

N-Channel Silicon MOSFET

ATP401 — General-Purpose Switching Device Applications

Features

- ON-resistance $R_{DS(on)1}=2.8m\Omega(\text{typ})$
- 4.5V Drive
- Input Capacitance $C_{iss}=17000pF(\text{typ})$
- Halogen free compliance

Specifications

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

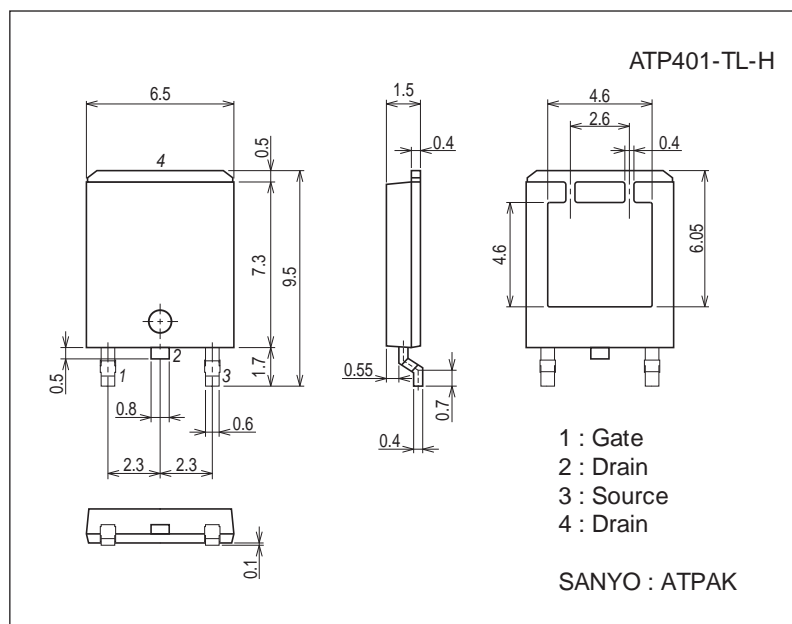
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		60	V
Gate-to-Source Voltage	V_{GSS}		± 20	V
Drain Current (DC)	I_D		100	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	400	A
Allowable Power Dissipation	P_D	$T_c=25^\circ\text{C}$	90	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	E_{AS}		549	mJ
Avalanche Current *2	I_{AV}		70	A

*1 $V_{DD}=36\text{V}$, $L=100\mu\text{H}$, $I_{AV}=70\text{A}(\text{Fig.1})$ *2 $L \leq 100\mu\text{H}$, Single pulse

Package Dimensions

unit : mm (typ)

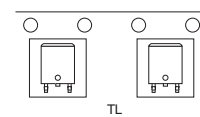
7057-001



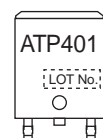
Product & Package Information

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

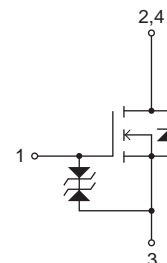
Packing Type: TL



Marking



Electrical Connection



ATP401

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}	$V_{DS}=60V, V_{GS}=0V$			10	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16V, V_{DS}=0V$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=50A$		90		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=50A, V_{GS}=10V$		2.8	3.7	$m\Omega$
	$R_{DS(on)2}$	$I_D=50A, V_{GS}=4.5V$		3.7	5.2	$m\Omega$
Input Capacitance	C_{iss}	$V_{DS}=20V, f=1MHz$		17000		pF
Output Capacitance	C_{oss}			1000		pF
Reverse Transfer Capacitance	C_{rss}			770		pF
Turn-ON Delay Time	$t_d(on)$		See Fig.2		110	
Rise Time	t_r			580		ns
Turn-OFF Delay Time	$t_d(off)$			840		ns
Fall Time	t_f			710		ns
Total Gate Charge	Q_g	$V_{DS}=36V, V_{GS}=10V, I_D=100A$			300	
Gate-to-Source Charge	Q_{gs}			60		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			60		nC
Diode Forward Voltage	V_{SD}	$I_S=100A, V_{GS}=0V$		0.9	1.2	V

