



SANYO Semiconductors

## DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

# ATP401 — General-Purpose Switching Device Applications

## Features

- ON-resistance  $R_{DS(on)} = 2.8\text{m}\Omega$ (typ)
- 4.5V Drive
- Input Capacitance  $C_{iss} = 17000\text{pF}$ (typ)
- Halogen free compliance

## Specifications

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

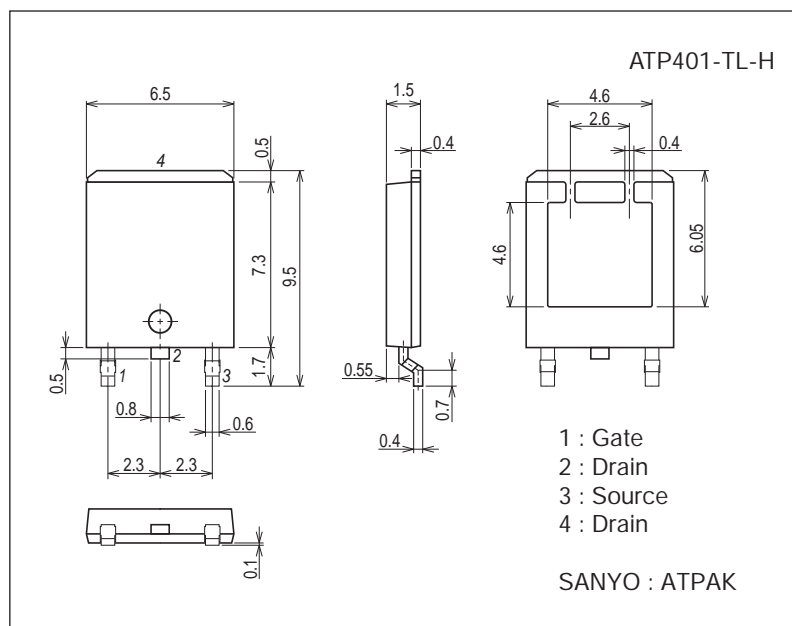
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		60	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		100	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	400	A
Allowable Power Dissipation	$P_D$	$T_c = 25^\circ\text{C}$	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	$E_{AS}$		549	mJ
Avalanche Current *2	$I_{AV}$		70	A

\*1  $V_{DD} = 36\text{V}$ ,  $L = 100\mu\text{H}$ ,  $I_{AV} = 70\text{A}$ (Fig.1)\*2  $L \leq 100\mu\text{H}$ , Single pulse

## Package Dimensions

unit : mm (typ)

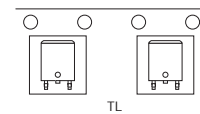
7057-001



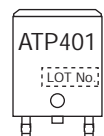
## Product & Package Information

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

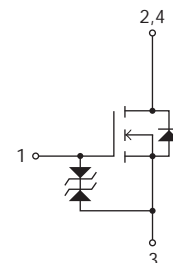
## Packing Type: TL



## Marking



## Electrical Connection



# ATP401

## 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	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$			10	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16V, V_{DS}=0V$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=50A$		90		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=50A, V_{GS}=10V$		2.8	3.7	$m\Omega$
	$R_{DS(on)2}$	$I_D=50A, V_{GS}=4.5V$		3.7	5.2	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=20V, f=1MHz$		17000		pF
Output Capacitance	$C_{oss}$			1000		pF
Reverse Transfer Capacitance	$C_{rss}$			770		pF
Turn-ON Delay Time	$t_{d(on)}$	See Fig.2		110		ns
Rise Time	$t_r$			580		ns
Turn-OFF Delay Time	$t_{d(off)}$			840		ns
Fall Time	$t_f$			710		ns
Total Gate Charge	$Q_g$	$V_{DS}=36V, V_{GS}=10V, I_D=100A$		300		nC
Gate-to-Source Charge	$Q_{gs}$			60		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$			60		nC
Diode Forward Voltage	$V_{SD}$	$I_S=100A, V_{GS}=0V$		0.9	1.2	V

