



# ATP213 — N-Channel Silicon MOSFET

## General-Purpose Switching Device

### Applications

#### Features

- Low ON-resistance.
- Large current.
- Slim package.
- 4V drive.
- Halogen free compliance.

#### Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter                          | Symbol           | Conditions             | Ratings     | Unit |
|------------------------------------|------------------|------------------------|-------------|------|
| Drain-to-Source Voltage            | V <sub>DSS</sub> |                        | 60          | V    |
| Gate-to-Source Voltage             | V <sub>GSS</sub> |                        | ±20         | V    |
| Drain Current (DC)                 | I <sub>D</sub>   |                        | 50          | A    |
| Drain Current (PW≤10μs)            | I <sub>DP</sub>  | PW≤10μs, duty cycle≤1% | 150         | A    |
| Allowable Power Dissipation        | P <sub>D</sub>   | T <sub>c</sub> =25°C   | 50          | W    |
| Channel Temperature                | T <sub>ch</sub>  |                        | 150         | °C   |
| Storage Temperature                | T <sub>stg</sub> |                        | -55 to +150 | °C   |
| Avalanche Energy (Single Pulse) *1 | E <sub>AS</sub>  |                        | 37          | mJ   |
| Avalanche Current *2               | I <sub>AV</sub>  |                        | 25          | A    |

Note : \*1 V<sub>DD</sub>=10V, L=100μH, I<sub>AV</sub>=25A

\*2 L≤100μH, Single pulse

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   |

Marking : ATP213

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# ATP213

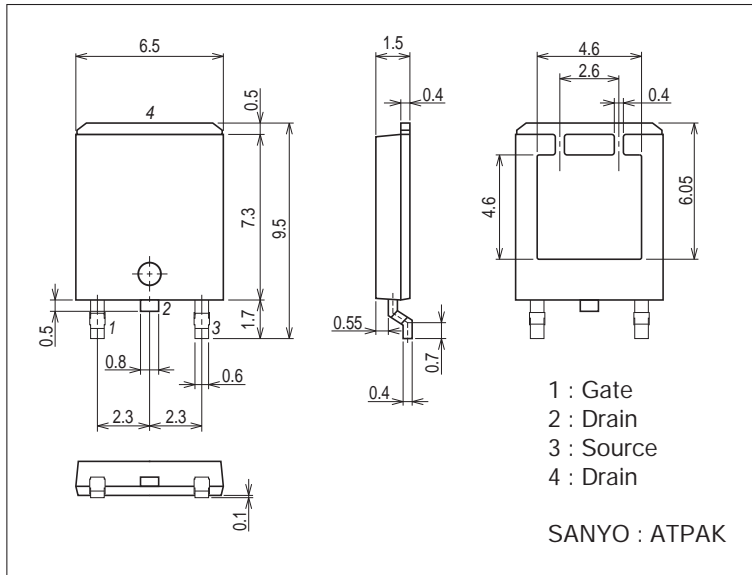
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| Parameter                                  | Symbol        | Conditions                        | Ratings |      |     | Unit       |
|--|---------------|-----------------------------------|---------|------|-----|------------|
|  |               |                                   | min     | typ  | max |            |
| Cutoff Voltage                             | $V_{GS(off)}$ | $V_{DS}=10V, I_D=1mA$             | 1.2     |      | 2.6 | V          |
| Forward Transfer Admittance                | $ y_{fs} $    | $V_{DS}=10V, I_D=25A$             |         | 55   |     | S          |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D=25A, V_{GS}=10V$             |         | 12   | 16  | m $\Omega$ |
|  | $R_{DS(on)2}$ | $I_D=13A, V_{GS}=4.5V$            |         | 15   | 21  | m $\Omega$ |
|  | $R_{DS(on)3}$ | $I_D=7A, V_{GS}=4V$               |         | 17   | 26  | m $\Omega$ |
| Input Capacitance                          | $C_{iss}$     | $V_{DS}=20V, f=1MHz$              |         | 3150 |     | pF         |
| Output Capacitance                         | $C_{oss}$     | $V_{DS}=20V, f=1MHz$              |         | 310  |     | pF         |
| Reverse Transfer Capacitance               | $C_{rss}$     | $V_{DS}=20V, f=1MHz$              |         | 190  |     | pF         |
| Turn-ON Delay Time                         | $t_d(on)$     | See specified Test Circuit.       |         | 23   |     | ns         |
| Rise Time                                  | $t_r$         | See specified Test Circuit.       |         | 170  |     | ns         |
| Turn-OFF Delay Time                        | $t_d(off)$    | See specified Test Circuit.       |         | 230  |     | ns         |
| Fall Time                                  | $t_f$         | See specified Test Circuit.       |         | 150  |     | ns         |
| Total Gate Charge                          | $Q_g$         | $V_{DS}=30V, V_{GS}=10V, I_D=50A$ |         | 58   |     | nC         |
| Gate-to-Source Charge                      | $Q_{gs}$      | $V_{DS}=30V, V_{GS}=10V, I_D=50A$ |         | 10.5 |     | nC         |
| Gate-to-Drain "Miller" Charge              | $Q_{gd}$      | $V_{DS}=30V, V_{GS}=10V, I_D=50A$ |         | 12.5 |     | nC         |
| Diode Forward Voltage                      | $V_{SD}$      | $I_S=50A, V_{GS}=0V$              |         | 1.01 | 1.2 | V          |

