

## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---------------|-----------------|-------|
| 100V          | 110mΩ@10V       | 3A    |

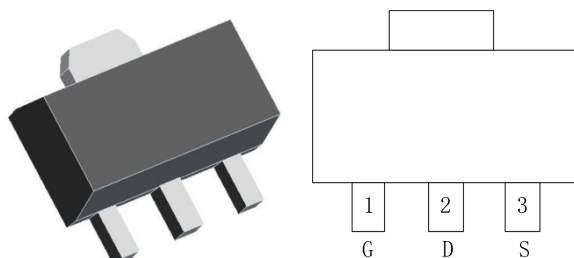
## Feature

- VDS 100V
- ID 3.0A
- $R_{DS(ON)}$ ( at VGS=10V) < 140 mohm

## Applications

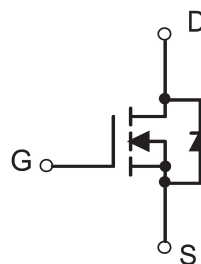
- Consumer electronic power supply
- Motor control
- Synchronous-rectification
- Isolated DC/DC convertor
- Invertors

## Package

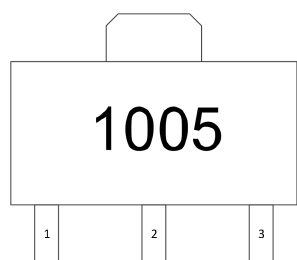


**SOT-89-3L**

## Circuit diagram



## Marking



**1005 =Device Code**

**Absolute maximum ratings (Ta=25°C unless otherwise noted)**

| Parameter                              | Symbol          | Rating     | Units |
|----------------------------------------|-----------------|------------|-------|
| Drain-Source Voltage                   | $V_{DS}$        | 100        | V     |
| Gate-Source Voltage                    | $V_{GS}$        | $\pm 20$   | V     |
| Drain Current – Continuous             | $I_D$           | 3          | A     |
| Drain Current – Pulsed <sup>1</sup>    | $I_{DM}$        | 21         | A     |
| Power Dissipation (TC=25°C)            | $P_D$           | 2.6        | W     |
| Thermal Resistance Junction to ambient | $R_{\theta JA}$ | 47.4       | °C/W  |
| Storage Temperature Range              | $T_{STG}$       | -50 to 150 | °C    |
| Operating Junction Temperature Range   | $T_J$           | -50 to 150 | °C    |

**Electrical characteristics (Ta=25°C, unless otherwise noted)**

| Parameter                               | Symbol            | Conditions                        | Min. | Typ. | Max. | Unit |
|-----------------------------------------|-------------------|-----------------------------------|------|------|------|------|
| Static Characteristics                  |                   |                                   |      |      |      |      |
| Drain-Source Breakdown Voltage          | B <sub>VDSS</sub> | VGS=0V , ID=250uA                 | 100  | 110  | ---  | V    |
| Drain-Source Leakage Current            | Idss              | VDS=100V , VGS=0V                 | ---  | ---  | 1    | uA   |
| Gate Threshold Voltage                  | VGS(th)           | VGS=VDS , ID =250uA               | 1    | 1.8  | 3    | V    |
| Gate-Source Leakage Current             | IGSS              | VGS= ± 20V , VDS=0V               | ---  | ---  | 100  | nA   |
| Static Drain-Source On-Resistance       | RDS(ON)           | VGS=10V , ID=3A                   | ---  | 110  | 140  | mΩ   |
|                                         |                   | VGS=4.5V , ID=2A                  | ---  | 160  | 300  | mΩ   |
| Dynamic Characteristics                 |                   |                                   |      |      |      |      |
| Total Gate Charge                       | Qg                | VGS=10V,VDS=50V,ID=3.0A           | ---  | 4.3  | ---  | nC   |
| Gate-Source Charge                      | Qgs               |                                   | ---  | 1.5  | ---  |      |
| Gate-Drain Charge                       | Qgd               |                                   | ---  | 1.1  | ---  |      |
| Turn-On Delay Time                      | Td(on)            | VGS=10V,VDD=50V, ID=3.0A, RGEN=2Ω | ---  | 14.7 | ---  | ns   |
| Rise Time                               | Tr                |                                   | ---  | 3.5  | ---  |      |
| Turn-Off Delay Time                     | Td(off)           |                                   | ---  | 20.9 | ---  |      |
| Fall Time                               | Tf                |                                   | ---  | 2.7  | ---  |      |
| Input Capacitance                       | Ciss              | VDS=50V,VGS=0V,f=1MHZ             | ---  | 206  | ---  | pF   |
| Output Capacitance                      | Coss              |                                   | ---  | 29   | ---  |      |
| Reverse Transfer Capacitance            | Crss              |                                   | ---  | 1.4  | ---  |      |
| Drain-Source Body Diode Characteristics |                   |                                   |      |      |      |      |
| Continuous Source Current               | Is                | VG=VD=0V , Force Current          | ---  | ---  | 5    | A    |
| Diode Forward Voltage                   | VSD               | VGS=0V , IS=3A , TJ=25℃           | ---  | ---  | 1.2  | V    |



