

# P126FP10SN

## Power MOSFETs

100V, 126A, N-channel

### Feature

- N-channel
- SMD
- Large Current
- Low Ron
- 10V Gate Drive
- Low Capacitance
- Halogen free
- Pb free terminal
- RoHS:Yes

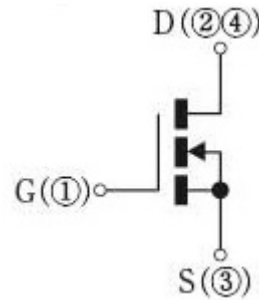
### OUTLINE

Package (House Name): FP

Package (JEITA Code): SC-83 similar



### Equivalent circuit



### Absolute Maximum Ratings (unless otherwise specified : Tc=25°C)

| Item                           | Symbol           | Conditions                                            | Ratings    | Unit |
|--------------------------------|------------------|-------------------------------------------------------|------------|------|
| Storage temperature            | T <sub>stg</sub> |                                                       | -55 to 175 | °C   |
| Channel temperature            | T <sub>ch</sub>  |                                                       | -55 to 175 | °C   |
| Drain-source voltage           | V <sub>DSS</sub> |                                                       | 100        | V    |
| Gate-source voltage            | V <sub>GSS</sub> |                                                       | ±20        | V    |
| Continuous drain current(DC)   | I <sub>D</sub>   |                                                       | 126        | A    |
| Continuous drain current(Peak) | I <sub>DP</sub>  | Pulse width 10μs, duty=1/100                          | 504        | A    |
| Total power dissipation        | P <sub>T</sub>   |                                                       | 238        | W    |
| Single avalanche current       | I <sub>AS</sub>  | Starting T <sub>ch</sub> =25°C T <sub>ch</sub> ≤150°C | 61         | A    |
| Single avalanche energy        | E <sub>AS</sub>  | Starting T <sub>ch</sub> =25°C T <sub>ch</sub> ≤150°C | 415        | mJ   |