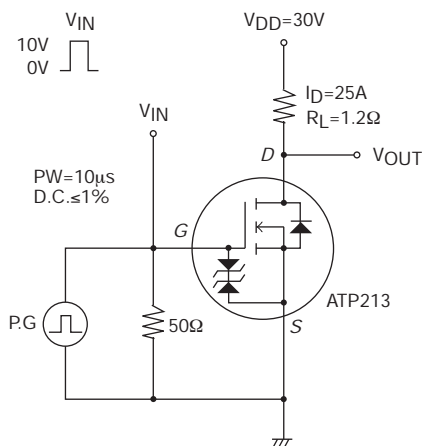
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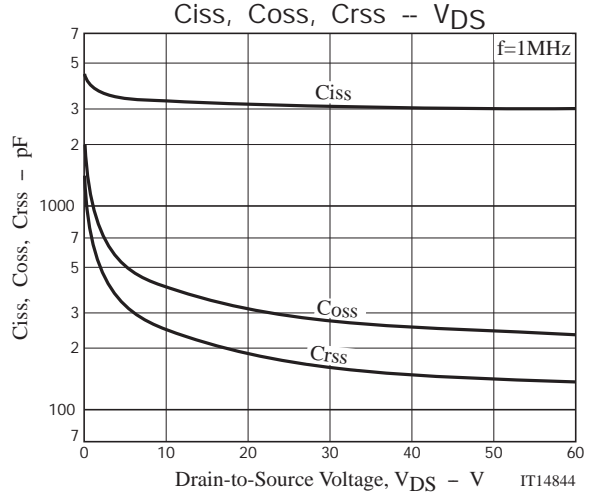
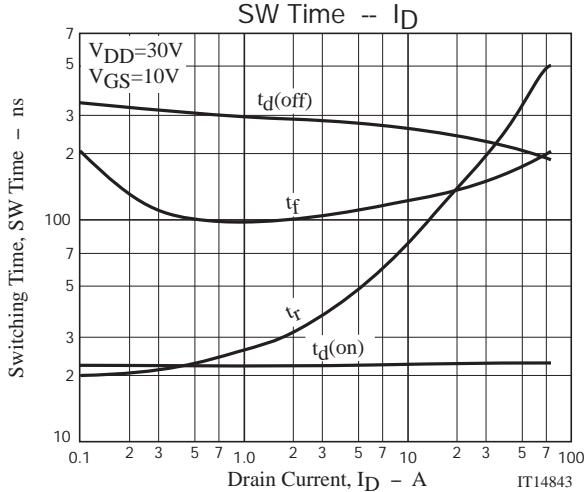
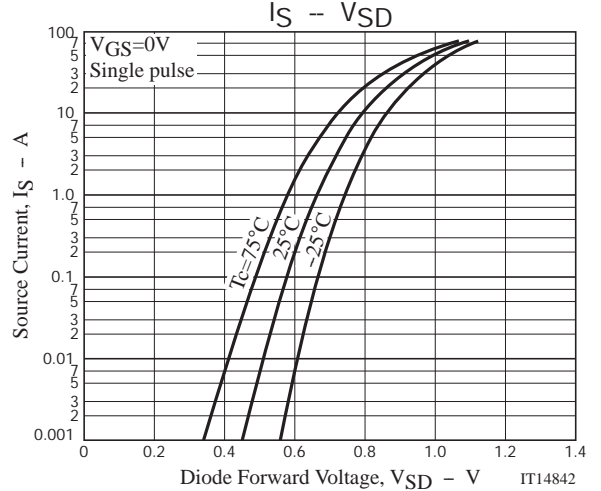
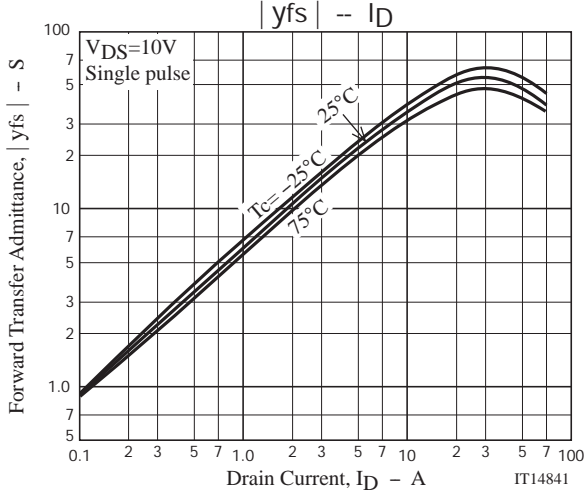
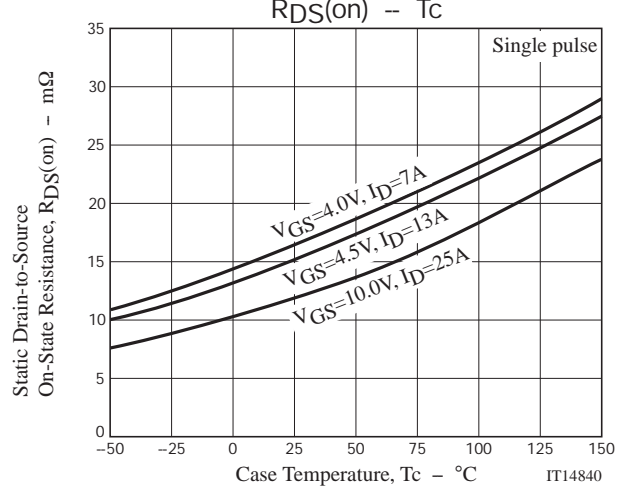