Fig.1 Unclamped Inductive Switching Test Circuit

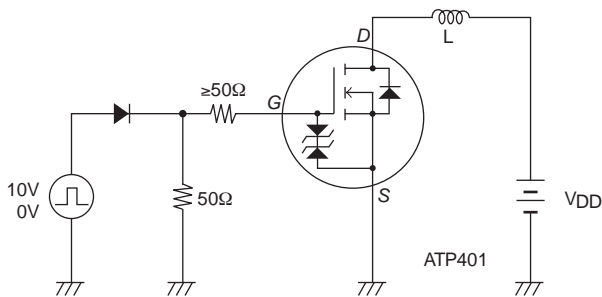
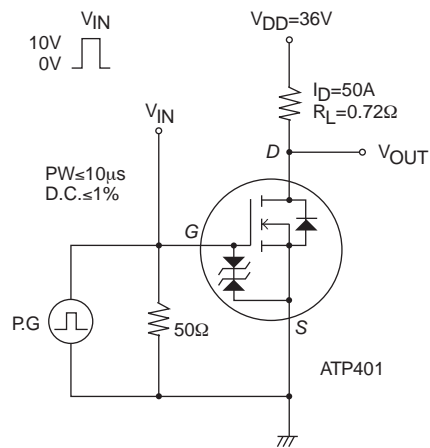
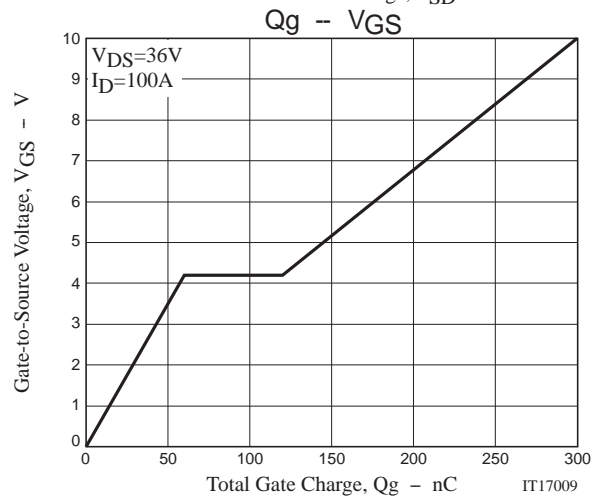
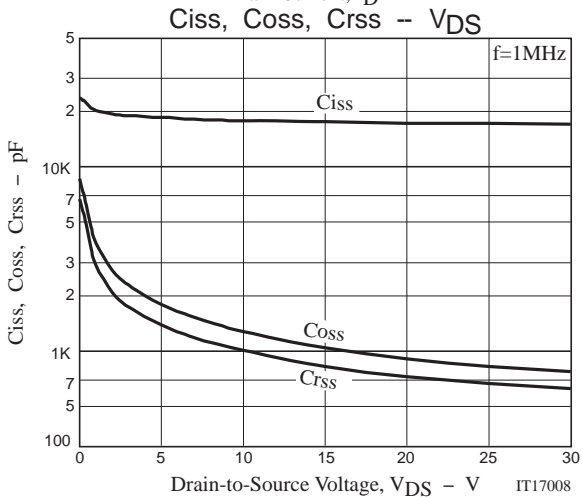
