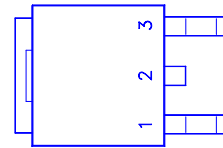
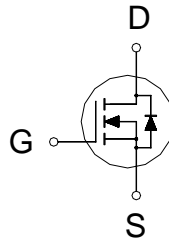


PRODUCT SUMMARY

| | | |
|---------------|--------------|-------|
| $V_{(BR)DSS}$ | $R_{DS(ON)}$ | I_D |
| 25 | 9.5m | 50A |



1. GATE
2. DRAIN
3. SOURCE

ABSOLUTE MAXIMUM RATINGS ($T_C = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

| PARAMETERS/TEST CONDITIONS | | SYMBOL | LIMITS | UNITS |
|--|-----------------------------------|----------------|------------|------------------|
| Gate-Source Voltage | | V_{GS} | ± 20 | V |
| Continuous Drain Current | $T_C = 25\text{ }^\circ\text{C}$ | I_D | 50 | A |
| | $T_C = 100\text{ }^\circ\text{C}$ | | 35 | |
| Pulsed Drain Current ¹ | | I_{DM} | 200 | |
| Avalanche Current | | I_{AR} | 40 | mJ |
| Avalanche Energy | $L = 0.1\text{mH}$ | E_{AS} | 250 | |
| Repetitive Avalanche Energy ² | $L = 0.05\text{mH}$ | E_{AR} | 8.6 | |
| Power Dissipation | $T_C = 25\text{ }^\circ\text{C}$ | P_D | 50 | W |
| | $T_C = 100\text{ }^\circ\text{C}$ | | 30 | |
| Operating Junction & Storage Temperature Range | | T_j, T_{stg} | -55 to 150 | $^\circ\text{C}$ |
| Lead Temperature (¹ / ₁₆ " from case for 10 sec.) | | T_L | 275 | |

THERMAL RESISTANCE RATINGS

| THERMAL RESISTANCE | SYMBOL | TYPICAL | MAXIMUM | UNITS |
|---------------------|-----------------|---------|---------|-----------------------------|
| Junction-to-Case | $R_{\theta JC}$ | | 2.5 | $^\circ\text{C} / \text{W}$ |
| Junction-to-Ambient | $R_{\theta JA}$ | | 62.5 | |
| Case-to-Heatsink | $R_{\theta CS}$ | 0.6 | | |

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$

ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$, Unless Otherwise Noted)

| PARAMETER | SYMBOL | TEST CONDITIONS | LIMITS | | | UNIT |
|---------------------------------|---------------|--|--------|-----|-----------|---------------|
| | | | MIN | TYP | MAX | |
| STATIC | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$ | 25 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu\text{A}$ | 1 | 1.6 | 3 | |
| Gate-Body Leakage | I_{GSS} | $V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$ | | | ± 250 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 20\text{V}, V_{GS} = 0\text{V}$ | | | 25 | μA |
| | | $V_{DS} = 20\text{V}, V_{GS} = 0\text{V}, T_C = 125\text{ }^\circ\text{C}$ | | | 250 | |

| | | | | | | |
|---|---------------|--|----|-------|------|---------|
| On-State Drain Current ¹ | $I_{D(ON)}$ | $V_{DS} = 10V, V_{GS} = 10V$ | 50 | | | A |
| Drain-Source On-State Resistance ¹ | $R_{DS(ON)}$ | $V_{GS} = 4.5V, I_D = 20A$ | | 11 | 16 | m |
| | | $V_{GS} = 10V, I_D = 25A$ | | 7.5 | 9.5 | |
| Forward Transconductance ¹ | g_{fs} | $V_{DS} = 10V, I_D = 25A$ | | 32 | | S |
| DYNAMIC | | | | | | |
| Input Capacitance | C_{iss} | $V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$ | | 1200 | 1800 | pF |
| Output Capacitance | C_{oss} | | | 600 | 1000 | |
| Reverse Transfer Capacitance | C_{rss} | | | 350 | 500 | |
| Total Gate Charge ² | Q_g | $V_{DS} = 10V, V_{GS} = 10V,$ $I_D = 25A$ | | 25 | 50 | nC |
| Gate-Source Charge ² | Q_{gs} | | | 15 | | |
| Gate-Drain Charge ² | Q_{gd} | | | 10 | | |
| Turn-On Delay Time ² | $t_{d(on)}$ | $V_{DS} = 15V, R_L = 1$ $I_D \cong 50A, V_{GS} = 10V, R_{GEN} = 24$ | | 6 | 16 | nS |
| Rise Time ² | t_r | | | 120 | 250 | |
| Turn-Off Delay Time ² | $t_{d(off)}$ | | | 40 | 90 | |
| Fall Time ² | t_f | | | 105 | 200 | |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C) | | | | | | |
| Continuous Current | I_S | | | | 50 | A |
| Pulsed Current ³ | I_{SM} | | | | 150 | |
| Forward Voltage ¹ | V_{SD} | $I_S = 25A, V_{GS} = 0V$ | | 0.9 | 1.3 | V |
| Reverse Recovery Time | t_{rr} | $I_F = I_S, di_F/dt = 100A / \mu S$ | | 70 | | 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%.

