

## Features

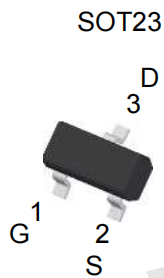
- $V_{DS} = 30V, I_D = 2A$   
 $R_{DS(ON)} < 90m\Omega @ V_{GS}=10V$   
 $R_{DS(ON)} < 130m\Omega @ V_{GS}=4.5V$

## Typical Applications

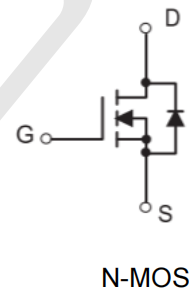
- Load switch
- PWM application

## Shipping Quantity

- 3000pcs / Tape & Reel



## Circuit Diagram



**Marking: 351AN**

## Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameter                                        | Symbol         | Limit      | Unit             |
|--------------------------------------------------|----------------|------------|------------------|
| Drain-Source Voltage                             | $V_{DS}$       | 30         | V                |
| Gate-Source Voltage                              | $V_{GS}$       | $\pm 20$   | V                |
| Drain Current-Continuous                         | $I_D$          | 2          | A                |
| Drain Current-Pulsed <sup>(Note 1)</sup>         | $I_{DM}$       | 10         | A                |
| Maximum Power Dissipation                        | $P_D$          | 0.9        | W                |
| Operating Junction and Storage Temperature Range | $T_J, T_{STG}$ | -55 To 150 | $^\circ\text{C}$ |

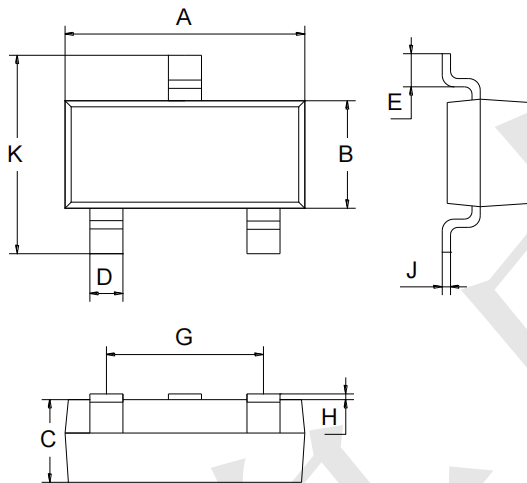
## Thermal Characteristic

|                                                             |                 |     |                    |
|-------------------------------------------------------------|-----------------|-----|--------------------|
| Thermal Resistance, Junction-to-Ambient <sup>(Note 2)</sup> | $R_{\theta JA}$ | 138 | $^\circ\text{C/W}$ |
|-------------------------------------------------------------|-----------------|-----|--------------------|

### Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter                          | Symbol       | Condition                                             | Min | Typ  | Max       | Unit       |
|------------------------------------|--------------|-------------------------------------------------------|-----|------|-----------|------------|
| Off Characteristics                |              |                                                       |     |      |           |            |
| Drain-Source Breakdown Voltage     | $BV_{DSS}$   | $V_{GS}=0V, I_D=250\mu A$                             | 30  | -    | -         | V          |
| Zero Gate Voltage Drain Current    | $I_{DSS}$    | $V_{DS}=20V, V_{GS}=0V$                               | -   | -    | 1         | $\mu A$    |
| Gate-Body Leakage Current          | $I_{GSS}$    | $V_{GS}=\pm 20V, V_{DS}=0V$                           | -   | -    | $\pm 100$ | nA         |
| On Characteristics (Note 3)        |              |                                                       |     |      |           |            |
| Gate Threshold Voltage             | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$                         | 1   | 1.5  | 3.0       | V          |
| Drain-Source On-State Resistance   | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=2A$                                  | -   | 65   | 90        | m $\Omega$ |
|                                    |              | $V_{GS}=4.5V, I_D=2A$                                 | -   | 100  | 130       | m $\Omega$ |
| Forward Transconductance           | $g_{FS}$     | $V_{DS}=5V, I_D=2A$                                   | 14  | -    | -         | S          |
| Dynamic Characteristics (Note4)    |              |                                                       |     |      |           |            |
| Input Capacitance                  | $C_{iss}$    | $V_{DS}=10V, V_{GS}=0V,$<br>$F=1.0MHz$                | -   | 235  | -         | PF         |
| Output Capacitance                 | $C_{oss}$    |                                                       | -   | 35   | -         | PF         |
| Reverse Transfer Capacitance       | $C_{rss}$    |                                                       | -   | 18   | -         | PF         |
| Switching Characteristics (Note 4) |              |                                                       |     |      |           |            |
| Turn-on Delay Time                 | $t_{d(on)}$  | $V_{DD}=15V, I_D=1A$<br>$V_{GS}=10V, R_{GEN}=6\Omega$ | -   | 3.5  | -         | nS         |
| Turn-on Rise Time                  | $t_r$        |                                                       | -   | 1.5  | -         | nS         |
| Turn-Off Delay Time                | $t_{d(off)}$ |                                                       | -   | 17.5 | -         | nS         |
| Turn-Off Fall Time                 | $t_f$        |                                                       | -   | 2.5  | -         | nS         |
| Total Gate Charge                  | $Q_g$        | $V_{DS}=15V, I_D=2A, V_{GS}=10V$                      | -   | 10   | -         | nC         |
| Gate-Source Charge                 | $Q_{gs}$     |                                                       | -   | 0.95 | -         | nC         |
| Gate-Drain Charge                  | $Q_{gd}$     |                                                       | -   | 1.6  | -         | nC         |
| Drain-Source Diode Characteristics |              |                                                       |     |      |           |            |
| Diode Forward Voltage (Note 3)     | $V_{SD}$     | $V_{GS}=0V, I_S=2A$                                   | -   | -    | 1.2       | V          |
| Diode Forward Current (Note 2)     | $I_S$        |                                                       | -   | -    | 2         | A          |

## Outline Drawing - SOT23



| SOT-23    |      |      |
|-----------|------|------|
| Dimension | Min. | Max. |
| A         | 2.70 | 3.10 |
| B         | 1.10 | 1.50 |
| C         | 0.90 | 1.10 |
| D         | 0.30 | 0.50 |
| E         | 0.35 | 0.48 |
| G         | 1.80 | 2.00 |
| H         | 0.02 | 0.10 |
| J         | 0.05 | 0.15 |
| K         | 2.20 | 2.60 |

## Land Pattern - SOT23

