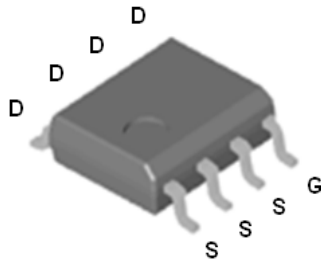


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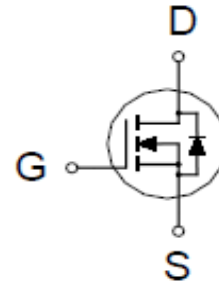
N-Channel Logic Level Enhancement Mode MOSFET

PRODUCT SUMMARY

| | | |
|---------------|----------------------|-------|
| $V_{(BR)DSS}$ | $R_{DS(ON)}$ | I_D |
| 30V | 9mΩ @ $V_{GS} = 10V$ | 13A |



SOP-8



ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ °C}$ Unless Otherwise Noted)

| PARAMETERS/TEST CONDITIONS | SYMBOL | LIMITS | UNITS |
|--|----------------|----------------------|-------|
| Gate-Source Voltage | V_{GS} | ±20 | V |
| Continuous Drain Current | I_D | $T_A = 25\text{ °C}$ | 13 |
| | | $T_A = 70\text{ °C}$ | 10 |
| Pulsed Drain Current ¹ | I_{DM} | 80 | A |
| Avalanche Current | I_{AS} | 30 | |
| Avalanche Energy | E_{AS} | 45 | mJ |
| Power Dissipation | P_D | $T_A = 25\text{ °C}$ | 2.3 |
| | | $T_A = 70\text{ °C}$ | 1.5 |
| Operating Junction & Storage Temperature Range | T_j, T_{stg} | -55 to 150 | °C |

THERMAL RESISTANCE RATINGS

| THERMAL RESISTANCE | SYMBOL | TYPICAL | MAXIMUM | UNITS |
|----------------------------------|-----------------|---------|---------|--------|
| Junction-to-Ambient ² | $R_{\theta JA}$ | | 55 | °C / W |
| Junction-to-Case | $R_{\theta JC}$ | | 3.7 | |

¹Pulse width limited by maximum junction temperature.

²The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25\text{ °C}$. The value in any given application depends on the user's specific board design

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N-Channel Logic Level Enhancement Mode MOSFET

