

### / Descriptions

TO-251          N          MOS          N-CHANNEL MOSFET in a TO-251 Plastic Package.

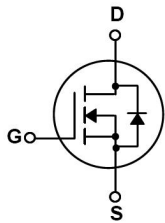
### / Features

Fast switching, low on resistance, low gate charge, low reverse transfer capacitances.

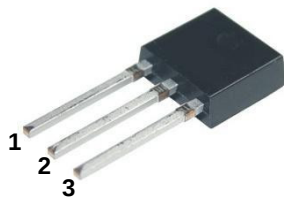
### / Applications

Used in various power switching circuit for system miniaturization and higher efficiency.

### / Equivalent Circuit



### / Pinning



PIN1   G          PIN 2   D          PIN 3   S

### / $h_{FE}$ Classifications & Marking

See Marking Instructions.

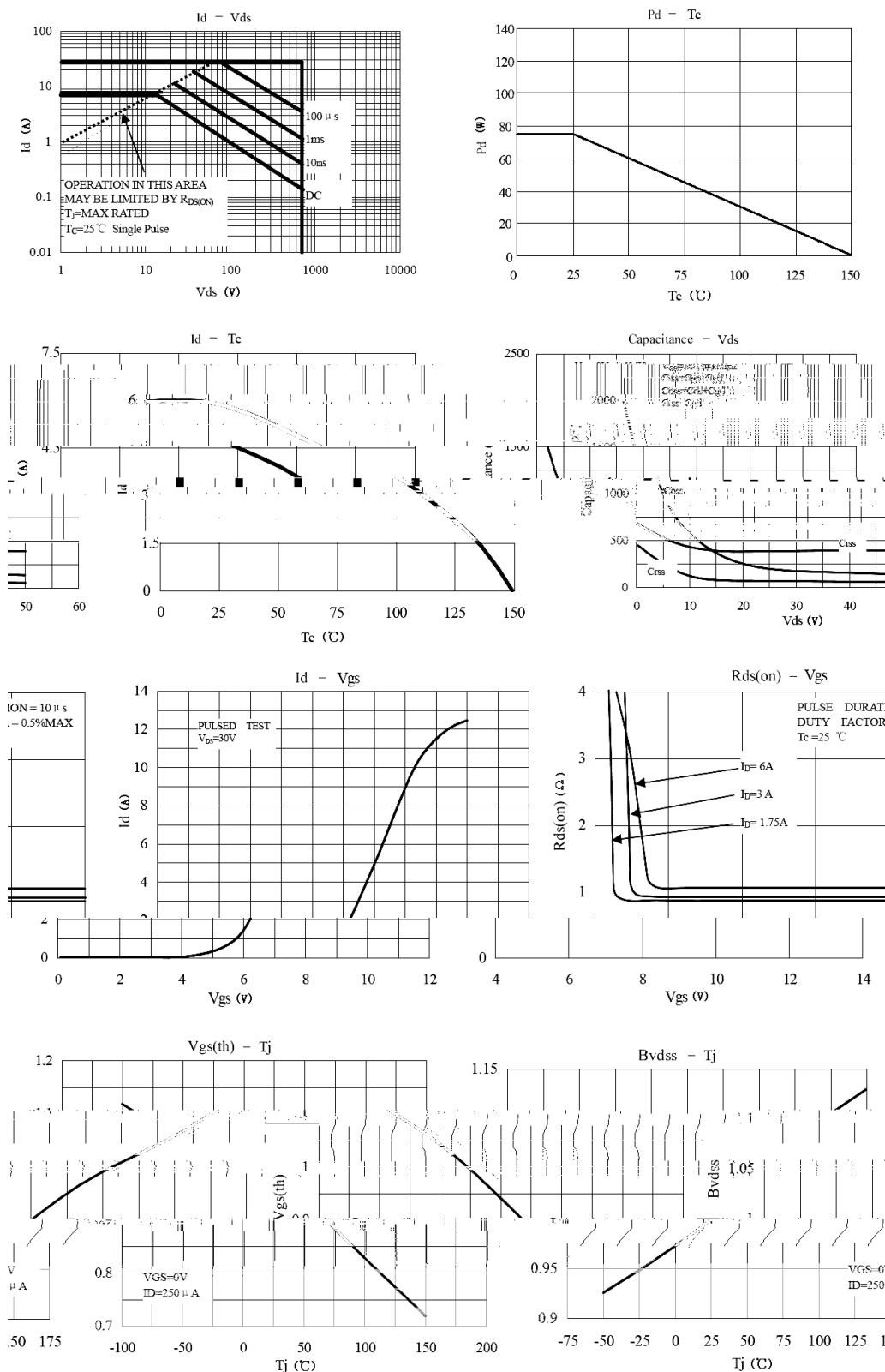
**/ Absolute Maximum Ratings(Ta=25 )**

| Parameter                               | Symbol         | Rating     | Unit          |
|-----------------------------------------|----------------|------------|---------------|
| Drain-Source Voltage                    | $V_{DS}$       | 700        | V             |
| Drain Current                           | $I_D(T_c=25)$  | 6.0        | A             |
