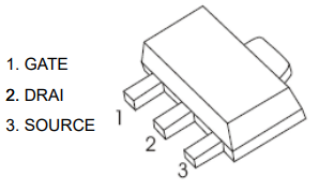
# GPA9452A

## 20V N-Channel MOSFET

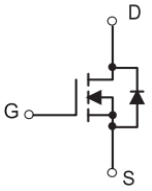
### Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---|---|---|
| 20V | 18mΩ@10V | 4A |
| | 20mΩ@4.5V | |
| | 25mΩ@2.5V | |

**SOT-89-3L**




**Schematic diagram**



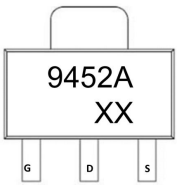

### Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance

### Application

- Power Switching Application

### MARKING:




9452A = Device Code

XX = Date Code

### ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25℃ unless otherwise noted)

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain - Source Voltage | | $V_{DS}$ | 20 | V |
| Gate - Source Voltage | | $V_{GS}$ | ±12 | V |
| Continuous Drain Current[1,5] | $T_A$ = 25℃ | $I_D$ | 4 | A |
| Pulsed Drain Current[2] | | $I_{DM}$ | 16 | A |
| Power Dissipation[4,5] | $T_A$ = 25℃ | $P_D$ | 0.48 | W |
| Thermal Resistance from Junction to Ambient[5] | | $R_{\theta JA}$ | 260 | ℃/W |
| Junction Temperature | | $T_J$ | 150 | ℃ |
| Storage Temperature | | $T_{STG}$ | -55~ +150 | ℃ |

## MOSFET ELECTRICAL CHARACTERISTICS ($T_J$ = 25℃ unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Type | Max | Unit |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| Drain - Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = 250μA | 20 | | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 16V, $V_{GS}$ = 0V | | | 1 | μA |
| Gate - Body Leakage Current | $I_{GSS}$ | $V_{GS}$ = ±12V, $V_{DS}$ = 0V | | | ±100 | nA |
| **On Characteristics[3]** | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA | 0.4 | 0.7 | 1 | V |
| Drain-source On-resistance | $R_{DS(on)}$ | $V_{GS}$ = 10V, $I_D$ = 4A | | 18 | 38 | mΩ |
| | | $V_{GS}$ = 4.5V, $I_D$ = 4A | | 20 | 50 | |
| | | $V_{GS}$ = 2.5V, $I_D$ = 3A | | 25 | 80 | |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$ = 4.5V, $I_D$ = 4A | 3 | | | S |
| **Dynamic Characteristics** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$ = 10V, $V_{GS}$ = 0V, f = 1MHz | | 336 | | pF |
| Output Capacitance | $C_{oss}$ | | | 78 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 70 | | |
| Gate Resistance | $R_g$ | $V_{DS}$ = 0V, $V_{GS}$ = 0V, f = 1MHz | | 1.6 | | Ω |
| **Switching Characteristics** | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$ = 10V, $V_{GS}$ = 4.5V, $I_D$ = 4A | | 6 | | nC |
| Gate-source Charge | $Q_{gs}$ | | | 1 | | |
| Gate-drain Charge | $Q_{gd}$ | | | 1.7 | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}$ = 10V, $V_{GS}$ = 4.5V, $R_L$ = 2.5Ω, $R_G$ = 3Ω | | 4 | | ns |
| Turn-on Rise Time | $t_r$ | | | 15 | | |
| Turn-off Delay Ttime | $t_{d(off)}$ | | | 20 | | |
| Turn-off Fall Time | $t_f$ | | | 25 | | |
| **Source - Drain Diode Characteristics** | | | | | | |
| Diode Forward Voltage[3] | $V_{SD}$ | $V_{GS}$ = 0V, $I_S$ = 4A | | | 1.2 | V |

Notes :

1.The maximum current rating is limited by package.

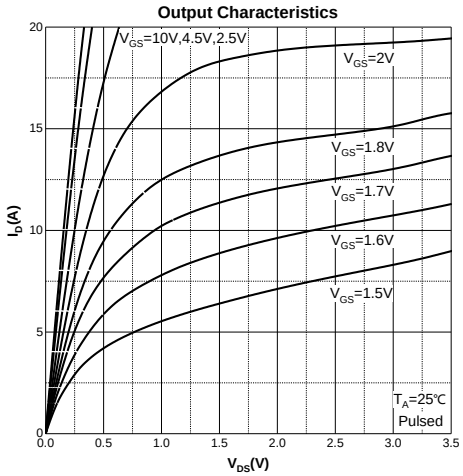
2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.

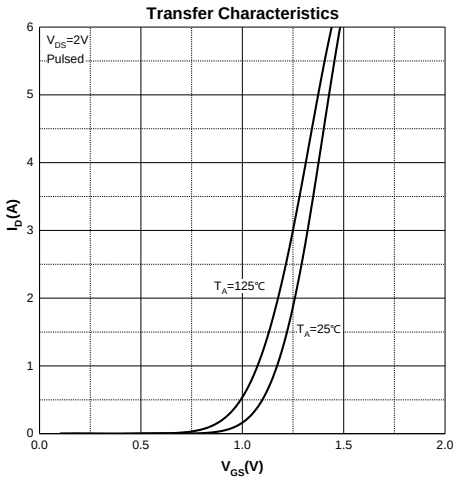
3.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

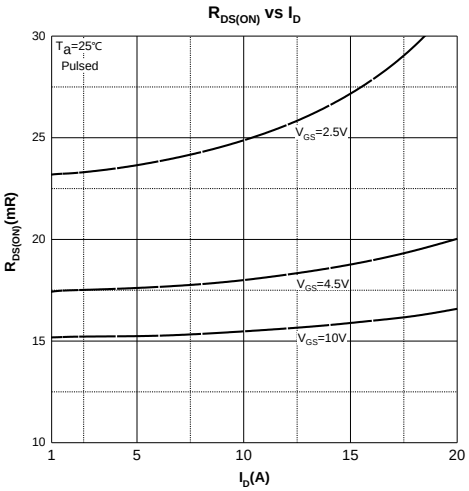
4.The power dissipation $P_D$ is limited by $T_{J(MAX)}$ = 150°C.