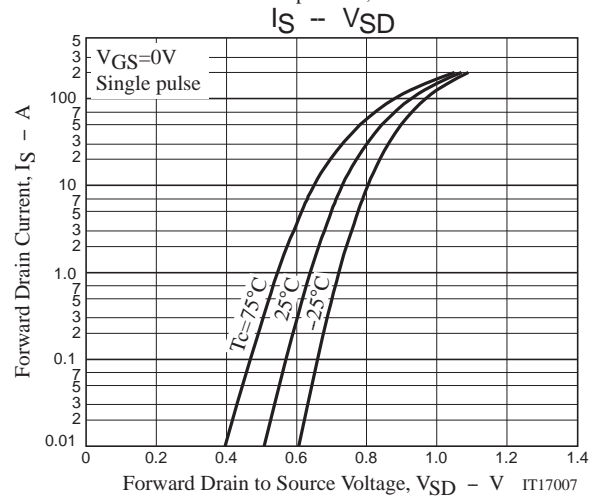
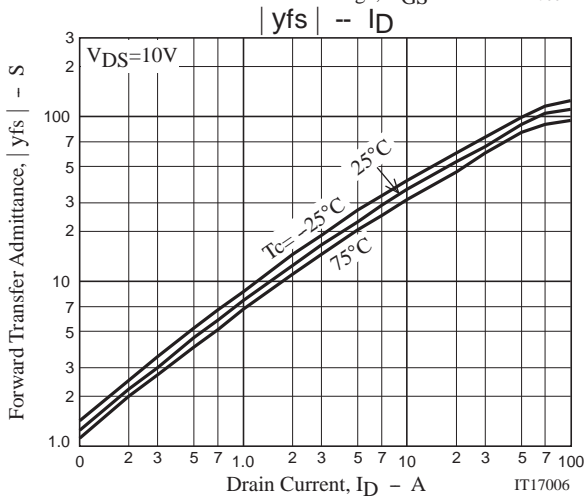
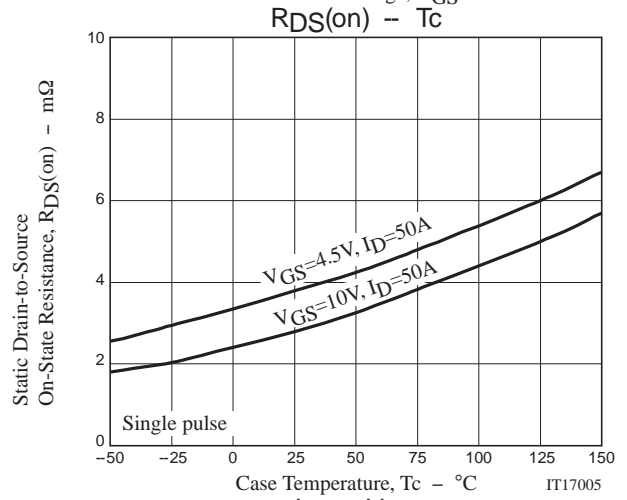
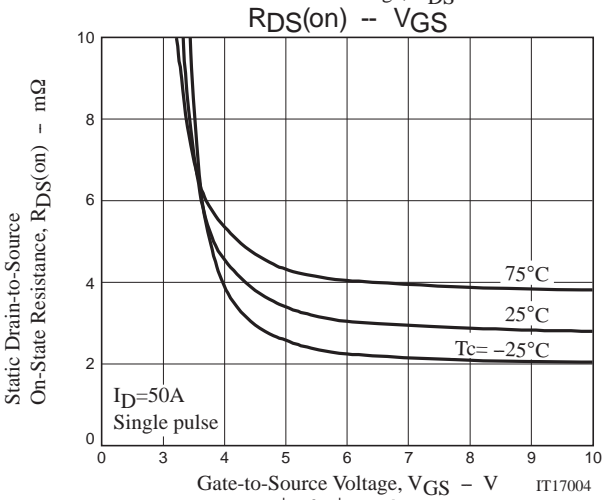
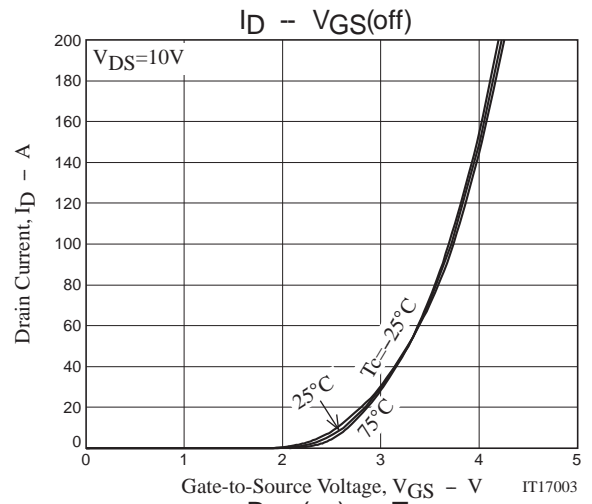
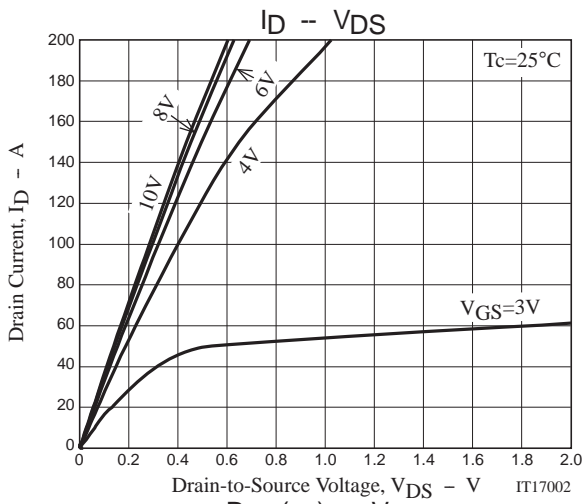


