

# ATP113 — P-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- ON-resistance  $R_{DS(on)1}=22.5m\Omega$ (typ.)
- 4V drive
- Protection diode in
- Input Capacitance  $C_{iss}=2400pF$ (typ.)
- Halogen free compliance

### Specifications

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

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)	$I_D$		-35	A
Drain Current ( $PW \leq 10\mu s$ )	$I_{DP}$	$PW \leq 10\mu s$ , duty cycle $\leq 1\%$	-105	A
Allowable Power Dissipation	$P_D$	$T_c=25^\circ C$	50	W
Channel Temperature	$T_{ch}$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$
Avalanche Energy (Single Pulse) *1	$E_{AS}$		95	mJ
Avalanche Current *2	$I_{AV}$		-18	A

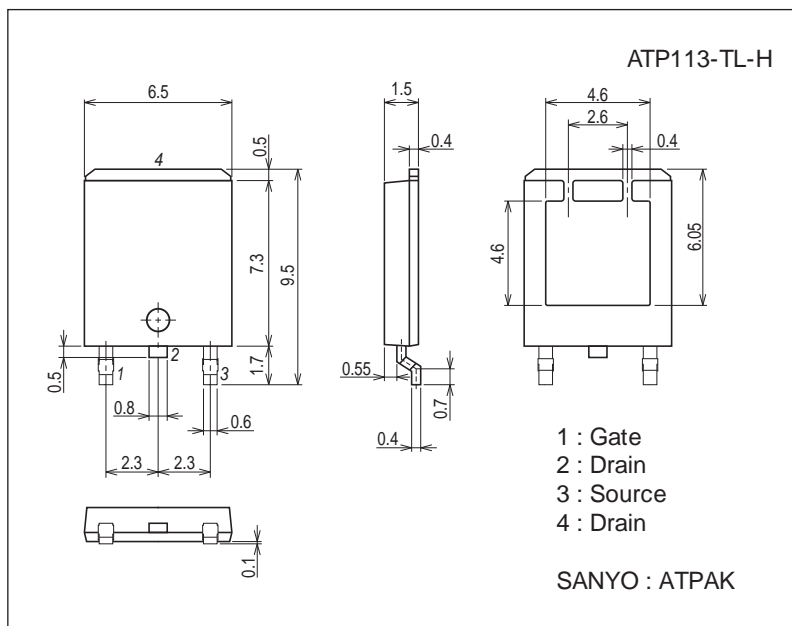
Note : \*1  $V_{DD}=-10V$ ,  $L=500\mu H$ ,  $I_{AV}=-18A$

\*2  $L \leq 500\mu H$ , Single pulse

### Package Dimensions

unit : mm (typ)

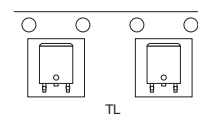
7057-001



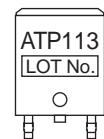
### Product & Package Information

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

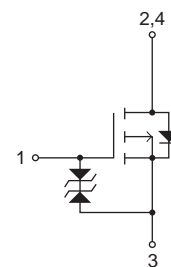
### Packing Type: TL



### Marking



### Electrical Connection

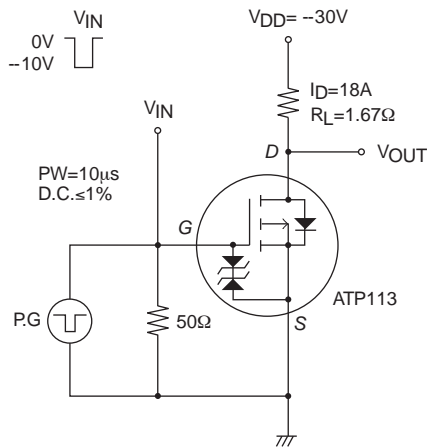


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## Electrical Characteristics at Ta=25°C