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

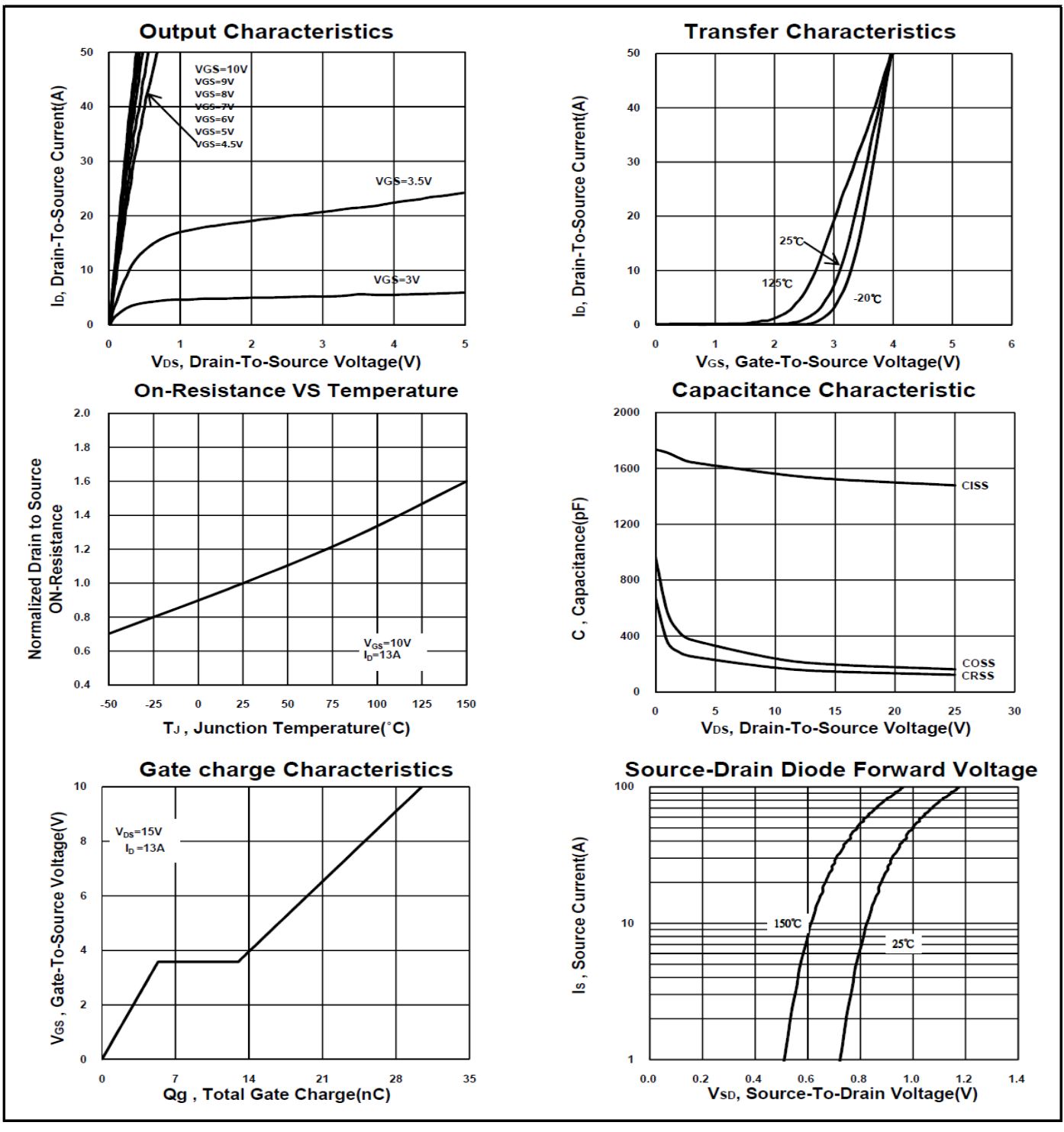
| PARAMETER | SYMBOL | TEST CONDITIONS | LIMITS | | | UNITS |
|---|--|--|---|------|------|-------|
| | | | MIN | TYP | MAX | |
| STATIC | | | | | | |
| Drain-Source Breakdown Voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D = 250μA | 30 | | | V |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250μA | 1 | 1.7 | 3 | |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0V, V _{GS} = ±20V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 24V, V _{GS} = 0V | | | 1 | μA |
| | | V _{DS} = 20V, V _{GS} = 0V, T _C = 125 °C | | | 10 | |
| On-State Drain Current ¹ | I _{D(ON)} | V _{DS} = 10V, V _{GS} = 10V | 80 | | | A |
| Drain-Source On-State Resistance ¹ | R _{DS(ON)} | V _{GS} = 4.5V, I _D = 13A | | 11.2 | 13 | mΩ |
| | | V _{GS} = 10V, I _D = 13A | | 7 | 9 | |
| Forward Transconductance ¹ | g _{fs} | V _{DS} = 5V, I _D = 13A | | 47 | | S |
| DYNAMIC | | | | | | |
| Input Capacitance | C _{iss} | V _{GS} = 0V, V _{DS} = 15V, f = 1MHz | | 1570 | | pF |
| Output Capacitance | C _{oss} | | | 202 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 158 | | |
| Gate Resistance | R _g | V _{GS} = 0V, f = 1MHz | | 1.4 | | Ω |
| Total Gate Charge ² | Q _g (V _{GS} =10V) | V _{DS} = 0.5V _{(BR)DSS} , I _D = 13A | | 31 | | nC |
| | Q _g (V _{GS} =4.5V) | | | 16 | | |
| Gate-Source Charge ² | Q _{gs} | | | 5.5 | | |
| Gate-Drain Charge ² | Q _{gd} | | | 8 | | |
| Turn-On Delay Time ² | t _{d(on)} | | V _{DS} = 15V, R _L = 1.5Ω, I _D ≅ 13A, V _{GS} = 10V, R _{GEN} = 6Ω | | 10.8 | |
| Rise Time ² | t _r | | | 16.8 | | |
| Turn-Off Delay Time ² | t _{d(off)} | | | 38.4 | | |
| Fall Time ² | t _f | | | 19.2 | | |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_A = 25 °C) | | | | | | |
| Continuous Current | I _S | | | | 13 | A |
| Forward Voltage ¹ | V _{SD} | I _F = 13A, V _{GS} = 0V | | | 1.3 | V |
| Diode Reverse Recovery Time | t _{rr} | I _F = 13A, di/dt = 100A / μS | | 15 | | nS |
| Diode Reverse Recovery Charge | Q _{rr} | | | 4 | | nC |

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

²Independent of operating temperature.

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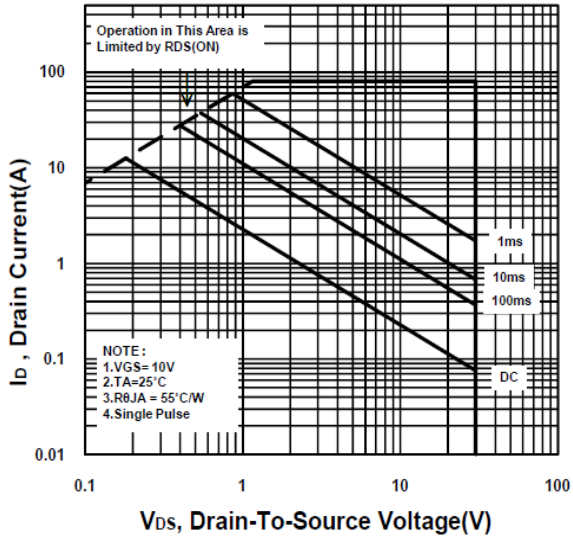
N-Channel Logic Level Enhancement Mode MOSFET