Fig.2 Switching Time Test Circuit

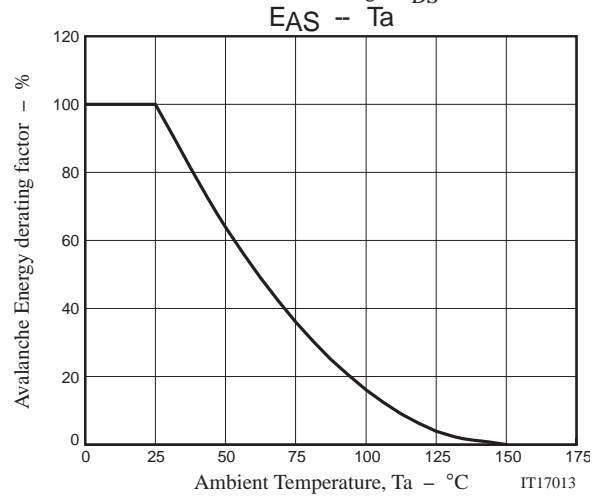
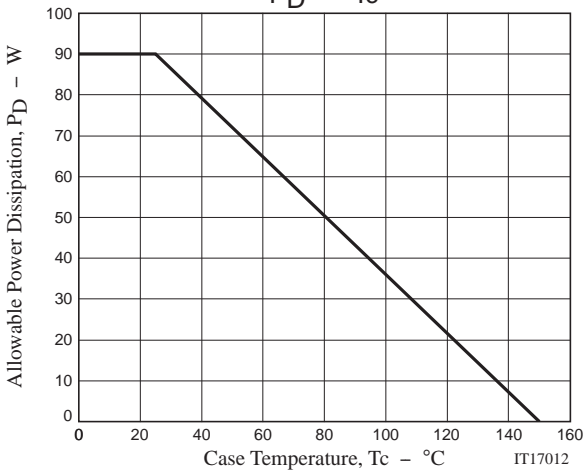
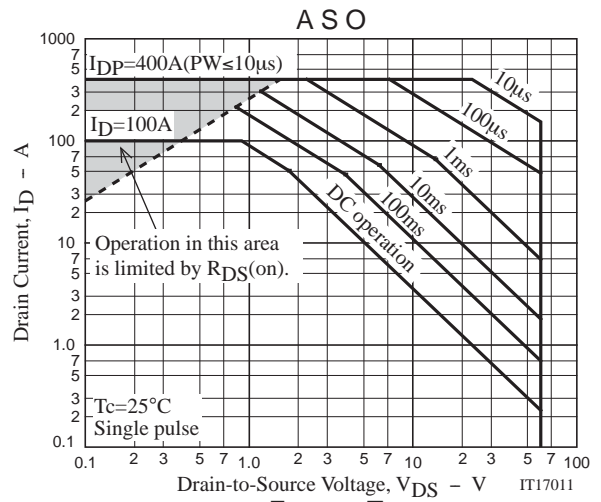
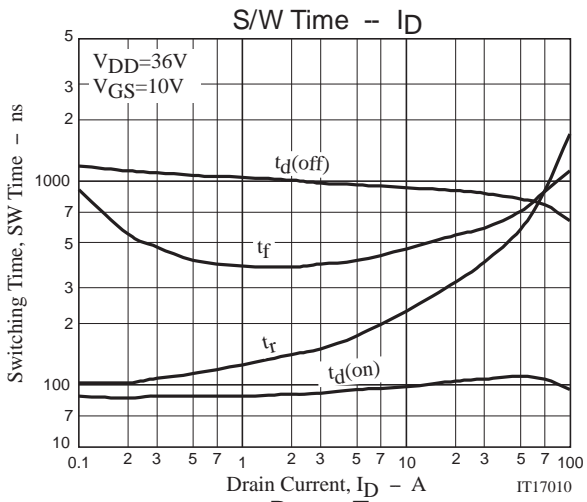