| Drain Current                           | $I_D(T_c=100)$ | 3.6        | A             |
| Drain Current - Pulsed                  | $I_{DM}$       | 24         | A             |
| Gate-Source Voltage                     | $V_{GS}$       | $\pm 30$   | V             |
| Single Pulsed Avalanche Energy          | $E_{AS}$       | 185        | mJ            |
| Repetitive Avalanche Energy             | $E_{AR}$       | 20         | mJ            |
| Avalanche Current                       | $I_{AR}$       | 3.3        | A             |
| Power Dissipation                       | $P_D(T_c=25)$  | 75         | W             |
| Operating and Storage Temperature Range | $T_J, T_{STG}$ | -55 to 150 | $^{\circ}C$   |
| Junction-to-Case                        | $R_{JC}$       | 1.66       | $^{\circ}C/W$ |
| Junction-to-Ambient                     | $R_{JA}$       | 83.3       | $^{\circ}C/W$ |

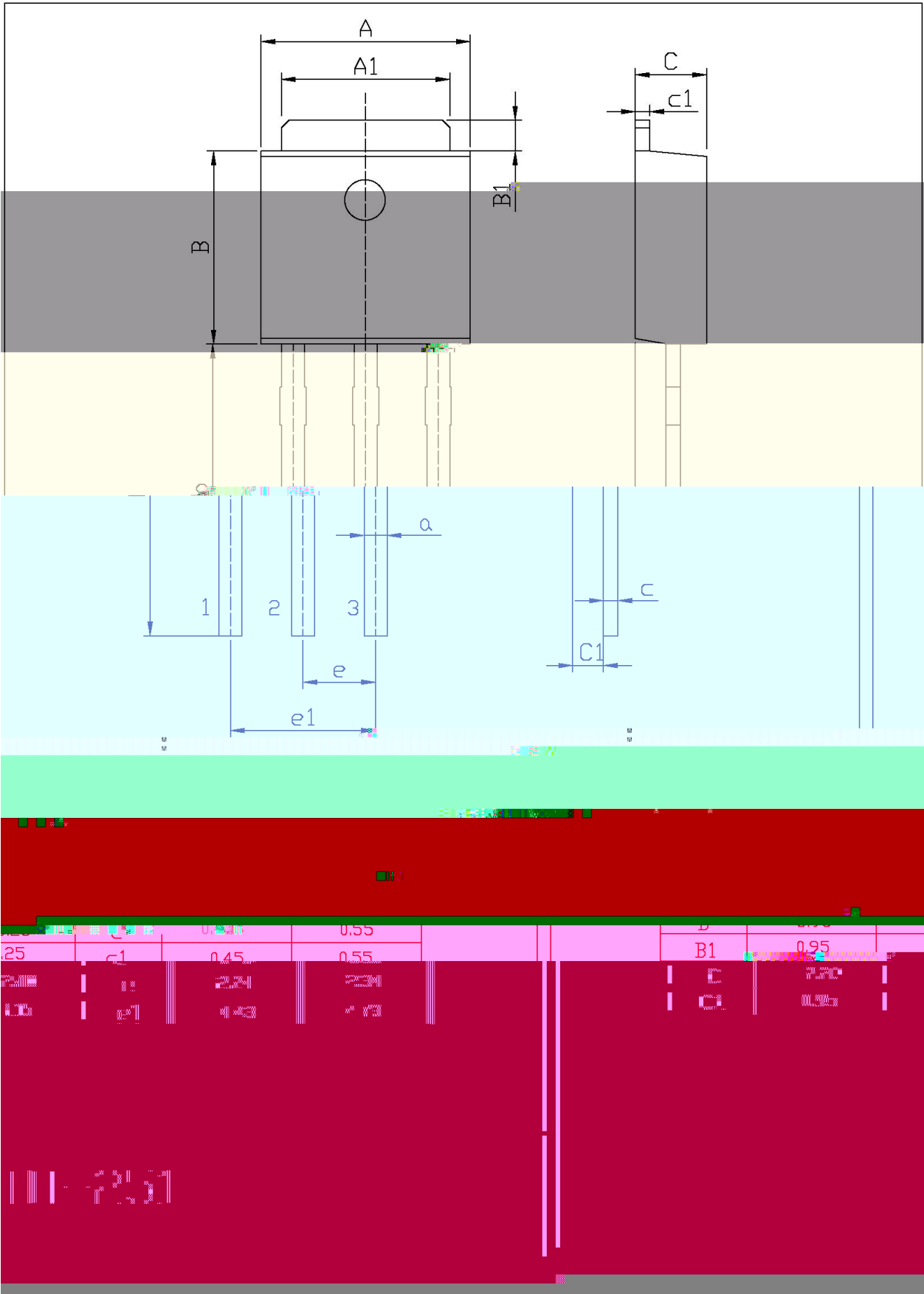
**/ Electrical Characteristics(Ta=25 )**