Fig.1 Unclamped Inductive Switching Test Circuit

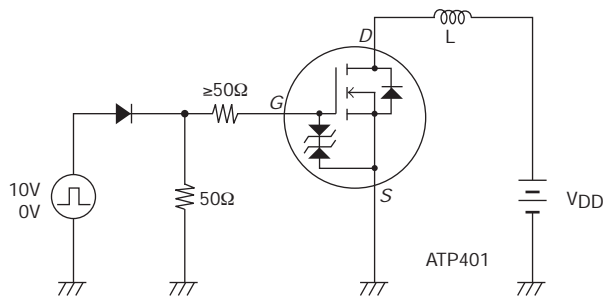
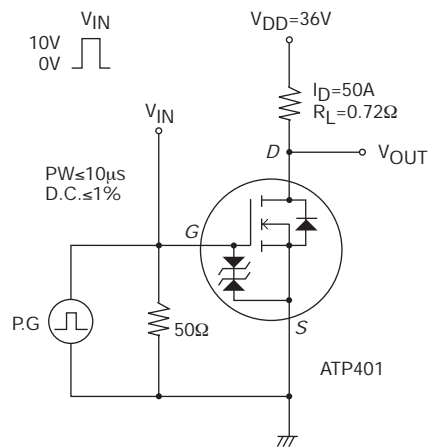
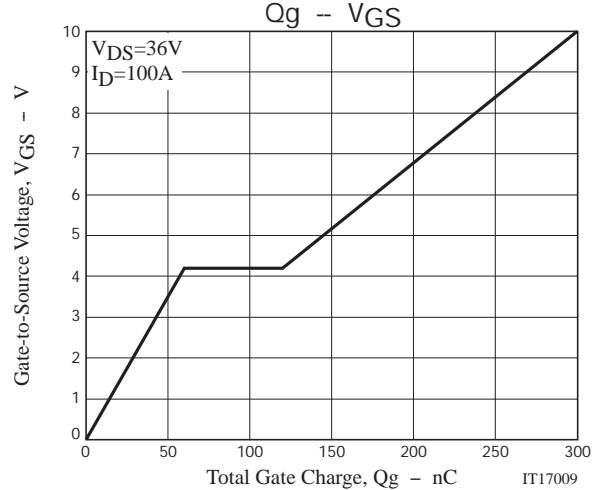
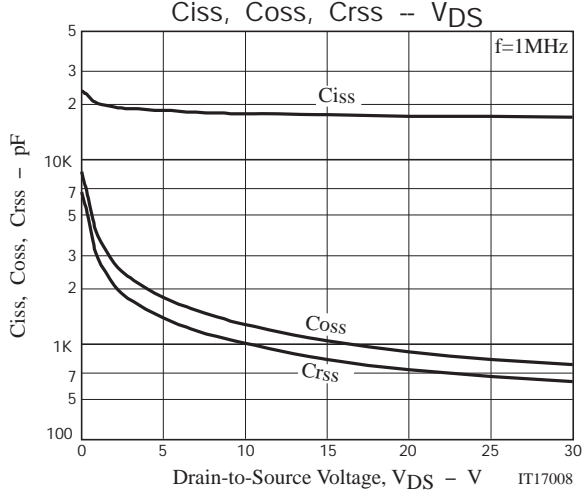
