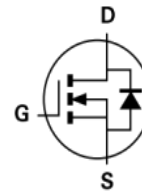


### MAIN CHARACTERISTICS

|                                       |        |
|---------------------------------------|--------|
| $I_D$                                 | 50A    |
| $V_{DSS}$                             | 150V   |
| $R_{DS(on)-typ}$<br>(@ $V_{GS}=10V$ ) | 15.6mΩ |

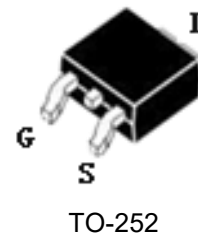


### FEATURES

- Ultra-Low  $R_{DS(ON)}$
- Low Gate Charge
- High Current Capability

### APPLICATIONS

- Power Management in Telecom., Industrial Automation
- Motor Driving in Power Tool, E-vehicle, Robotics
- Current Switching in DC/DC&AC/DC(SR) Sub-systems



### MECHANICAL DATA

- Case: Molded plastic
- Mounting Position: Any

### Product specification classification

| Part Number | Package | Mode Name | Pack |
|-------------|---------|-----------|------|
| LG50N15AD   | TO-252  | LG50N15AD | Tape |

### Maximum Ratings at $T_c=25^{\circ}\text{C}$ unless otherwise specified

| Characteristics                         | Symbol          | Value       | Unit                 |
|-----------------------------------------|-----------------|-------------|----------------------|
| Drain-Source Voltage                    | $V_{DS}$        | 150         | V                    |
| Gate-Source Voltage                     | $V_{GS}$        | $\pm 20$    | V                    |
| Continue Drain Current                  | $I_D$           | 50          | A                    |
| Pulsed Drain Current (Note1)            | $I_{DM}$        | 200         | A                    |
| Power Dissipation                       | $P_D$           | 96          | W                    |
| Single Pulse Avalanche Energy (Note1)   | $E_{AS}$        | 135         | mJ                   |
| Operating Temperature Range             | $T_J$           | 150         | $^{\circ}\text{C}$   |
| Storage Temperature Range               | $T_{STG}$       | -55 to +150 | $^{\circ}\text{C}$   |
| Thermal Resistance, Junction to Case    | $R_{\theta JC}$ | 1           | $^{\circ}\text{C/W}$ |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 50          | $^{\circ}\text{C/W}$ |

Note1:Pulse test: 300  $\mu\text{s}$  pulse width, 2 % duty cycle

### Electrical Characteristics at $T_c=25^{\circ}\text{C}$ unless otherwise specified

| Characteristics                  | Test Condition                                                                | Symbol       | Min | Typ  | Max       | Unit          |
|----------------------------------|-------------------------------------------------------------------------------|--------------|-----|------|-----------|---------------|
| Drain-Source Breakdown Voltage   | $V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$                           | $BV_{DSS}$   | 150 | -    | -         | V             |
| Drain-Source Leakage Current     | $V_{DS} = 150\text{ V}, V_{GS} = 0\text{ V}$                                  | $I_{DSS}$    | -   | -    | 1         | $\mu\text{A}$ |
| Gate Leakage Current             | $V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$                               | $I_{GSS}$    | -   | -    | $\pm 100$ | nA            |
| Gate-Source Threshold Voltage    | $V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$                               | $V_{GS(th)}$ | 2.2 | -    | 4.2       | V             |
| Drain-Source On-State Resistance | $V_{GS} = 10\text{ V}, I_D = 20\text{ A}$                                     | $R_{DS(on)}$ | -   | 15.6 | 18.8      | m $\Omega$    |
| Input Capacitance                | $V_{GS} = 0\text{ V}, V_{DS} = 75\text{ V}, f = 1\text{ MHz}$                 | $C_{iss}$    | -   | 2500 | -         | pF            |
| Output Capacitance               |                                                                               | $C_{oss}$    | -   | 210  | -         | pF            |
| Reverse Transfer Capacitance     |                                                                               | $C_{rss}$    | -   | 20   | -         | pF            |
| Turn-on Delay Time(Note2)        | $V_{GS}=10\text{ V}, V_{DD}=75\text{ V}, RG=6\text{ }\Omega, I_D=20\text{ A}$ | $t_{d(ON)}$  | -   | 7.1  | -         | ns            |
| Rise Time(Note2)                 |                                                                               | $t_r$        | -   | 8.4  | -         | ns            |
| Turn-Off Delay Time(Note2)       |                                                                               | $t_{d(OFF)}$ | -   | 17   | -         | ns            |
| Fall Time(Note2)                 |                                                                               | $t_f$        | -   | 11   | -         | ns            |
| Total Gate Charge(Note2)         | $I_D = 20\text{ A}, V_{DD} = 75\text{ V}, V_{GS} = 10\text{ V}$               | $Q_G$        | -   | 23   | -         | nC            |
| Gate to Source Charge(Note2)     |                                                                               | $Q_{GS}$     | -   | 7.7  | -         | nC            |
| Gate to Drain Charge(Note2)      |                                                                               | $Q_{GD}$     | -   | 4.7  | -         | nC            |

