Ordering number : ENA1712A

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

ATP214 — General-Purpose Switching Device Applications

Features

- ON-resistance $R_{DS}(on)1$=6.2mΩ(typ.)
- 4V drive
- Protection diode in
- Input Capacitance Ciss=4850pF(typ.)
- Halogen free compliance

Specifications

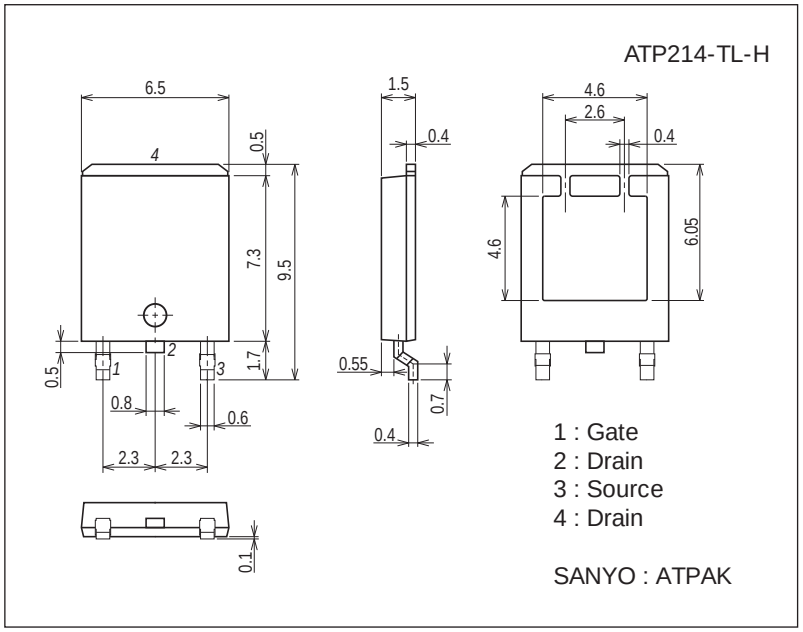
Absolute Maximum Ratings at Ta=25°C

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		75	A
Drain Current (PW≤10μs)	I_{DP}	PW≤10μs, duty cycle≤1%	225	A
Allowable Power Dissipation	P_D	Tc=25°C	60	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C
Avalanche Energy (Single Pulse) *1	E_{AS}		94	mJ
Avalanche Current *2	I_{AV}		38	A

Note :*1 V_{DD}=15V, L=100μH, I_{AV}=38A
*2 L≤100μH, Single pulse

Package Dimensions

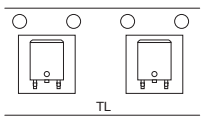
unit : mm (typ)
7057-001



Product & Package Information

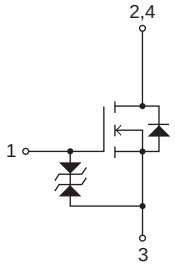
- Package : ATPAK
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

