOX SD-A-18
ATPAK	ATP	3,000	3,000	15,000	1 reels contained Dimensions:mm (external) 340×340×28	5 inner boxes contained Dimensions:mm (external) 355×355×165

Packing method



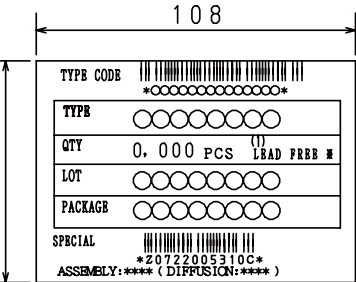
Reel label

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.



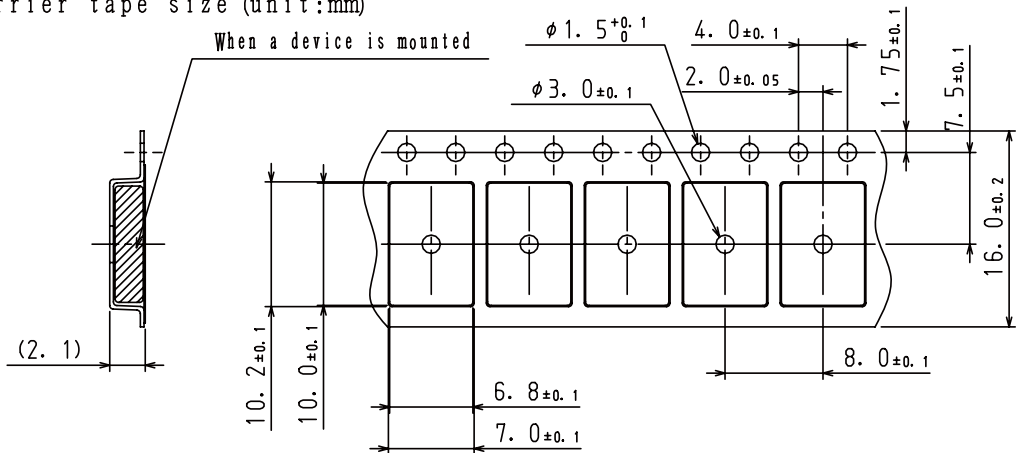
NOTE (1)

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

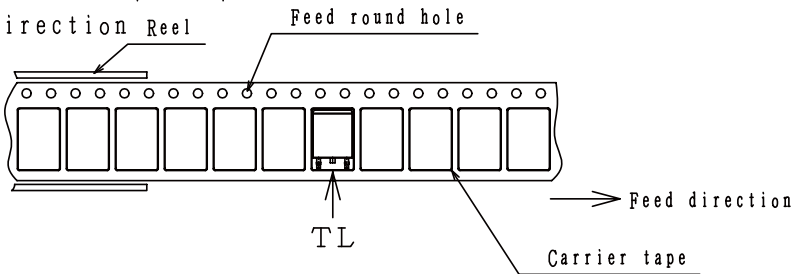
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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

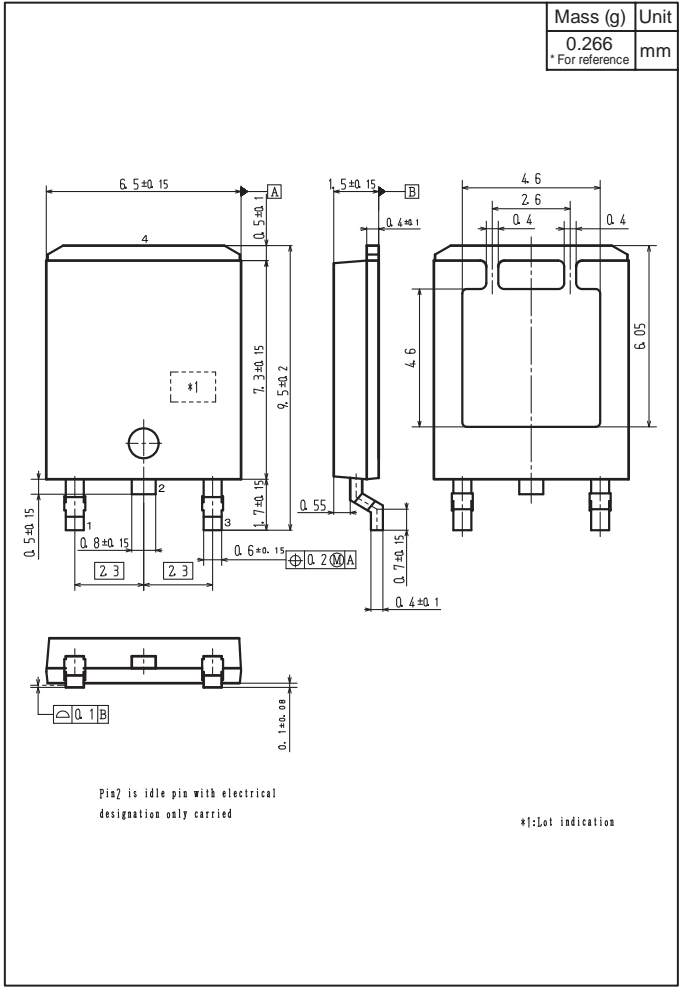


2-2. Device placement direction Reel

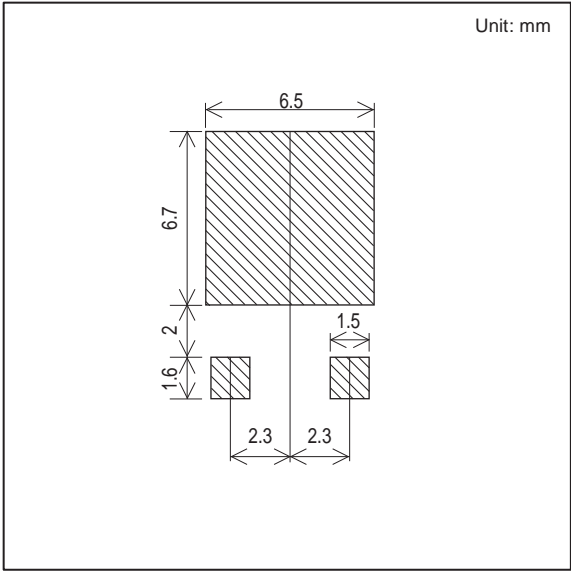


The one electrode terminals on feed hole side...TL

Outline Drawing
ATP613-TL-H



Land Pattern Example



Note on usage : Since the ATP613 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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