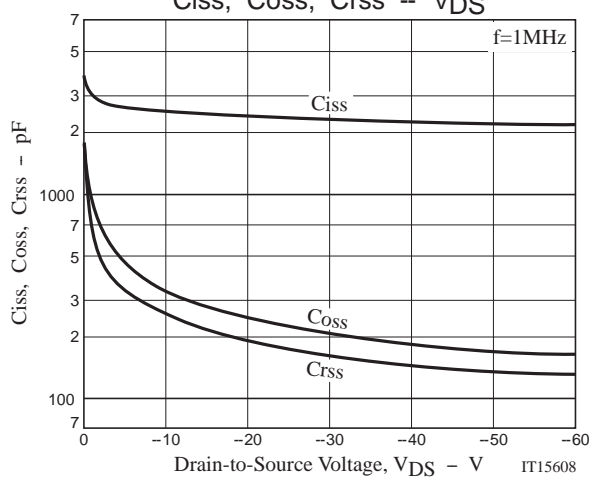
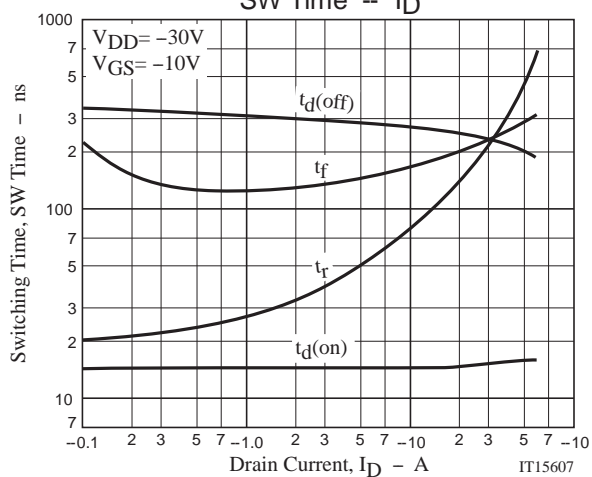
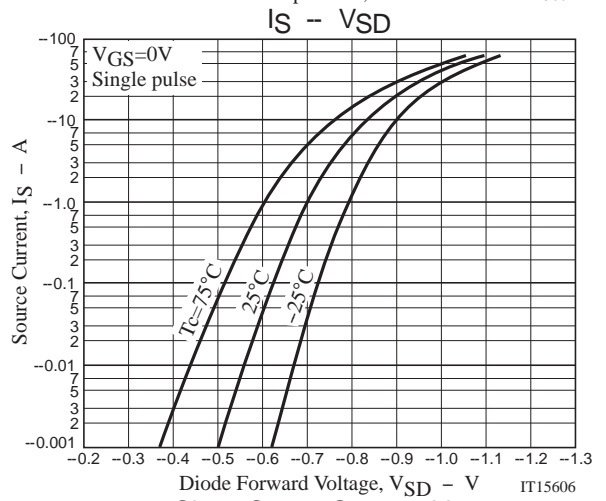
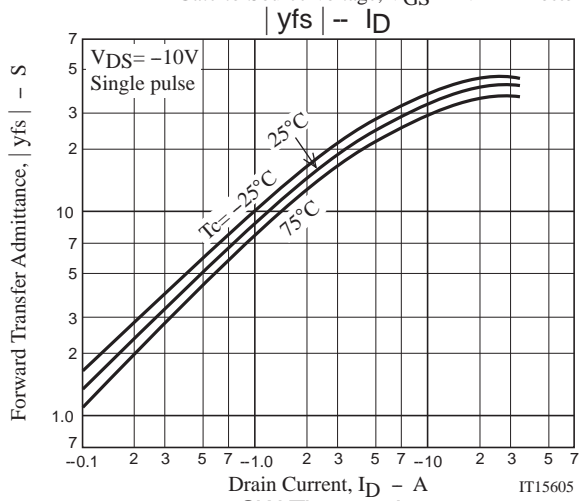
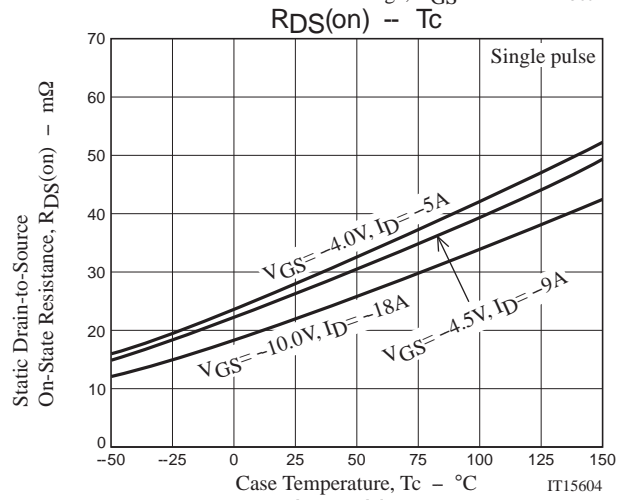
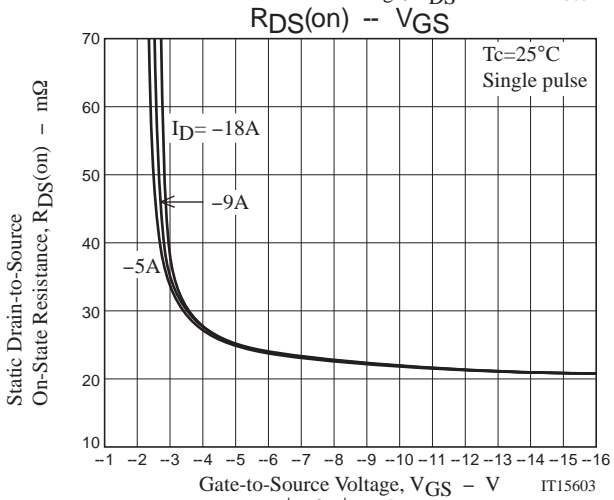
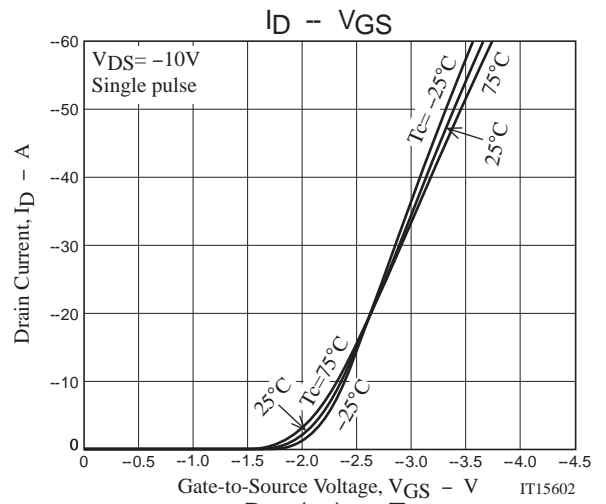
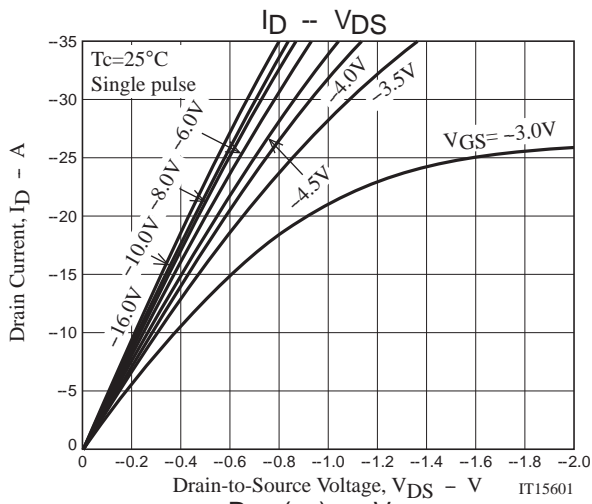
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V(BR)DSS	I <sub>D</sub> =-1mA, V <sub>GS</sub> =0V	-60			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-60V, V <sub>GS</sub> =0V			-1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±16V, V <sub>DS</sub> =0V			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-1mA	-1.2		-2.6	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-18A		37		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =-18A, V <sub>GS</sub> =-10V		22.5	29.5	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =-9A, V <sub>GS</sub> =-4.5V		27	38	mΩ
	R <sub>DS(on)3</sub>	I <sub>D</sub> =-5A, V <sub>GS</sub> =-4V		29	44	mΩ
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-20V, f=1MHz		2400		pF
Output Capacitance	C <sub>oss</sub>			250		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			195		pF
Turn-ON Delay Time	t <sub>d(on)</sub>			15		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		125		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>			250		ns
Fall Time	t <sub>f</sub>			200		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-35A		55		nC
Gate-to-Source Charge	Q <sub>gs</sub>			7.5		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>			12		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-35A, V <sub>GS</sub> =0V		-0.98	-1.5	V