### Source-Drain Diode Characteristics at $T_a=25^{\circ}\text{C}$ unless otherwise specified

| Characteristics                          | Test Condition                                                                    | Symbol   | Min. | Typ. | Max. | Unit |
|------------------------------------------|-----------------------------------------------------------------------------------|----------|------|------|------|------|
| Maximun Body-Diode Continuous Current    |                                                                                   | $I_S$    | -    | -    | 50   | A    |
| Maximun Body-Diode Pulsed Current(Note2) |                                                                                   | $I_{SM}$ | -    | -    | 200  | A    |
| Drain-Source Diode Forward Voltage       | $I_{SD} = 20\text{ A}$                                                            | $V_{SD}$ | -    | -    | 1.2  | V    |
| Reverse Recovery Time(Note2)             | $I_{SD} = 20\text{ A}, V_{GS} = 0\text{ V}, dI_F / dt = 100\text{ A}/\mu\text{s}$ | $t_{rr}$ | -    | 86   | -    | ns   |
| Reverse Recovery Charge(Note2)           |                                                                                   | $Q_{rr}$ | -    | 137  | -    | nC   |

Note2:Pulse test: 300  $\mu\text{s}$  pulse width, 2 % duty cycle

### RATINGS AND CHARACTERISTIC CURVES

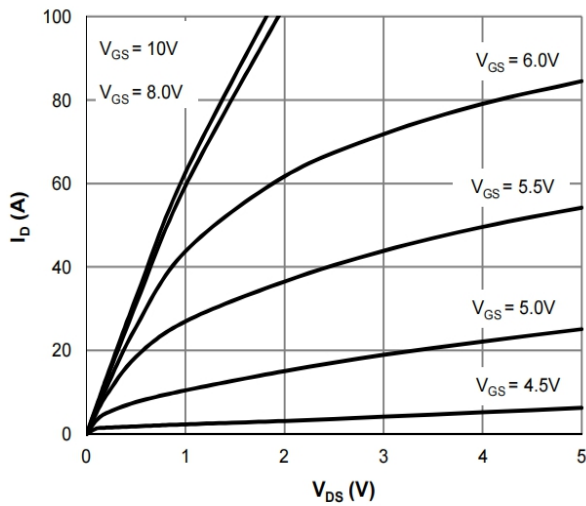


Figure 1: Saturation Characteristics

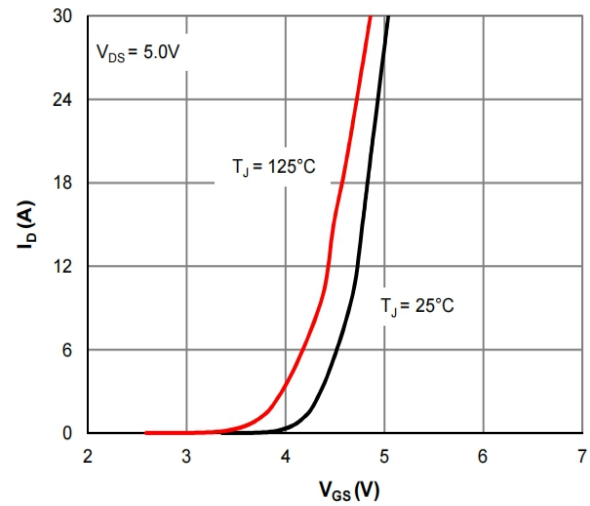


Figure 2: Transfer Characteristics

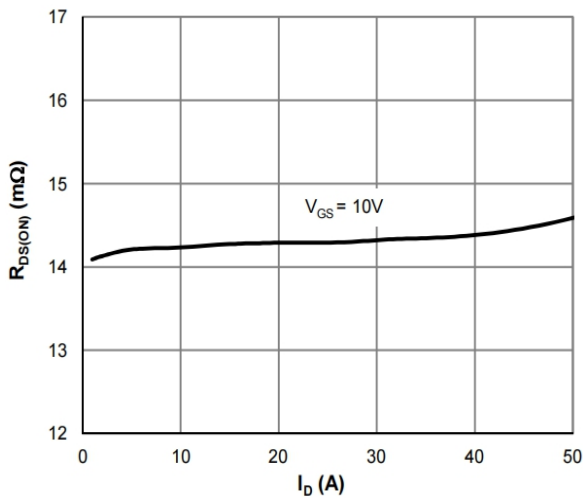


Figure 3:  $R_{DS(ON)}$  vs. Drain Current

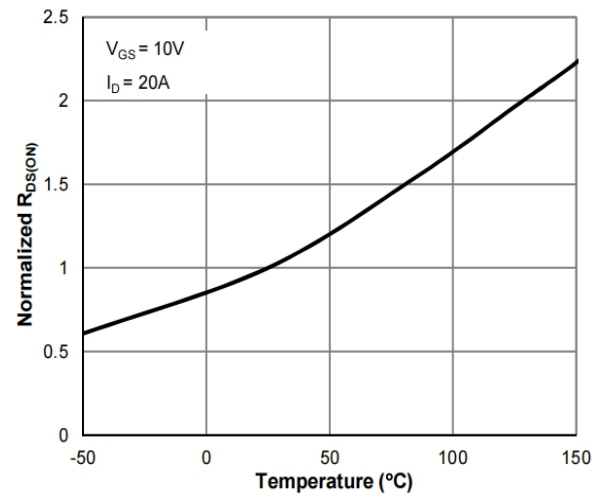


Figure 4:  $R_{DS(ON)}$  vs. Junction Temperature

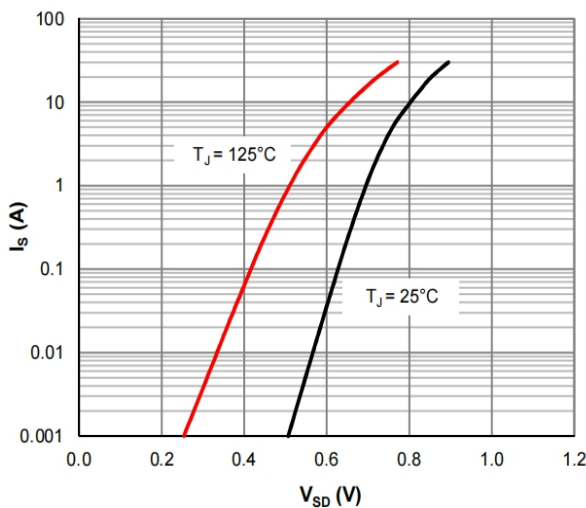


Figure 5: Body-Diode Characteristics

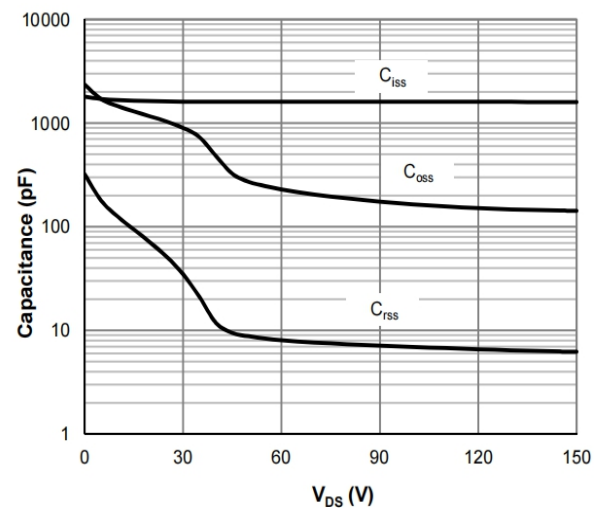


