Ordering number : ENA1597A

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

P-Channel Silicon MOSFET

ATP106 — General-Purpose Switching Device Applications

Features

- Low ON-resistance
- Slim package
- Halogen free compliance
- Large current
- 4.5V drive
- Protection diode in

Specifications

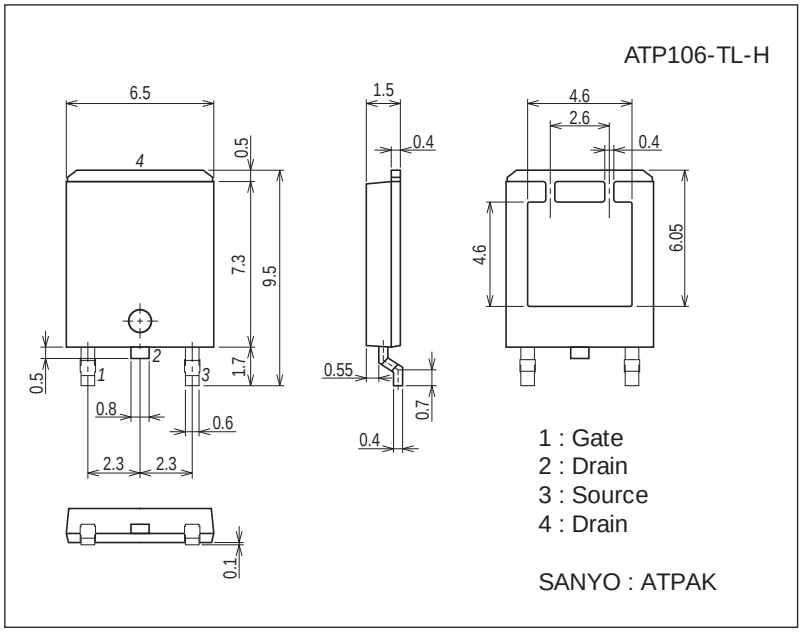
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		−40	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		−30	A
Drain Current (PW≤10μs)	I_{DP}	PW≤10μs, duty cycle≤1%	−90	A
Allowable Power Dissipation	P_D	Tc=25°C	40	W
Channel Temperature	Tch		150	℃
Storage Temperature	Tstg		−55 to +150	℃
Avalanche Energy (Single Pulse) *1	E_{AS}		30	mJ
Avalanche Current *2	I_{AV}		−15	A

