Ordering number : ENA1754A

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

P-Channel Silicon MOSFET

ATP112 — General-Purpose Switching Device Applications

Features

- ON-resistance $R_{DS}(on)1=33m\Omega$(typ.)
- 4V drive
- Protection diode in
- Input Capacitance Ciss=1450pF(typ.)
- Halogen free compliance

Specifications

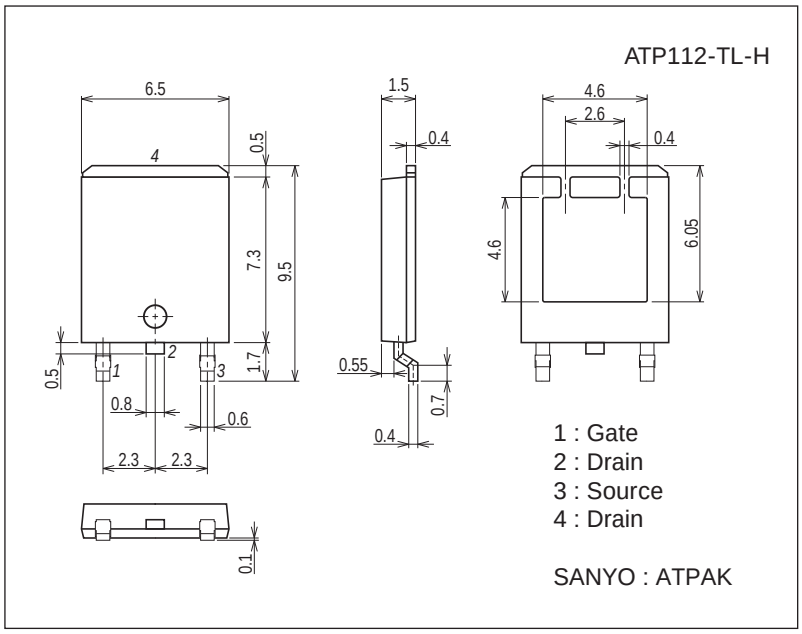
Absolute Maximum Ratings at Ta=25°C

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		−25	A
Drain Current (PW≤10μs)	I_{DP}	PW≤10μs, duty cycle≤1%	−75	A
Allowable Power Dissipation	P_D	Tc=25°C	40	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C
Avalanche Energy (Single Pulse) *1	E_{AS}		50	mJ
Avalanche Current *2	I_{AV}		−13	A

Note :*1 V_{DD}=−10V, L=500μH, I_{AV}=−13A
*2 L≤500μH, Single pulse

Package Dimensions

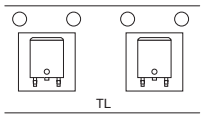
unit : mm (typ)
7057-001



Product & Package Information

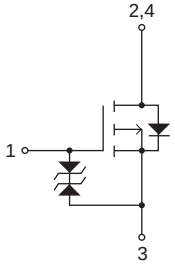
- Package : ATPAK
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

