Ordering number : ENA1526A

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

ATP213 — General-Purpose Switching Device Applications

Features

- Low ON-resistance
- 4V drive
- Halogen free compliance
- Large current
- Slim package
- Protection diode in

Specifications

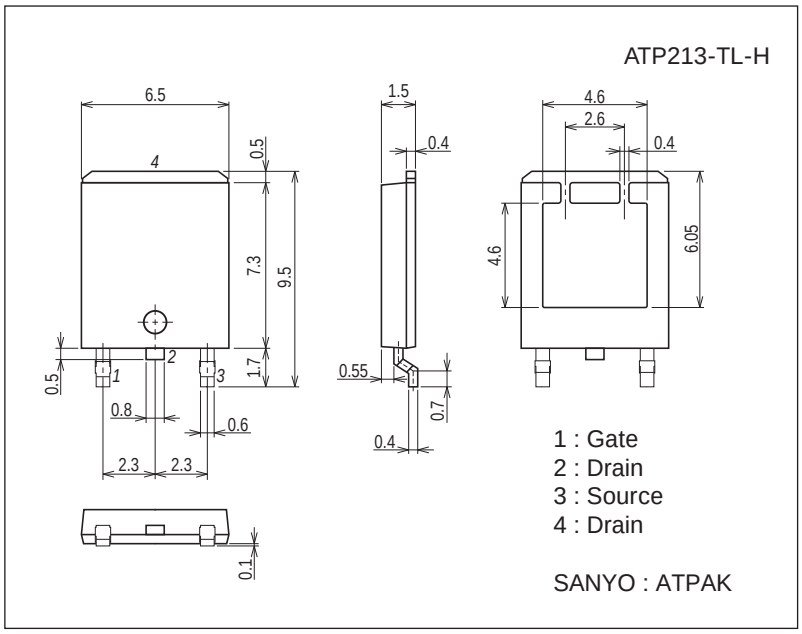
Absolute Maximum Ratings at Ta=25°C

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		50	A
Drain Current (PW≤10μs)	I_{DP}	PW≤10μs, duty cycle≤1%	150	A
Allowable Power Dissipation	P_D	Tc=25°C	50	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C
Avalanche Energy (Single Pulse) *1	E_{AS}		37	mJ
Avalanche Current *2	I_{AV}		25	A

Note :*1 V_{DD}=10V, L=100μH, I_{AV}=25A
*2 L≤100μH, Single pulse

Package Dimensions

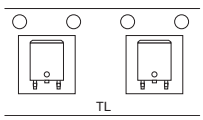
unit : mm (typ)
7057-001



Product & Package Information

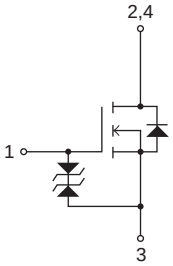
- Package : ATPAK
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