Note :*1 V_{DD}=−10V, L=200μH, I_{AV}=−15A
*2 L≤200μH, Single pulse

Package Dimensions

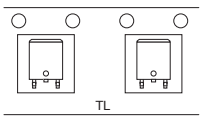
unit : mm (typ)
7057-001



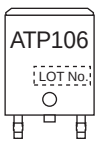
Product & Package Information

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

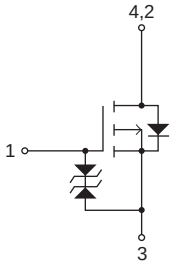
Packing Type: TL



Marking



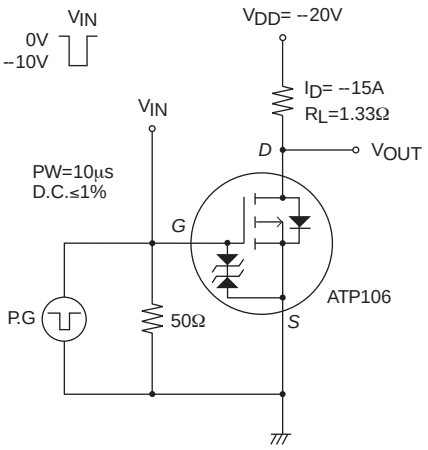
Electrical Connection



Electrical Characteristics at Ta=25°C

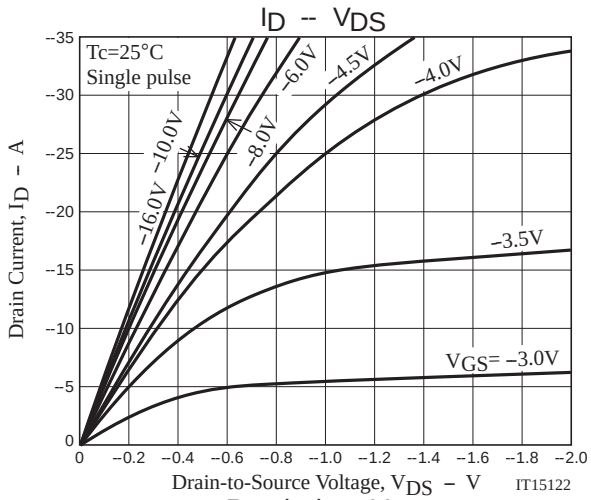
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=−1mA, V_{GS}=0V	−40			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−40V, V_{GS}=0V			−1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=−10V, I_D=−1mA	−1.5		−2.6	V
Forward Transfer Admittance	|yfs|	V_{DS}=−10V, I_D=−15A		28		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−15A, V_{GS}=−10V		19	25	mΩ
	R_{DS}(on)2	I_D=−8A, V_{GS}=−4.5V		29	41	mΩ
Input Capacitance	Ciss	V_{DS}=−20V, f=1MHz		1380		pF
Output Capacitance	Coss			210		pF
Reverse Transfer Capacitance	Crss			150		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		12		ns
Rise Time	t_r			120		ns
Turn-OFF Delay Time	t_d(off)			110		ns
Fall Time	t_f			90		ns
Total Gate Charge	Qg	V_{DS}=−20V, V_{GS}=−10V, I_D=−30A		29		nC
Gate-to-Source Charge	Qgs			6.4		nC
Gate-to-Drain “Miller” Charge	Qgd			5.9		nC
Diode Forward Voltage	V_{SD}	I_S=−30A, V_{GS}=0V		−0.97	−1.5	V

