



# ATP302 — P-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- ON-resistance  $R_{DS(on)1}=10m\Omega$  (typ.)
- 4.5V drive
- Input capacitance  $C_{iss}=5400pF$  (typ.)
- Halogen free compliance

### Specifications

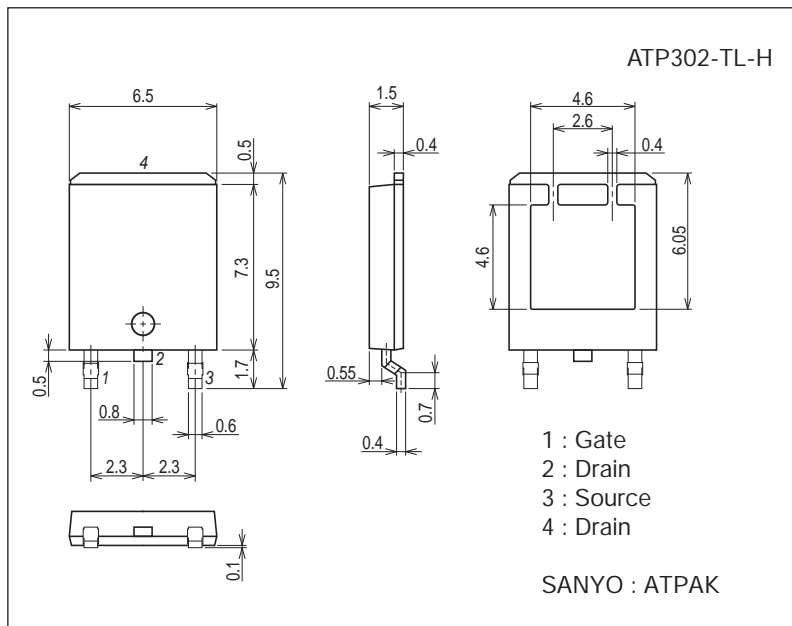
Absolute Maximum Ratings at  $T_a=25^\circ C$

| 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)                 | $I_D$     |   | -70         | A          |
| Drain Current (Pulse)              | $I_{DP}$  | $PW \leq 10\mu s$ , duty cycle $\leq 1\%$ | -280        | 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 | $E_{AS}$  |   | 197         | mJ         |
| Avalanche Current *2               | $I_{AV}$  |   | -42         | A          |

Note : \*1  $V_{DD}=-36V$ ,  $L=100\mu H$ ,  $I_{AV}=-42A$   
 \*2  $L \leq 100\mu H$ , Single pulse

### Package Dimensions

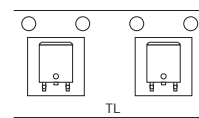
unit : mm (typ)  
 7057-001



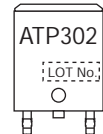
### Product & Package Information

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

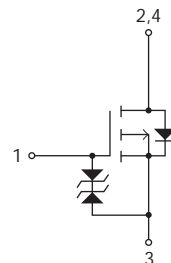
### Packing Type: TL



### Marking



### Electrical Connection

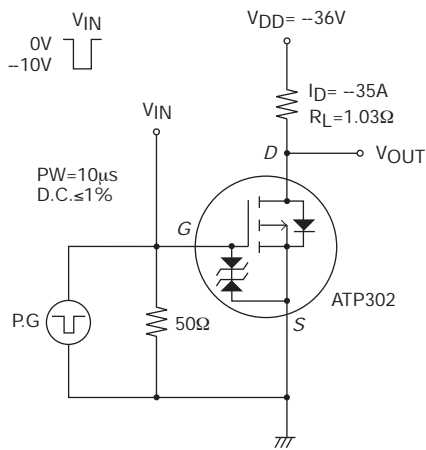


# ATP302

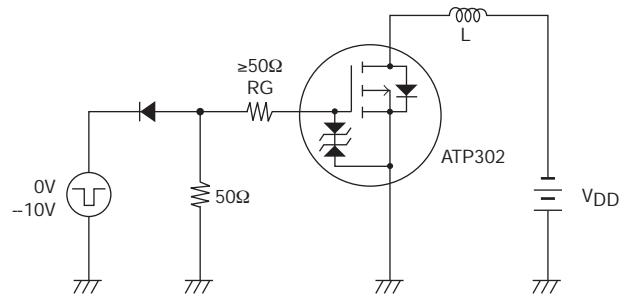
## Electrical Characteristics at $T_a=25^\circ\text{C}$