Packing Type: TL



Marking

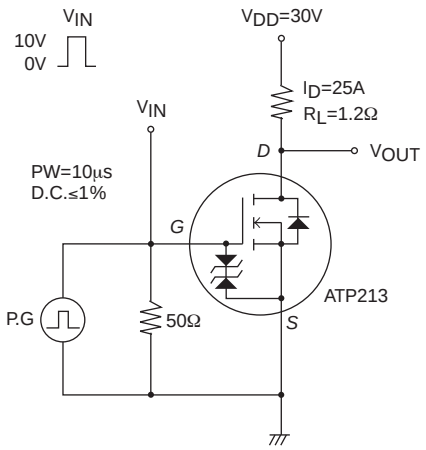
Electrical Connection



Electrical Characteristics at Ta=25°C

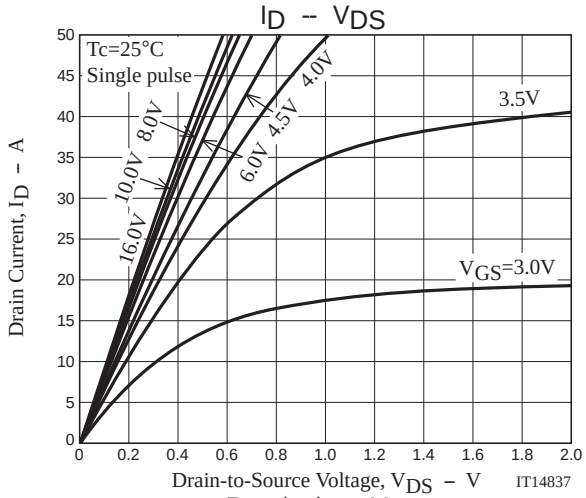
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=10V, I_D=1mA	1.2		2.6	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=25A		55		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=25A, V_{GS}=10V		12	16	mΩ
	R_{DS}(on)2	I_D=13A, V_{GS}=4.5V		15	21	mΩ
	R_{DS}(on)3	I_D=7A, V_{GS}=4V		17	26	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		3150		pF
Output Capacitance	Coss			310		pF
Reverse Transfer Capacitance	Crss			190		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		23		ns
Rise Time	t_r			170		ns
Turn-OFF Delay Time	t_d(off)			230		ns
Fall Time	t_f			150		ns
Total Gate Charge	Qg	V_{DS}=30V, V_{GS}=10V, I_D=50A		58		nC
Gate-to-Source Charge	Qgs			10.5		nC
Gate-to-Drain “Miller” Charge	Qgd			12.5		nC
Diode Forward Voltage	V_{SD}	I_S=50A, V_{GS}=0V		1.01	1.2	V