| Parameter                          | Symbol       | Test Conditions                                   | Min | Typ  | Max      | Unit |
|------------------------------------|--------------|---------------------------------------------------|-----|------|----------|------|
| Drain-Source Breakdown Voltage     | $BV_{DS}$    | $V_{GS}=0V$ $I_D=250$ A                           | 700 |      |          | V    |
| Zero Gate Voltage Drain Current    | $I_{DSS}$    | $V_{DS}=700V$ $V_{GS}=0V$                         |     |      | 1        | A    |
|                                    |              | $V_{DS}=560V$ $T_a=125$                           |     |      | 100      | A    |
| Gate-Body Leakage Current, Forward | $I_{GSS}$    | $V_{GS}=\pm 20V$ $V_{DS}=0V$                      |     |      | $\pm 10$ | A    |
| Gate Threshold Voltage             | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ $I_D=250$ A                       | 2.0 |      | 4.0      | V    |
| Static Drain-Source On-Resistance  | $R_{DS(on)}$ | $V_{GS}=10V$ $I_D=3.0A$                           |     | 1.35 | 1.6      |      |
| Forward Transconductance           | $g_{FS}$     | $V_{DS}=15V$ $I_D=3.0A$                           |     | 5.0  |          | S    |
| Drain-Source Diode Forward Voltage | $V_{SD}$     | $V_{GS}=0V$ $I_S=6.0A$                            |     |      | 1.5      | V    |
| Input Capacitance                  | $C_{iss}$    | $V_{DS}=25V$ $V_{GS}=0V$<br>$f=1.0MHz$            |     | 938  |          | pF   |
| Output Capacitance                 | $C_{oss}$    |                                                   |     | 87.8 |          | pF   |
| Reverse Transfer Capacitance       | $C_{rss}$    |                                                   |     | 8.2  |          | pF   |
| Turn-On Delay Time                 | $t_{d(on)}$  | $V_{DD}=350V$ $I_D=6.0A$<br>$R_G=25$ $V_{GS}=10V$ |     | 14.7 |          | ns   |
| Turn-On Rise Time                  | $t_r$        |                                                   |     | 26   |          | ns   |
| Turn-Off Delay Time                | $t_{d(off)}$ |                                                   |     | 68.4 |          | ns   |
| Turn-Off Fall Time                 | $t_f$        |                                                   |     | 34.6 |          | ns   |