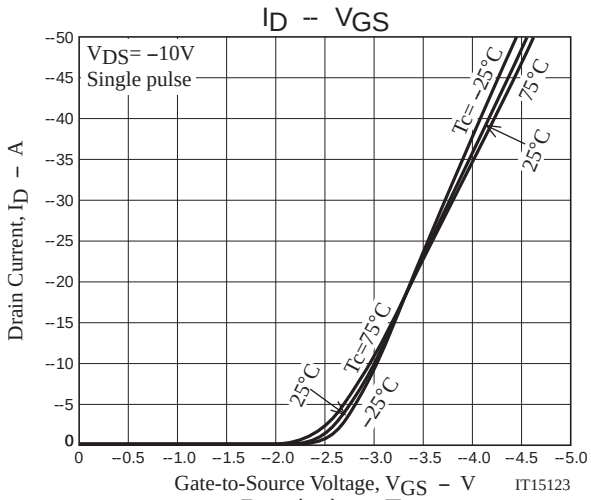
Switching Time Test Circuit

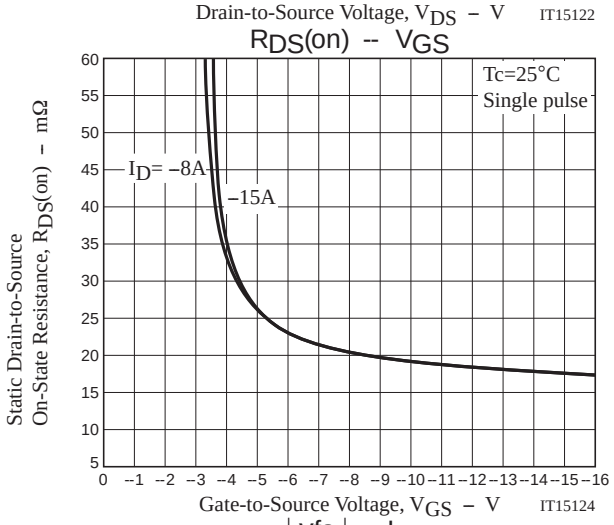


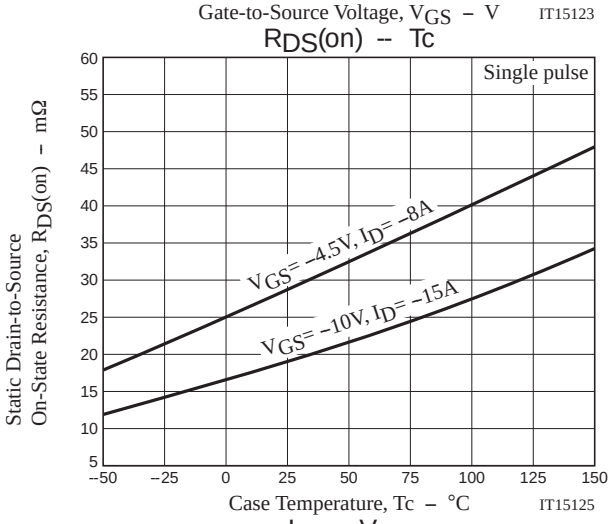
Ordering Information

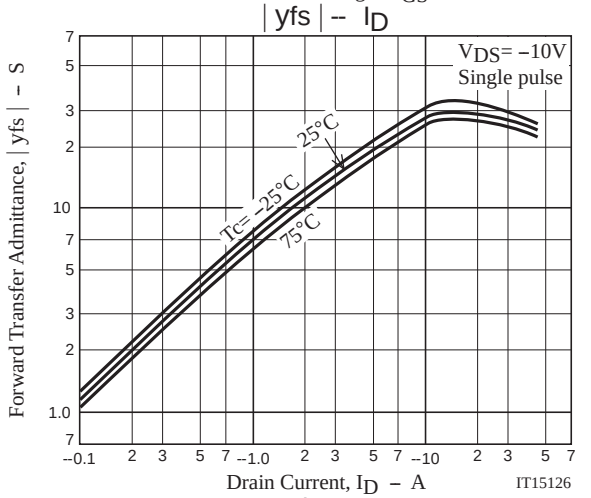
Device	Package	Shipping	memo
ATP106-TL-H	ATPAK	3,000pcs./reel	Pb Free and Halogen Free

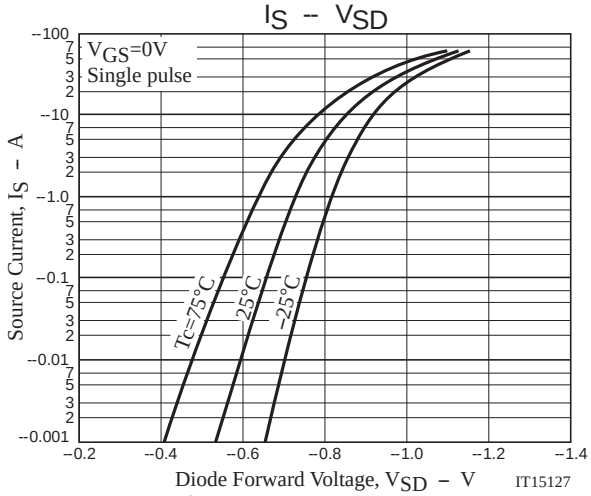

ID -- VDS
Tc=25°C
Single pulse
–16.0V
–10.0V
–8.0V
–6.0V
–4.5V
–4.0V
–3.5V
VGS= –3.0V
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT15122

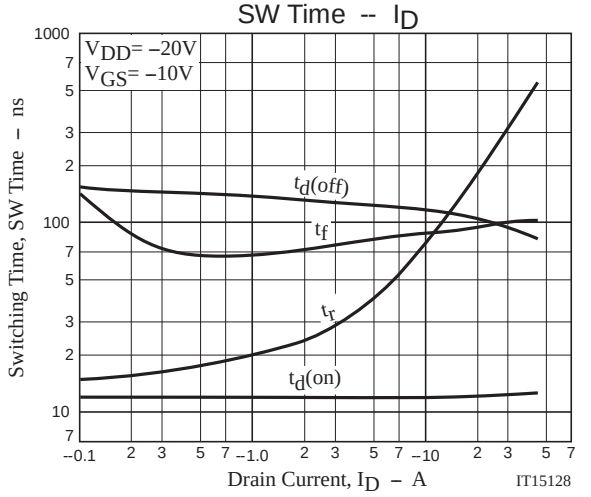

ID -- VGS
VDS= –10V
Single pulse
Tc= –25°C
75°C
25°C
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT15123