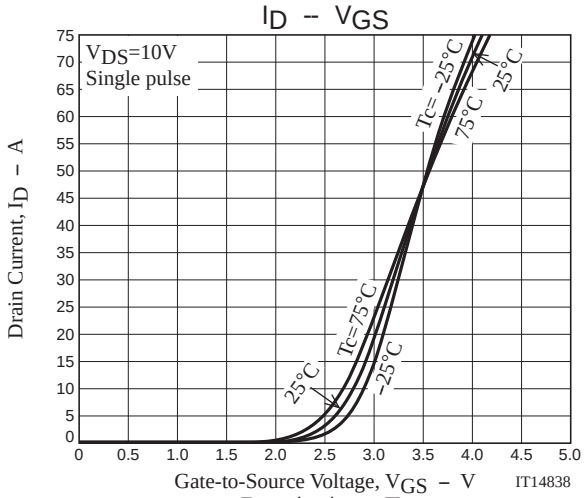
Switching Time Test Circuit

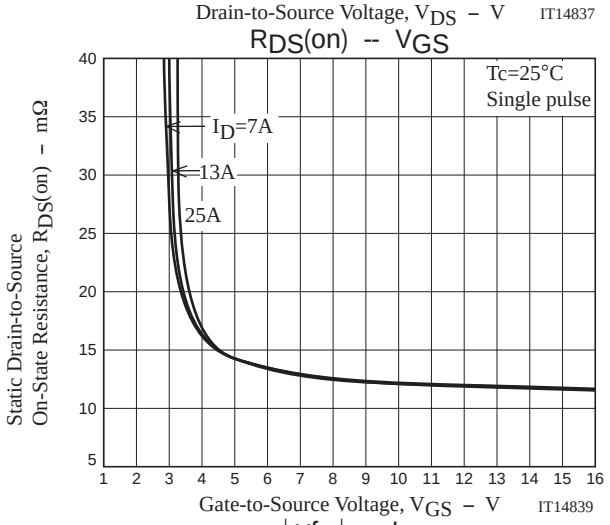


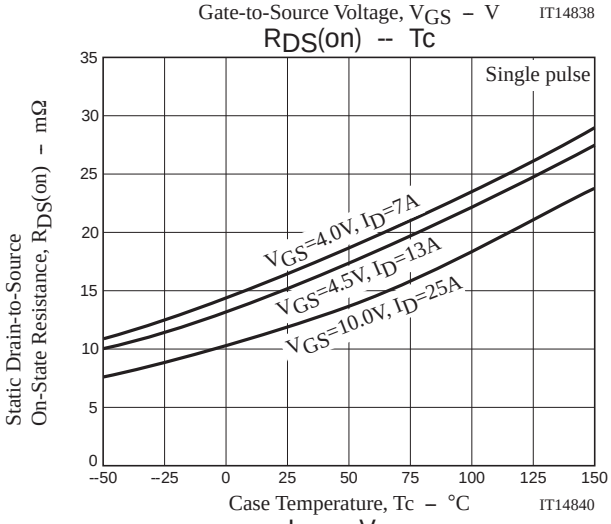
Ordering Information

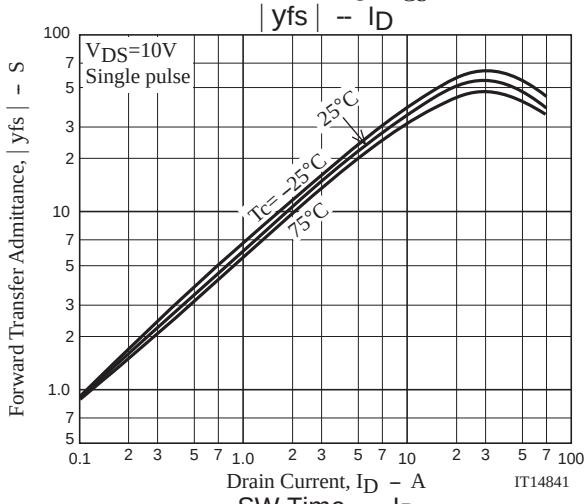
Device	Package	Shipping	memo
ATP213-TL-H	ATPAK	3,000pcs./reel	Pb Free and Halogen Free

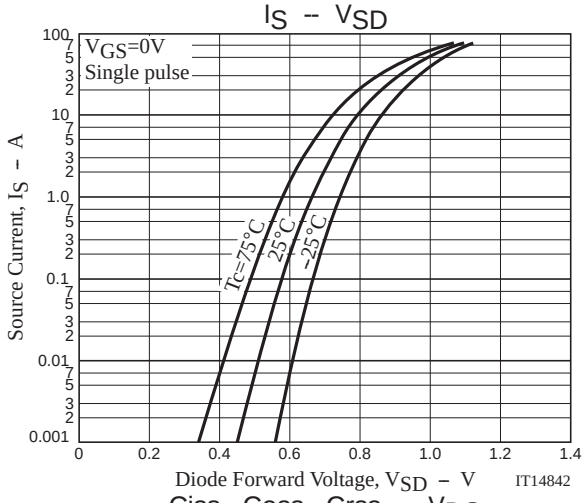

ID -- VDS
Tc=25°C
Single pulse
3.5V
4.0V
4.5V
6.0V
8.0V
10.0V
16.0V
VGS=3.0V
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT14837

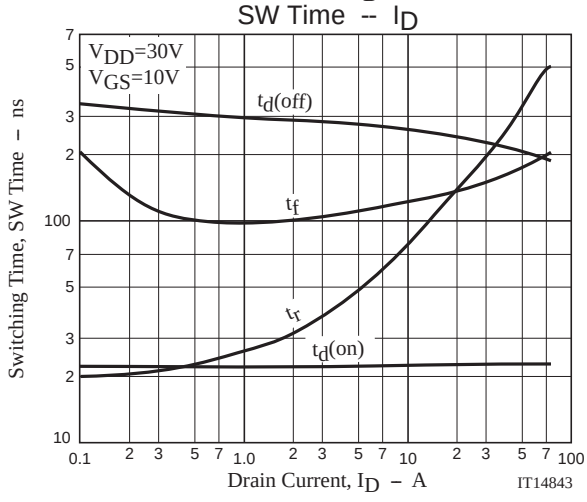

ID -- VGS
VDS=10V
Single pulse
Tc=–25°C
75°C
25°C
Tc=75°C
25°C
–25°C
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT14838