## Typical Characteristics

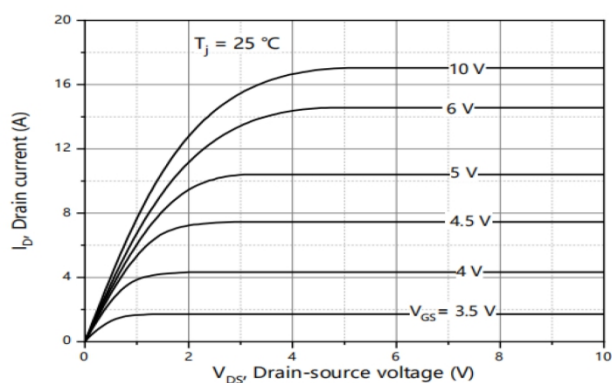


Figure1. Output Characteristics

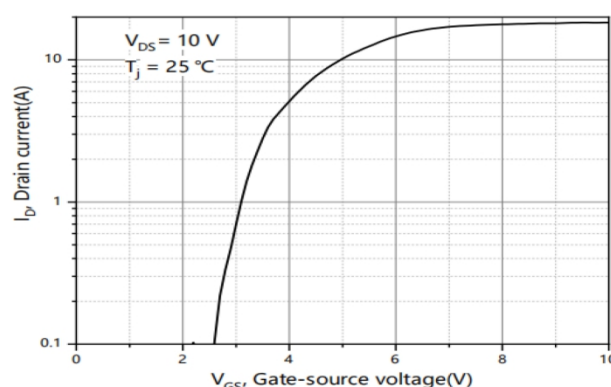


Figure2. Transfer Characteristics

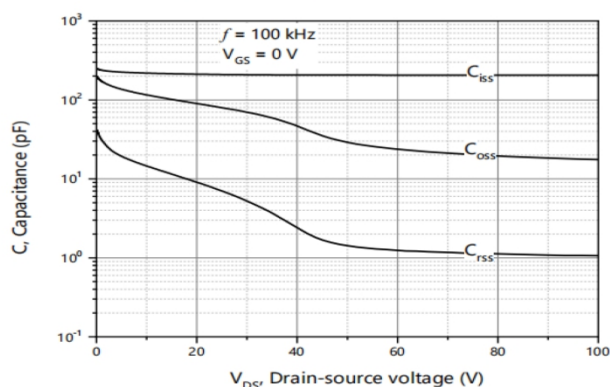


Figure3. Capacitance Characteristics

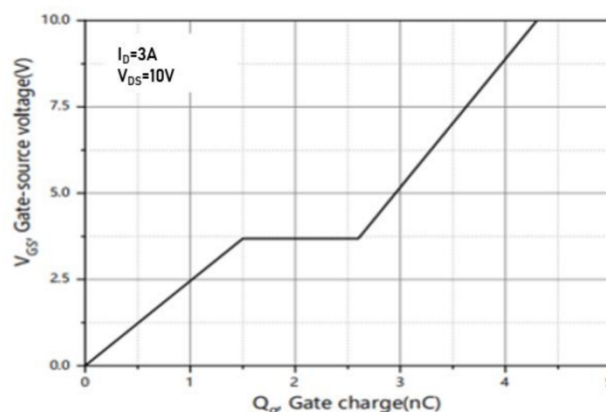


Figure4. Gate Charge

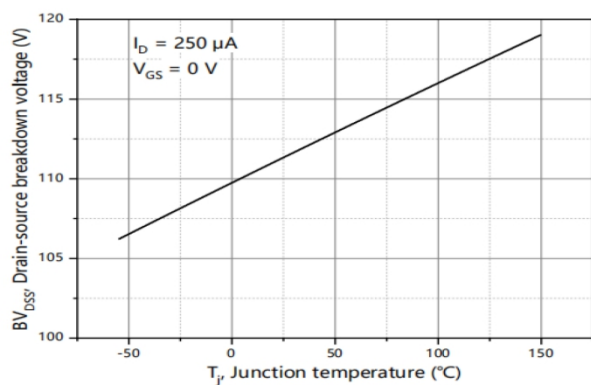


Figure5. Drain-Source breakdown voltage

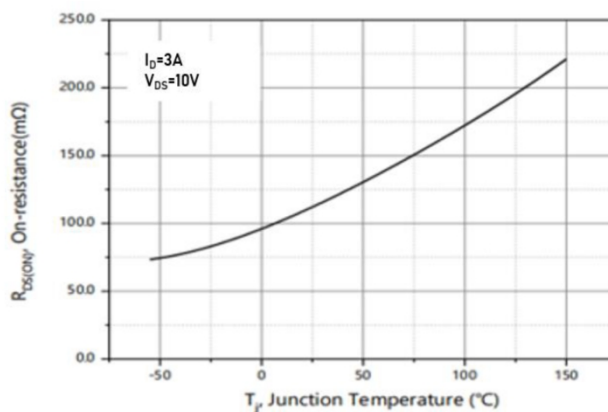


Figure6. Drain-Source on Resistance

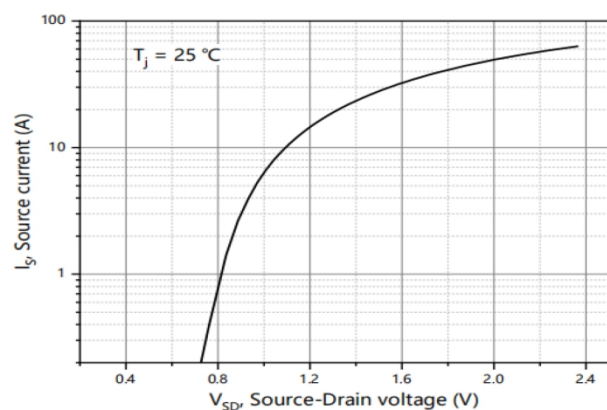


Figure7. Forward characteristic of body diode