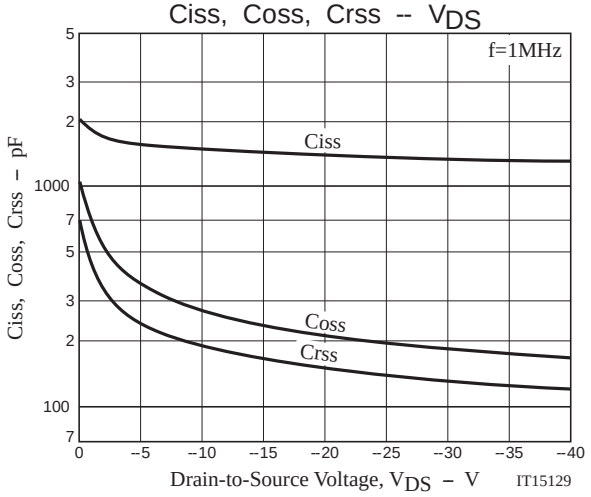

RDS(on) -- VGS
Tc=25°C
Single pulse
ID= –8A
–15A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT15124

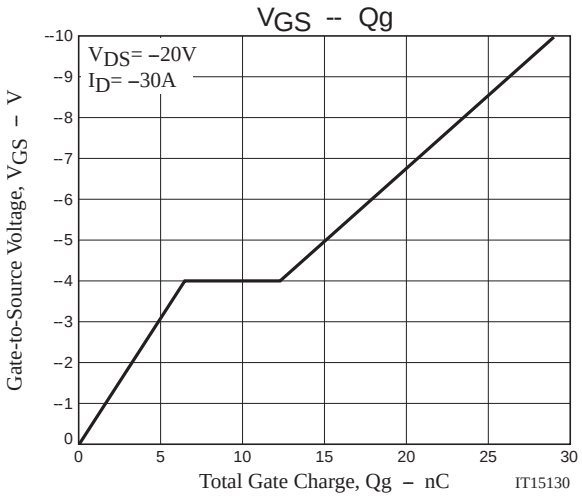

RDS(on) -- Tc
Single pulse
VGS= –4.5V, ID= –8A
VGS= –10V, ID= –15A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C
IT15125

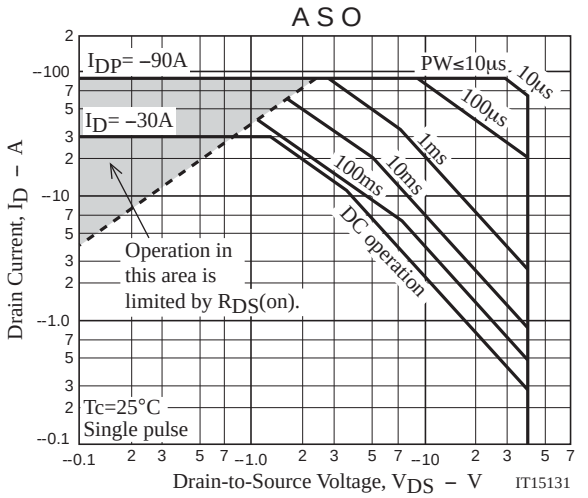

| yfs | -- ID
VDS= –10V
Single pulse
25°C
Tc= –25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT15126

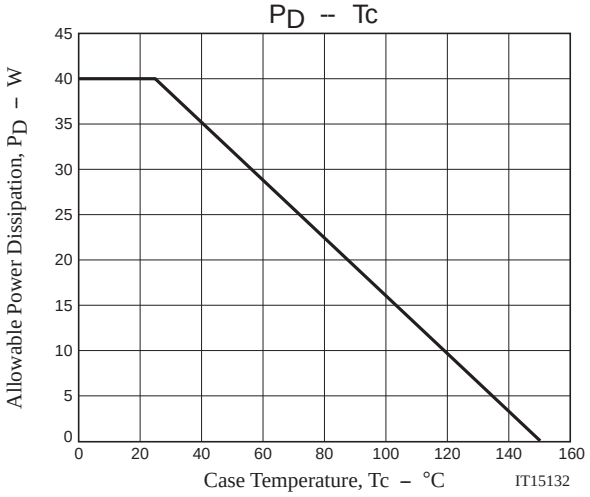

IS -- VSD
VGS=0V
Single pulse
Tc=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT15127

