

**/ Descriptions**

N TO-252

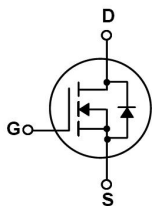
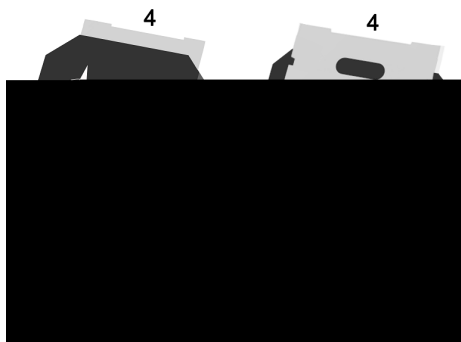
N-CHANNEL MOSFET in a TO-252 Plastic Package.

**/ Features** $V_{DS}(V) = 150V$   $I_D=20.5A$  $R_{DS(ON)}@10V$  75m (Typ. 65m ) $R_{DS(ON)}@6V$  120m (Typ. 79m )

HF Product.

**/ Applications**

LED backlighting, Ideal for high-frequency switching and synchronous rectification.

**/ Equivalent Circuit****/ Pinning**

PIN1 G

PIN 2 D

PIN 3 S

PIN 4 D

**/ Marking**

See Marking Instructions.


**/ Absolute Maximum Ratings(Ta=25 )**

| Parameter                              | Symbol         | Rating     | Unit |
|----------------------------------------|----------------|------------|------|
| Drain-Source Voltage                   | $V_{DS}$       | 150        | V    |
| Drain Current                          | $I_D(T_c=25)$  | 20.5       | A    |
| Peak Drain Current                     | $I_{DM}$       | 68         | A    |
| Gate-Source Voltage                    | $V_{GS}$       | $\pm 20$   | V    |
| Single Pulsed Avalanche Energy         | $E_{AS}$       | 67         | mJ   |
| Avalanche Current                      | $I_{AS}$       | 13.4       | A    |
| Total Power Dissipation                | $P_D(T_c=25)$  | 70         | W    |
| Junction and Storage Temperature Range | $T_J, T_{STG}$ | -55 to 150 |      |
| Thermal Resistance-Junction to Ambient | $R_{JA}$       | 75         | /W   |
| Thermal Resistance-Junction to Case    | $R_{JC}$       | 1.8        |      |