Ordering Information

Device	Package	Shipping	memo
ATP401-TL-H	ATPAK	3,000pcs./reel	Pb Free and Halogen Free



ATP401



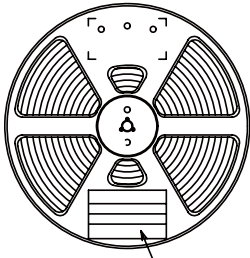
Taping Specification

ATP401-TL-H

1. Packing Format (TL)

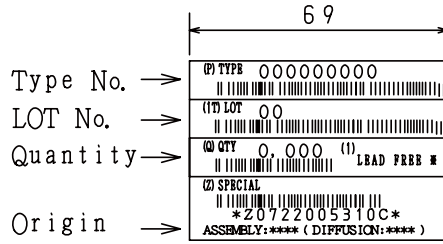
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	INNER BOX SD-C-18	OUTER BOX SD-A-18
ATPAK	ATP	3,000	3,000	15,000	1 reels contained Dimensions:mm (external) 340×340×28	5 inner boxes contained Dimensions:mm (external) 355×355×165

Packing method



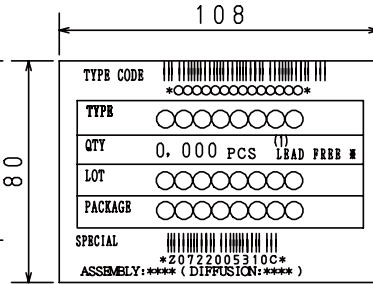
Reel label

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.



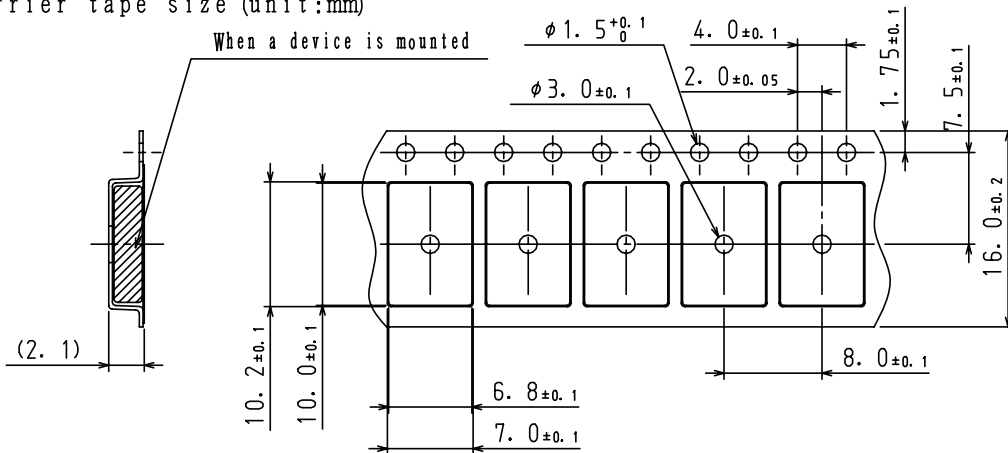
NOTE (1)