Packing Type: TL



Marking

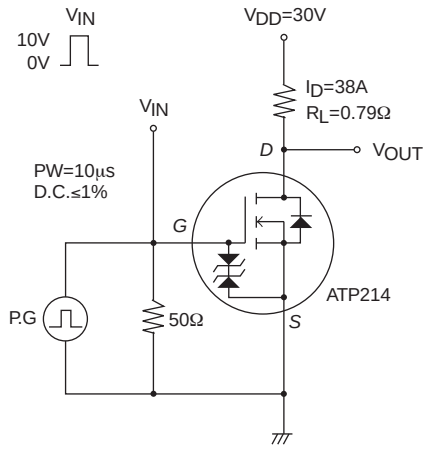
Electrical Connection



Electrical Characteristics at Ta=25°C

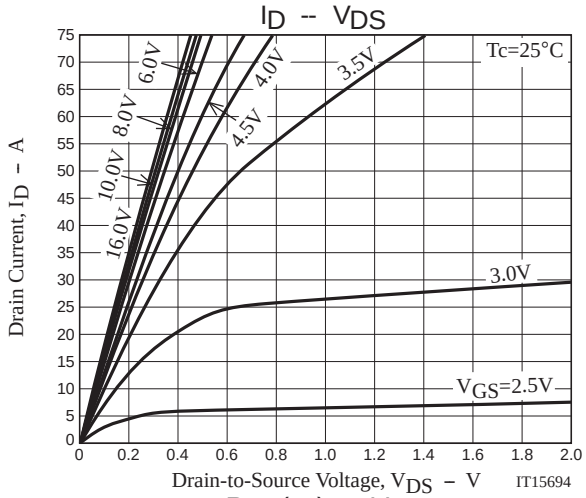
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=10V, I_D=1mA	1.2		2.6	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=38A		100		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=38A, V_{GS}=10V		6.2	8.1	mΩ
	R_{DS}(on)2	I_D=19A, V_{GS}=4.5V		8.2	11.5	mΩ
	R_{DS}(on)3	I_D=10A, V_{GS}=4V		9.2	14	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		4850		pF
Output Capacitance	Coss			370		pF
Reverse Transfer Capacitance	Crss			280		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		30		ns
Rise Time	t_r			240		ns
Turn-OFF Delay Time	t_d(off)			360		ns
Fall Time	t_f			250		ns
Total Gate Charge	Qg	V_{DS}=30V, V_{GS}=10V, I_D=75A		96		nC
Gate-to-Source Charge	Qgs			18.5		nC
Gate-to-Drain “Miller” Charge	Qgd			18		nC
Diode Forward Voltage	V_{SD}	I_S=75A, V_{GS}=0V		0.93	1.2	V