| Parameter                                  | Symbol        | Conditions  | Ratings |      |          | Unit             |
|--|---------------|---|---------|------|----------|------------------|
|  |               |   | min     | typ  | max      |                  |
| Drain-to-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D=-1\text{mA}, V_{GS}=0\text{V}$                       | -60     |      |          | V                |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS}=-60\text{V}, V_{GS}=0\text{V}$                    |         |      | -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                             | $V_{GS(off)}$ | $V_{DS}=-10\text{V}, I_D=-1\text{mA}$                     | -1.2    |      | -2.6     | V                |
| Forward Transfer Admittance                | $ y_{fs} $    | $V_{DS}=-10\text{V}, I_D=-35\text{A}$                     |         | 75   |          | S                |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D=-35\text{A}, V_{GS}=-10\text{V}$                     |         | 10   | 13       | $\text{m}\Omega$ |
|  | $R_{DS(on)2}$ | $I_D=-35\text{A}, V_{GS}=-4.5\text{V}$                    |         | 13   | 18       | $\text{m}\Omega$ |
| Input Capacitance                          | $C_{iss}$     |   |         | 5400 |          | $\text{pF}$      |
| Output Capacitance                         | $C_{oss}$     | $V_{DS}=-20\text{V}, f=1\text{MHz}$                       |         | 500  |          | $\text{pF}$      |
| Reverse Transfer Capacitance               | $C_{rss}$     |   |         | 370  |          | $\text{pF}$      |
| Turn-ON Delay Time                         | $t_{d(on)}$   | See specified Test Circuit.                               |         | 35   |          | ns               |
| Rise Time                                  | $t_r$         |   |         | 430  |          | ns               |
| Turn-OFF Delay Time                        | $t_{d(off)}$  |   |         | 420  |          | ns               |
| Fall Time                                  | $t_f$         |   |         | 500  |          | ns               |
| Total Gate Charge                          | $Q_g$         |   |         |      | 115      |                  |
| Gate-to-Source Charge                      | $Q_{gs}$      | $V_{DS}=-36\text{V}, V_{GS}=-10\text{V}, I_D=-70\text{A}$ |         | 20   |          | nC               |
| Gate-to-Drain "Miller" Charge              | $Q_{gd}$      |   |         | 25   |          | nC               |
| Diode Forward Voltage                      | $V_{SD}$      | $I_S=-70\text{A}, V_{GS}=0\text{V}$                       |         | -1.0 | -1.5     | V                |