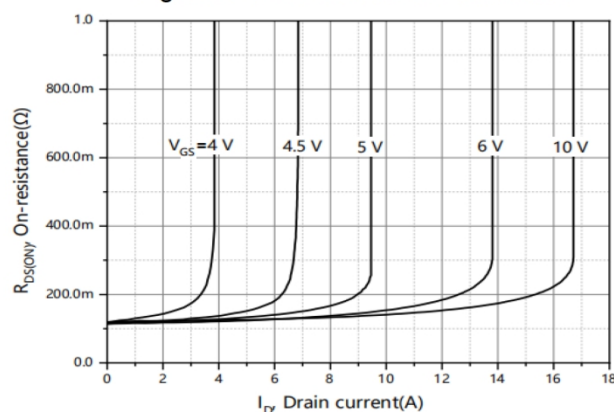


Figure8. Drain-source on-state resistance

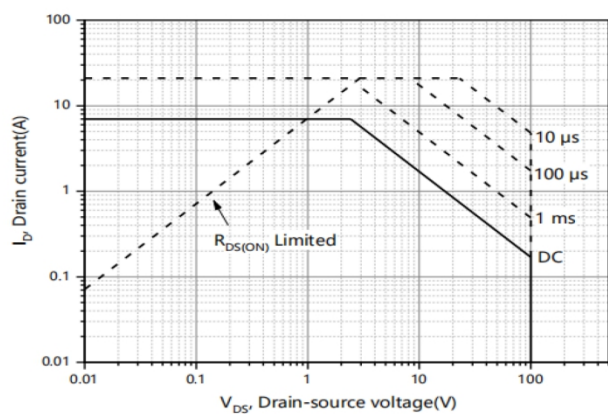


Figure9. Safe Operation Area  $T_A=25\text{ }^{\circ}\text{C}$

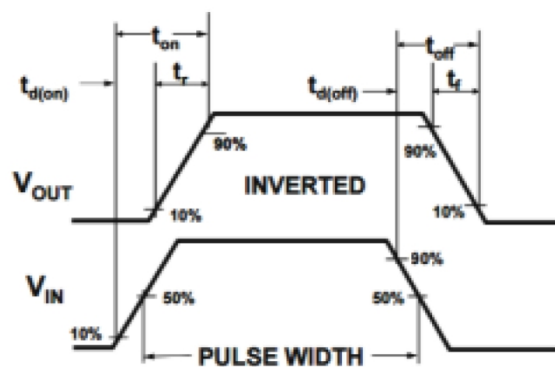
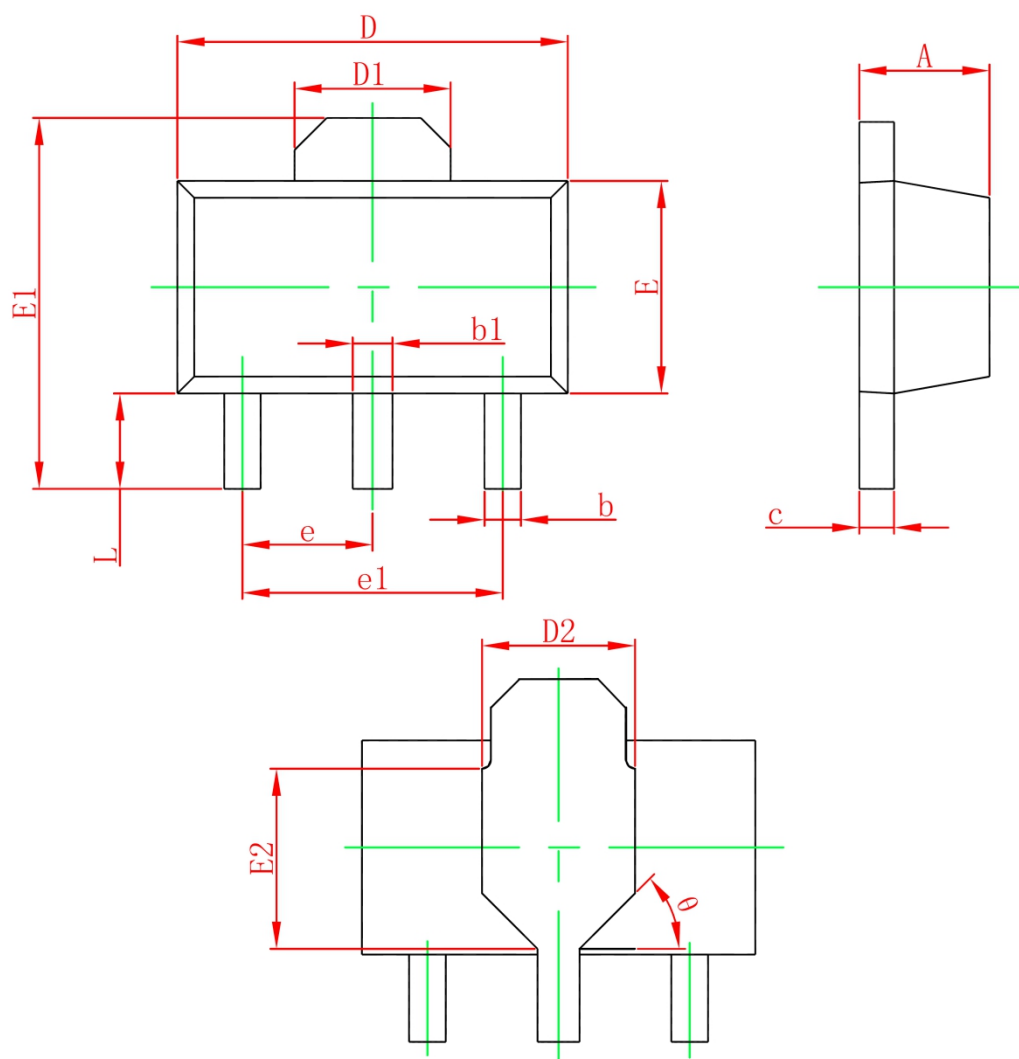


Figure10. Switching wave



SOT-89-3L Package Outline



| Symbol | Dimensions In Millimeters |       |
|--------|---------------------------|-------|
|        | Min.                      | Max.  |
| A      | 1.400                     | 1.600 |
| b      | 0.320                     | 0.520 |
| b1     | 0.400                     | 0.580 |
| c      | 0.350                     | 0.440 |
| D      | 4.400                     | 4.600 |
| D1     | 1.550 REF.                |       |
| D2     | 1.750 REF.                |       |
| E      | 2.300                     | 2.600 |
| E1     | 3.940                     | 4.250 |
| E2     | 1.900 REF.                |       |
| e      | 1.500 TYP.                |       |
| e1     | 3.000 TYP.                |       |
| L      | 0.900                     | 1.200 |
| θ      | 45°                       |       |