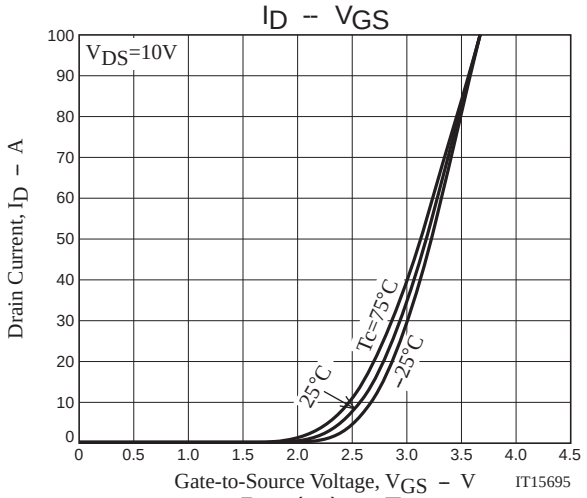
Switching Time Test Circuit

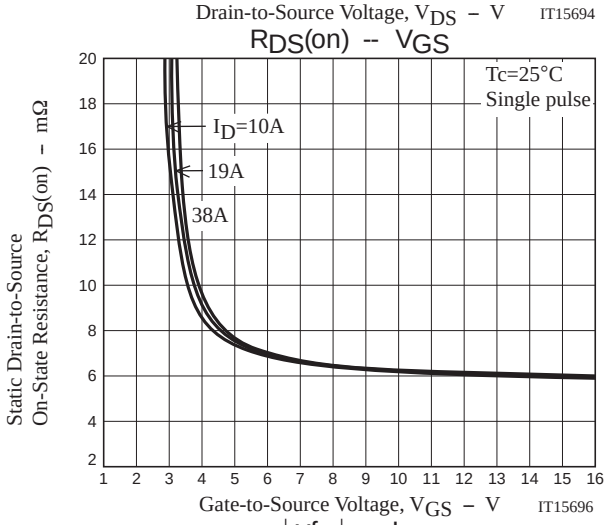


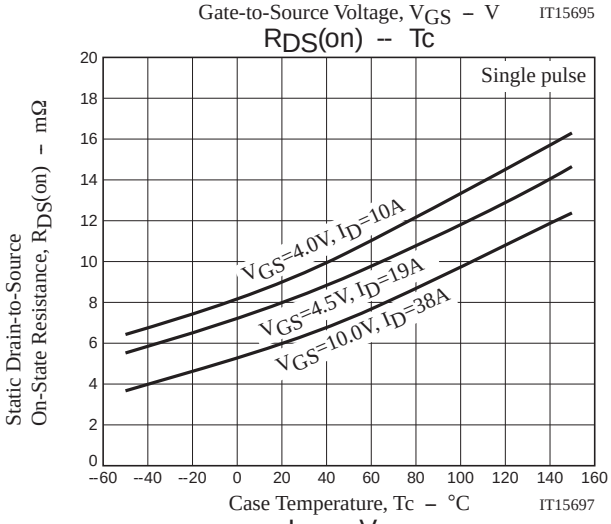
Ordering Information

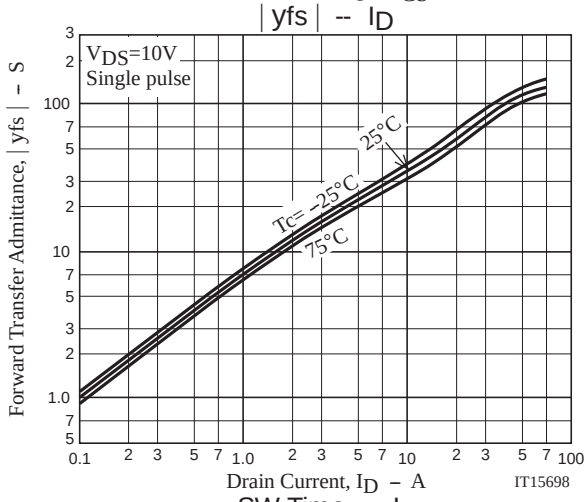
Device	Package	Shipping	memo
ATP214-TL-H	ATPAK	3,000pcs./reel	Pb Free and Halogen Free

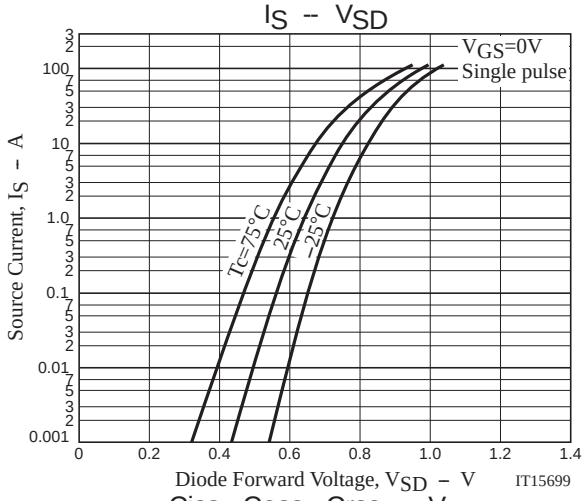

ID -- VDS
Tc=25°C
6.0V
8.0V
10.0V
16.0V
4.0V
4.5V
3.5V
3.0V
VGS=2.5V
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT15694

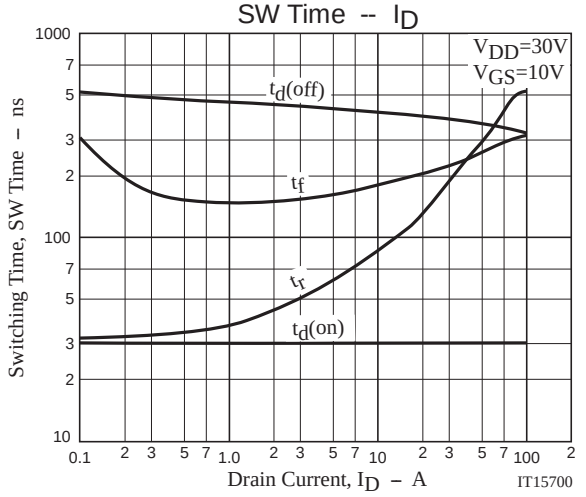

ID -- VGS
VDS=10V
Tc=75°C
25°C
–25°C
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT15695

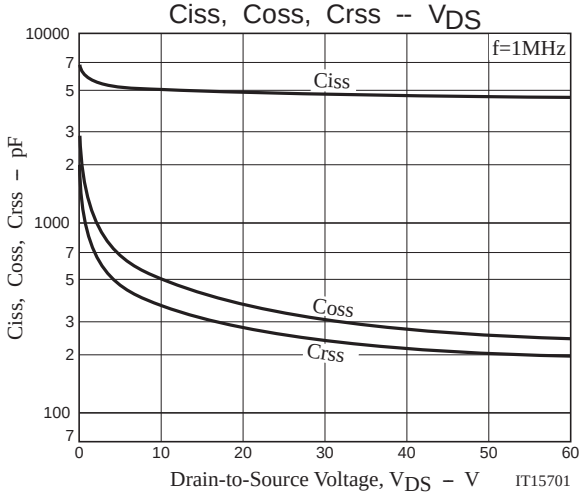

RDS(on) -- VGS
Tc=25°C
Single pulse
ID=10A
19A
38A
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT15696