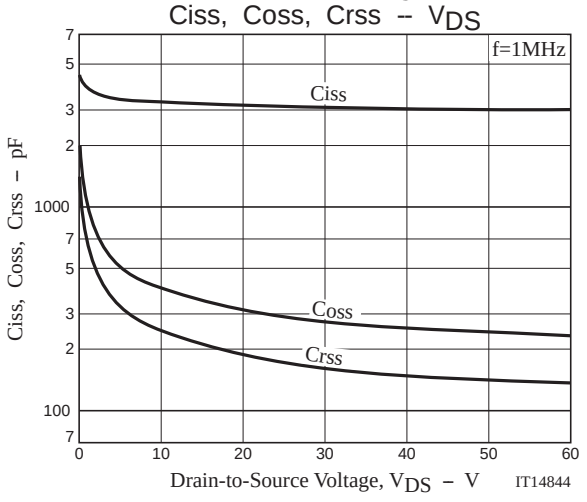

RDS(on) -- VGS
Tc=25°C
Single pulse
ID=7A
13A
25A
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT14839

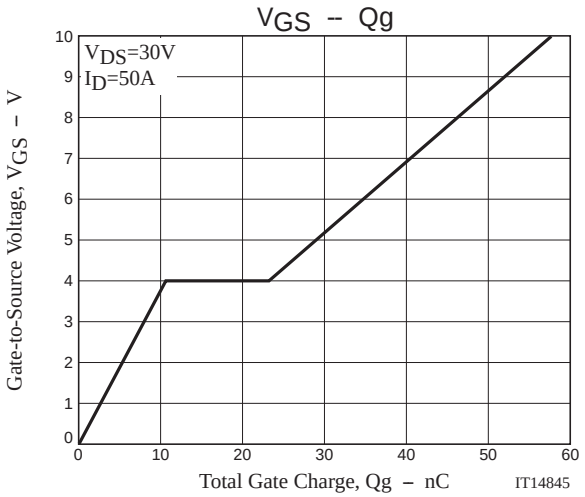

RDS(on) -- Tc
Single pulse
VGS=4.0V, ID=7A
VGS=4.5V, ID=13A
VGS=10.0V, ID=25A
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C
IT14840

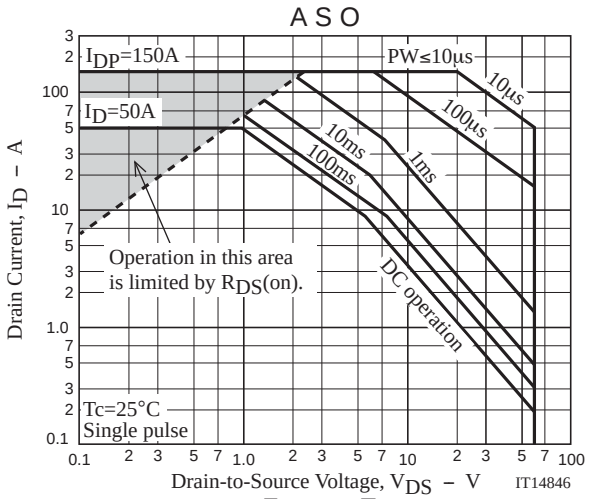

| yfs | -- ID
VDS=10V
Single pulse
25°C
Tc=–25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT14841

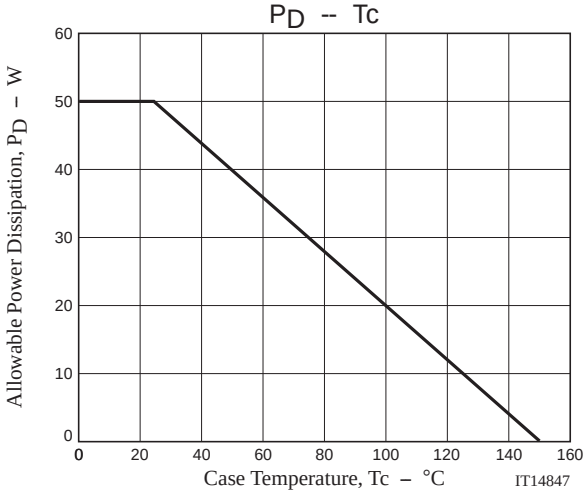

IS -- VSD
VGS=0V
Single pulse
Tc=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT14842

