



# ATP405 — General-Purpose Switching Device Applications

N-Channel Silicon MOSFET

## Features

- ON-resistance  $R_{DS(on)}=25m\Omega$  (typ.)
- 10V drive
- Input capacitance  $C_{iss}=4000pF$  (typ.)
- Halogen free compliance

## Specifications

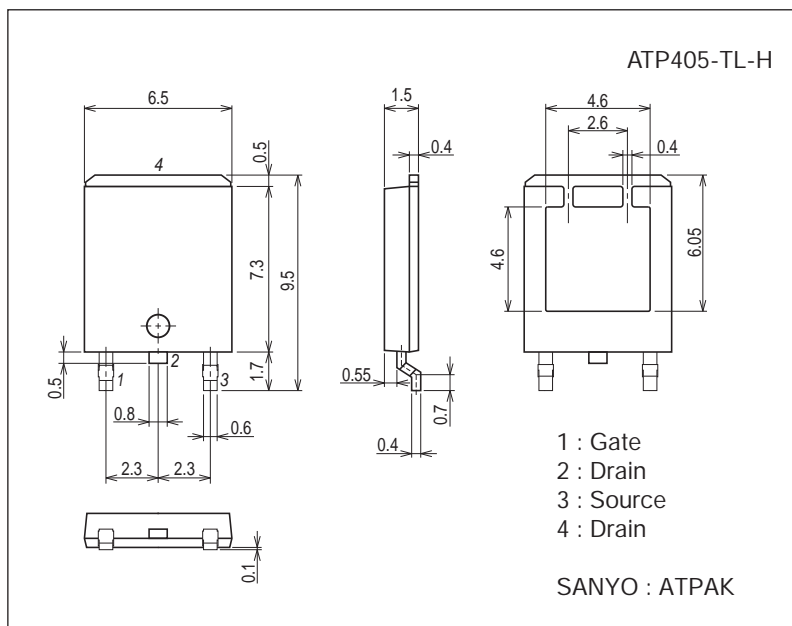
### Absolute Maximum Ratings at $T_a=25^\circ C$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		100	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		40	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu s$ , duty cycle $\leq 1\%$	160	A
Allowable Power Dissipation	$P_D$	$T_c=25^\circ C$	70	W
Channel Temperature	$T_{ch}$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$
Avalanche Energy (Single Pulse) *1	$E_{AS}$		148	mJ
Avalanche Current *2	$I_{AV}$		40	A

Note : \*1  $V_{DD}=30V$ ,  $L=100\mu H$ ,  $I_{AV}=40A$   
 \*2  $L \leq 100\mu H$ , Single pulse