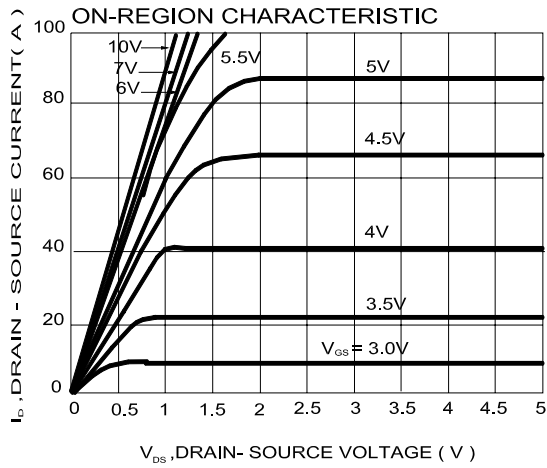
²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.

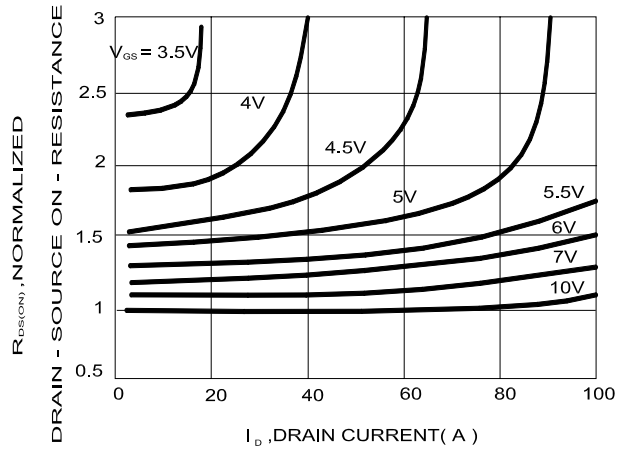
REMARK: THE PRODUCT MARKED WITH “P0903BDG”, DATE CODE or LOT #

Orders for parts with Lead-Free plating can be placed using the PXXXXXXG parts name.