Packing Type: TL



Marking

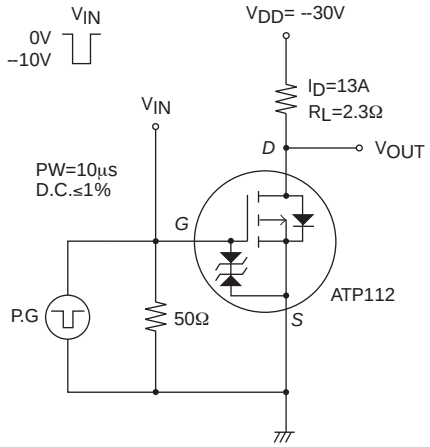
Electrical Connection



Electrical Characteristics at Ta=25°C

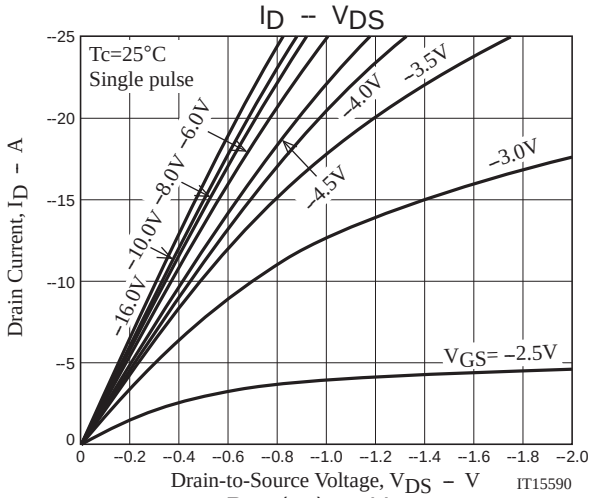
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=−1mA, V_{GS}=0V	−60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−60V, V_{GS}=0V			−1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=−10V, I_D=−1mA	−1.2		−2.6	V
Forward Transfer Admittance	| yfs |	V_{DS}=−10V, I_D=−13A		24		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−13A, V_{GS}=−10V		33	43	mΩ
	R_{DS}(on)2	I_D=−7A, V_{GS}=−4.5V		42	59	mΩ
	R_{DS}(on)3	I_D=−3.5A, V_{GS}=−4V		45	63	mΩ
Input Capacitance	Ciss	V_{DS}=−20V, f=1MHz		1450		pF
Output Capacitance	Coss			155		pF
Reverse Transfer Capacitance	Crss			125		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		10		ns
Rise Time	t_r			80		ns
Turn-OFF Delay Time	$t_{d(off)}$			150		ns
Fall Time	t_f			120		ns
Total Gate Charge	Qg	V_{DS}=−30V, V_{GS}=−10V, I_D=−25A		33.5		nC
Gate-to-Source Charge	Qgs			5.3		nC
Gate-to-Drain “Miller” Charge	Qgd			7.9		nC
Diode Forward Voltage	V_{SD}	I_S=−25A, V_{GS}=0V		−0.97	−1.5	V