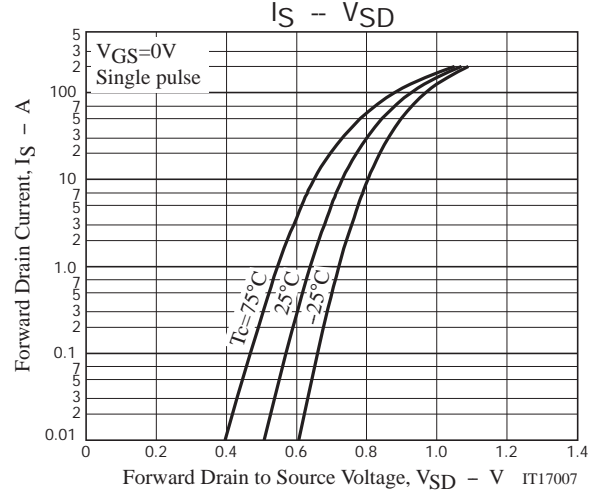
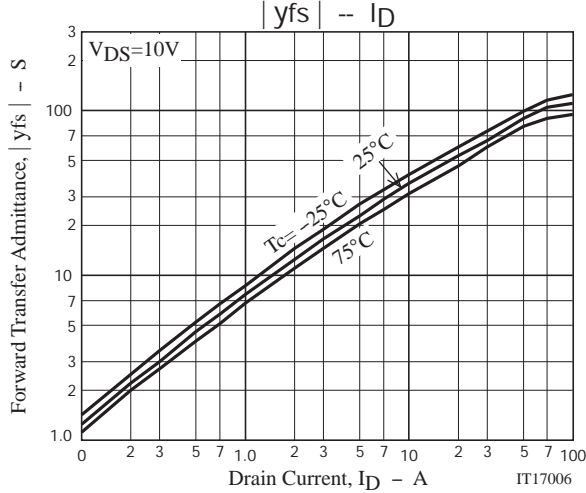
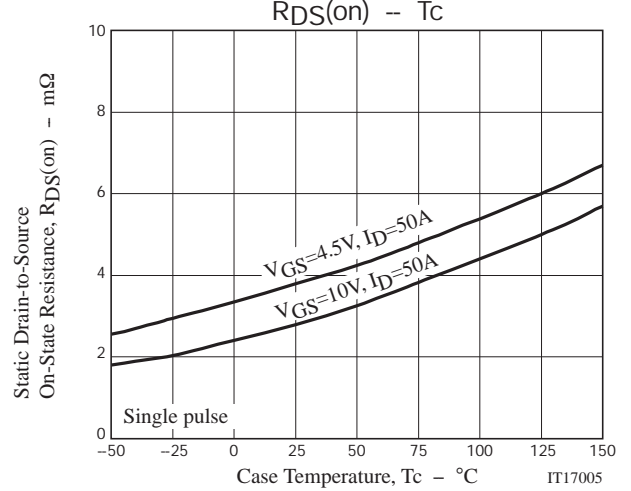
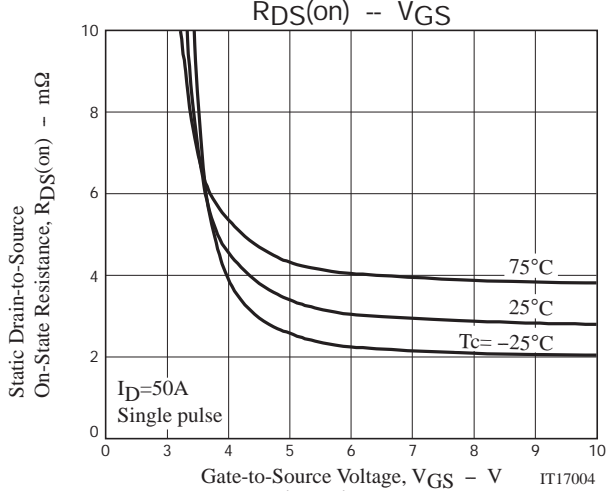
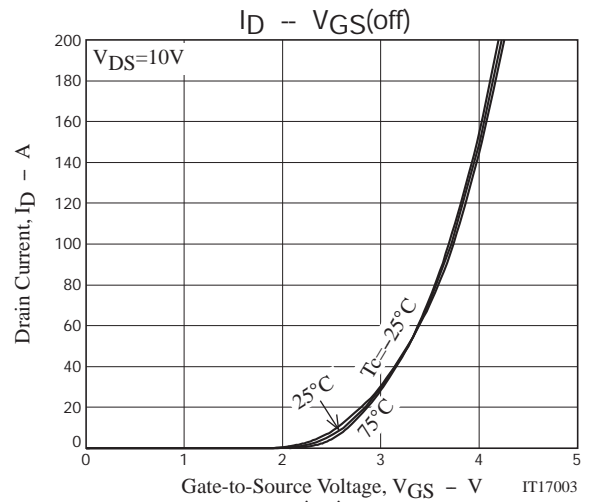
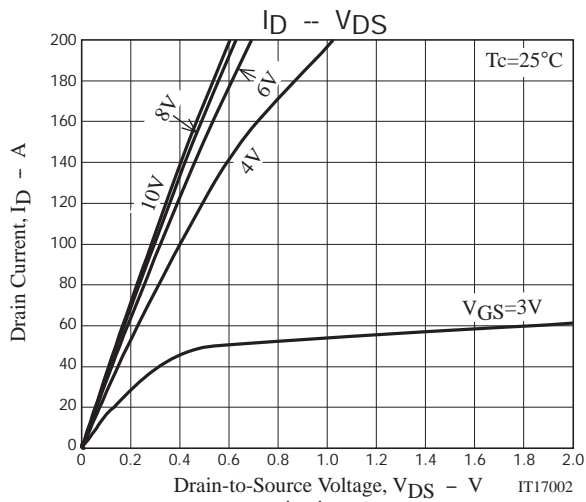