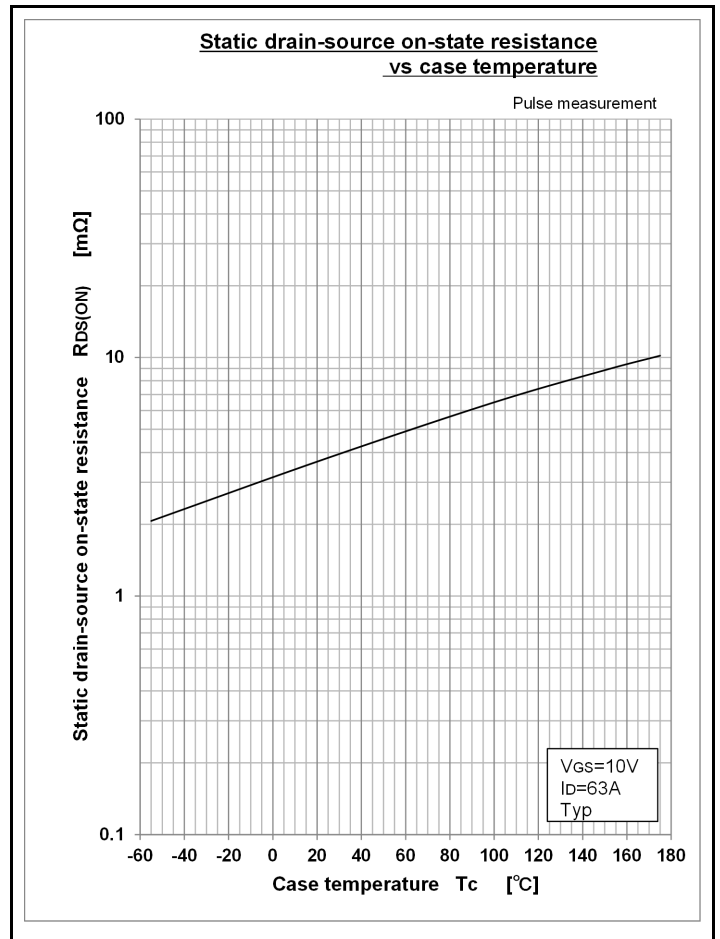
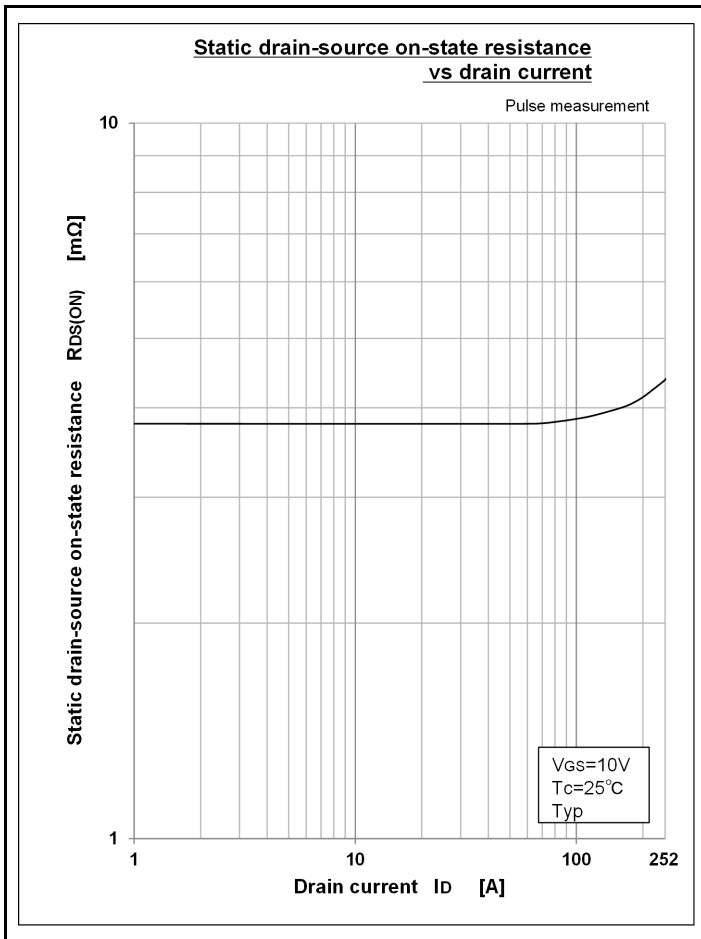