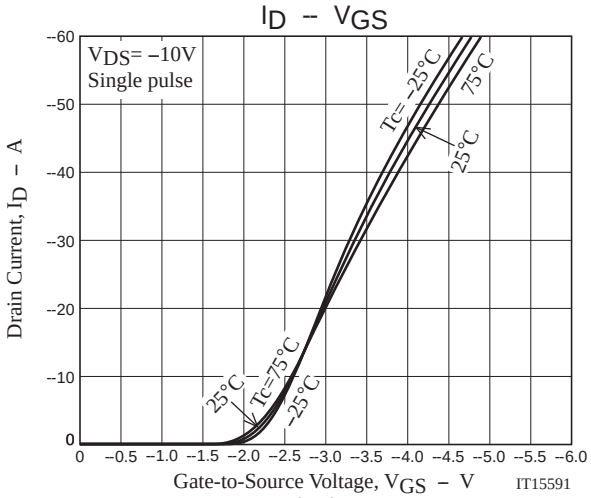
Switching Time Test Circuit

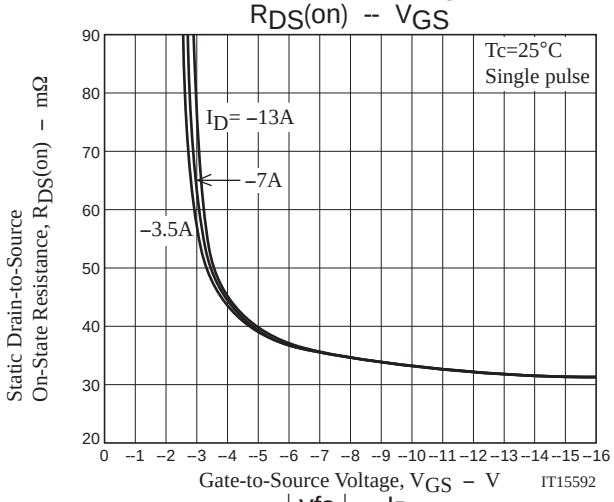


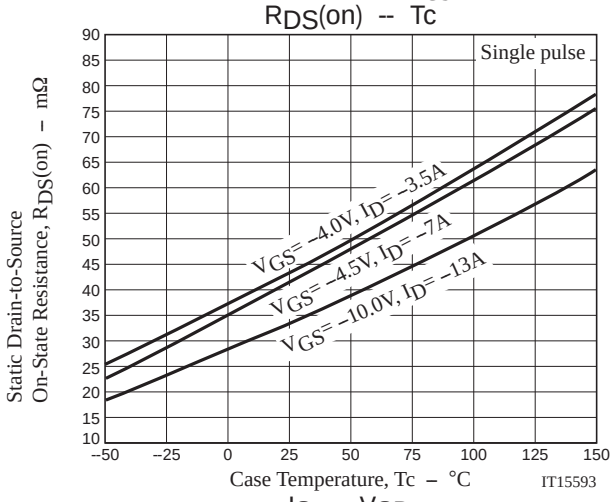
Ordering Information

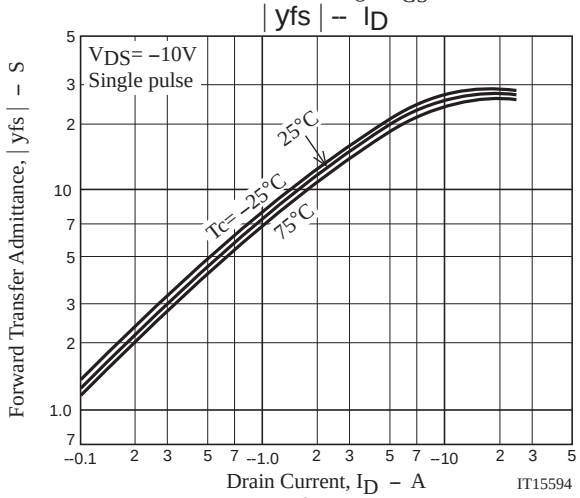
Device	Package	Shipping	memo
ATP112-TL-H	ATPAK	3,000pcs./reel	Pb Free and Halogen Free

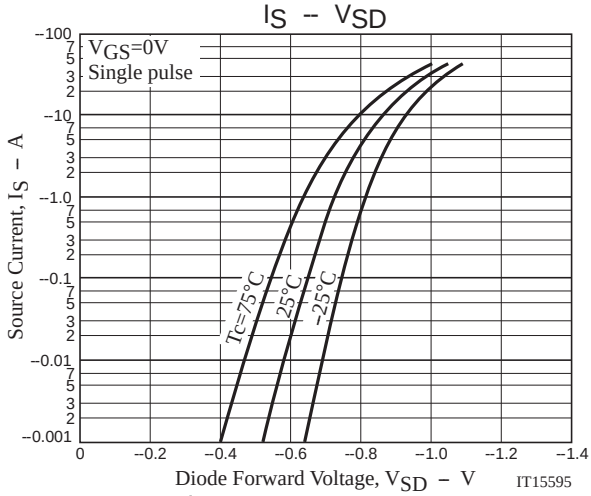

ID -- VDS
Tc=25°C
Single pulse
–3.0V
–3.5V
–4.0V
–4.5V
–6.0V
–8.0V
–10.0V
–16.0V
VGS= –2.5V
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT15590

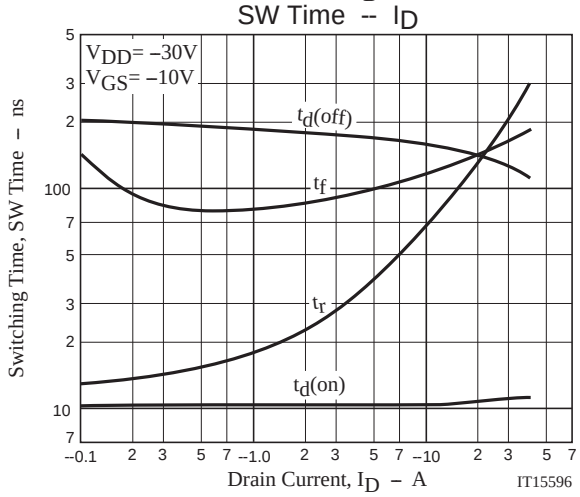

ID -- VGS
VDS= –10V
Single pulse
Tc= –25°C
75°C
25°C
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT15591

