# OSG70R350PF

Enhancement Mode N-Channel Power MOSFET

The GreenMOS® high voltage MOSFET utilizes charge balance technology to achieve outstanding low on-resistance and lower gate charge. It is engineered to minimize conduction loss, provide superior switching performance and robust avalanche capability.

The GreenMOS® Generic series is optimized for extreme switching performance to minimize switching loss. It is tailored for high power density applications to meet the highest efficiency standards.

GreenMOS®

RoHS

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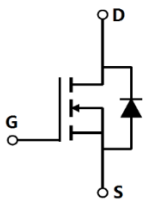
| Parameter | Value | Unit |
|---|---|---|
| $V_{DS,\ min}$ @ $T_{j(max)}$ | 750 | V |
| $I_{D,\ pulse}$ | 36 | A |
| $R_{DS(ON)\ ,\ max}$ @ $V_{GS}$=10V | 350 | |
| $Q_g$ | 16.7 | nC |

| Product Name | Package | Marking |
|---|---|---|
| OSG70R350PF | TO220 | OSG70R350P |



## Absolute Maximum Ratings at $T_j$=25 unless otherwise noted

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-source voltage | $V_{DS}$ | 700 | V |
| Gate-source voltage | $V_{GS}$ | ±30 | V |
| Continuous drain current[1], $T_C$=25 °C | $I_D$ | 12 | A |
| Continuous drain current[1], $T_C$=100 °C | | 7.6 | |
| Pulsed drain current[2], $T_C$=25 °C | $I_{D, pulse}$ | 36 | A |
| Continuous diode forward current[1], $T_C$=25 °C | $I_S$ | 12 | A |
| Diode pulsed current[2], $T_C$=25 °C | $I_{S, pulse}$ | 36 | A |
| Power dissipation[3], $T_C$=25 °C | $P_D$ | 104 | W |
| Single pulsed avalanche energy[5] | $E_{AS}$ | 400 | mJ |
| MOSFET dv/dt ruggedness, $V_{DS}$ 480 V | dv/dt | 50 | V/ns |
| Reverse diode dv/dt, $V_{DS}$ 480 V, $I_{SD}$ D | dv/dt | 15 | V/ns |
| Operation and storage temperature | $T_{stg}$, $T_j$ | -55 to 150 | °C |

## Thermal Characteristics

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Thermal resistance, junction-case | R | 1.2 | °C/W |
| Thermal resistance, junction-ambient[4] | R | 62.5 | °C/W |

## Electrical Characteristics at $T_j$=25 unless otherwise specified

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test condition |
|---|---|---|---|---|---|---|
| Drain-source breakdown voltage | $BV_{DSS}$ | 700 | | | V | $V_{GS}$=0 V, $I_D$=250 A |
| | | 750 | 820 | | | $V_{GS}$=0 V, $I_D$=250 A, $T_j$=150 °C |
| Gate threshold voltage | $V_{GS(th)}$ | 2.0 | | 4.0 | V | $V_{DS}$=$V_{GS}$, $I_D$=250 A |
| Drain-source on-state resistance | $R_{DS(ON)}$ | | 0.3 | 0.35 | | $V_{GS}$=10 V, $I_D$=6 A |
| | | | 0.78 | | | $V_{GS}$=10 V, $I_D$=6 A, $T_j$=150 °C |
| Gate-source leakage current | $I_{GSS}$ | | | 100 | nA | $V_{GS}$=30 V |
| | | | | -100 | | $V_{GS}$=-30 V |
| Drain-source leakage current | $I_{DSS}$ | | | 1 | A | $V_{DS}$=700 V, $V_{GS}$=0 V |