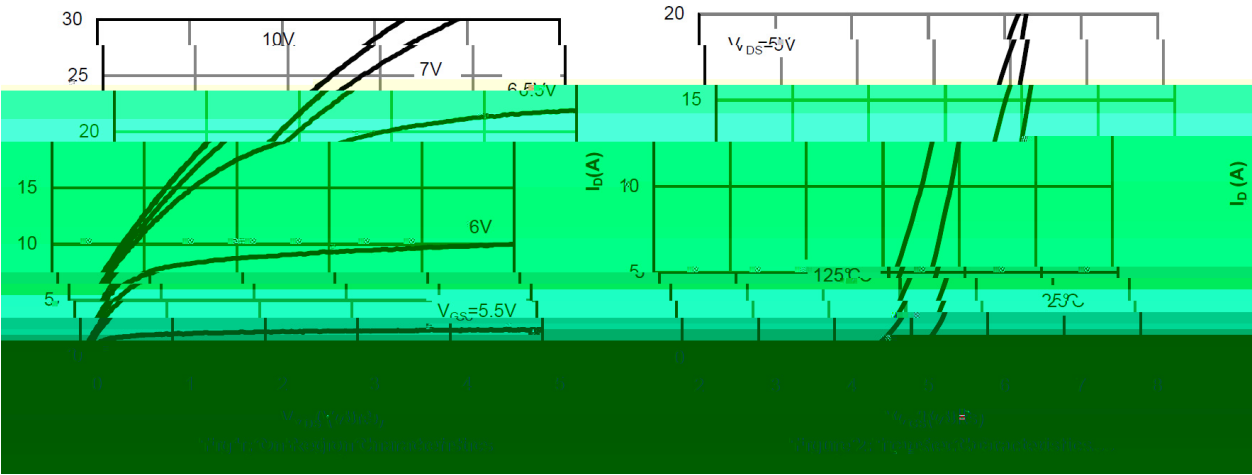
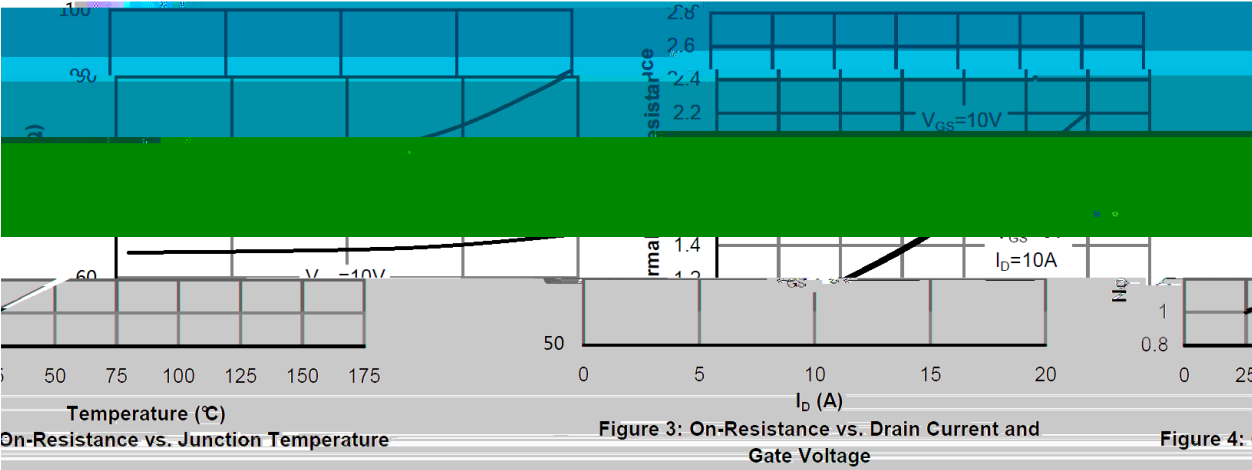
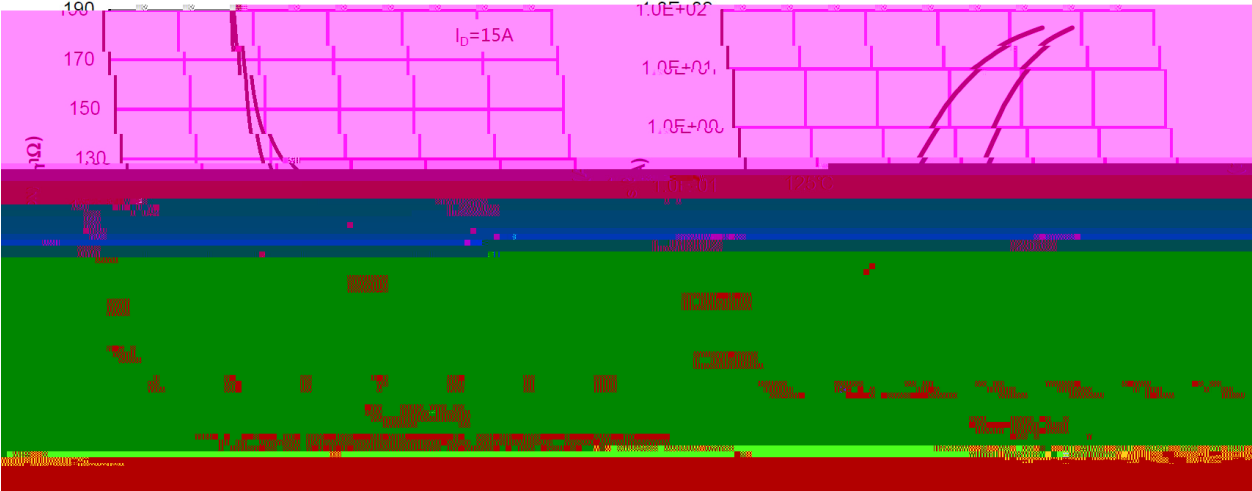
**/ Electrical Characteristics(Ta=25 )**

| Parameter                         | Symbol       | Test Conditions                          | Min | Typ | Max       | Unit |
|-----------------------------------|--------------|------------------------------------------|-----|-----|-----------|------|
| Drain-Source Breakdown Voltage    | $BV_{DS}$    | $V_{GS}=0V$ $I_D=250$ A                  | 150 | 167 |           | V    |
| Zero Gate Voltage Drain Current   | $I_{DSS}$    | $V_{DS}=150V$ $V_{GS}=0V$                |     |     | 1         | A    |
| Gate-Body leakage current         | $I_{GSS}$    | $V_{GS}=\pm 20V$ $V_{DS}=0V$             |     |     | $\pm 100$ | nA   |
| Gate Threshold Voltage            | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ $I_D=250$ A              | 2   | 3   | 4         | V    |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V$ $I_D=15A$                   |     | 65  | 75        | m    |
|                                   |              | $V_{GS}=6V$ $I_D=10A$                    |     | 79  | 120       |      |
| Diode Forward Voltage             | $V_{SD}$     | $I_S=1A$ $V_{GS}=0V$                     |     |     | 1.2       | V    |
| Input Capacitance                 | $C_{iss}$    | $V_{GS}=0V$ $V_{DS}=25V$ ,<br>$f=1.0MHz$ |     | 390 |           | pF   |
| Output Capacitance                | $C_{oss}$    |                                          |     | 235 |           |      |
| Reverse Transfer Capacitance      | $C_{rss}$    |                                          |     | 12  |           |      |
| Gate resistance                   | $R_g$        | $V_{GS}=0V$ $V_{DS}=0V$ ,<br>$f=1MHz$    |     | 1.9 |           |      |
| Total Gate Charge                 | $Q_{g(10V)}$ | $V_{GS}=10V$ $V_{DS}=75V$<br>$I_D=10A$   |     | 5.2 |           | nC   |
| Total Gate Charge                 | $Q_{g(6V)}$  |                                          |     | 2.9 |           |      |
| Gate Source Charge                | $Q_{gs}$     |                                          |     | 1.1 |           |      |
| Gate Drain Charge                 | $Q_{gd}$     |                                          |     | 1.4 |           |      |

