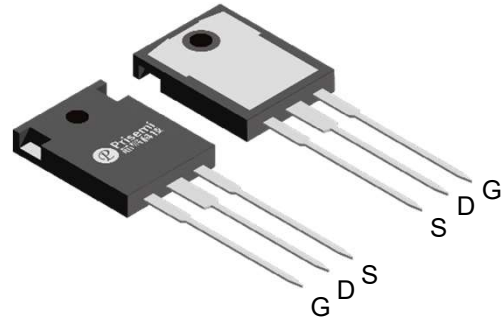


Description

| MOSFET Product Summary | | |
|------------------------|-----------------------|----------|
| $V_{DS}(V)$ | $R_{DS(on)}(m\Omega)$ | $I_D(A)$ |
| 1700 | 45 | 72 |

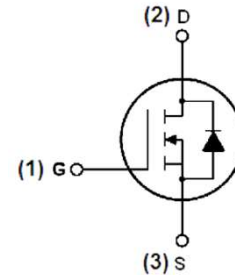

TO-247-3L (Top View)

Feature

- High Speed Switching with Low Capacitances
- High Blocking Voltage with Low RDS(on)
- Avalanche Ruggednes

Applications

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC-DC Converters
- Battery Chargers


Schematic diagram

Absolute maximum rating@25°C

| Parameter | Symbol | Rating | Unit |
|---|----------------|-------------------|------|
| Drain-Source Voltage | V_{DS} | 1700 | V |
| Gate-Source Voltage | V_{GS} | -10/+25 | V |
| Continuous Drain Current | I_D | $T_C=25^\circ C$ | 72 |
| | | $T_C=100^\circ C$ | 50 |
| Pulsed drain current ($T_C = 25^\circ C$, t_p limited by T_{jmax}) | $I_{D\ pulse}$ | 160 | A |
| Power dissipation ($T_C = 25^\circ C$) | P_{tot} | 338 | W |
| Operating Junction Temperature | T_J | -55 to +150 | °C |
| Storage Temperature | T_{STG} | -55 to +150 | °C |

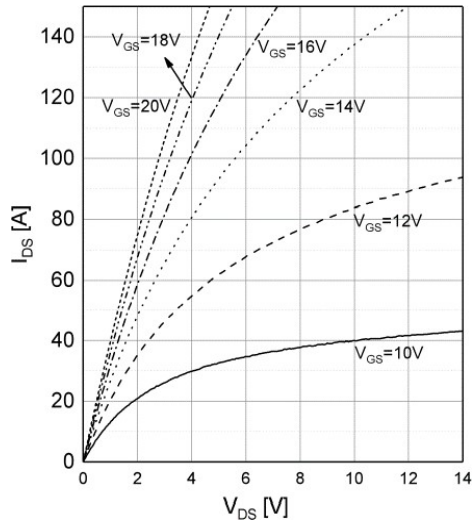
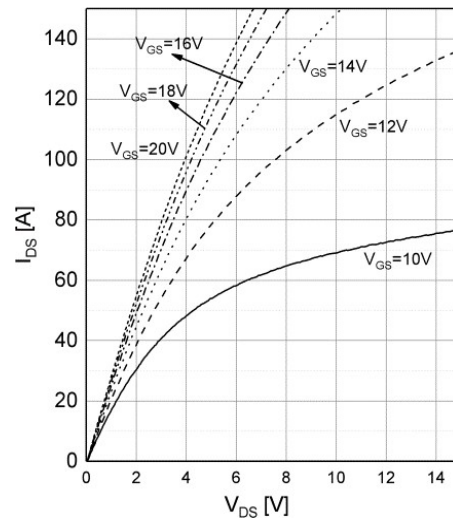
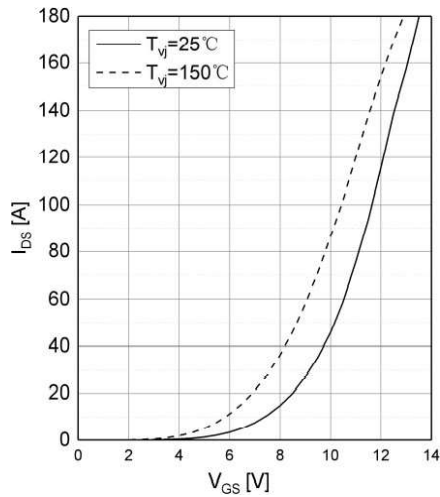
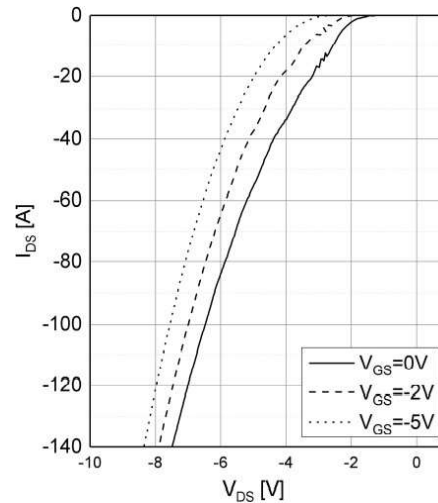
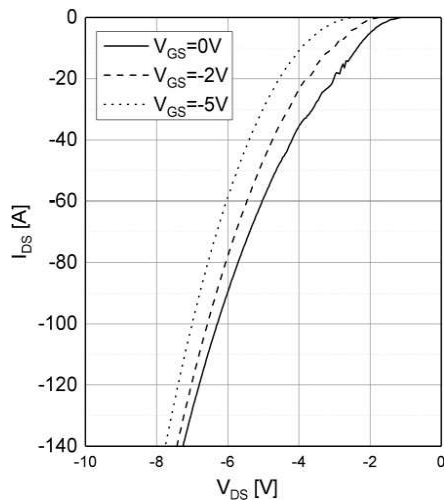
Thermal Resistance