## Electrical Characteristics Diagrams

**Figure 1. Typ. output characteristics**

**Figure 2. Typ. transfer characteristics**

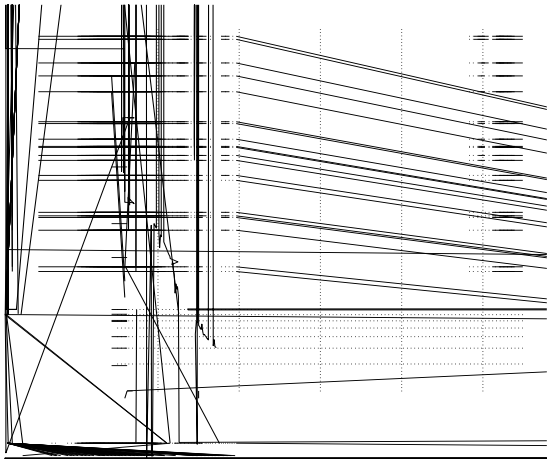


**Figure 3. Typ. capacitances**

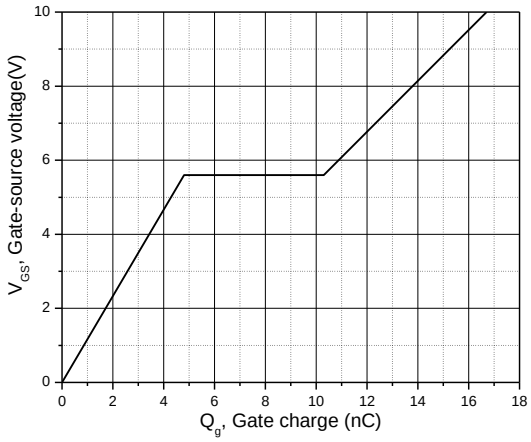



**Figure 4. Typ. gate charge**

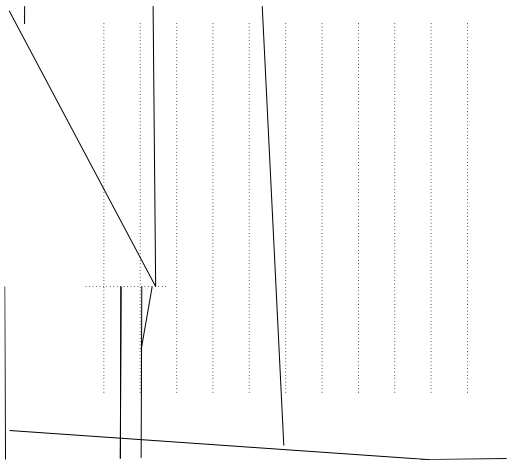


**Figure 5. Drain-source breakdown voltage**

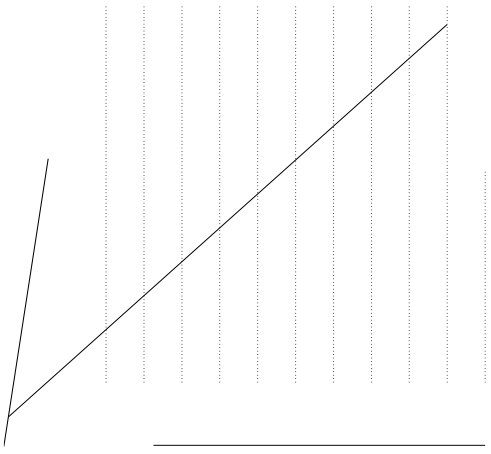


**Figure 6. Drain-source on-state resistance**

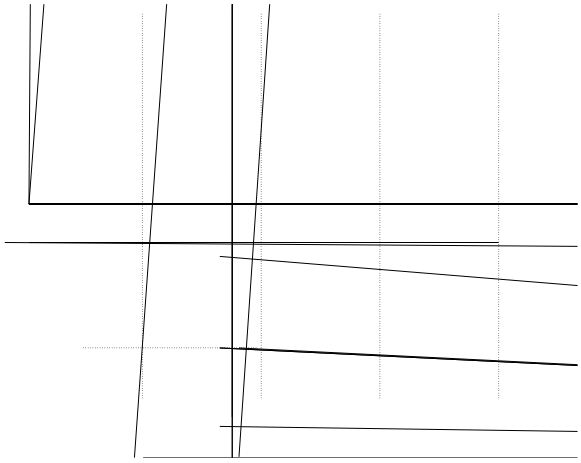


**Figure 7. Forward characteristic of body diode**

**Figure 8. Drain-source on-state resistance**

**Figure 9. Drain current**

**Figure 