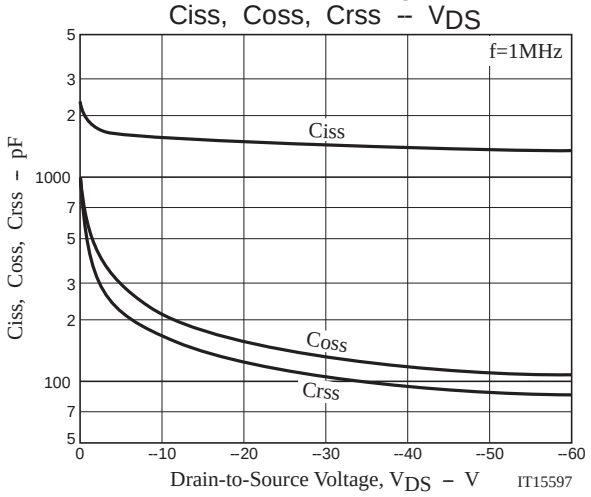

RDS(on) -- VGS
Tc=25°C
Single pulse
ID= –13A
–7A
–3.5A
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT15592

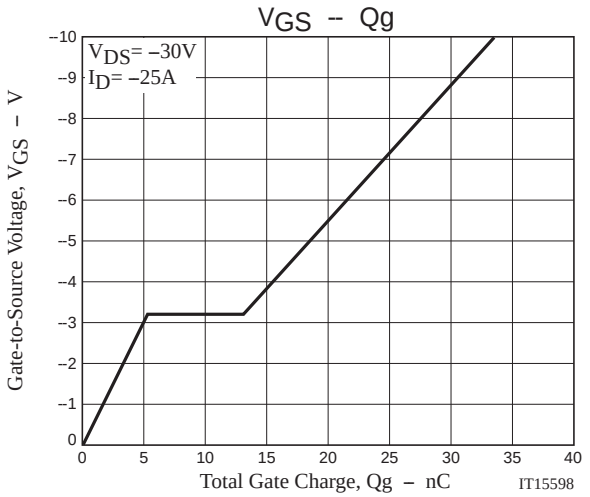

RDS(on) -- Tc
Single pulse
VGS= –4.0V, ID= –3.5A
VGS= –4.5V, ID= –7A
VGS= –10.0V, ID= –13A
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C
IT15593

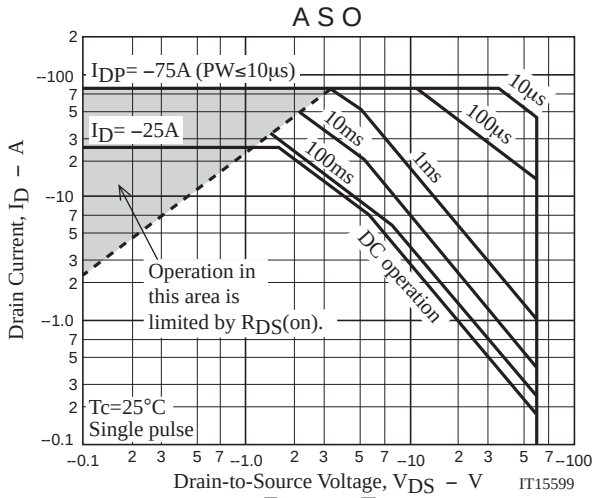

| yfs | -- ID
VDS= –10V
Single pulse
25°C
Tc= –25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT15594

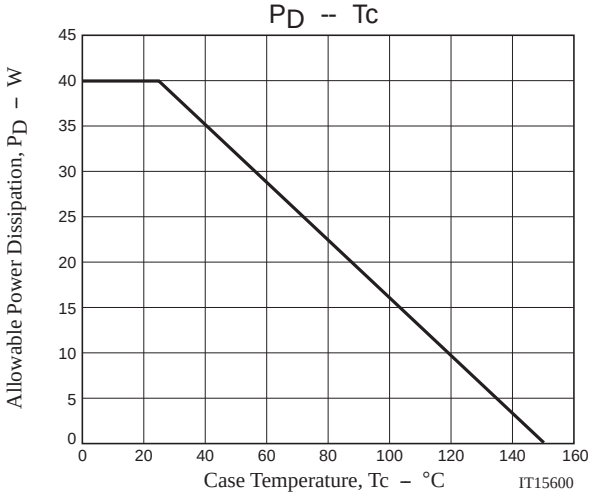

IS -- VSD
VGS=0V
Single pulse
Tc=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT15595