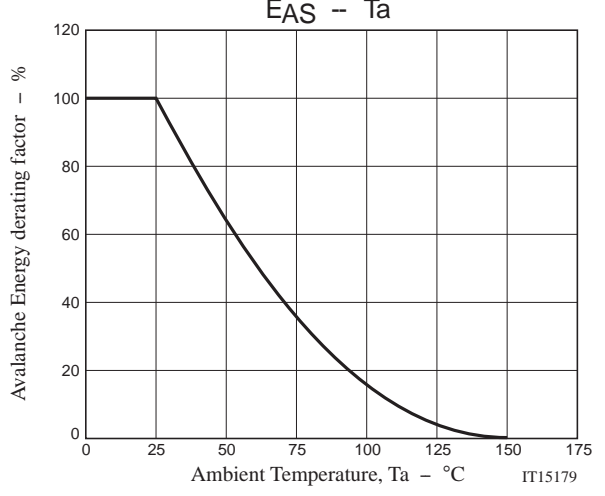
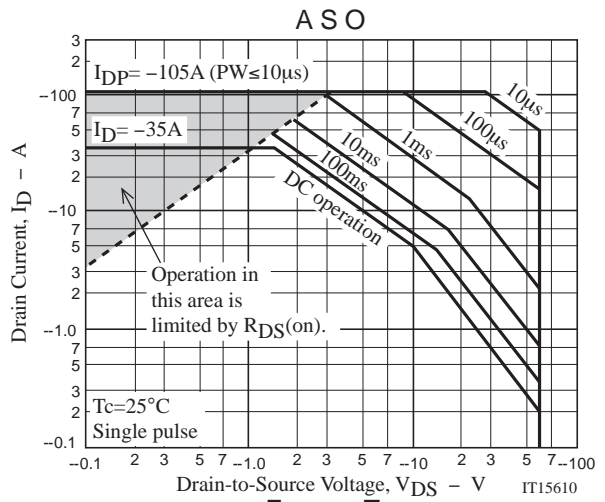
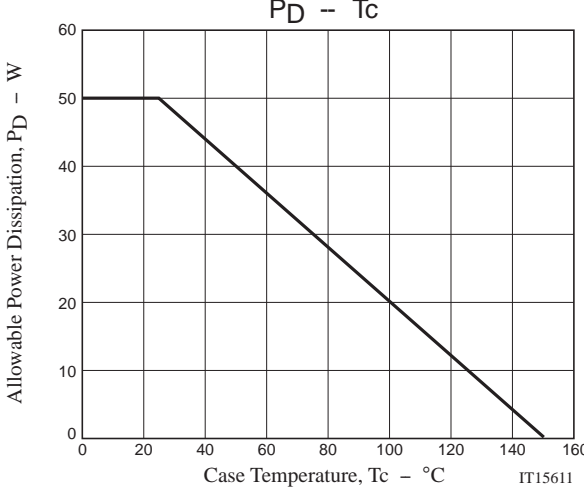
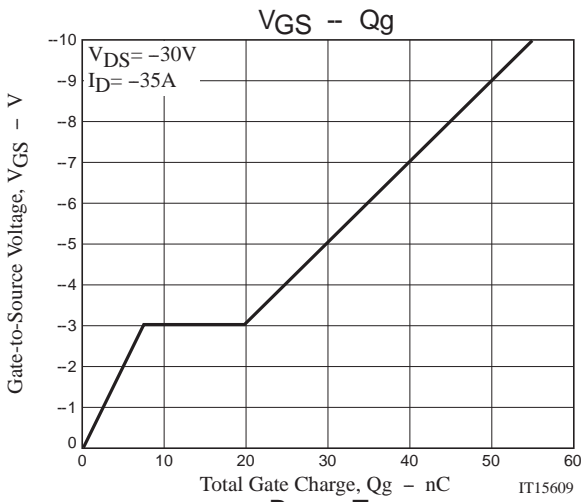
## Switching Time Test Circuit