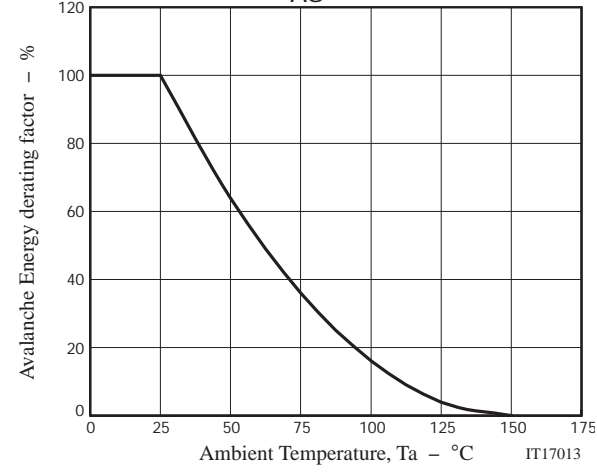
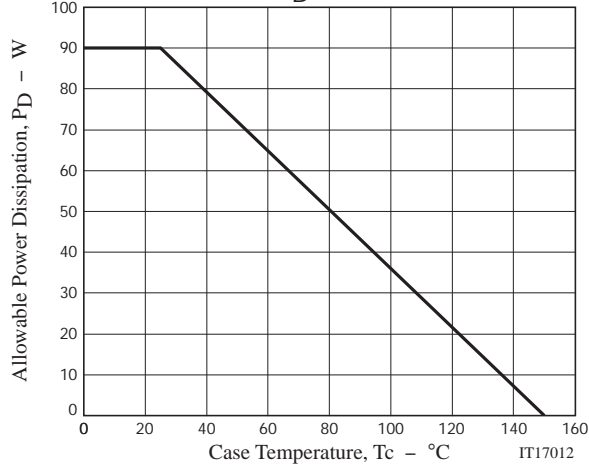
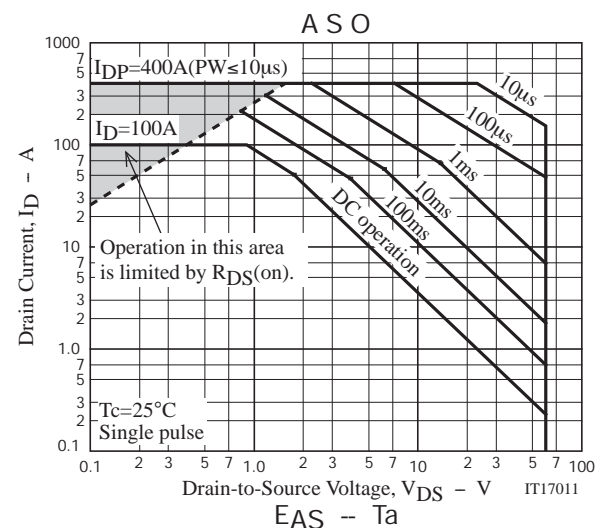
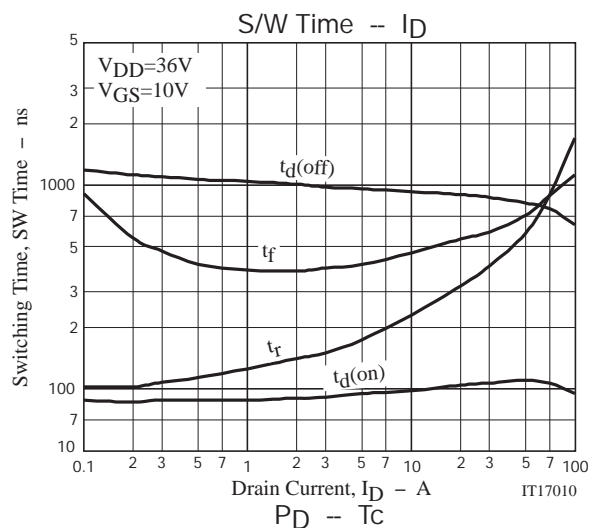
Fig.2 Switching Time Test Circuit



