

/ Revised record

## / Descriptions

TO-220 N

N-CHANNEL MOSFET in a TO-220 Plastic Package.

## / Features

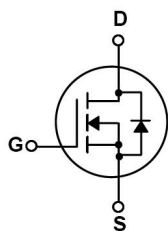
Ultra Low On-Resistance,fast switching.

## / Applications

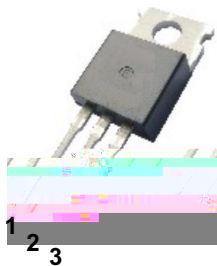
PFC

These devices are well suited for high efficient switched mode power supplies, Active power factor correction, electronic lamp ballast based on half bridge topology.

## / Equivalent Circuit



## / Pinning



PIN1 G

PIN 2 4 D

PIN 3 S

/ h<sub>FE</sub> Classifications & Marking

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See Marking Instructions.

/ Absolute Maximum Ratings( $T_a=25^\circ\text{C}$ )

| Parameter                                       |                     | Symbol                      | Rating     | Unit               |
|-------------------------------------------------|---------------------|-----------------------------|------------|--------------------|
| Drain-Source Voltage                            |                     | $V_{DSS}$                   | 85         | V                  |
| Drain Current                                   |                     | $I_D(T_c=25^\circ\text{C})$ | 70         | A                  |
| Pulsed Drain Current                            |                     | $I_{DM}$                    | 245        | A                  |
| Gate-Source Voltage                             |                     | $V_{GS}$                    | $\pm 20$   | V                  |
| Single Pulsed Avalanche Energy $L=0.5\text{mH}$ |                     | $E_{AS}$                    | 238        | mJ                 |
| Avalanche Current                               |                     | $I_{AS}$                    | 75         | A                  |
| Total Power Dissipation                         |                     | $P_D(T_c=25^\circ\text{C})$ | 139        | W                  |
| Junction and Storage Temperature Range          |                     | $T_J, T_{STG}$              | -55 to 150 | $^\circ\text{C}$   |
| Thermal Resistance-Junction to Ambient          | $t \leq 10\text{s}$ | $R_{\theta JA}$             | 15         | $^\circ\text{C/W}$ |
| Thermal Resistance-Junction to Ambient          | Steady-State        |                             | 60         |                    |
| Thermal Resistance-Junction to Case             | Steady-State        | $R_{\theta JC}$             | 0.9        |                    |