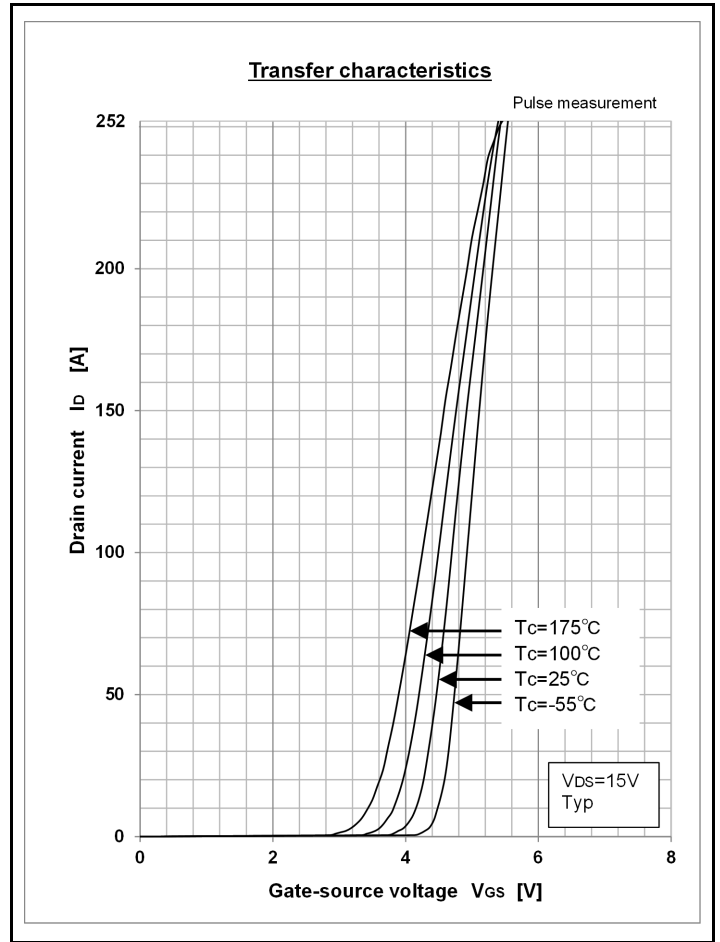
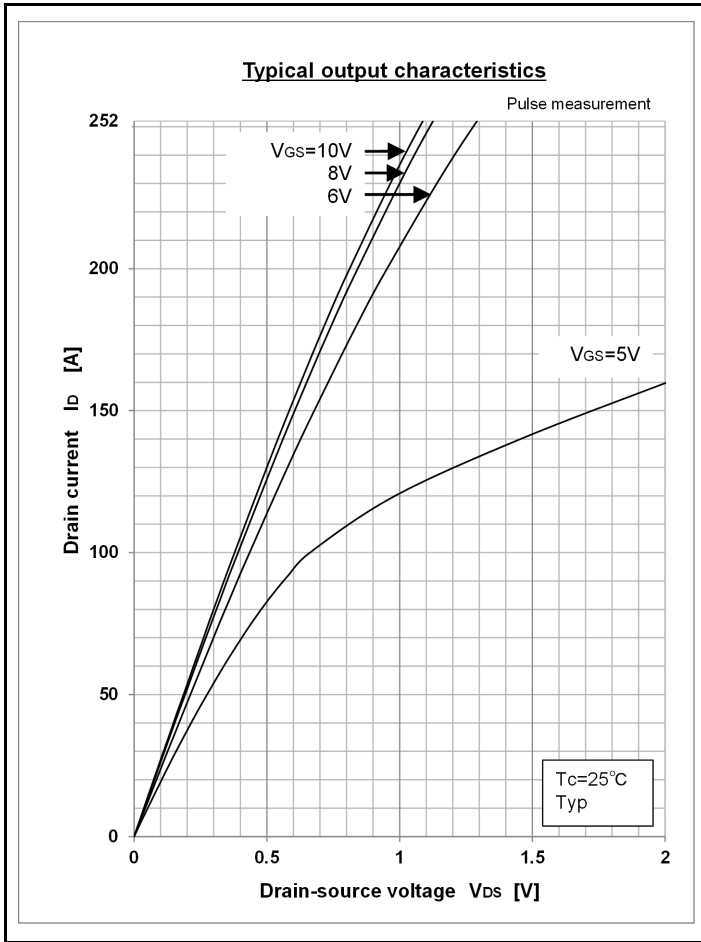
※ :See the original Specifications