### Switching Time Test Circuit

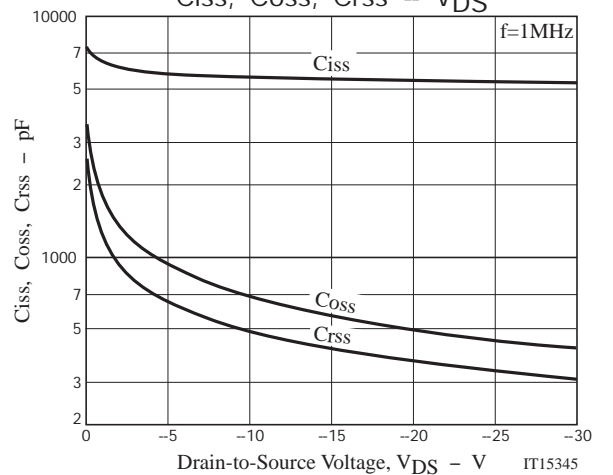
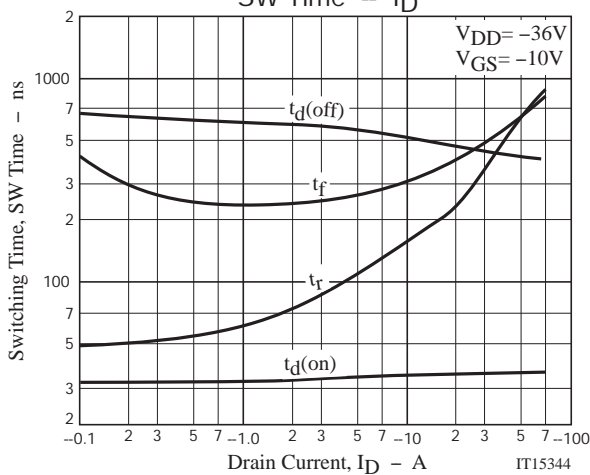
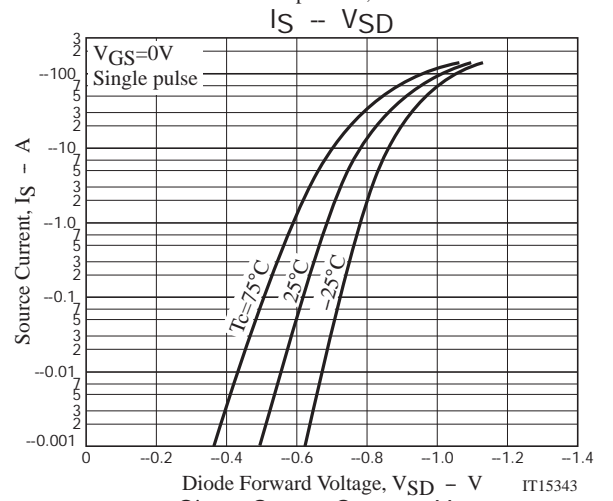
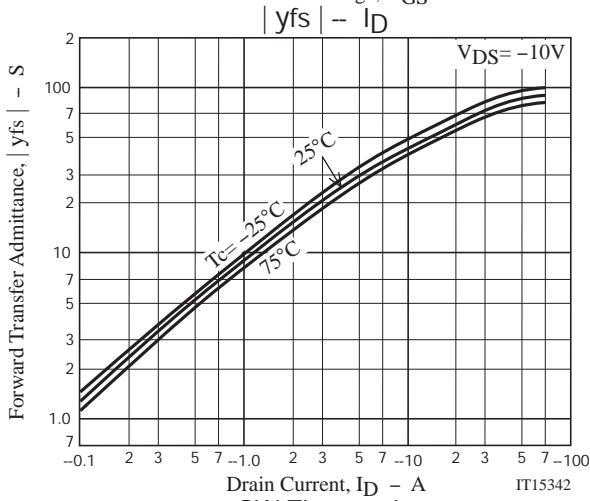
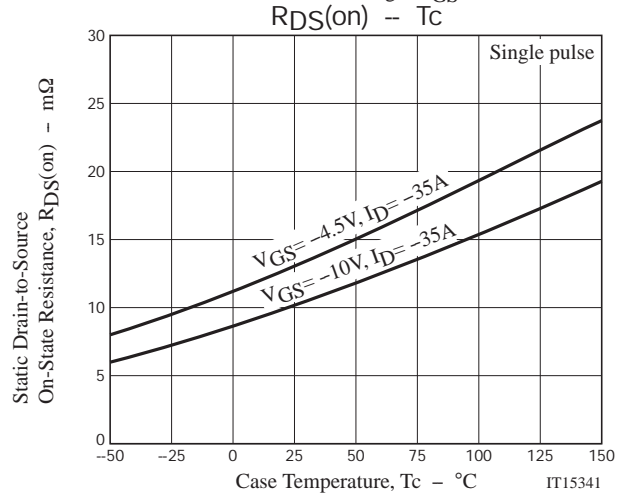
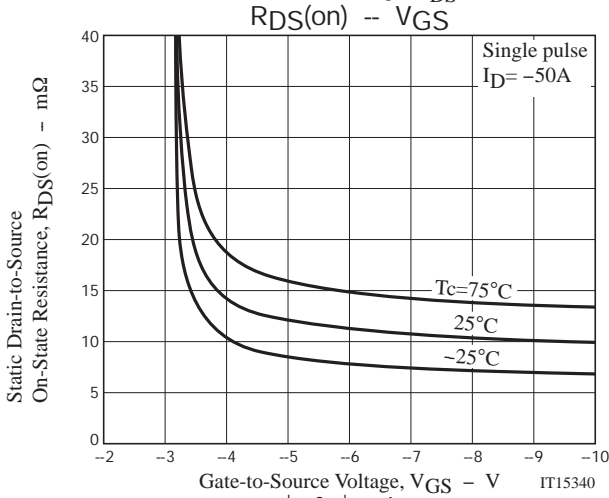
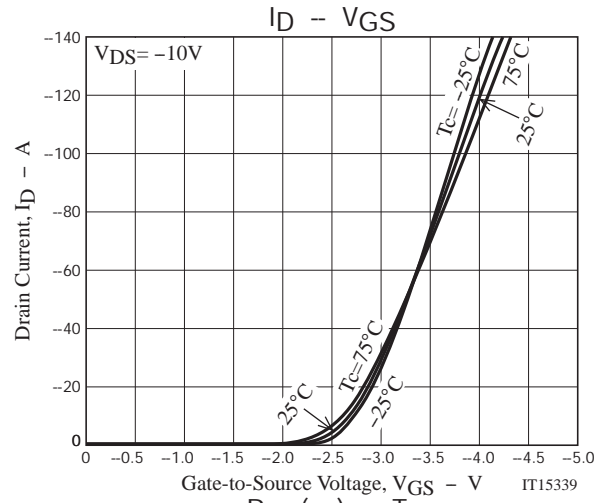
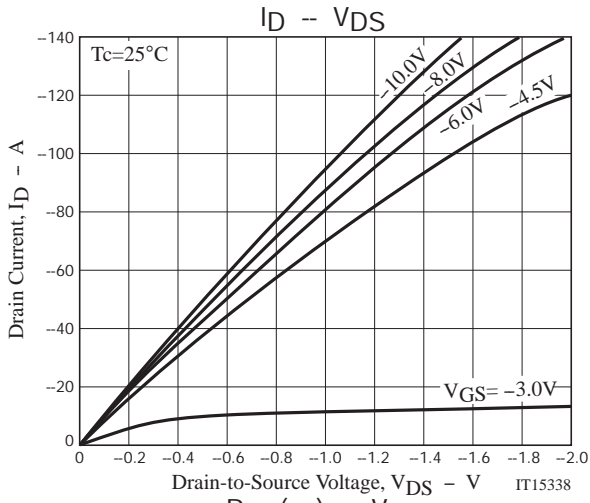