| Parameter | Symbol | Rating | Unit |
|---|------------|--------|------|
| Thermal Resistance, Junction-to-Case | R_{thJC} | 0.37 | °C/W |
| Thermal Resistance, Junction-to-Ambient | R_{thJA} | 40 | °C/W |

Electrical characteristics per line@25°C (unless otherwise specified)

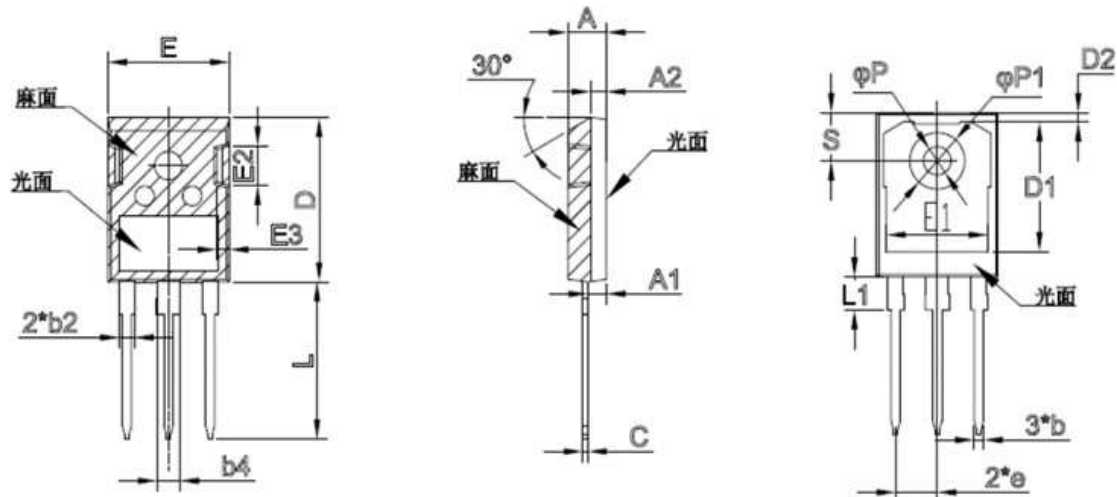
| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Units |
|---|--------------|---|------|------|------|------------|
| Statistic Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS} = 0V, I_D = 100\mu A$ | 1700 | - | - | V |
| Zero Gate Voltage Drain Current @ $V_{DS} = 1700V, V_{GS} = 0V$ | I_{DSS} | $T_C = 25^\circ C$ | - | 1 | 100 | μA |
| | | $T_C = 175^\circ C$ | - | 10 | - | |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS} = 20V, V_{DS} = 0V$ | - | 10 | 600 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 18mA$ | 2.0 | 2.6 | 4.0 | V |
| Drain-Source On-State Resistance @ $V_{GS} = 20V, I_D = 50A$ | $R_{DS(ON)}$ | $T_J = 25^\circ C$ | - | 27 | 45 | m Ω |
| | | $T_J = 150^\circ C$ | - | 45 | - | |
| Dynamic Characteristics | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS} = 1000V, f = 1MHz, V_{GS} = 0V$ | - | 5070 | - | pF |
| Output Capacitance | C_{oss} | | - | 240 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 50 | - | |
| Transconductance | g_{fs} | $V_{DS} = 20V, I_D = 20A$ | - | 26.8 | - | S |
| Turn-On Energy (Body Diode) | E_{on} | $V_{GS} = -1.5/20V, I_D = 50A, V_{DS} = 1200V, R_g = 15\Omega$ | - | 5.33 | - | mJ |
| Turn-Off Energy (Body Diode) | E_{off} | | - | 4.07 | - | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{GS} = -1.5/20V, I_D = 50A, V_{DS} = 1200V, R_g = 15\Omega, L = 250\mu H$ Timing relative to V_{DS} | - | 18 | - | ns |
| Turn-on Rise Time | t_r | | - | 64 | - | |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 210 | - | |