## Ordering Information

Device	Package	Shipping	memo
ATP401-TL-H	ATPAK	3,000pcs./reel	Pb Free and Halogen Free





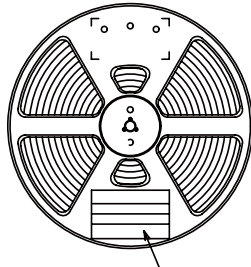
## Taping Specification

ATP401-TL-H

### 1. Packing Format (TL)

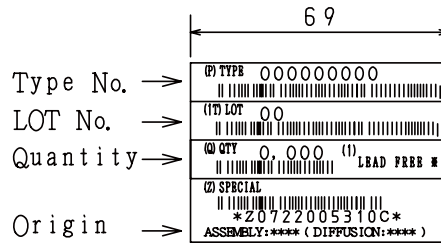
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	INNER BOX SD-C-18	OUTER BOX SD-A-18
ATPAK	ATP	3,000	3,000	15,000	1 reels contained Dimensions:mm (external) 340×340×28	5 inner boxes contained Dimensions:mm (external) 355×355×165

#### Packing method



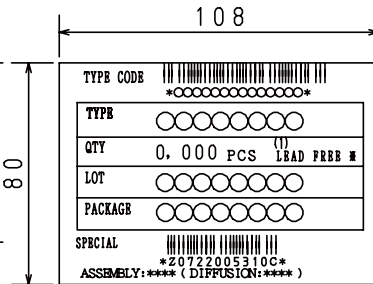
Reel label

#### 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.



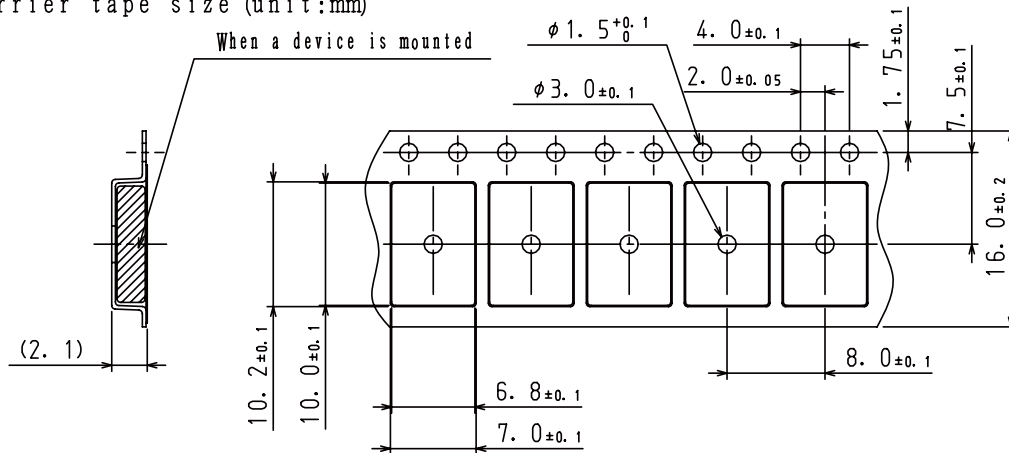
#### NOTE (1)