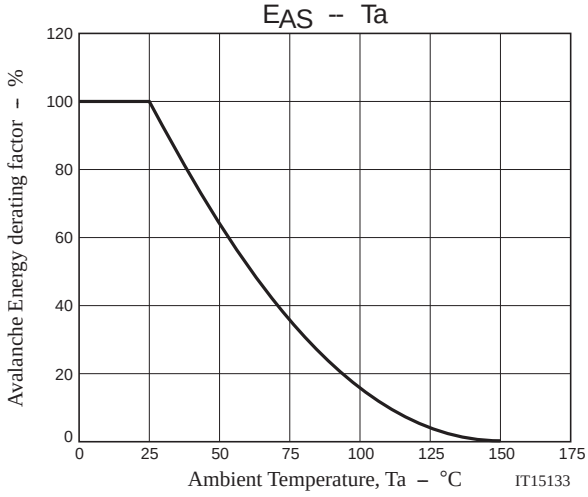

SW Time -- ID
VDD= –20V
VGS= –10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT15128


Ciss, Coss, Crss -- VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT15129


VGS -- Qg
VDS= –20V
ID= –30A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT15130


A S O
IDP= –90A
PW≤10μs
10μs
100μs
1ms
10ms
100ms
DC operation
ID= –30A
Operation in this area is limited by RDS(on).
Tc=25°C
Single pulse
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT15131


PD -- Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
IT15132


EAS -- Ta
Avalanche Energy derating factor – %
Ambient Temperature, Ta – °C
IT15133

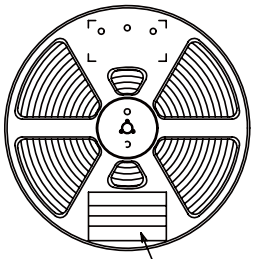
Taping Specification

ATP106-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

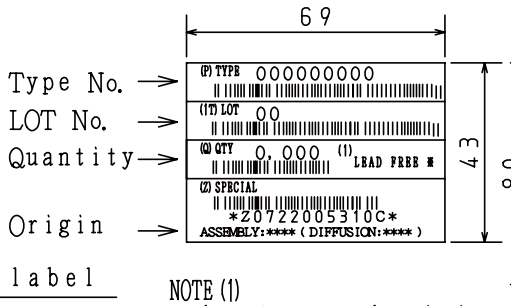
Packing method



Reel label

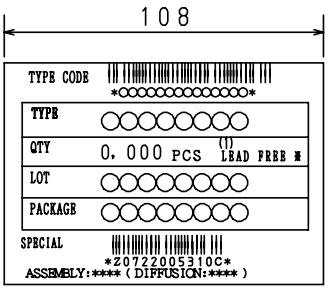
Reel label, Inner box label

(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.



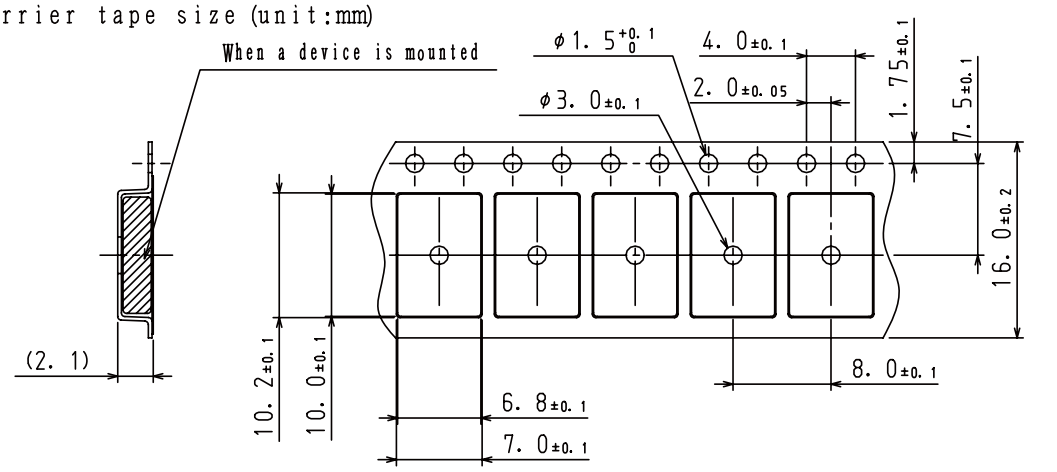
NOTE (1)