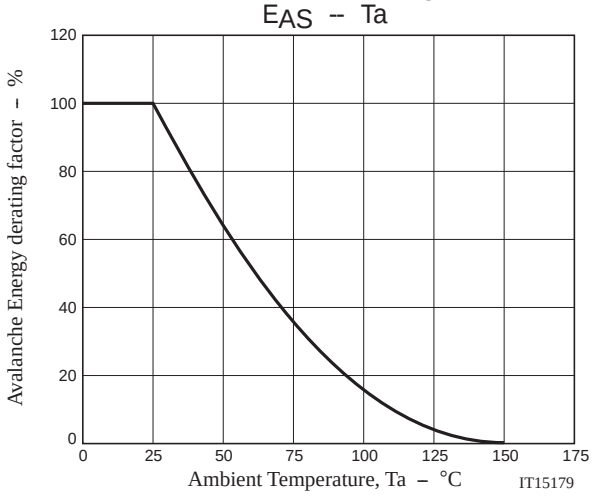

SW Time -- ID
VDD= –30V
VGS= –10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT15596


Ciss, Coss, Crss -- VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT15597


VGS -- Qg
VDS= −30V
ID= −25A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT15598


A S O
IDP= −75A (PW≤10μs)
ID= −25A
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
IT15599


PD -- Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
IT15600


EAS -- Ta
Avalanche Energy derating factor – %
Ambient Temperature, Ta – °C
IT15179

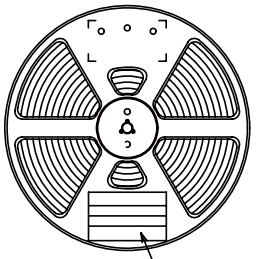
Taping Specification

ATP112-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

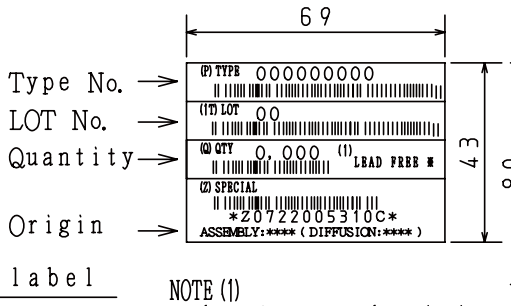
Packing method



Reel label

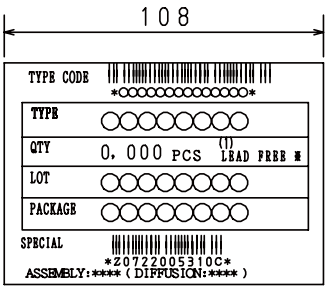
Reel label, Inner box label

(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.



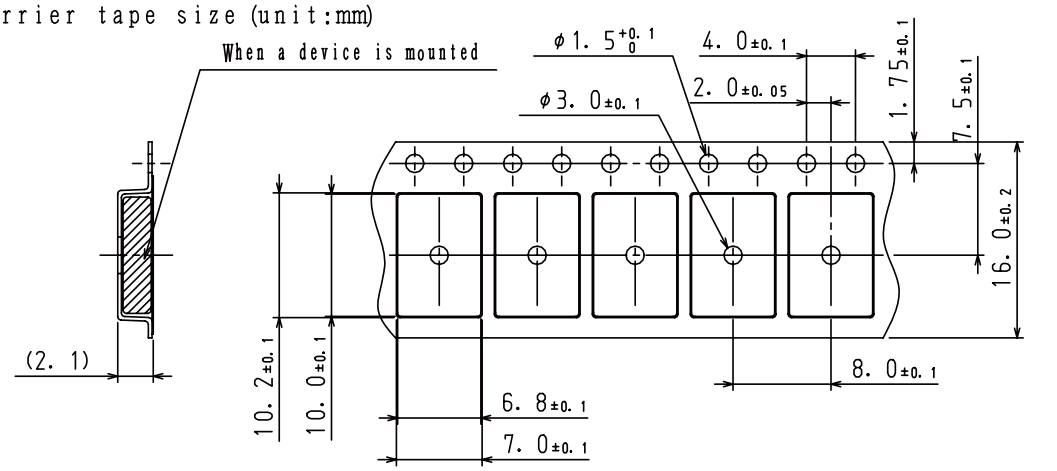
NOTE (1)