## Package Dimensions

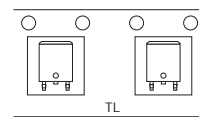
unit : mm (typ)  
 7057-001



## Product & Package Information

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

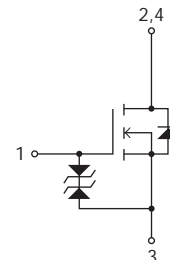
## Packing Type: TL



## Marking



## Electrical Connection

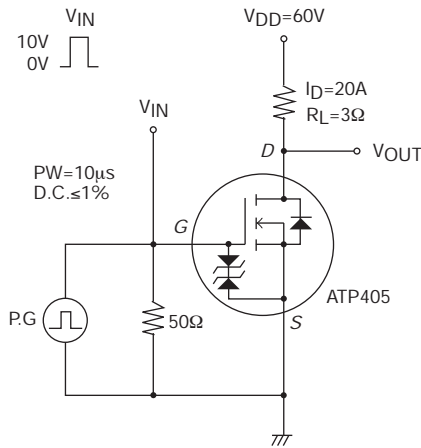


# ATP405

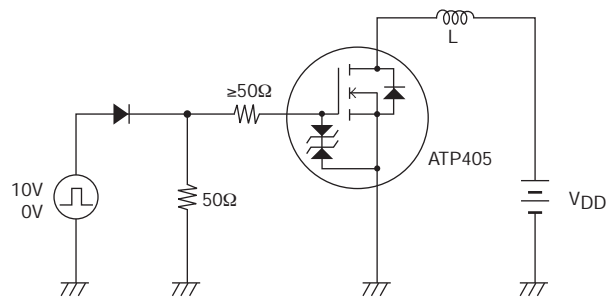
## Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit	
			min	typ	max		
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}, V_{GS}=0\text{V}$	100			V	
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100\text{V}, V_{GS}=0\text{V}$			10	$\mu\text{A}$	
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16\text{V}, V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$	
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}, I_D=1\text{mA}$	2.0		3.5	V	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}, I_D=20\text{A}$		62		S	
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=20\text{A}, V_{GS}=10\text{V}$		25	33	$\text{m}\Omega$	
Input Capacitance	$C_{iss}$	$V_{DS}=20\text{V}, f=1\text{MHz}$		4000		pF	
Output Capacitance	$C_{oss}$				300		pF
Reverse Transfer Capacitance	$C_{rss}$				170		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		38		ns	
Rise Time	$t_r$			125		ns	
Turn-OFF Delay Time	$t_{d(off)}$			220		ns	
Fall Time	$t_f$			150		ns	
Total Gate Charge	$Q_g$	$V_{DS}=60\text{V}, V_{GS}=10\text{V}, I_D=40\text{A}$		68		nC	
Gate-to-Source Charge	$Q_{gs}$			14		nC	
Gate-to-Drain "Miller" Charge	$Q_{gd}$			15		nC	
Diode Forward Voltage	$V_{SD}$	$I_S=40\text{A}, V_{GS}=0\text{V}$		0.9	1.2	V	