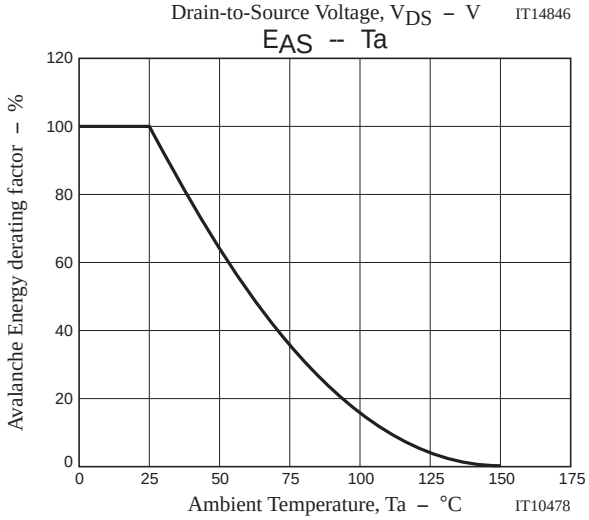

SW Time -- ID
VDD=30V
VGS=10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT14843


Ciss, Coss, Crss -- VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT14844


VGS – Qg
VDS=30V
ID=50A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT14845


A S O
IDP=150A
PW≤10μs
ID=50A
10μs
100μs
10ms
1ms
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
IT14846


PD -- Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
IT14847


EAS -- Ta
Avalanche Energy derating factor – %
Ambient Temperature, Ta – °C
IT10478

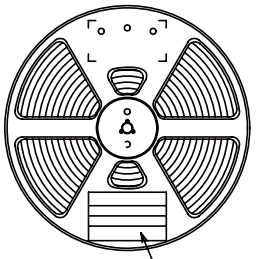
Taping Specification

ATP213-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

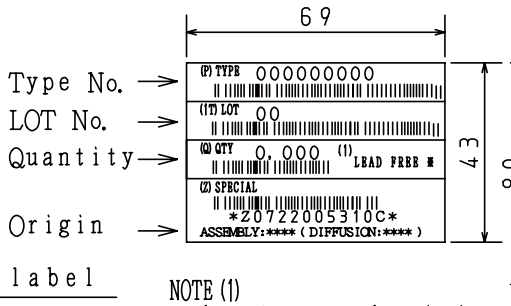
Packing method



Reel label

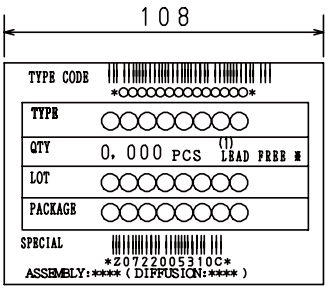
Reel label, Inner box label

(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.



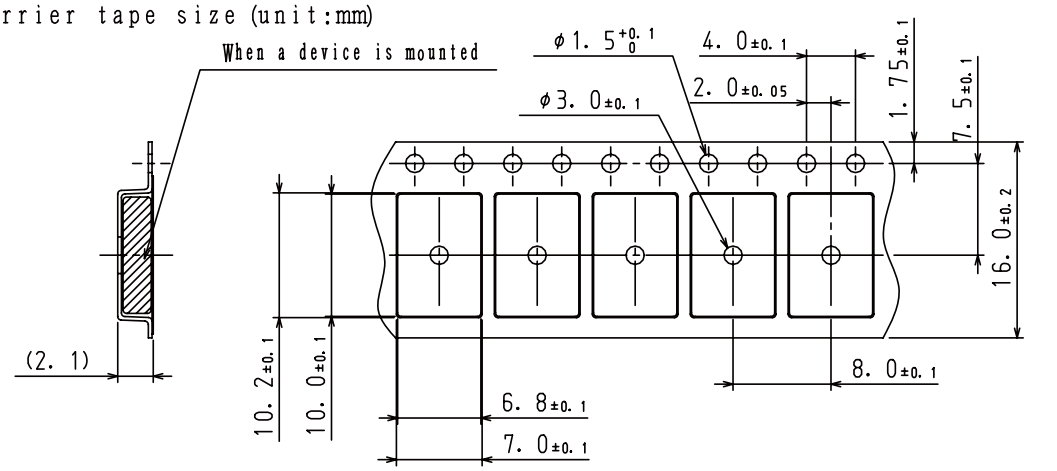
NOTE (1)