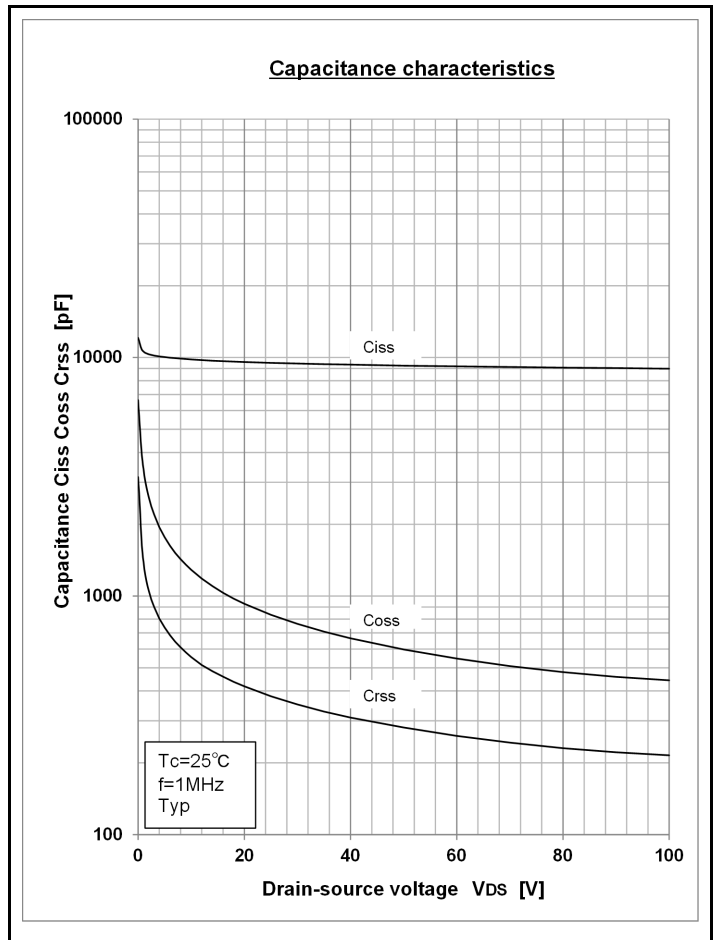
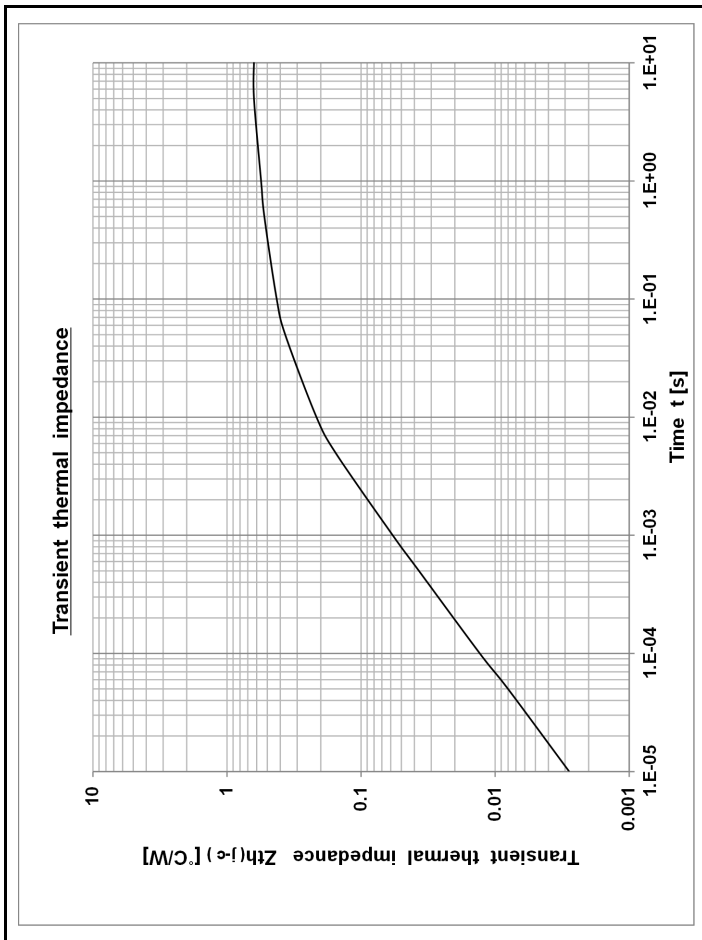
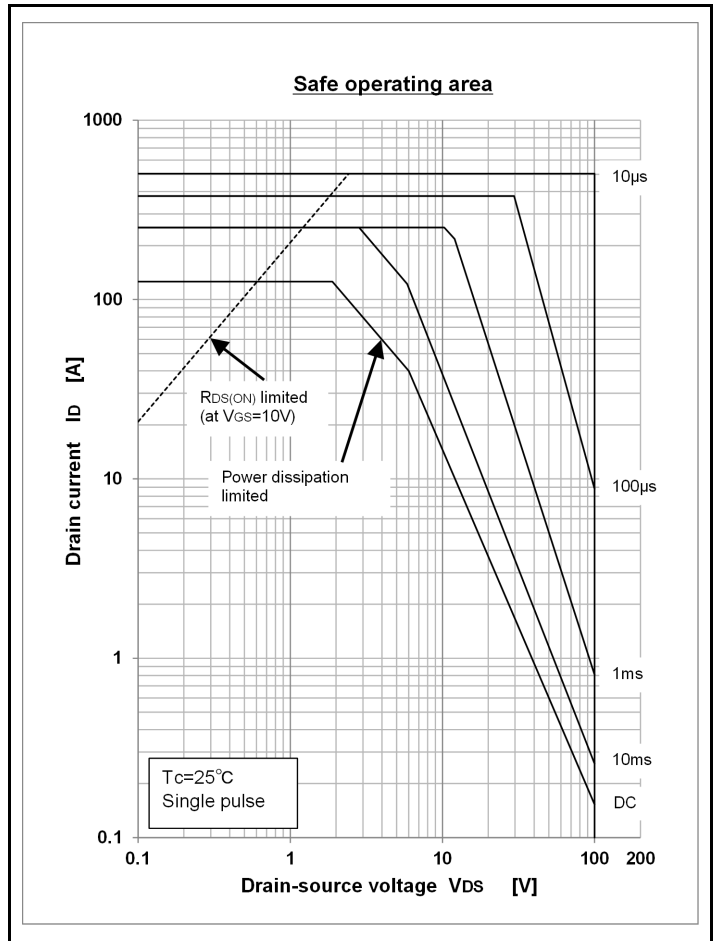