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

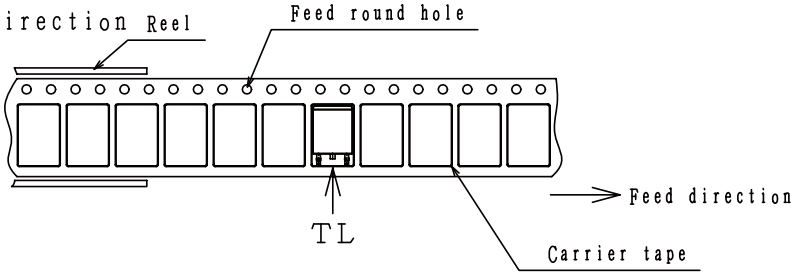
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



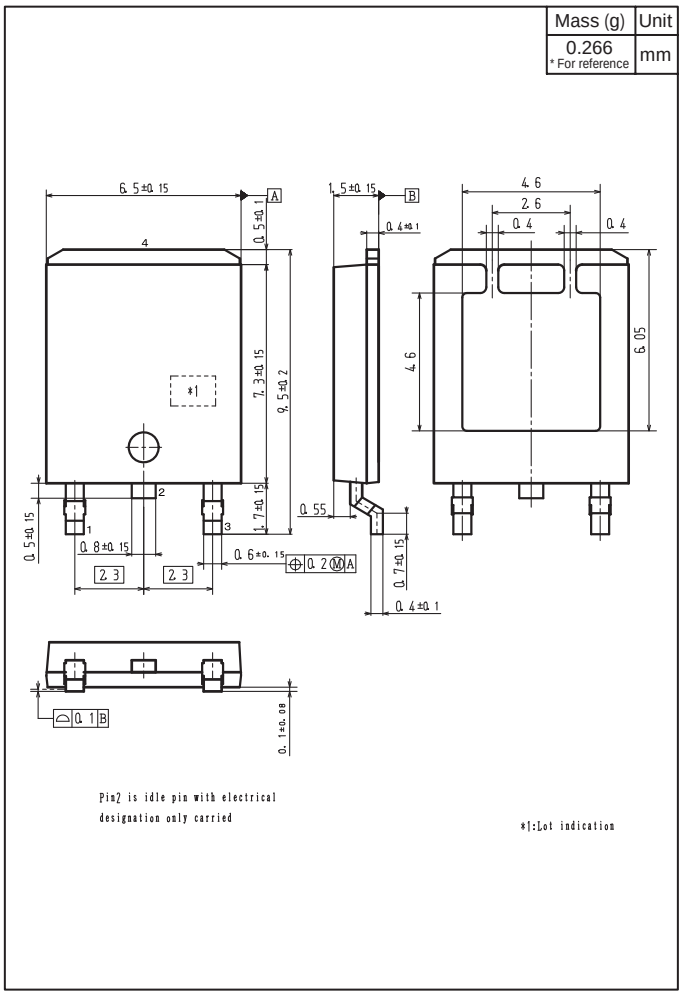
2-2. Device placement direction



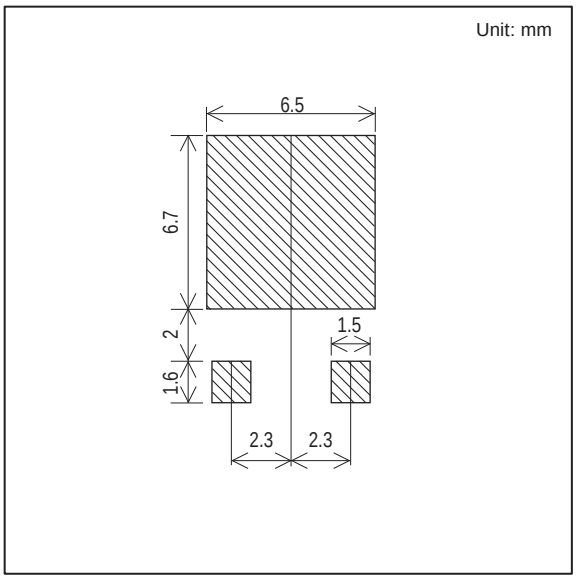
The one erectrode terminals on feed hole side····TL

Outline Drawing

ATP112-TL-H



Land Pattern Example



Note on usage : Since the ATP112 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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