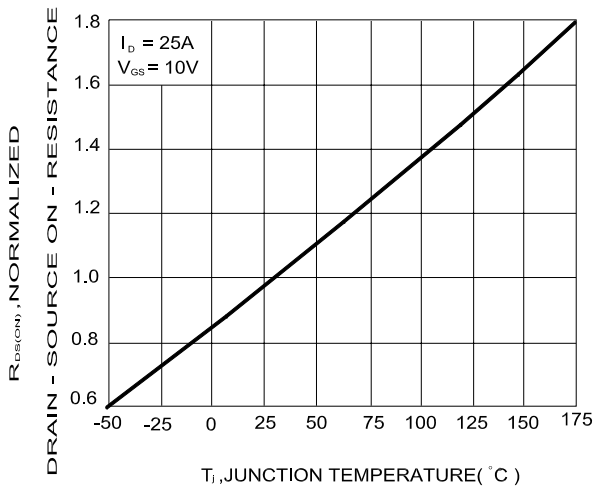
TYPICAL CHARACTERISTICS



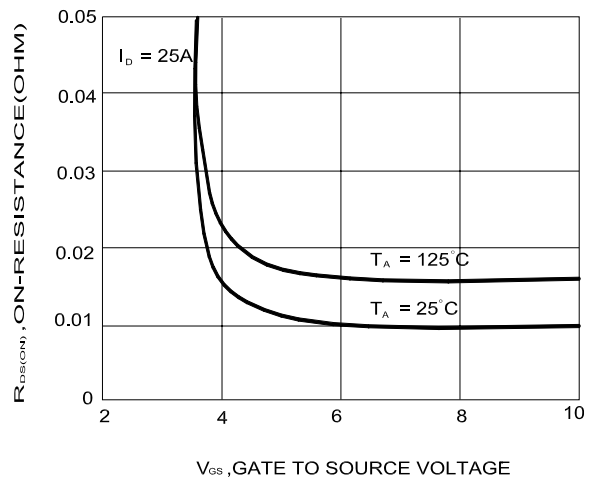
ON- RESISTANCE VARIATION WITH DRAIN CURRENT AND GATE



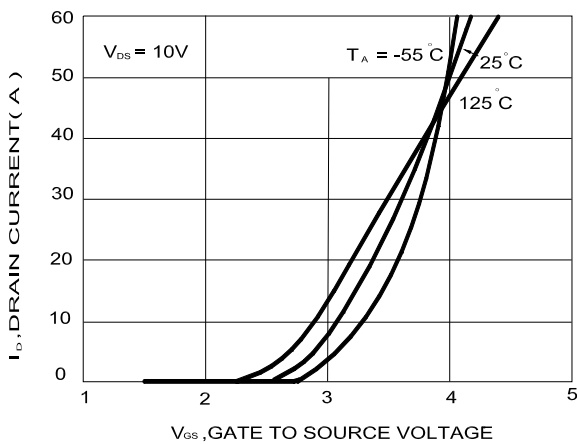
ON- RESISTANCE VARIATION WITH TEMPERATURE