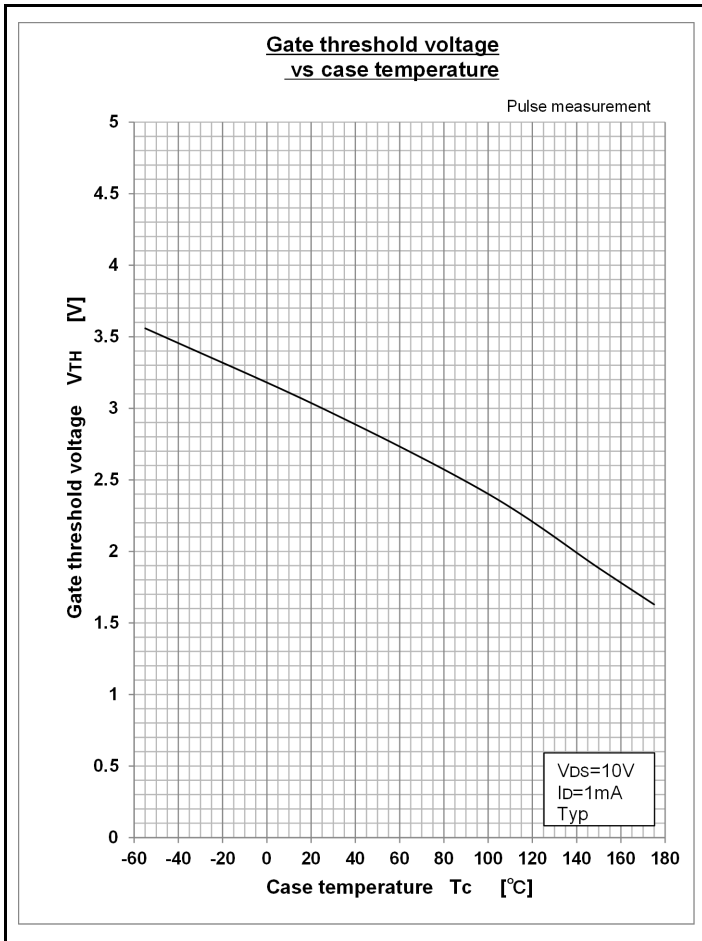
**Electrical Characteristics** (unless otherwise specified : Tc=25°C)