### Switching Time Test Circuit

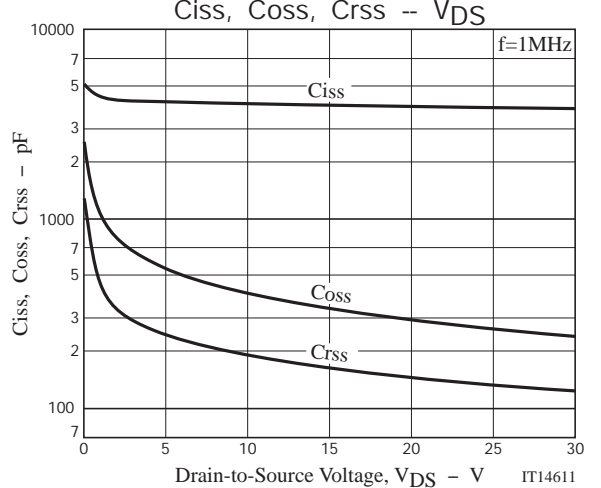
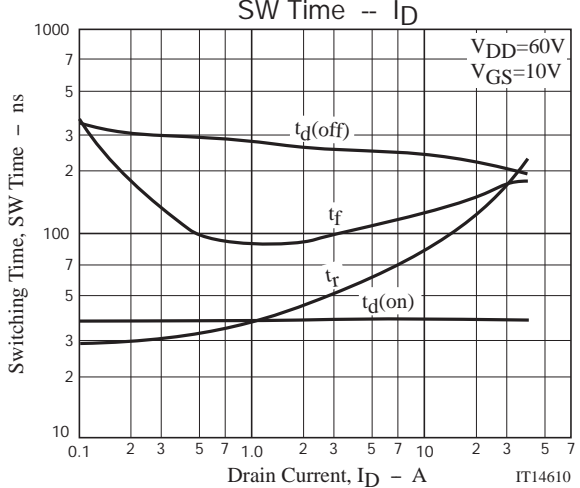
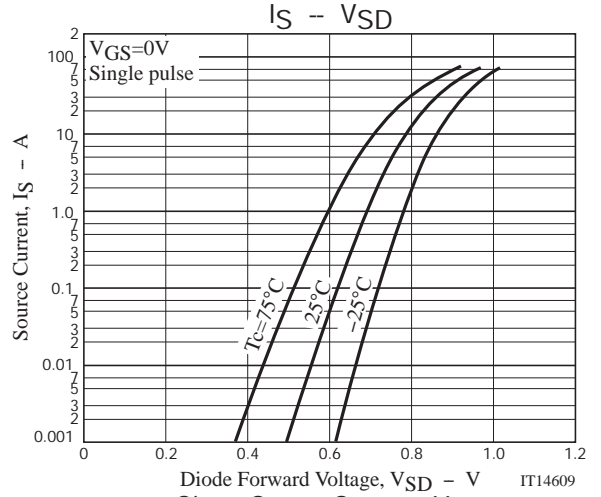
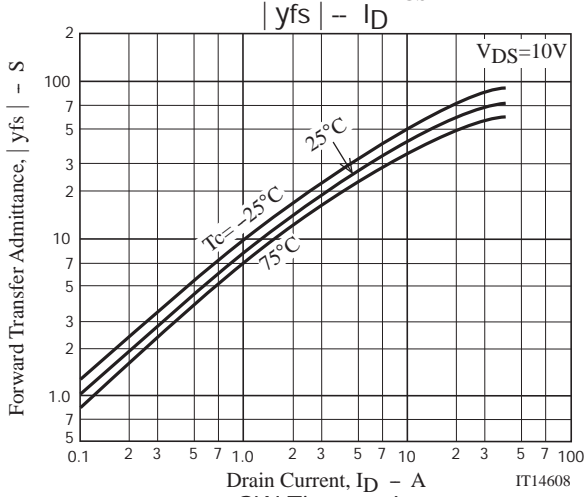
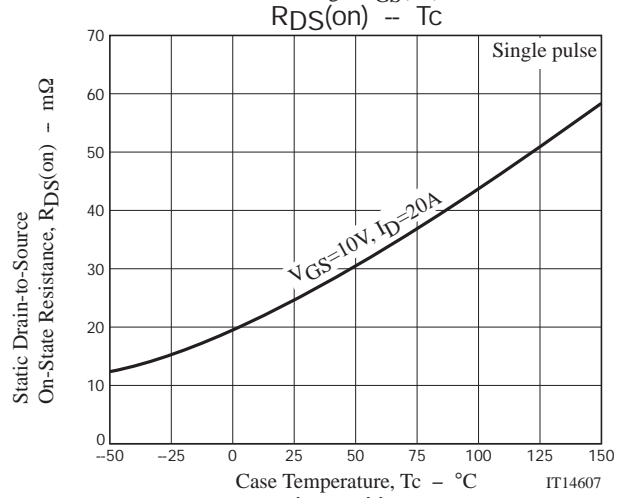
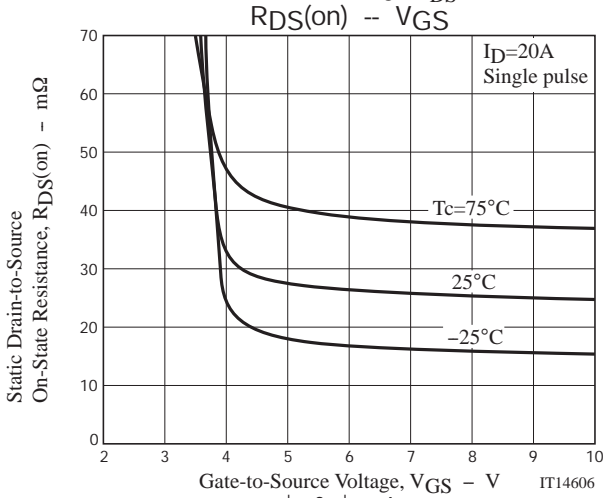
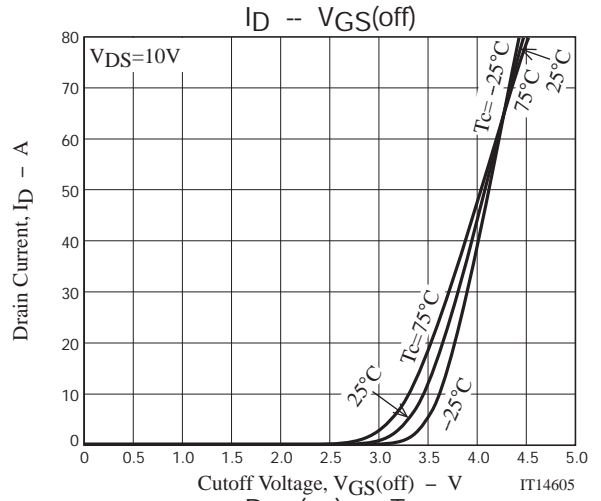
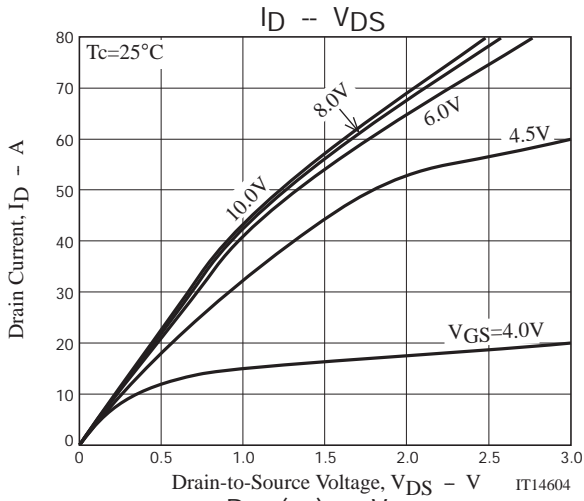