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

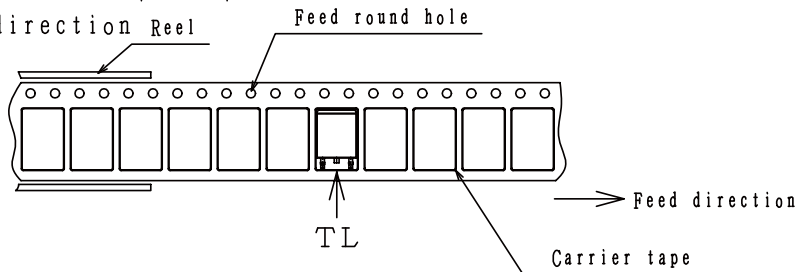
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



2-2. Device placement direction Reel

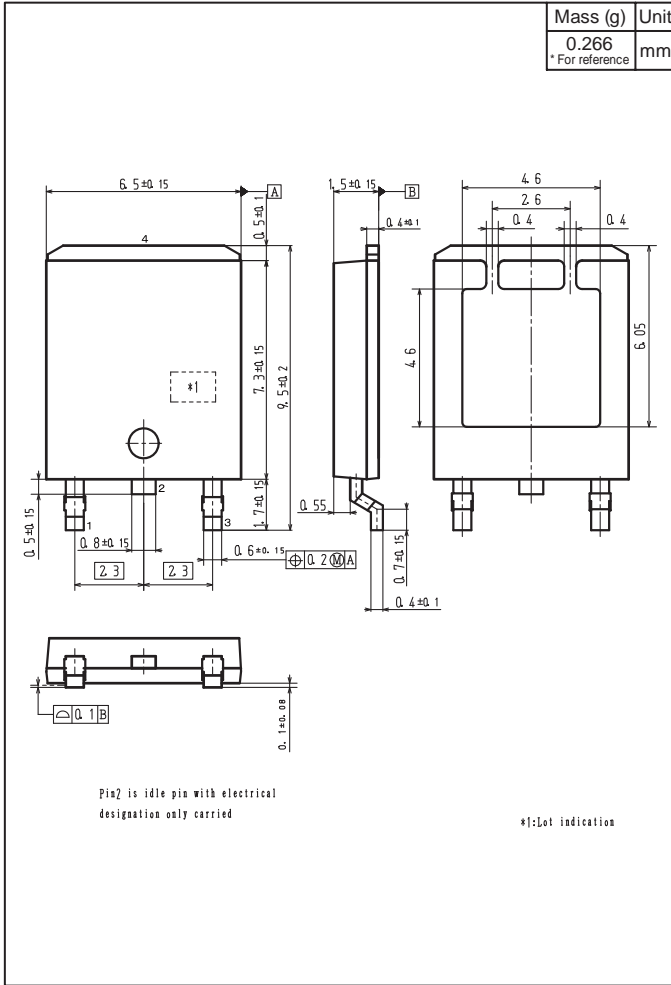


The one electrode terminals on feed hole side...TL

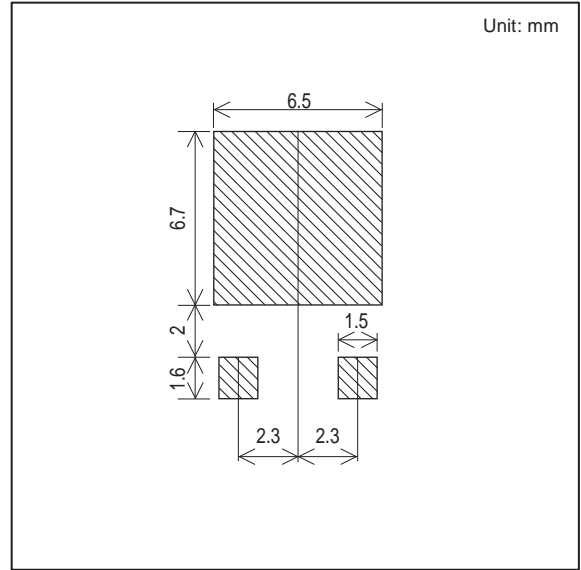
ATP401

Outline Drawing

ATP401-TL-H



Land Pattern Example



Note on usage : Since the ATP401 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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