| Turn-Off Fall Time | t_f | | - | 84 | - | |
| Total Gate Charge | Q_g | $V_{GS} = -5/+20V, V_{DS} = 1200V, I_D = 50A$ | - | 185 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 45 | - | |
| Gate-Drain Charge | Q_{gd} | | - | 55 | - | |
| Gate Resistance | R_G | $V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$ | - | 3.5 | - | Ω |
| Reverse Diode Characteristics | | | | | | |
| Body Diode Forward Voltage | V_{SD} | $V_{GS} = -5V, I_{SD} = 25A, T_J = 25^\circ C$ | - | 5.4 | - | V |
| | | $V_{GS} = -5V, I_{SD} = 25A, T_J = 150^\circ C$ | - | 4.8 | - | |
| Body Diode Reverse Recovery Time | t_{rr} | $V_{DS} = 1200V, V_{GS} = -5V, I_{SD} = 50A, di/dt = 1053A/\mu s$ | - | 96 | - | ns |
| Body Diode Reverse Recovery Charge | Q_{rr} | | - | 915 | - | nC |

Typical Characteristics

Fig 1. Output Characteristic ($T_J=25^\circ\text{C}$)Fig 2. Output Characteristic ($T_J=150^\circ\text{C}$)Fig 3: Transfer Characteristic ($V_{DS}=20\text{V}$)Fig 6: Body-diode Characteristic ($T_J=25^\circ\text{C}$)Fig 7: Body-diode Characteristic ($T_J=150^\circ\text{C}$)


Product dimension (TO-247-3L)

Unit:mm



| TO247-3L | | | | | | | |
|----------|-------|-------|-------|----|-------|-------|-------|
| | Min | Nom | Max | | Min | Nom | Max |
| A | 4.70 | 5.00 | 5.20 | E1 | 13.06 | 13.26 | 13.56 |
| A1 | 2.30 | | 2.50 | E2 | 4.90 | 5.00 | 5.10 |
| A2 | 1.90 | 2.00 | 2.10 | E3 | 1.50 | 1.60 | 1.70 |
| b | 1.10 | 1.20 | 1.30 | e | 5.34 | 5.44 | 5.54 |
| b2 | | 2.00 | | L | 19.80 | 20.00 | 20.32 |
| b4 | | 3.00 | | L1 | | 4.17 | 4.50 |
| C | 0.5 | 0.6 | 0.7 | P | 3.50 | 3.60 | 3.70 |
| D | 20.8 | 20.95 | 21.1 | P1 | 7.00 | 7.19 | 7.40 |
| D1 | | 16.55 | | S | 6.04 | 6.15 | 6.3 |
| D2 | 0.95 | 1.17 | 1.35 | | | | |
| E | 15.48 | 15.88 | 16.28 | | | | |
| | | | | | | | |


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