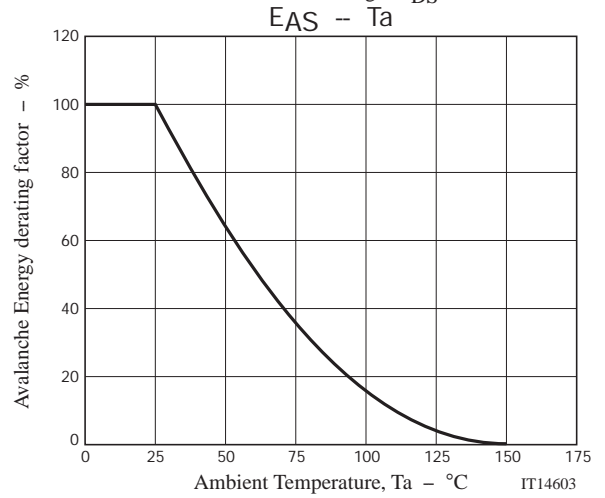
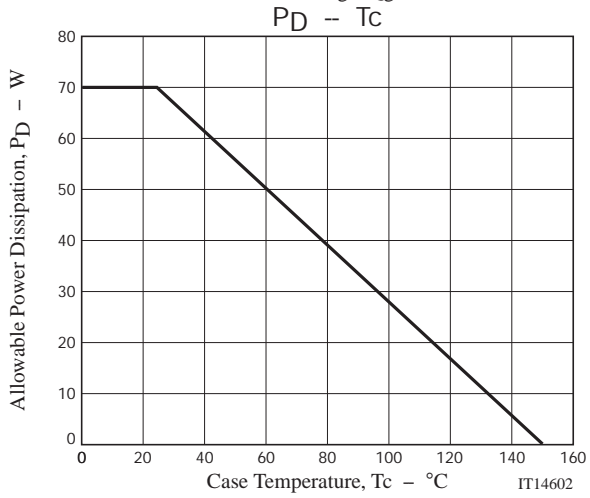
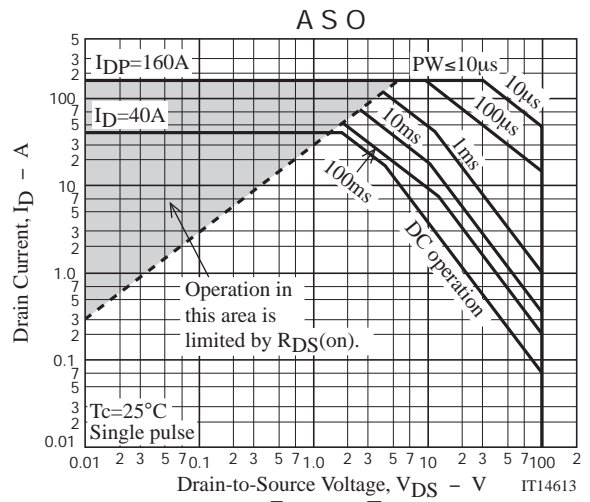
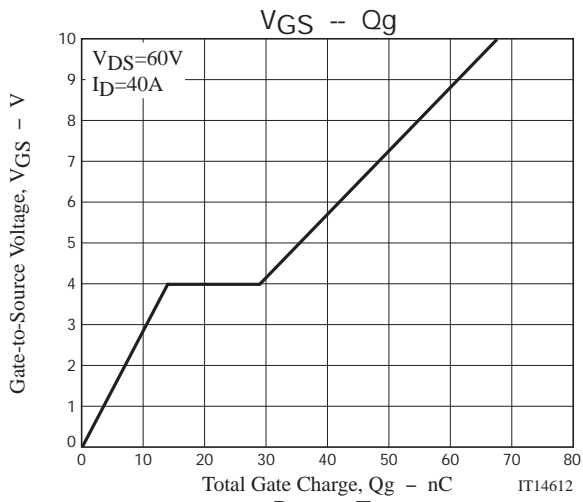
### Avalanche Resistance Test Circuit