## Ordering Information

Device	Package	Shipping	memo
ATP113-TL-H	ATPAK	3,000pcs./reel	Pb Free and Halogen Free





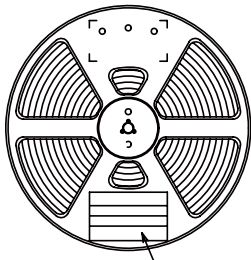
Taping Specification

ATP113-TL-H

1. Packing Format (TL)

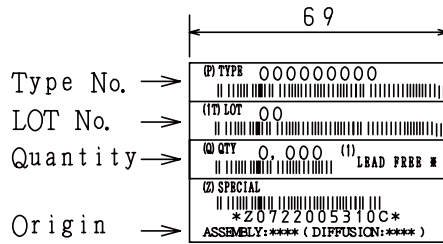
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	INNER BOX SD-C-18	OUTER BOX SD-A-18
ATPAK	ATP	3,000	3,000	15,000	1 reels contained Dimensions:mm (external) 340×340×28	5 inner boxes contained Dimensions:mm (external) 355×355×165

Packing method



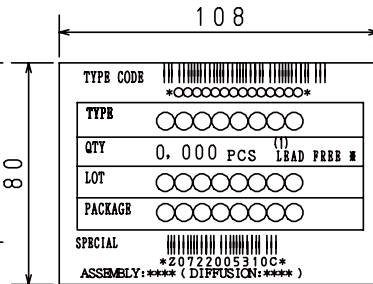
Reel label

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.



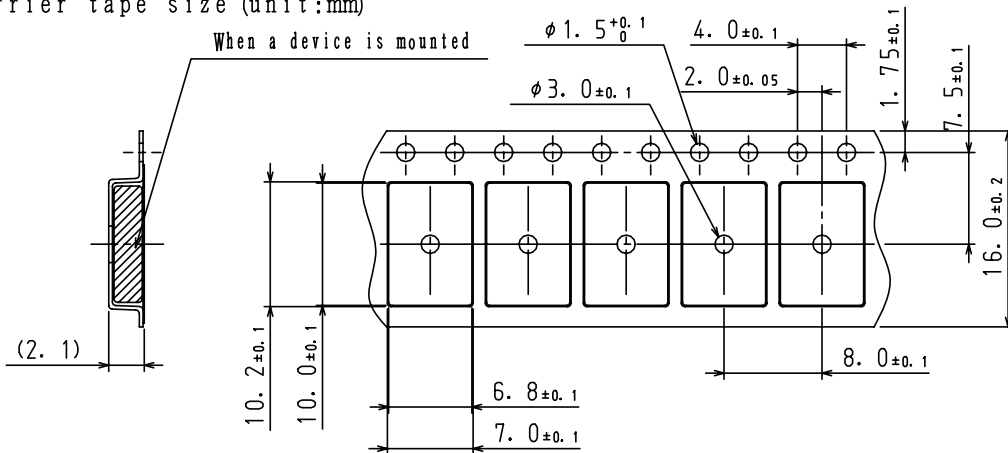
NOTE (1)