| Item                                    | Symbol        | Conditions                                              | Ratings |        |        | Unit |
|-----------------------------------------|---------------|---------------------------------------------------------|---------|--------|--------|------|
|                                         |               |                                                         | MIN     | TYP    | MAX    |      |
| Drain-Source breakdown voltage          | $V_{(BR)DSS}$ | ID=1mA, VGS=0V                                          | 100     |        |        | V    |
| Zero gate voltage drain current         | $I_{DSS}$     | VDS=100V, VGS=0V                                        |         |        | 1      | μA   |
| Gate-source leakage current             | $I_{GSS}$     | VGS=±20V, VDS=0V                                        |         |        | ±0.1   | μA   |
| Forward transconductance                | $g_{fs}$      | ID=63A, VDS=10V                                         | 40      | 80     |        | S    |
| Static drain-source on-state resistance | $R_{DS(ON)}$  | ID=63A, VGS=10V                                         |         | 0.0038 | 0.0048 | Ω    |
| Gate threshold voltage                  | $V_{th}$      | ID=1mA, VDS=10V                                         | 2       | 3      | 4      | V    |
| Source-drain diode forward voltage      | $V_{SD}$      | IS=126A, VGS=0V                                         |         |        | 1.5    | V    |
| Thermal resistance                      | $R_{th(j-c)}$ | Junction to case                                        |         |        | 0.63   | °C/W |
| Total gate charge                       | $Q_g$         | VDD=80V, VGS=10V, ID=126A                               |         | 160    |        | nC   |
| Gate to source charge                   | $Q_{gs}$      | VDD=80V, VGS=10V, ID=126A                               |         | 46     |        | nC   |
| Gate to drain charge                    | $Q_{gd}$      | VDD=80V, VGS=10V, ID=126A                               |         | 66     |        | nC   |
| Input capacitance                       | $C_{iss}$     | VDS=25V, VGS=0V, f=1MHz                                 |         | 9500   |        | pF   |
| Reverse transfer capacitance            | $C_{rss}$     | VDS=25V, VGS=0V, f=1MHz                                 |         | 380    |        | pF   |
| Output capacitance                      | $C_{oss}$     | VDS=25V, VGS=0V, f=1MHz                                 |         | 835    |        | pF   |
| Turn-on delay time                      | $t_{d(on)}$   | ID=63A, RL=0.79Ω, VDD=50V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V |         | 13     |        | ns   |
| Rise time                               | $t_r$         | ID=63A, RL=0.79Ω, VDD=50V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V |         | 40     |        | ns   |
| Turn-off delay time                     | $t_{d(off)}$  | ID=63A, RL=0.79Ω, VDD=50V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V |         | 110    |        | ns   |
| Fall time                               | $t_f$         | ID=63A, RL=0.79Ω, VDD=50V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V |         | 52     |        | ns   |
| Diode reverse recovery time             | $t_{rr}$      | IF=126A, VGS=0V, di/dt=100A/μs                          |         | 68     |        | ns   |
| Diode reverse recovery charge           | $Q_{rr}$      | IF=126A, VGS=0V, di/dt=100A/μs                          |         | 170    |        | nC   |