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

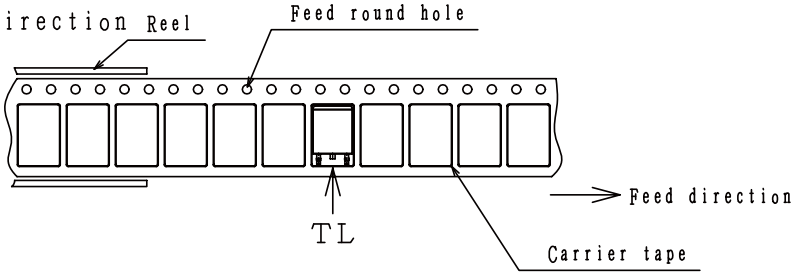
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



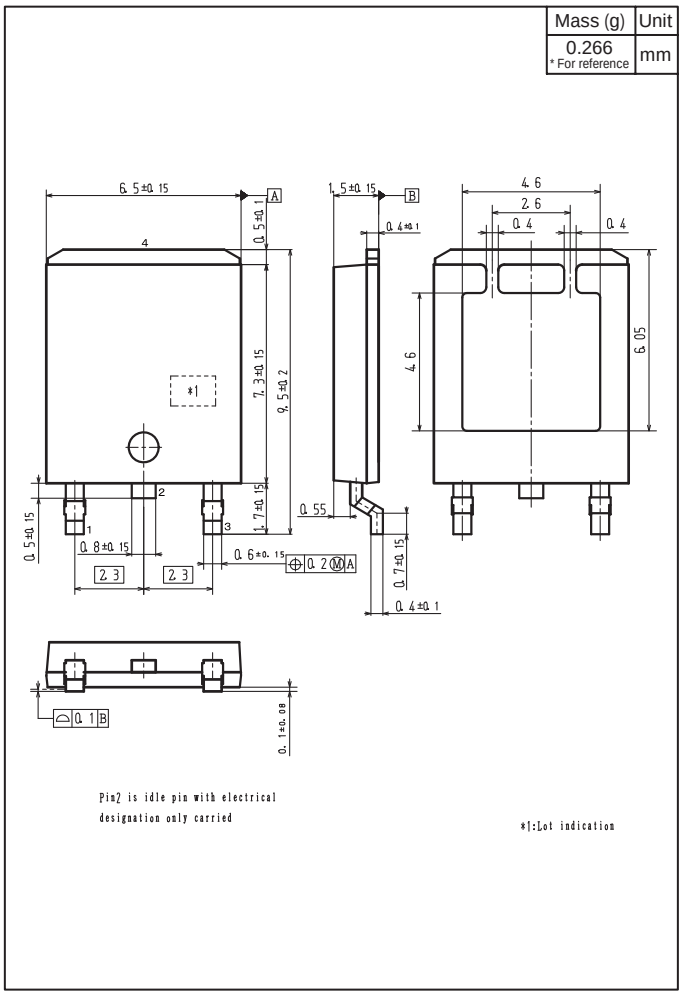
2-2. Device placement direction



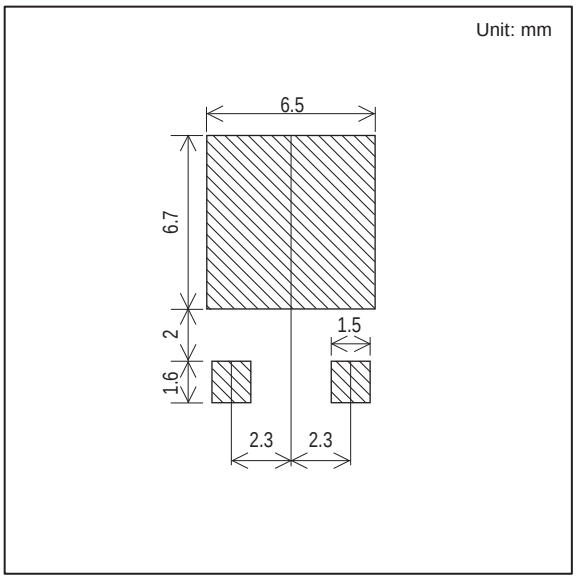
The one erectrode terminals on feed hole side····TL

Outline Drawing

ATP213-TL-H



Land Pattern Example



Note on usage : Since the ATP213 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.