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

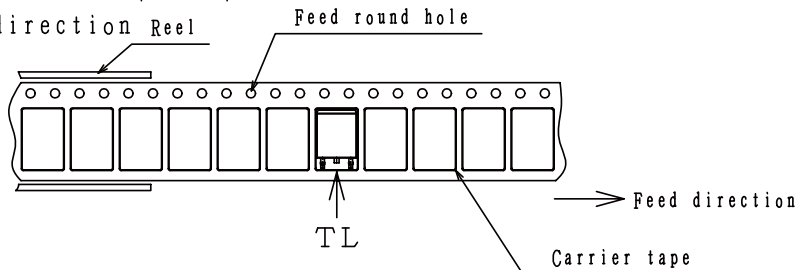
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



2-2. Device placement direction Reel

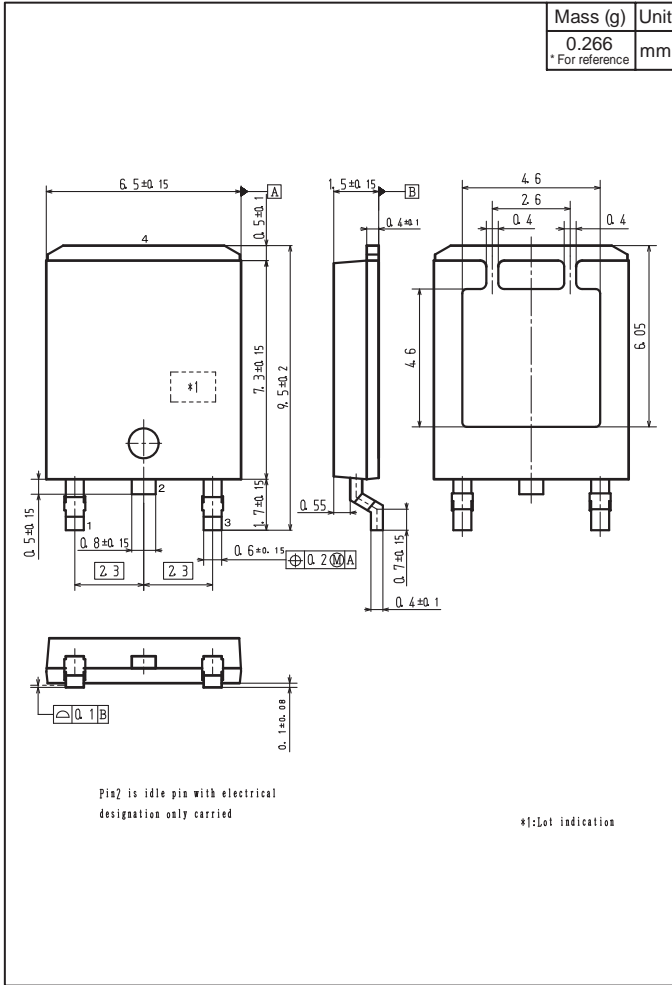


The one electrode terminals on feed hole side...TL

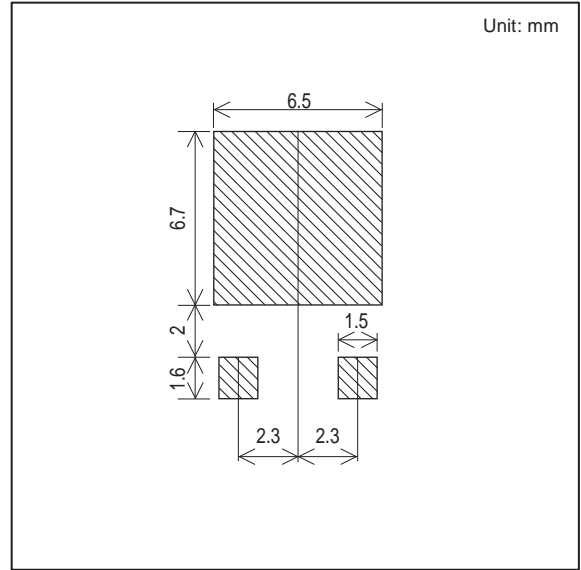
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## Outline Drawing

ATP113-TL-H



## Land Pattern Example



Note on usage : Since the ATP113 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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