Figure 6: Capacitance Characteristics

### RATINGS AND CHARACTERISTIC CURVES

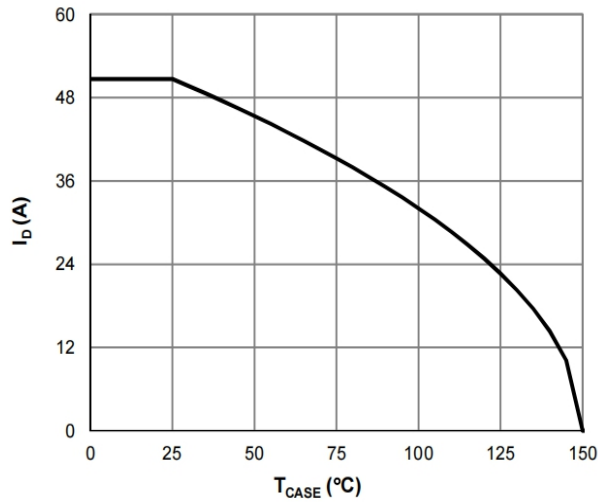


Figure 7: Current De-rating

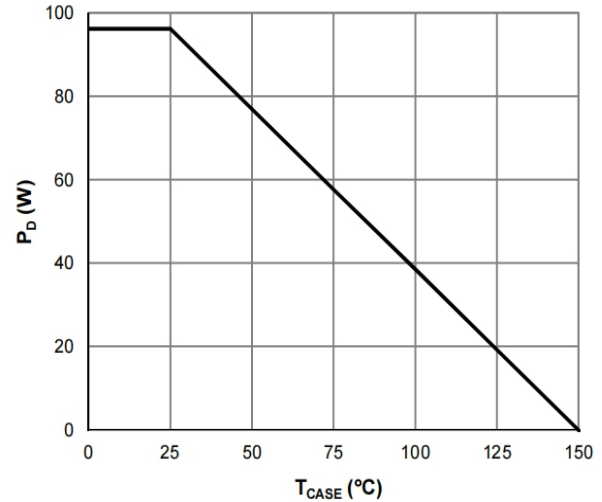


Figure 8: Power De-rating

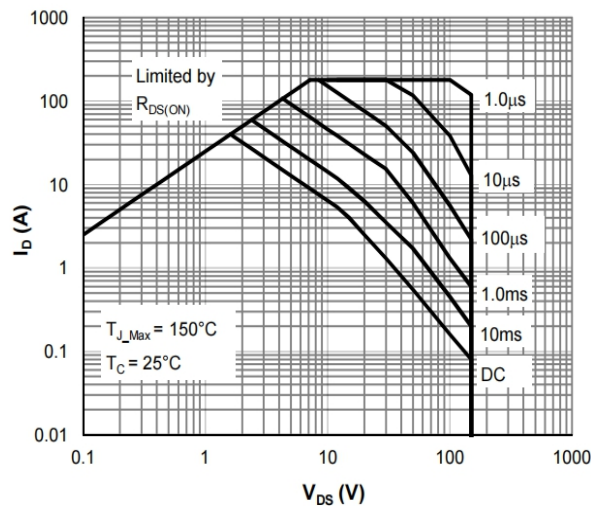


Figure 9: Maximum Safe Operating Area

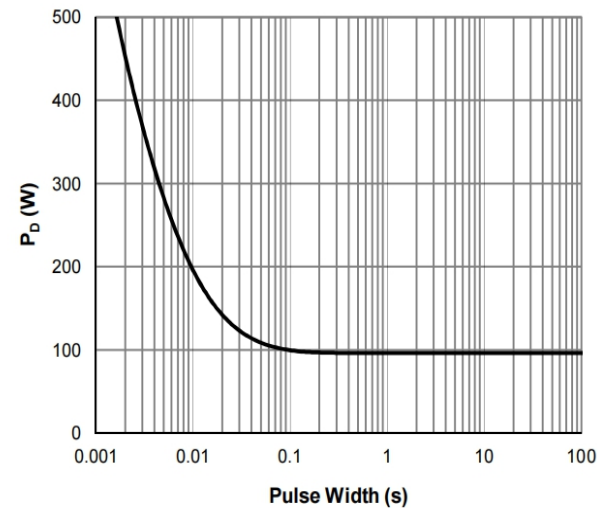


Figure 10: Single Pulse Power Rating, Junction-to-Case

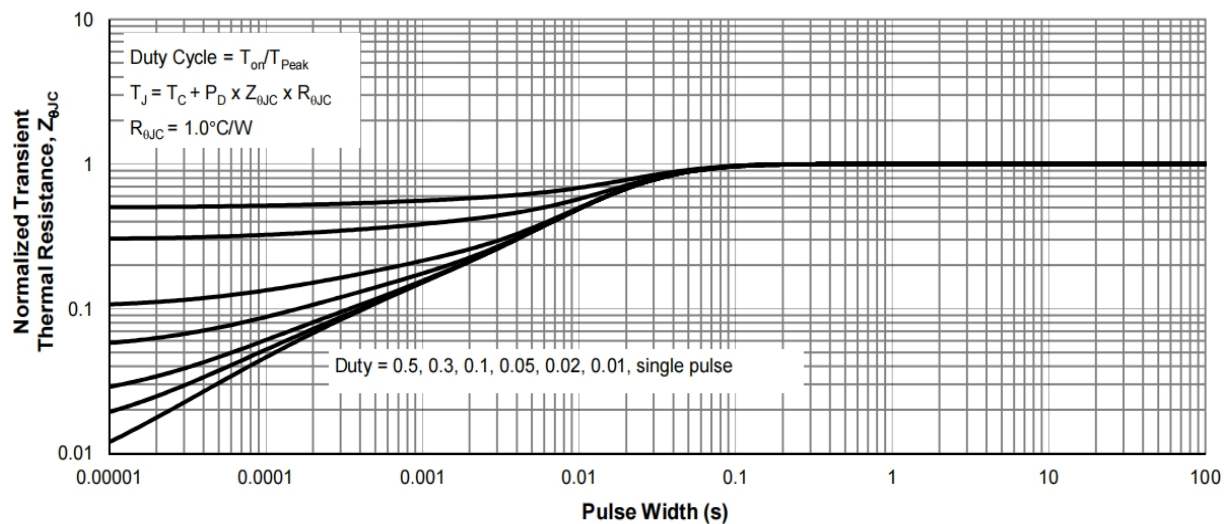
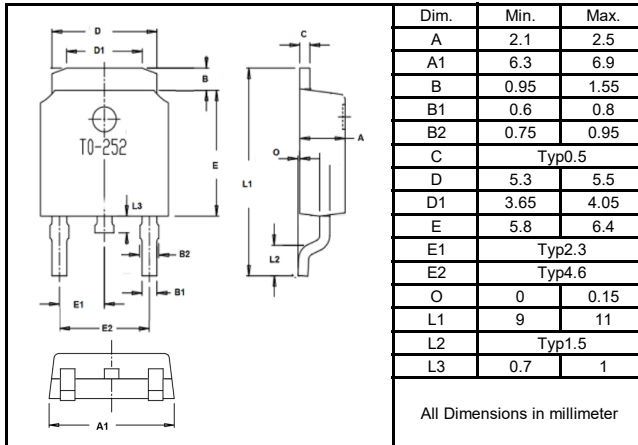


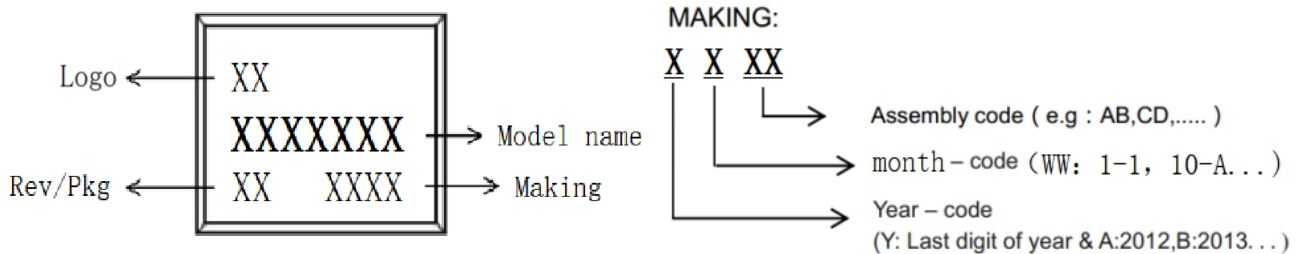
Figure 11: Normalized Maximum Transient Thermal Impedance

### Package Outline Dimensions millimeters

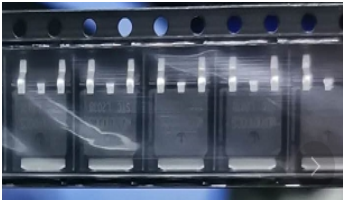
TO-252



### Marking on the body



### packing instruction

| PKG    | 最小包装                                                                                | 内盒                                                                                  | 外箱                                                                                    |
|--------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| TO-252 |  |  |  |
|        | 2500pcs/盘                                                                           | 5000pcs/盒                                                                           | 25000pcs/箱                                                                            |

### Notice

All product, product specifications and data are subject to change without notice to improve. The right to explain is owned by LINGXUN electronics company.

Confirm that operation temperature is within the specified range described in the product specification. Avoid applying power exceeding normal rated power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.

LINGXUN electronics shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.