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

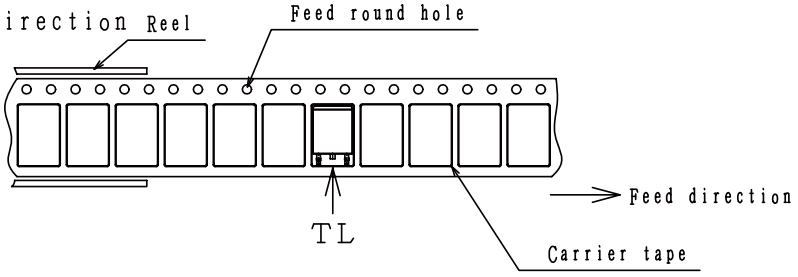
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



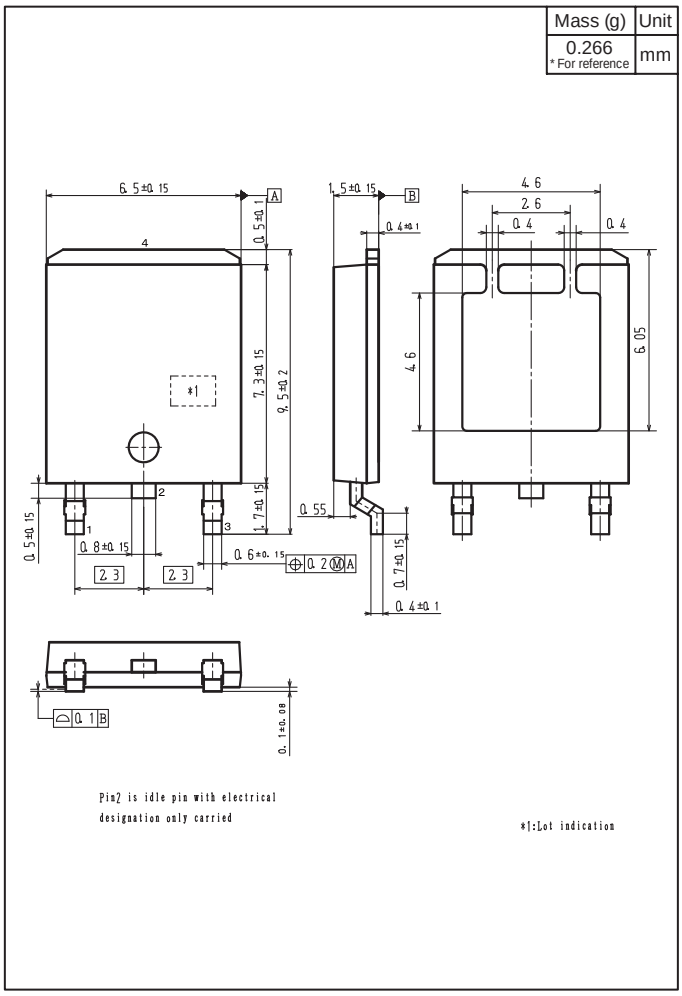
2-2. Device placement direction



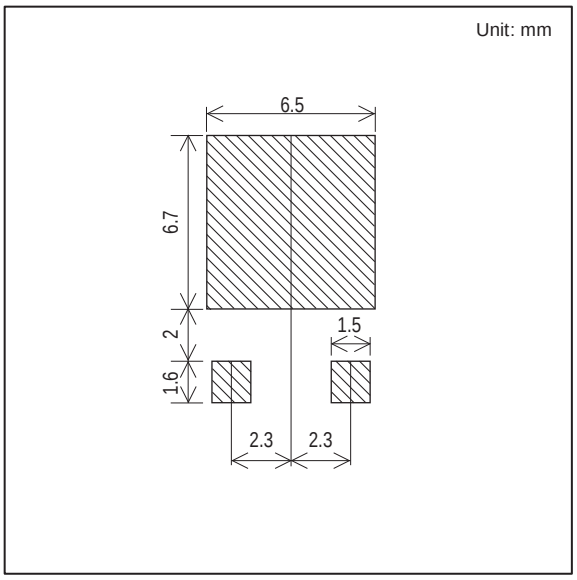
The one erectrode terminals on feed hole side····TL

Outline Drawing

ATP106-TL-H



Land Pattern Example



Note on usage : Since the ATP106 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of June, 2012. Specifications and information herein are subject to change without notice.