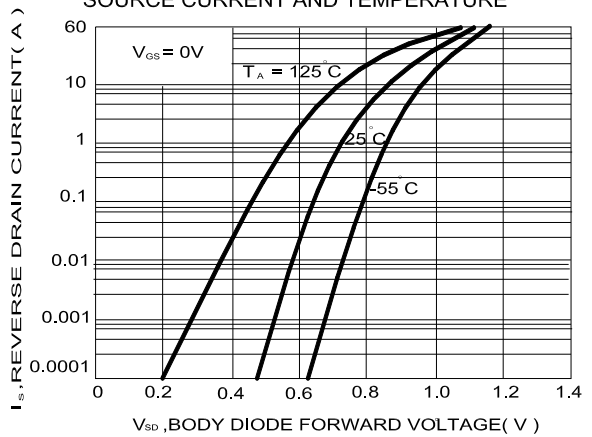
ON-RESISTANCE VARIATION WITH GATE-TO-SOYRCE VOLTAGE

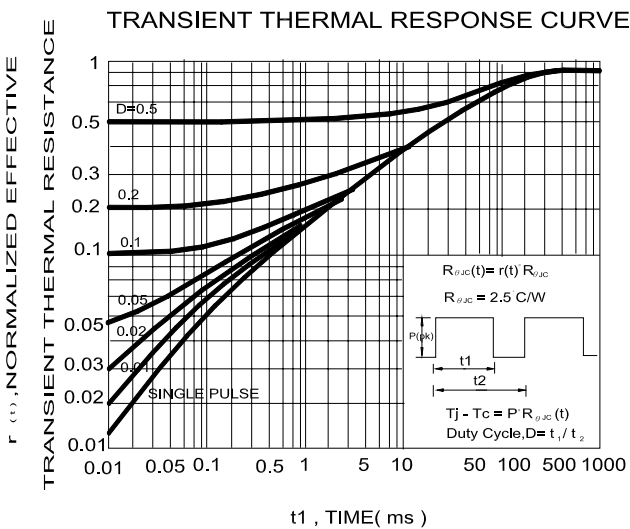
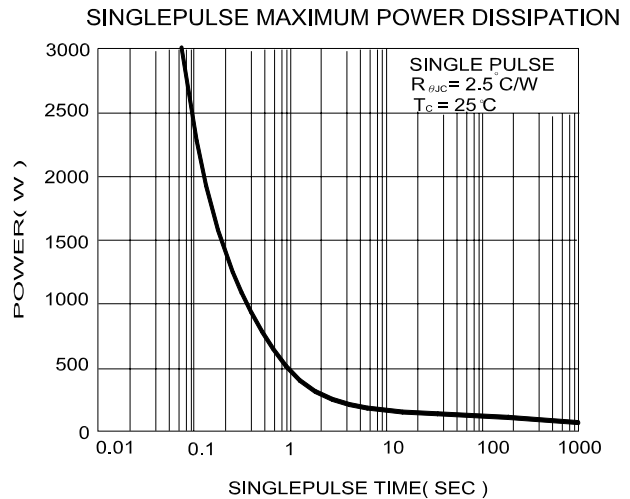
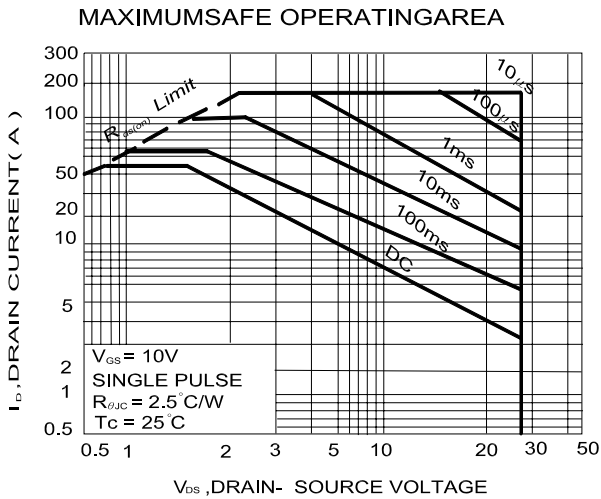
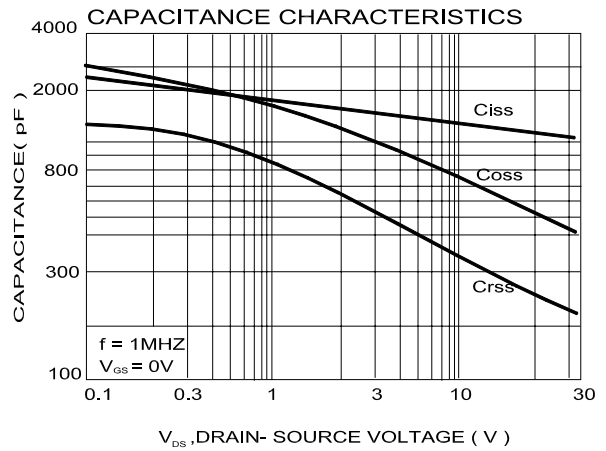
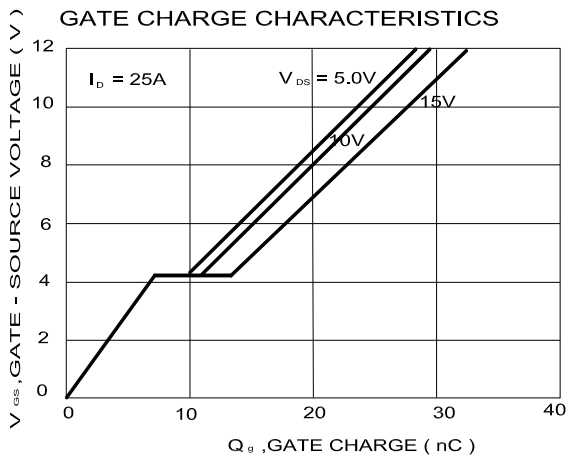


TRANSFER CHARACTERISTICS



BODY DIODE FORWARD VOLTAGE VARIATION WITH SOURCE CURRENT AND TEMPERATURE





TO-252 (DPAK) MECHANICAL DATA

| Dimension | mm | | | Dimension | mm | | |
|-----------|------|------|------|-----------|------|------|------|
| | Min. | Typ. | Max. | | Min. | Typ. | Max. |
| A | 9.35 | | 10.4 | H | 0.89 | | 2.03 |
| B | 2.2 | | 2.4 | I | 6.35 | | 6.80 |
| C | 0.45 | | 0.6 | J | 5.2 | | 5.5 |
| D | 0.89 | | 1.5 | K | 0.6 | | 1 |
| E | 0.45 | | 0.69 | L | 0.5 | | 0.9 |
| F | 0.03 | | 0.23 | M | 3.96 | 4.57 | 5.18 |
| G | 5.2 | | 6.2 | N | | | |

