## SOT-89-3L Plastic-Encapsulate MOSFETS

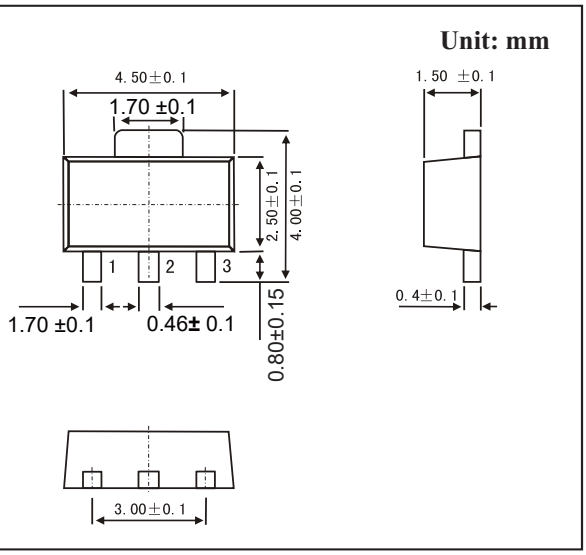
# FEATURE

●N-Channel 20-V(D-S) MOSFET

# MECHANICAL DATA

●Case style:SOT-89-3L molded plastic

●Mounting position:any




### MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 20 | V |
| Continuous Gate-Source Voltage | $V_{GS}$ | ±12 | |
| Continuous Drain Current | $I_D$ | 4 | A |
| Power Dissipation | $P_D$ | 0.5 | W |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 250 | ℃/W |
| Operating Temperature | $T_j$ | 150 | ℃ |
| Storage Temperature | $T_{stg}$ | -55 ~+150 | |

| $V_{(BR)DSS}$ | $R_{DS(on)}$MAX | $I_D$ |
|---|---|---|
| 20 V | 38mΩ@10V | 4A |
| | 50mΩ@4.5V | |
| | 80mΩ@2.5V | |

## MOSFET ELECTRICAL CHARACTERISTICS $T_A$=25℃ unless otherwise specified

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Off characteristics** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =250μA | 20 | | | V |
| Gate-body leakage | $I_{GSS}$ | $V_{DS}$ =0V, $V_{GS}$ =±12V | | | ±100 | nA |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$=20V, $V_{GS}$ =0V | | | 1.0 | μA |
| **On characteristics** | | | | | | |
| Gate-threshold voltage | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =0.25mA | 0.70 | | 1.50 | V |
| Static drain-source on-resistance (note 1) | $R_{DS(on)}$ | $V_{GS}$ =10V, $I_D$ =4A | | | 0.038 | Ω |
| | | $V_{GS}$ =4.5V, $I_D$ =4A | | | 0.05 | |
| | | $V_{GS}$ =2.5V, $I_D$ =3A | | | 0.08 | |
| Forward transconductance (note 1) | $g_{fs}$ | $V_{DS}$ =5V, $I_D$ =3A | 3 | | | S |
| **Dynamic characteristics (note 2)** | | | | | | |
| Input capacitance | $C_{iss}$ | $V_{DS}$ =20V,$V_{GS}$ =0V, f=1MHz | | | 570 | pF |
| Output capacitance | $C_{oss}$ | | | 80 | | |
| Reverse transfer capacitance | $C_{rss}$ | | | 65 | | |
| **Switching characteristics** | | | | | | |
| Turn-on delay time (note 1,2) | $t_{d(on)}$ | $V_{GS}$=5V, $V_{DS}$=10V, $I_D$ =1A,$R_{GEN}$=3.3Ω, $R_D$=10Ω | | 8 | | ns |
| Rise time (note 2) | $t_r$ | | | 9 | | |
| Turn-off delay time (note 2) | $t_{d(off)}$ | | | 13 | | |
| Fall time (note 2) | $t_f$ | | | 3 | | |
| **Drain-source body diode characteristics** | | | | | | |
| Body diode forward voltage (note 1) | $V_{SD}$ | $I_S$=1A, $V_{GS}$ = 0V | | | 1.3 | V |