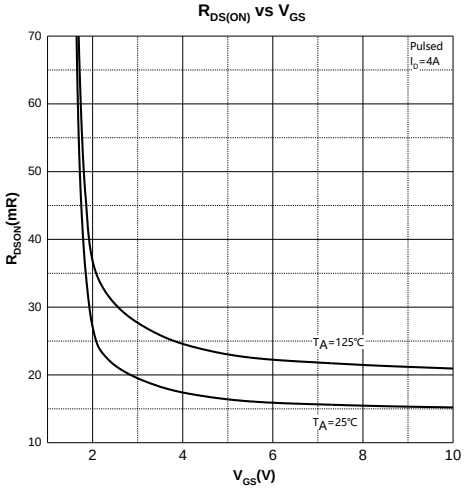
5.Device mounted on 1in$^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A$ =25°C.

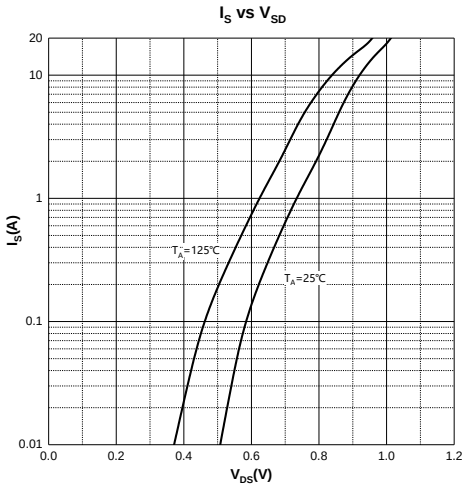
## Typical Characteristics

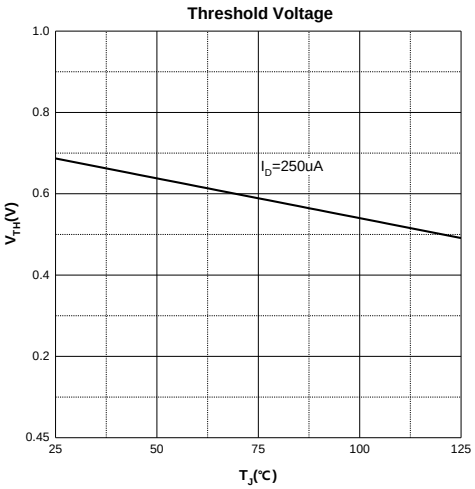


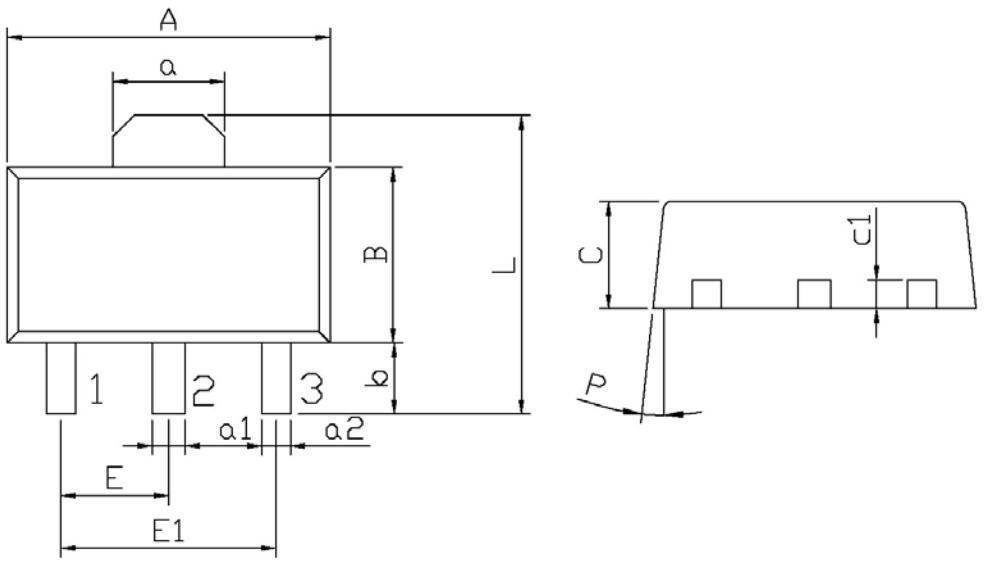



## SOT-89-3L Package Information

SOT-89

单位：mm




| Symbol | Dimensions In Millmeters | | Symbol | Dimensions In Millmeters | |
|---|---|---|---|---|---|
| | Min | Max | | Min | Max |
| A | 4.4 | 4.7 | a1 | 0.36 | 0.56 |
| B | 2.35 | 2.65 | a2 | 0.30 | 0.50 |
| L | 3.878 | 4.478 | C | 1.40 | 1.70 |
| a | 1.45 | 1.65 | c1 | 0.35 | 0.50 |
| E | 1.40 | 1.60 | P | 6° | |
| E1 | 2.80 | 3.20 | | | |
| b | 0.80 | 1.20 | | | |

单击下面可查看定价，库存，交付和生命周期等信息

>>GP(格瑞宝)