10. Safe operation area $T_C$=25 °C**

## Test circuits and waveforms

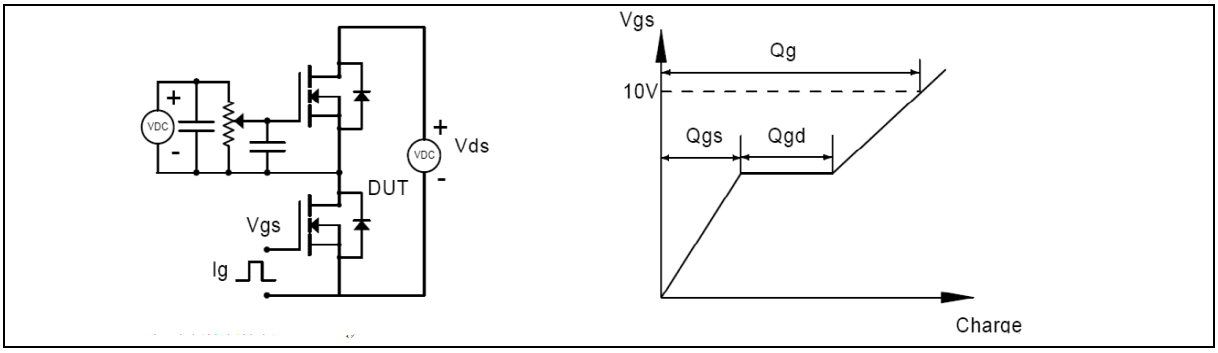



**Figure 1. Gate charge test circuit & waveform**

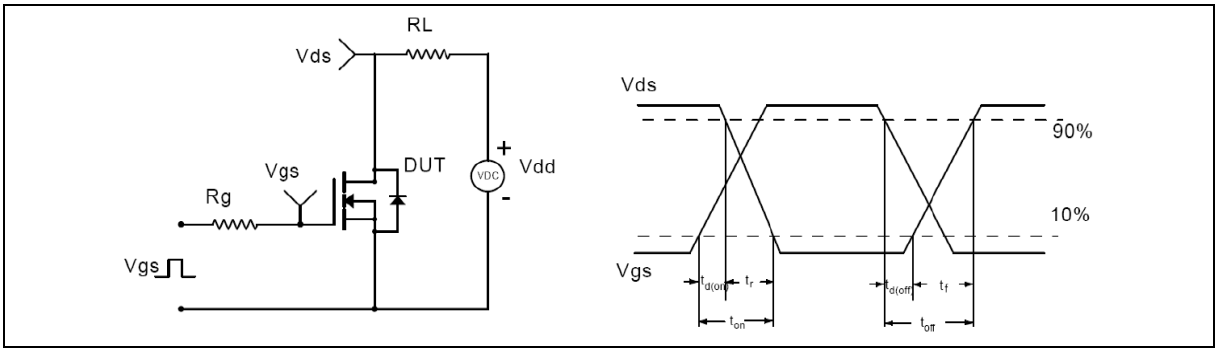



**Figure 2. Switching time test circuit & waveforms**

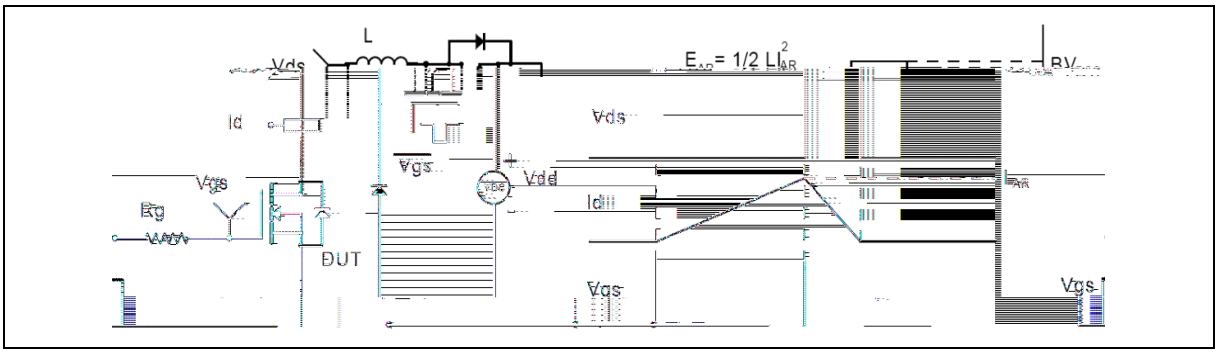



**Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms**

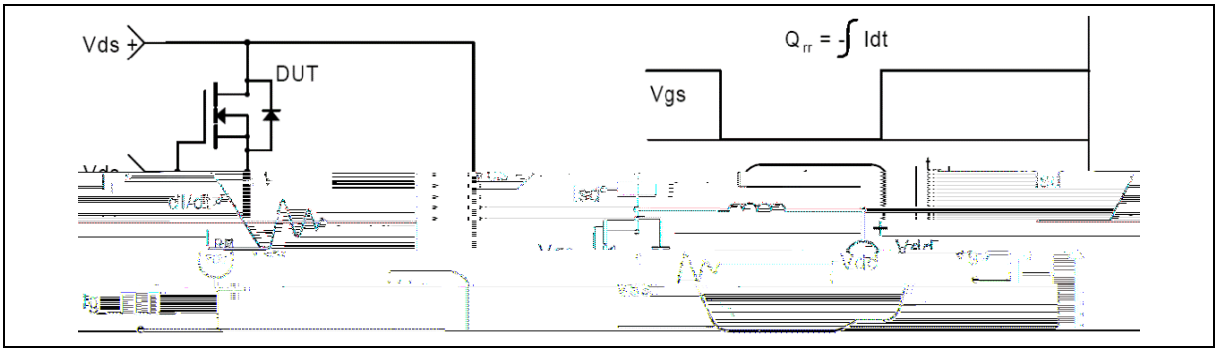



**Figure 4. Diode reverse recovery test circuit & waveforms**

## Package Information

| Symbol | mm | | |
|---|---|---|---|
| | Min | Nom | Max |
| A | 4.37 | 4.57 | 4.77 |
| A1 | 1.25 | 1.30 | 1.45 |
| A2 | 2.20 | 2.40 | 2.60 |
| b | 0.70 | 0.80 | 0.95 |
| b2 | 1.17 | 1.27 | 1.47 |
| c | 0.40 | 0.50 | 0.65 |
| D | 15.10 | 15.60 | 16.10 |
| D1 | 8.80 | 9.10 | 9.40 |
| D2 | 5.50 | - | - |
| E | 9.70 | 10.00 | 10.30 |
| E3 | 7.00 | - | - |
| e | 2.54BSC | | |
| e1 | 5.08BSC | | |
| H1 | 6.25 | 6.50 | 6.85 |

## Ordering Information

| Package Type | Units/ Tube | Tubes/ Inner Box | Units/ Inner Box | Inner Boxes/ Carton Box | Units/ Carton Box |
|---|---|---|---|---|---|
| TO220-P | 50 | 20 | 1000 | 6 | 6000 |

## Product Information

| Product | Package | Pb Free | RoHS | Halogen Free |
|---|---|---|---|---|
| OSG70R350PF | TO220 | yes | yes | |