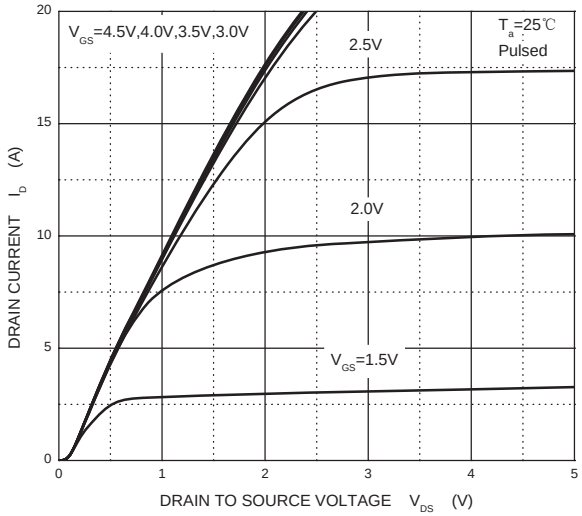
**No tes:**

1. Pulse Test ; Pulse Width ≤300μs, Duty Cycle ≤2%.
2. These parameters have no way to verify.

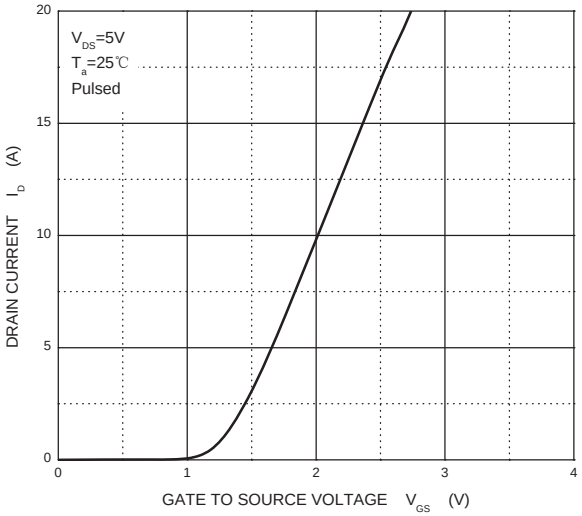
# RATINGS AND CHARACTERISTIC CURVES

■ Typical Characterisitics

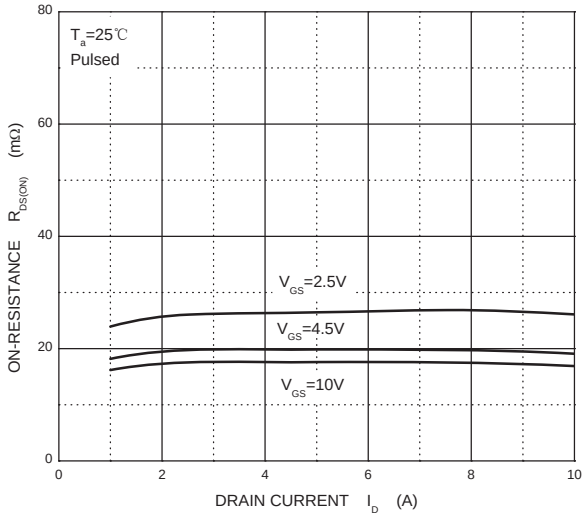
**Output Characteristics**



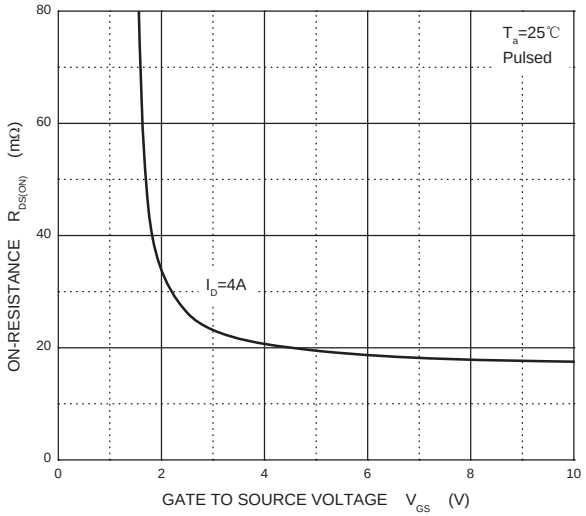

**Transfer Characteristics**



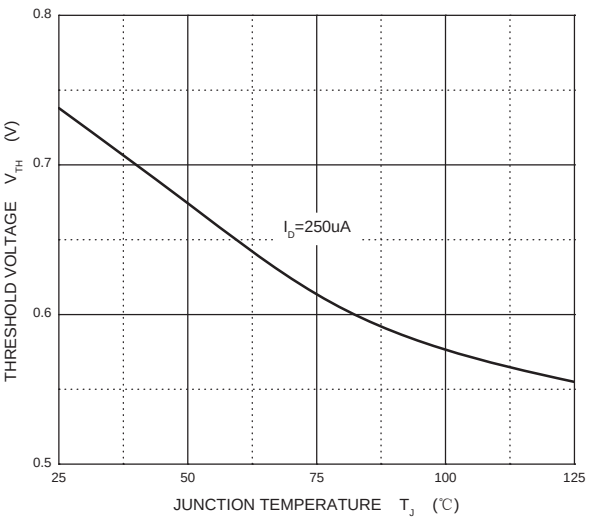

**$R_{DS(ON)}$ —— $I_D$**




**$R_{DS(ON)}$ —— $V_{GS}$**




**Threshold Voltage**




**$I_S$ —— $V_{SD}$**