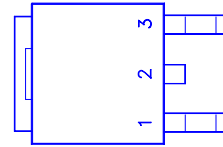
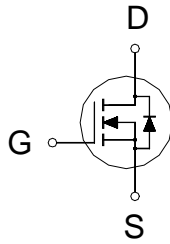


PRODUCT SUMMARY

| | | |
|---------------|--------------|-------|
| $V_{(BR)DSS}$ | $R_{DS(ON)}$ | I_D |
| 25 | 20mΩ | 45A |



1. GATE
2. DRAIN
3. SOURCE

ABSOLUTE MAXIMUM RATINGS (T_C = 25 °C Unless Otherwise Noted)

| PARAMETERS/TEST CONDITIONS | | SYMBOL | LIMITS | UNITS |
|--|-------------------------|-----------------------------------|------------|-------|
| Gate-Source Voltage | | V_{GS} | ±20 | V |
| Continuous Drain Current | T _C = 25 °C | I_D | 45 | A |
| | T _C = 100 °C | | 28 | |
| Pulsed Drain Current ¹ | | I_{DM} | 140 | |
| Avalanche Current | | I_{AR} | 20 | |
| Avalanche Energy | L = 0.1mH | E_{AS} | 140 | mJ |
| Repetitive Avalanche Energy ² | L = 0.05mH | E_{AR} | 5.6 | |
| Power Dissipation | T _C = 25 °C | P_D | 55 | W |
| | T _C = 100 °C | | 33 | |
| Operating Junction & Storage Temperature Range | | T _j , T _{stg} | -55 to 150 | °C |
| Lead Temperature (¹ / ₁₆ " from case for 10 sec.) | | T _L | 275 | |

THERMAL RESISTANCE RATINGS

| THERMAL RESISTANCE | SYMBOL | TYPICAL | MAXIMUM | UNITS |
|---------------------|-----------|---------|---------|--------|
| Junction-to-Case | $R_{θJC}$ | | 3 | °C / W |
| Junction-to-Ambient | $R_{θJA}$ | | 70 | |
| Case-to-Heatsink | $R_{θCS}$ | 0.7 | | |

¹Pulse width limited by maximum junction temperature.

²Duty cycle ≤ 1%

ELECTRICAL CHARACTERISTICS (T_C = 25 °C, Unless Otherwise Noted)

| PARAMETER | SYMBOL | TEST CONDITIONS | LIMITS | | | UNIT |
|-------------------------------------|---------------|---|--------|-----|------|------|
| | | | MIN | TYP | MAX | |
| STATIC | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$ | 25 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu A$ | 0.8 | 1.2 | 2.5 | |
| Gate-Body Leakage | I_{GSS} | $V_{DS} = 0V, V_{GS} = \pm 20V$ | | | ±250 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 20V, V_{GS} = 0V$ | | | 25 | μA |
| | | $V_{DS} = 20V, V_{GS} = 0V, T_J = 125 °C$ | | | 250 | |
| On-State Drain Current ¹ | $I_{D(ON)}$ | $V_{DS} = 10V, V_{GS} = 10V$ | 45 | | | A |

| | | | | | |
|---|--------------|---------------------------|----|----|----|
| Drain-Source On-State Resistance ¹ | $R_{DS(ON)}$ | $V_{GS} = 7V, I_D = 18A$ | 20 | 30 | mΩ |
| | | $V_{GS} = 10V, I_D = 20A$ | 15 | 28 | |
| Forward Transconductance ¹ | g_{fs} | $V_{DS} = 15V, I_D = 30A$ | 16 | | S |

DYNAMIC

| | | | | | |
|----------------------------------|--------------|--|-----|--|----|
| Input Capacitance | C_{iss} | $V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$ | 600 | | pF |
| Output Capacitance | C_{oss} | | 290 | | |
| Reverse Transfer Capacitance | C_{rss} | | 100 | | |
| Total Gate Charge ² | Q_g | $V_{DS} = 0.5V_{(BR)DSS}, V_{GS} = 10V, I_D = 20A$ | 25 | | nC |
| Gate-Source Charge ² | Q_{gs} | | 2.9 | | |
| Gate-Drain Charge ² | Q_{gd} | | 7.0 | | |
| Turn-On Delay Time ² | $t_{d(on)}$ | $V_{DS} = 15V, R_L = 1\Omega, I_D \cong 30A, V_{GS} = 10V, R_{GS} = 2.5\Omega$ | 7.0 | | nS |
| Rise Time ² | t_r | | 7.0 | | |
| Turn-Off Delay Time ² | $t_{d(off)}$ | | 24 | | |
| Fall Time ² | t_f | | 6.0 | | |

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)

| | | | | | |
|-------------------------------|---------------|-------------------------------------|-------|-----|----|
| Continuous Current | I_S | | | 45 | A |
| Pulsed Current ³ | I_{SM} | | | 150 | |
| Forward Voltage ¹ | V_{SD} | $I_F = I_S, V_{GS} = 0V$ | | 1.3 | V |
| Reverse Recovery Time | t_{rr} | $I_F = I_S, di_F/dt = 100A / \mu S$ | | 37 | nS |
| Peak Reverse Recovery Current | $I_{RM(REC)}$ | | 200 | | A |
| Reverse Recovery Charge | Q_{rr} | | 0.043 | | μC |

¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.

REMARK: THE PRODUCT MARKED WITH “P45N02LD”, DATE CODE or LOT #

TO-252 (DPAK) MECHANICAL DATA

| Dimension | mm | | | Dimension | mm | | |
|-----------|------|------|------|-----------|------|------|------|
| | Min. | Typ. | Max. | | Min. | Typ. | Max. |
| A | 9.35 | | 10.1 | H | | 0.8 | |
| B | 2.2 | | 2.4 | I | 6.4 | | 6.6 |
| C | 0.48 | | 0.6 | J | 5.2 | | 5.4 |
| D | 0.89 | | 1.5 | K | 0.6 | | 1 |
| E | 0.45 | | 0.6 | L | 0.64 | | 0.9 |
| F | 0.03 | | 0.23 | M | 4.4 | | 4.6 |
| G | 6 | | 6.2 | N | | | |