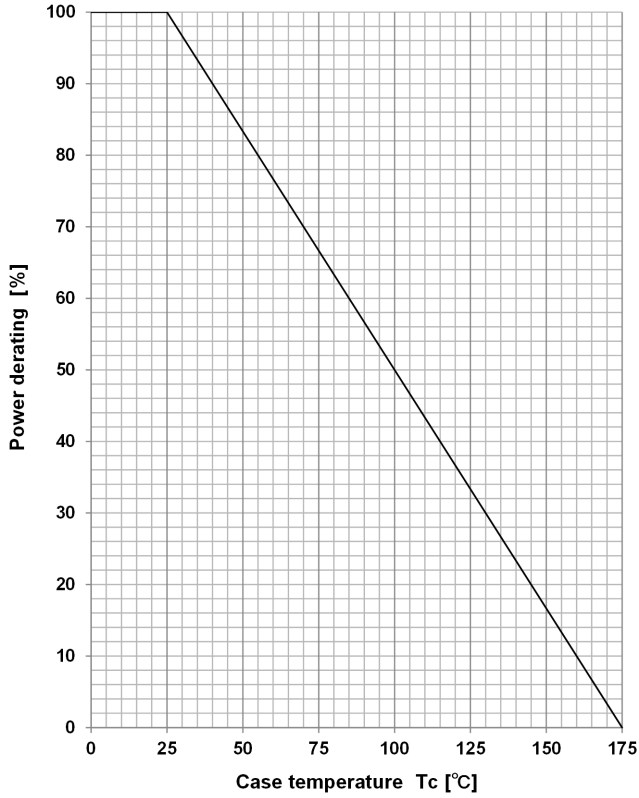
※ : See the original Specifications

# CHARACTERISTIC DIAGRAMS

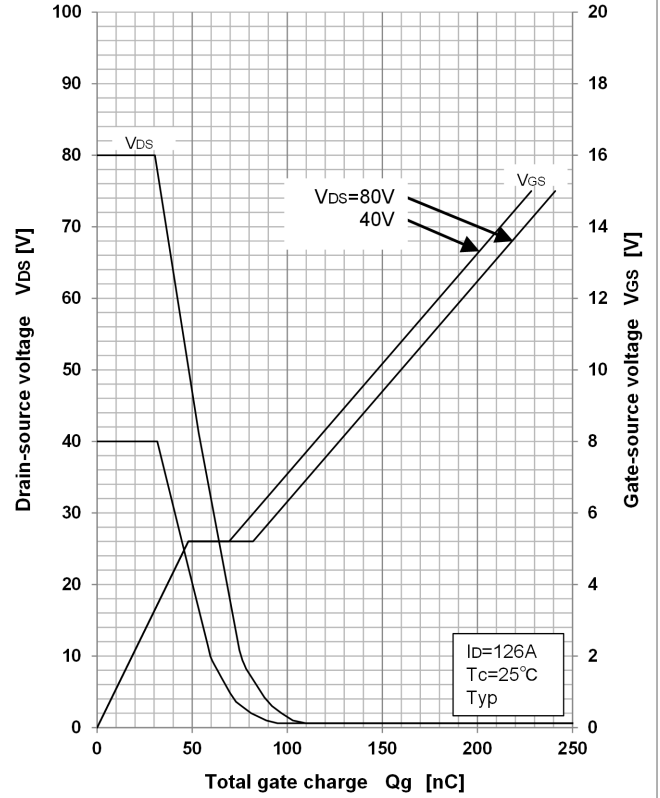




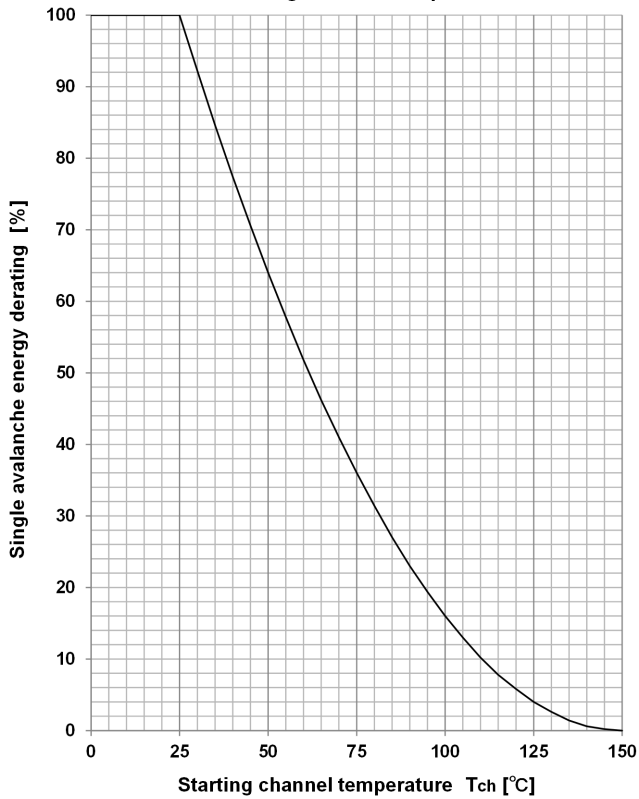
**Power derating vs case temperature**



**Gate charge characteristics**

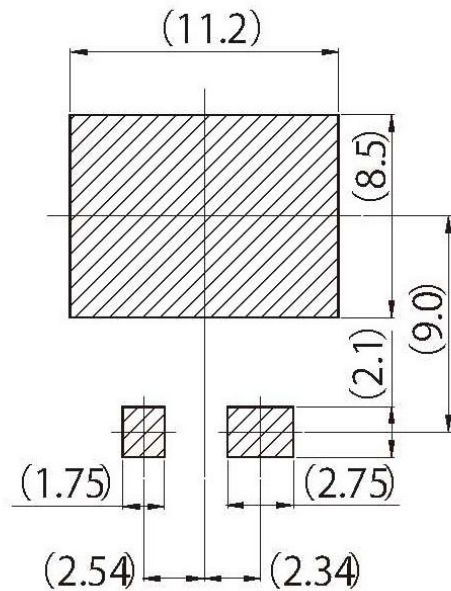
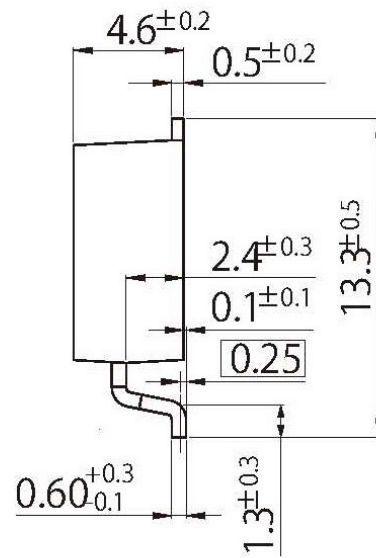
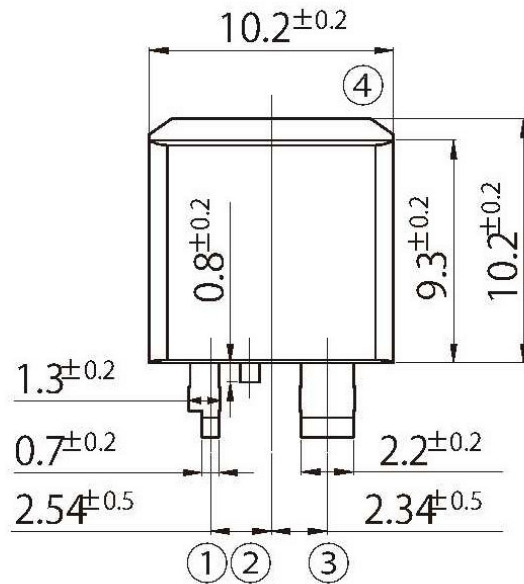


**Single avalanche energy derating vs starting channel temperature**



H5

|            |               |
|------------|---------------|
| JEDEC Code | -             |
| JEITA Code | SC-83 similar |
| House Name | FP            |



• Optimize soldering pad to the board design and soldering condition.

## Notes

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