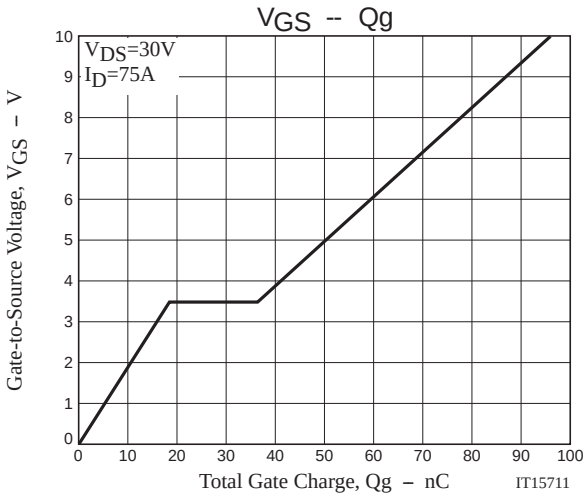

RDS(on) -- Tc
Single pulse
VGS=4.0V, ID=10A
VGS=4.5V, ID=19A
VGS=10.0V, ID=38A
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C
IT15697

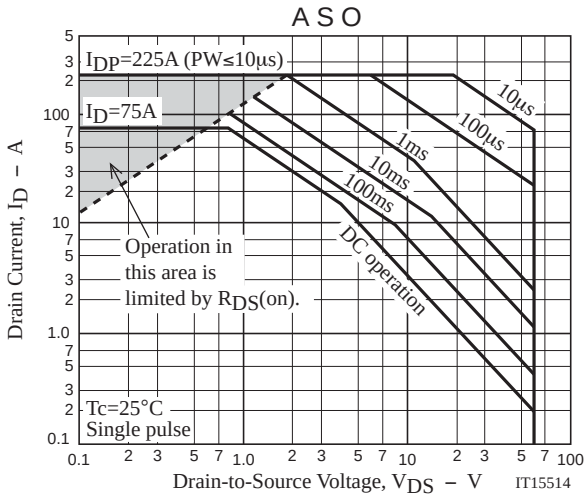

| yfs | -- ID
VDS=10V
Single pulse
25°C
Tc=–25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT15698

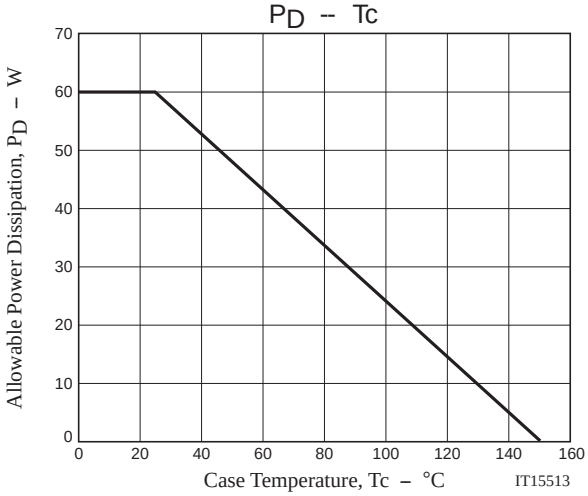

IS -- VSD
VGS=0V
Single pulse
Tc=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT15699

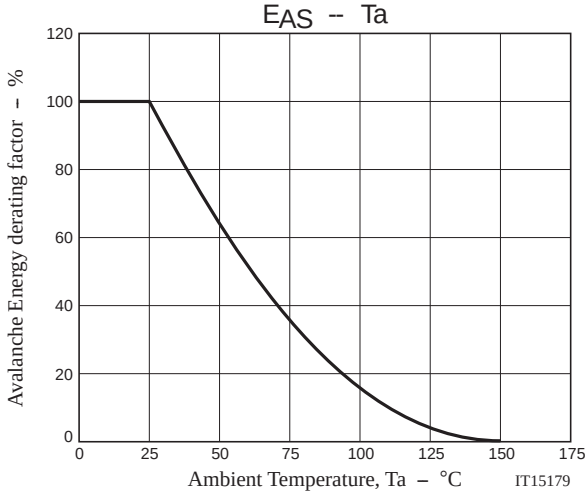

SW Time -- ID
VDD=30V
VGS=10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT15700


Ciss, Coss, Crss -- VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT15701


VGS -- Qg
VDS=30V
ID=75A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT15711


A S O
IDP=225A (PW≤10μs)
ID=75A
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
IT15514