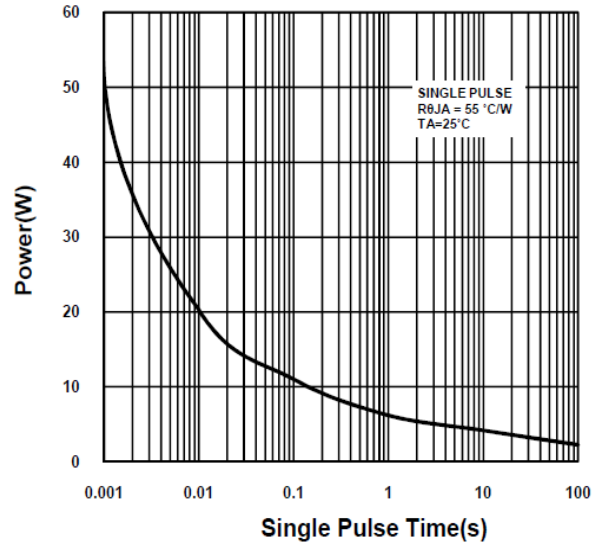
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N-Channel Logic Level Enhancement Mode MOSFET

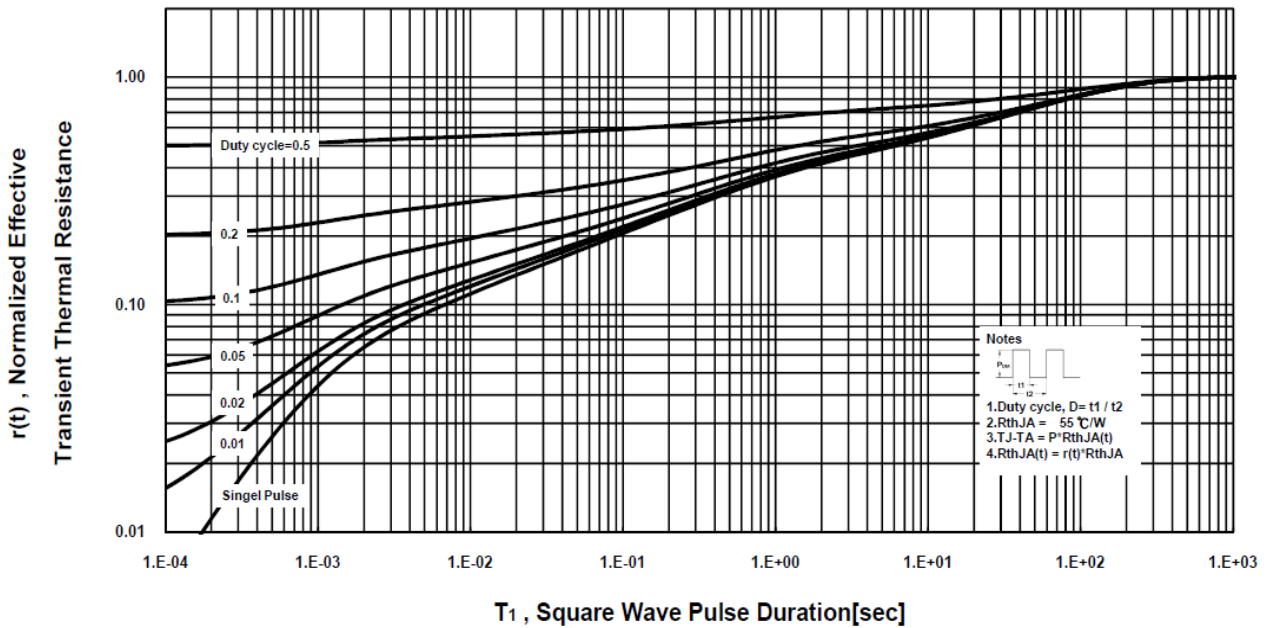
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



P0903BVA

N-Channel Logic Level Enhancement Mode MOSFET

Package Dimension

SOP-8 MECHANICAL DATA

| Dimension | mm | | | Dimension | mm | | |
|-----------|------|------|------|-----------|------|-------|------|
| | Min. | Typ. | Max. | | Min. | Typ. | Max. |
| A | 4.8 | 4.9 | 5.0 | H | 0.4 | 0.6 | 0.93 |
| B | 3.8 | 3.9 | 4.0 | I | 0.19 | 0.21 | 0.25 |
| C | 5.79 | 6.0 | 6.2 | J | 0.25 | 0.375 | 0.5 |
| D | 0.33 | 0.4 | 0.51 | K | 0° | 3° | 18° |
| E | 1.25 | 1.27 | 1.29 | | | | |
| F | 1.1 | 1.3 | 1.65 | | | | |
| G | 0.05 | 0.15 | 0.25 | | | | |