## / Electrical Characteristics(Ta=25 )

| Parameter          | Symbol       | Test Conditions                                | Min | Typ | Max | Unit |
|--------------------|--------------|------------------------------------------------|-----|-----|-----|------|
| Turn-On DelayTime  | $t_{D(on)}$  | $V_{DS}=75V$ $I_D=10A$<br>$V_{GS}=10V$ $R_G=3$ |     | 5.7 |     | ns   |
| Turn-On Rise Time  | $t_r$        |                                                |     | 2.9 |     |      |
| Turn-Off DelayTime | $t_{D(off)}$ |                                                |     | 6.9 |     |      |
| Turn-Off Fall Time | $t_f$        |                                                |     | 3.3 |     |      |

/ Electrical Characteristic Curve



/ Electrical Characteristic Curve

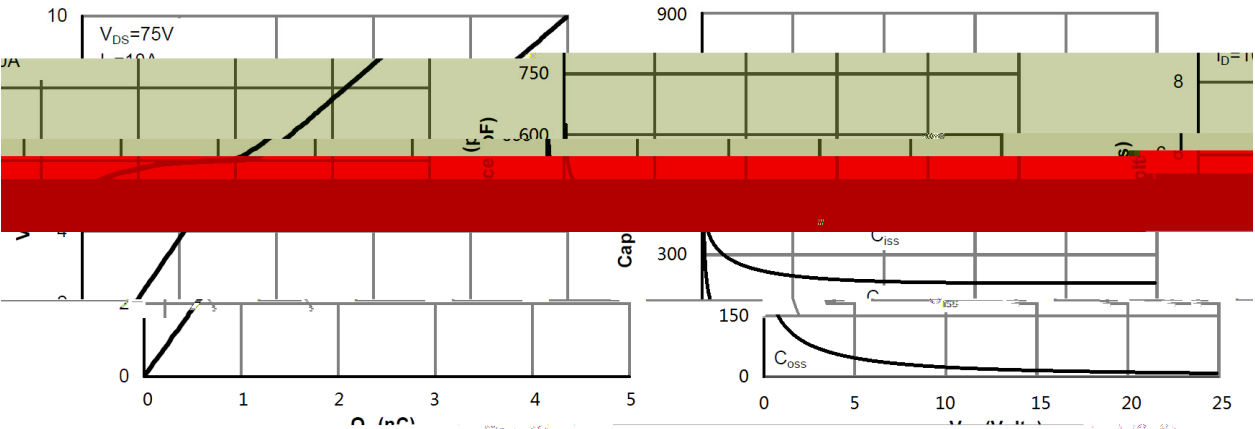


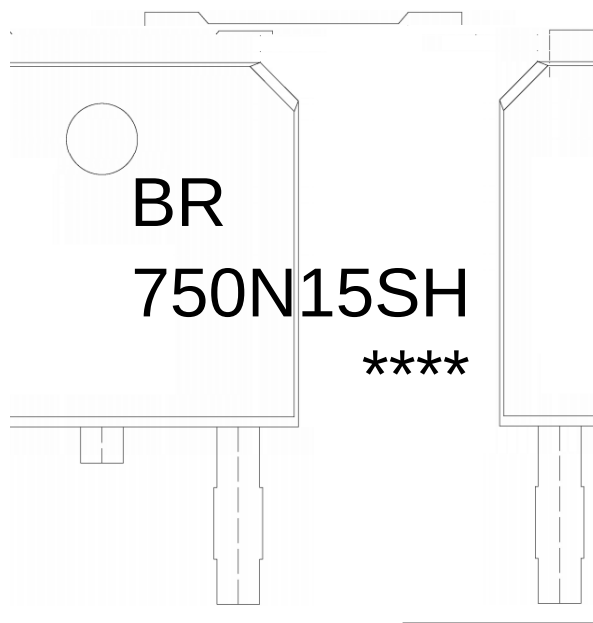
Figure 7: Gate-Charge Characteristics

Figure 8: Capacitance Characteristics



**BRCS750N15SHDP**  
Rev.A Jun.-2025

## / Marking Instructions



BR

Note:

BR: Company Code

750N15SH: Product Type Code

\*\*\*\*: Lot No. Code, code change with Lot No.