PD -- Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
IT15513


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

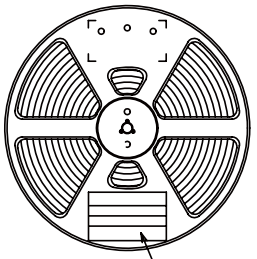
Taping Specification

ATP214-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

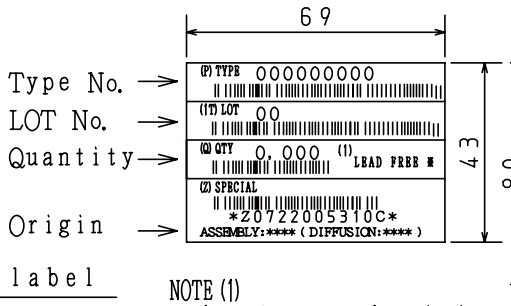
Packing method



Reel label

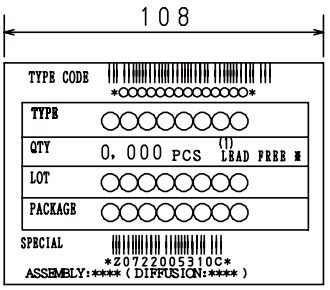
Reel label, Inner box label

(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.



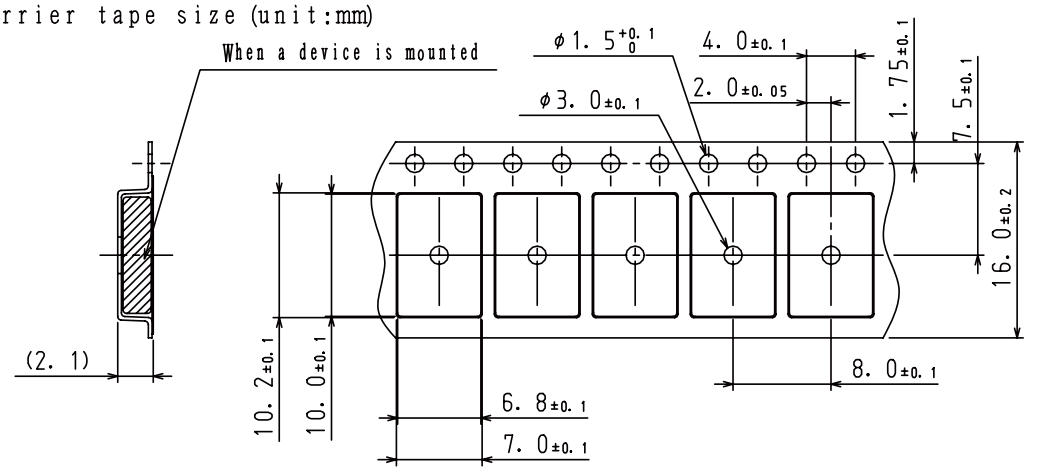
NOTE (1)

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

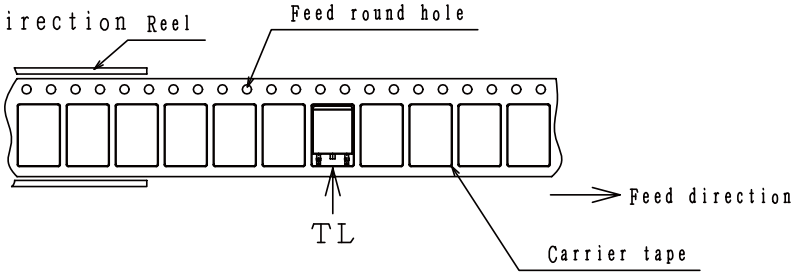
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