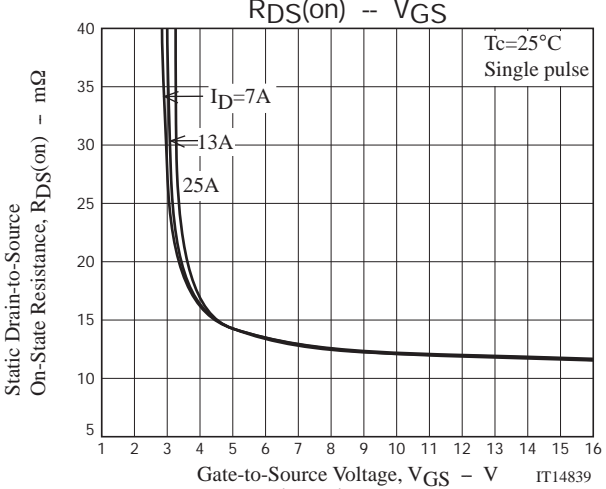
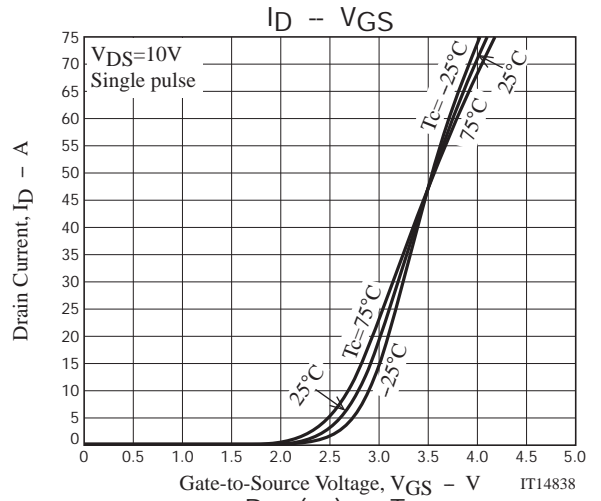
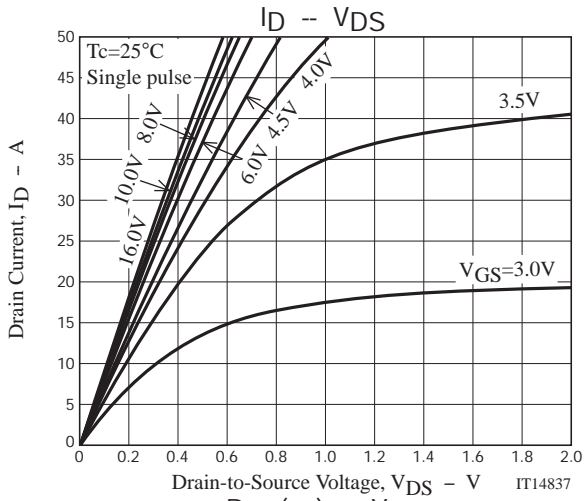
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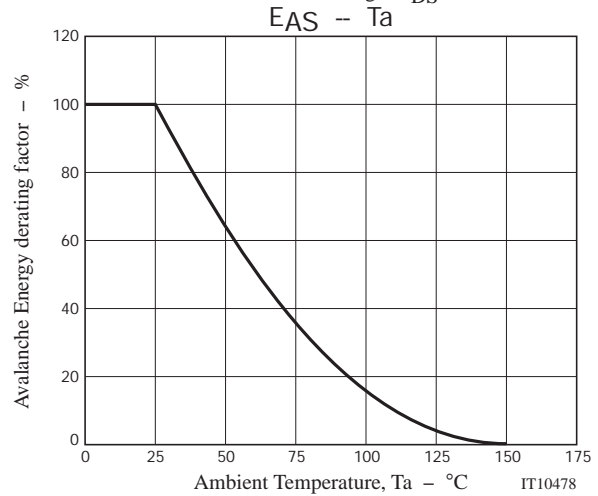
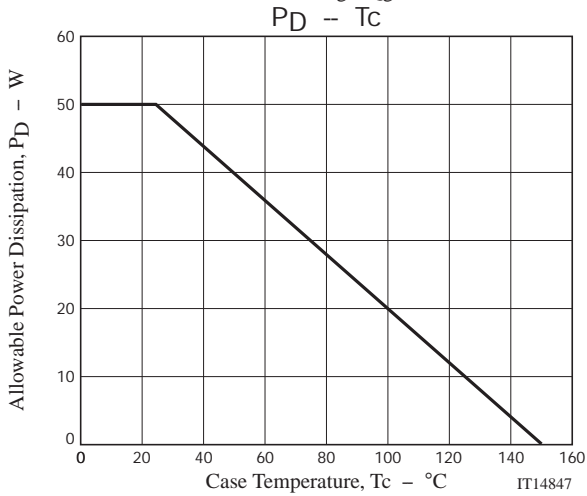
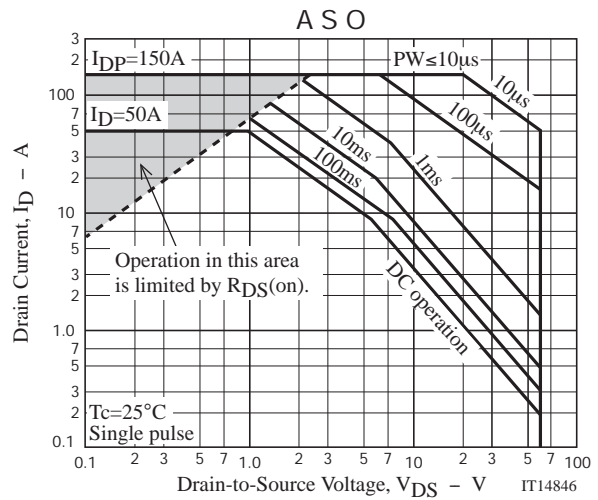
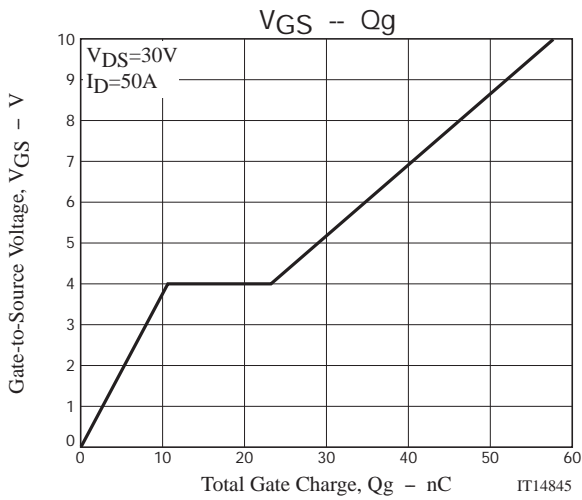
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## Switching Time Test Circuit







Note on usage : Since the ATP213 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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