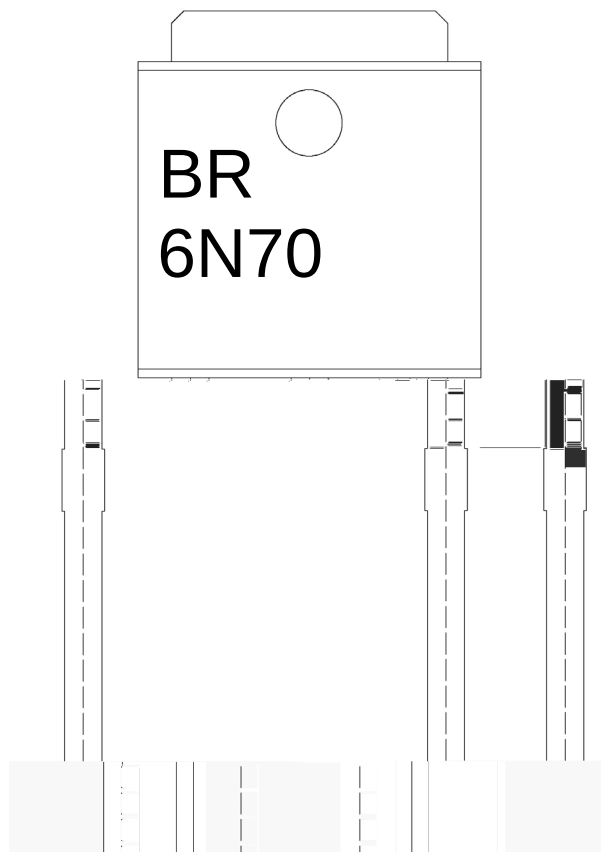
## / Electrical Characteristic Curve



/ Package Dimensions



/ Marking Instructions



BR

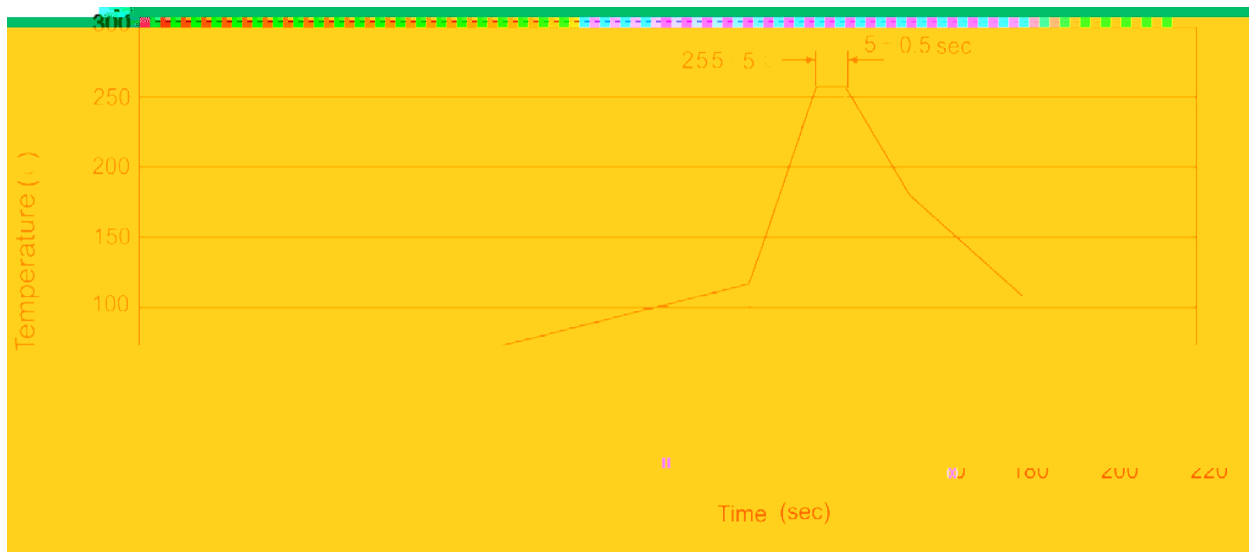
Note:

BR: Company Code

6N70: Product Type.

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

( ) / Temperature Profile for Dip Soldering(Pb-Free)



Note:

- |   |     |     |    |          |                                         |
|---|-----|-----|----|----------|-----------------------------------------|
| 1 | 25  | 150 | 60 | 90sec;   | 1.Preheating:25~150 , Time:60~90sec.    |
| 2 | 255 | 5   | 5  | 0.5sec;  | 2.Peak Temp.:255 5 , Duration:5 0.5sec. |
| 3 |     |     | 2  | 10 /sec. | 3. Cooling Speed: 2~10 /sec.            |

/ Resistance to Soldering Heat Test Conditions

270 5      10 1 sec.      Temp.:270±5℃      Time:10±1 sec

/ Packaging SPEC.

/ BULK

| Package Type<br>封装形式 | Units 包装数量 |    |    |    |    | Dimension 包装尺寸 (unit: mm <sup>3</sup> ) |   |   |
|----------------------|------------|----|----|----|----|-----------------------------------------|---|---|
|                      | 只袋         | 袋盒 | 只盒 | 盒箱 | 只箱 | 袋                                       | 盒 | 箱 |
|                      |            |    |    |    |    |                                         |   |   |

/ TUBE

| Package Type<br>封装形式 | Units 包装数量 |     |    |    |    | Dimension 包装尺寸 (unit: mm <sup>3</sup> ) |   |   |
|----------------------|------------|-----|----|----|----|-----------------------------------------|---|---|
|                      | 只套管        | 套管盒 | 只盒 | 盒箱 | 只箱 | 套管                                      | 盒 | 箱 |
|                      |            |     |    |    |    |                                         |   |   |

/ Notices