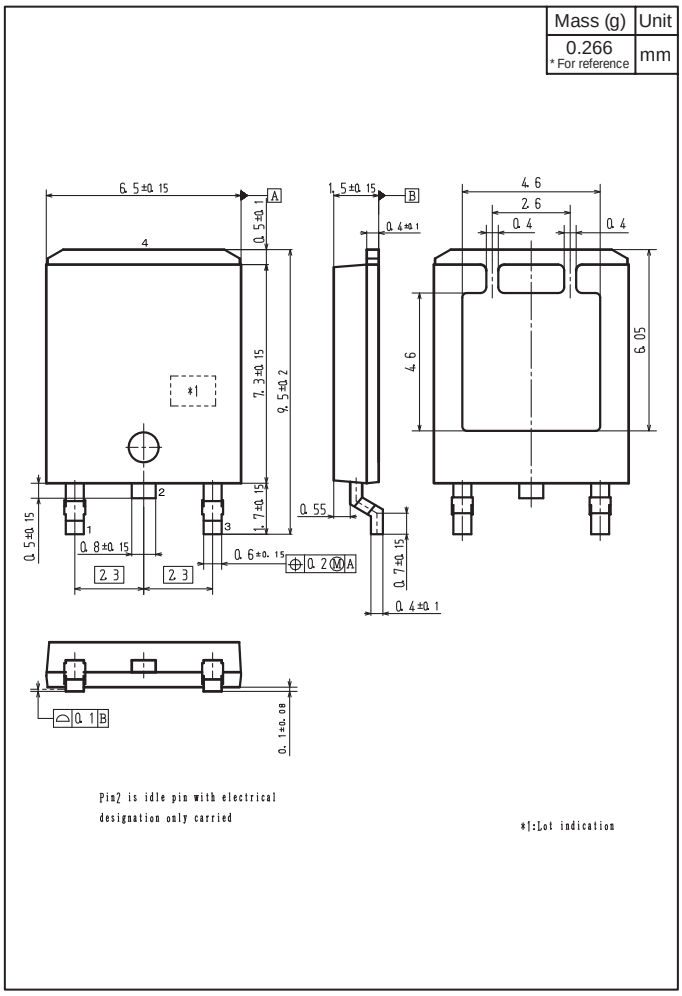
2-2. Device placement direction



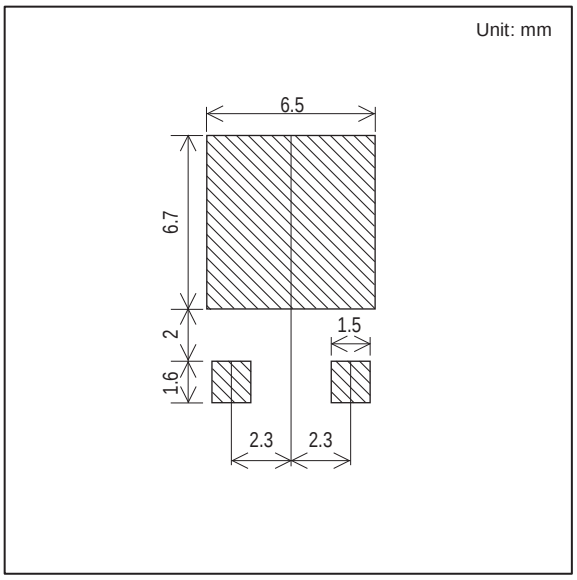
The one erectrode terminals on feed hole side····TL

Outline Drawing

ATP214-TL-H



Land Pattern Example



Note on usage : Since the ATP214 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

- Any and all SANYO Semiconductor Co.,Ltd. products described or contained herein are, with regard to "standard application", intended for the use as general electronics equipment. The products mentioned herein shall not be intended for use for any "special application" (medical equipment whose purpose is to sustain life, aerospace instrument, nuclear control device, burning appliances, transportation machine, traffic signal system, safety equipment etc.) that shall require extremely high level of reliability and can directly threaten human lives in case of failure or malfunction of the product or may cause harm to human bodies, nor shall they grant any guarantee thereof. If you should intend to use our products for new introduction or other application different from current conditions on the usage of automotive device, communication device, office equipment, industrial equipment etc. , please consult with us about usage condition (temperature, operation time etc.) prior to the intended use. If there is no consultation or inquiry before the intended use, our customer shall be solely responsible for the use.
- Specifications of any and all SANYO Semiconductor Co.,Ltd. products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- SANYO Semiconductor Co.,Ltd. assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO Semiconductor Co.,Ltd. products described or contained herein.
- Regarding monolithic semiconductors, if you should intend to use this IC continuously under high temperature, high current, high voltage, or drastic temperature change, even if it is used within the range of absolute maximum ratings or operating conditions, there is a possibility of decrease reliability. Please contact us for a confirmation.
- SANYO Semiconductor Co.,Ltd. strives to supply high-quality high-reliability products, however, any and all semiconductor products fail or malfunction with some probability. It is possible that these probabilistic failures or malfunction could give rise to accidents or events that could endanger human lives, trouble that could give rise to smoke or fire, or accidents that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all SANYO Semiconductor Co.,Ltd. products described or contained herein are controlled under any of applicable local export control laws and regulations, such products may require the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written consent of SANYO Semiconductor Co.,Ltd.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the SANYO Semiconductor Co.,Ltd. product that you intend to use.
- Upon using the technical information or products described herein, neither warranty nor license shall be granted with regard to intellectual property rights or any other rights of SANYO Semiconductor Co.,Ltd. or any third party. SANYO Semiconductor Co.,Ltd. shall not be liable for any claim or suits with regard to a third party's intellectual property rights which has resulted from the use of the technical information and products mentioned above.

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