### Ordering Information

Device	Package	Shipping	memo
ATP405-TL-H	ATPAK	3,000pcs./reel	Pb Free and Halogen Free





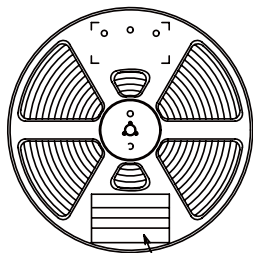
Taping Specification

ATP405-TL-H

1. Packing Format (TL)

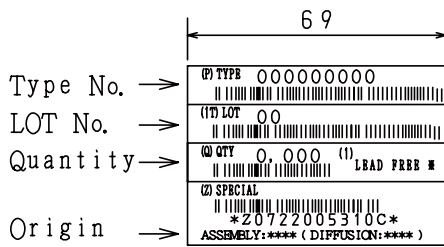
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	INNER BOX SD-C-18	OUTER BOX SD-A-18
ATPAK	ATP	3,000	3,000	15,000	1 reels contained Dimensions:mm (external) 340×340×28	5 inner boxes contained Dimensions:mm (external) 355×355×165

Packing method



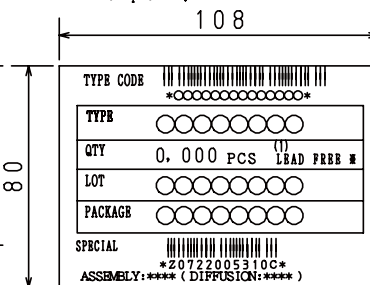
Reel label

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.



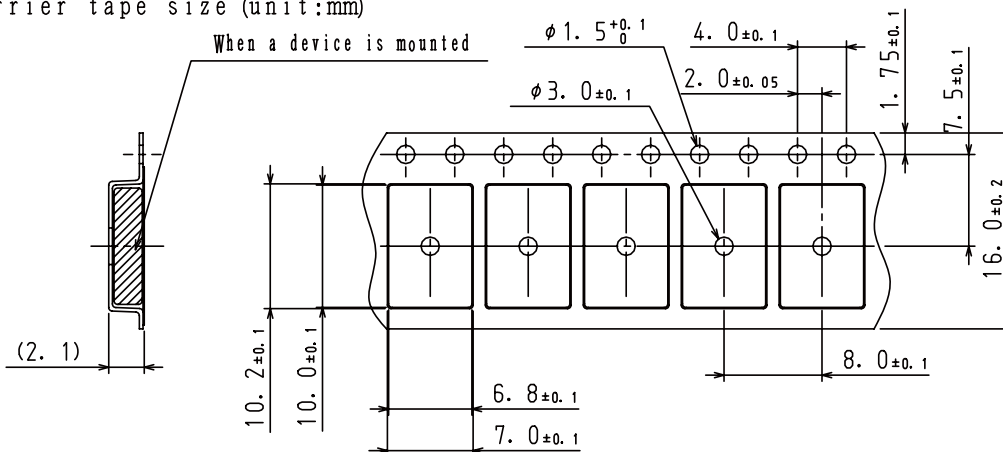
NOTE (1)

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

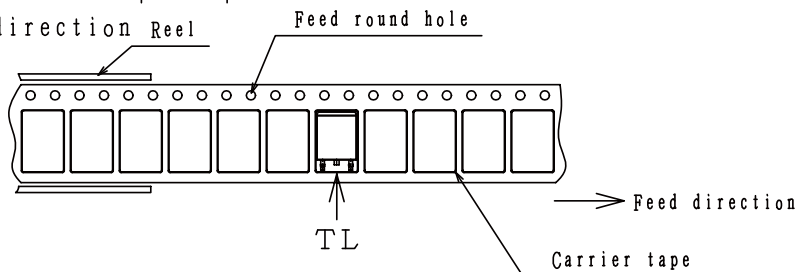
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

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

# ATP405

## Outline Drawing

ATP405-TL-H



## Land Pattern Example



Note on usage : Since the ATP405 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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