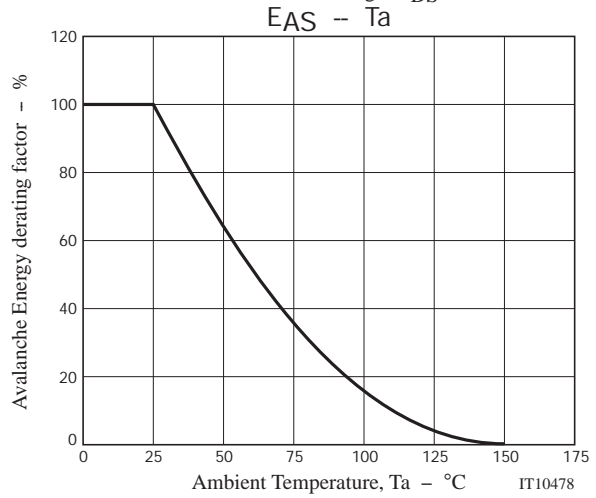
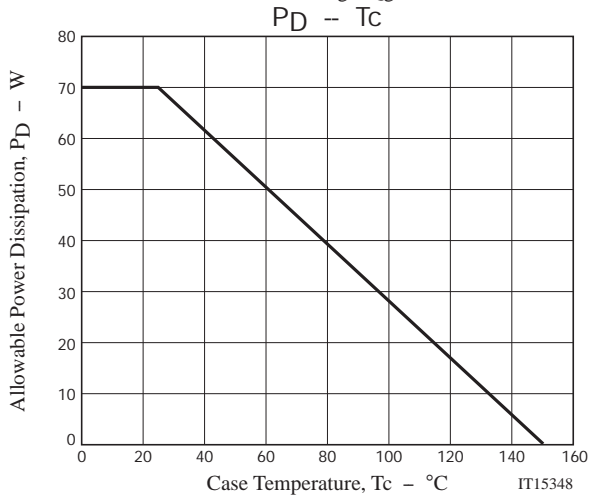
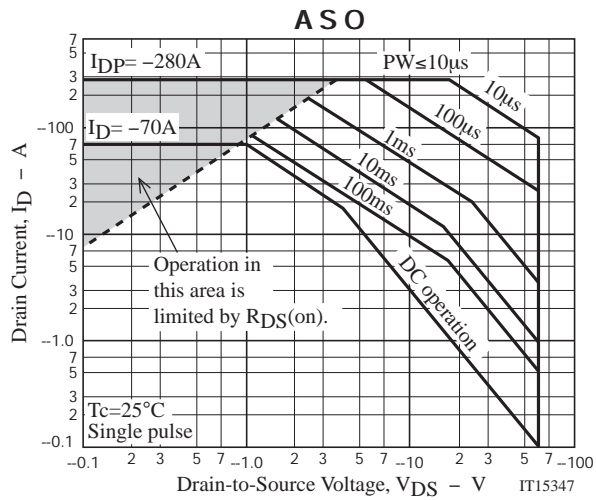
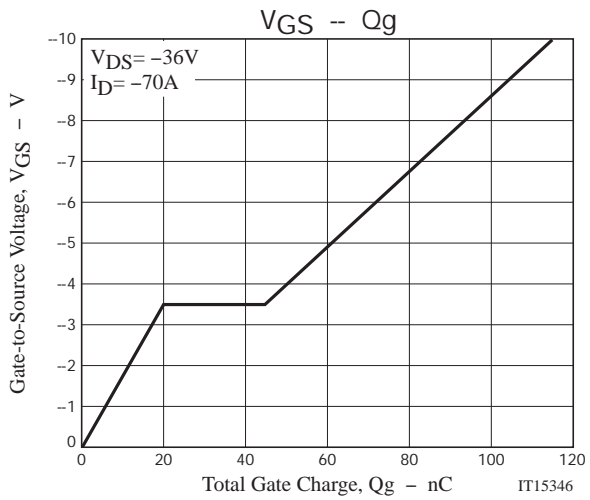
### Avalanche Resistance Test Circuit