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

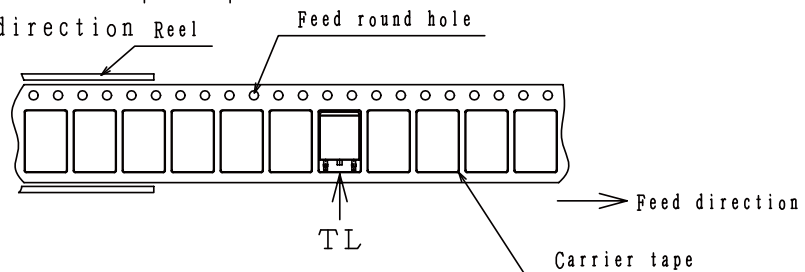
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

### 2. Taping configuration

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

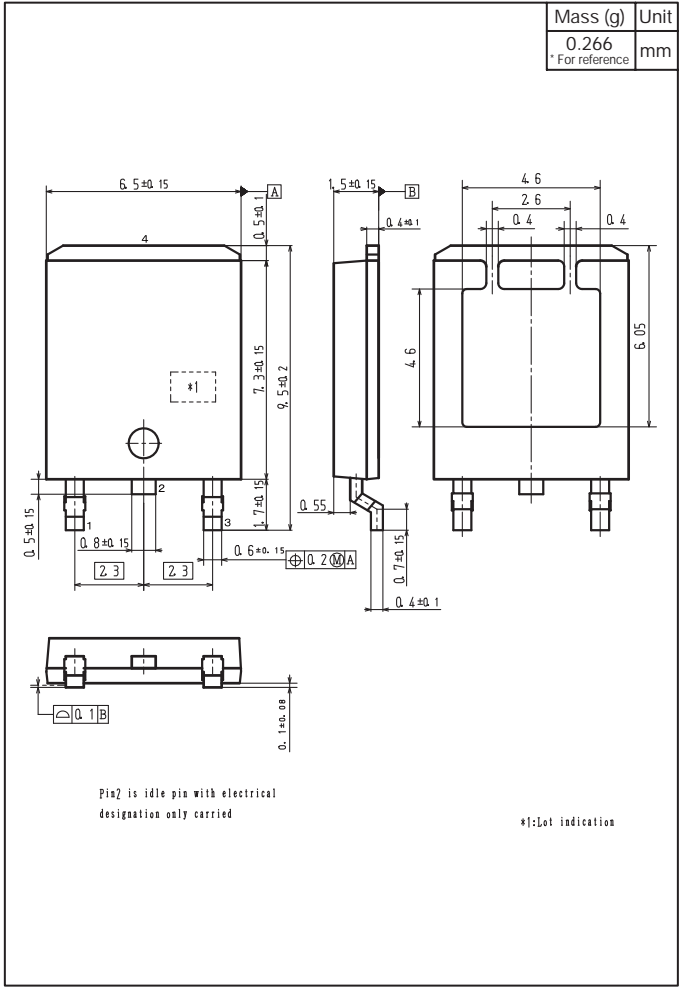


#### 2-2. Device placement direction Reel

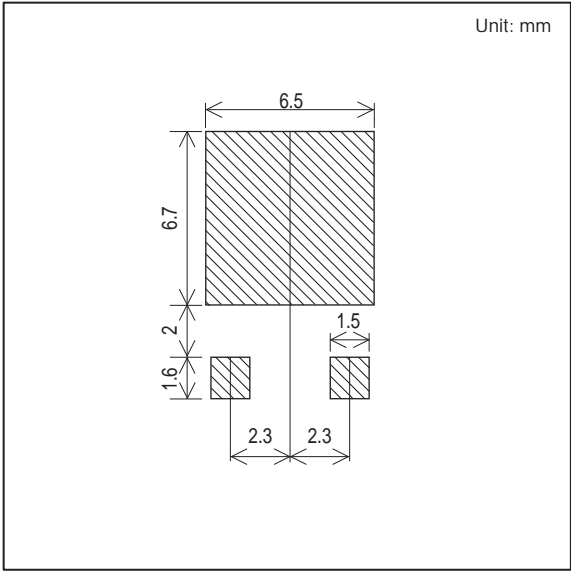


The one electrode terminals on feed hole side...TL

Outline Drawing  
ATP401-TL-H



Land Pattern Example



Note on usage : Since the ATP401 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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