### Ordering Information

| Device      | Package | Shipping       | memo                     |
|-------------|---------|----------------|--------------------------|
| ATP302-TL-H | ATPAK   | 3,000pcs./reel | Pb Free and Halogen Free |





Taping Specification

ATP302-TL-H

1. Packing Format (TL)

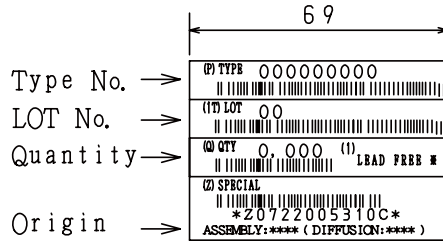
| Package Name | Carrier Tape Type | Maximum Number of devices contained (pcs) |           |           | Packing format  |  |
|--------------|-------------------|---|-----------|-----------|---|--|
|              |                   | Reel                                      | Inner box | Outer box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

Packing method



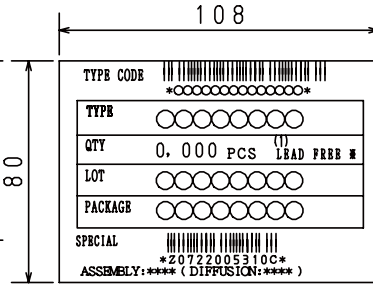
Reel label

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.

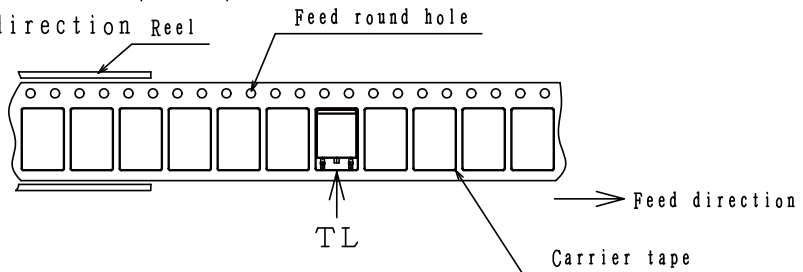
| Label       | JEITA Phase    |
|-------------|----------------|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3  |

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

# ATP302

## Outline Drawing

ATP302-TL-H



## Land Pattern Example



Note on usage : Since the ATP302 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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