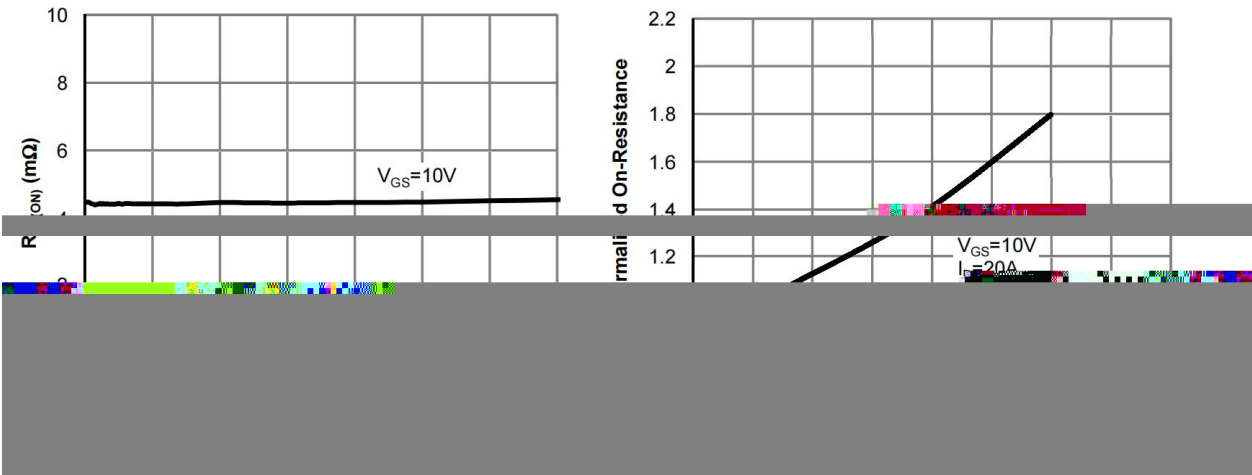
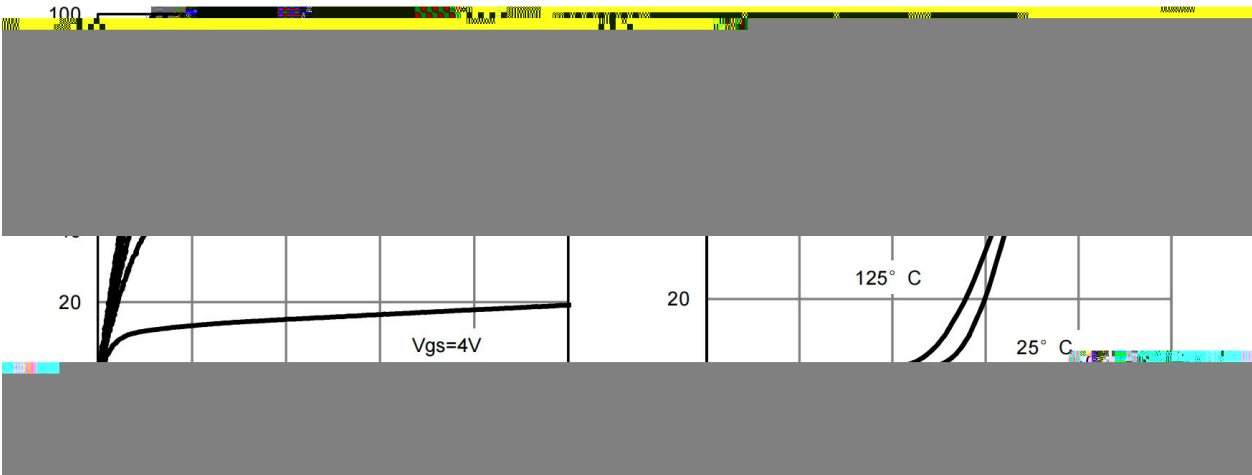
/ Electrical Characteristics( $T_a=25^\circ\text{C}$ )

| Parameter                         | Symbol       | Test Conditions                                        | Min | Typ  | Max       | Unit             |
|-----------------------------------|--------------|--------------------------------------------------------|-----|------|-----------|------------------|
| Drain-Source Breakdown Voltage    | $BV_{DSS}$   | $V_{GS}=0\text{V}$ $I_D=250\mu\text{A}$                | 85  |      |           | V                |
| Zero Gate Voltage Drain Current   | $I_{DSS}$    | $V_{DS}=85\text{V}$ $V_{GS}=0\text{V}$                 |     |      | 1         | $\mu\text{A}$    |
|                                   |              | $T_J=125^\circ\text{C}$                                |     |      | 5         | $\mu\text{A}$    |
| Gate-Body Leakage Current Forward | $I_{GSS}$    | $V_{GS}=\pm 20\text{V}$ $V_{DS}=0\text{V}$             |     |      | $\pm 100$ | nA               |
| Gate Threshold Voltage            | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ $I_D=250\mu\text{A}$                   | 2   | 3    | 4         | V                |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10\text{V}$ $I_D=70\text{A}$                   |     | 4.5  | 5         | $\text{m}\Omega$ |
| Forward On Voltage                | $V_{SD}$     | $V_{GS}=0\text{V}$ $I_S=1\text{A}$                     |     |      | 1.2       | V                |
| Input Capacitance                 | $C_{iss}$    | $V_{DS}=40\text{V}$ $V_{GS}=0\text{V}$ $f=1\text{MHz}$ |     | 2900 |           | pF               |
| Output Capacitance                | $C_{oss}$    |                                                        |     | 750  |           |                  |
| Reverse Transfer Capacitance      | $C_{rss}$    |                                                        |     | 15   |           |                  |

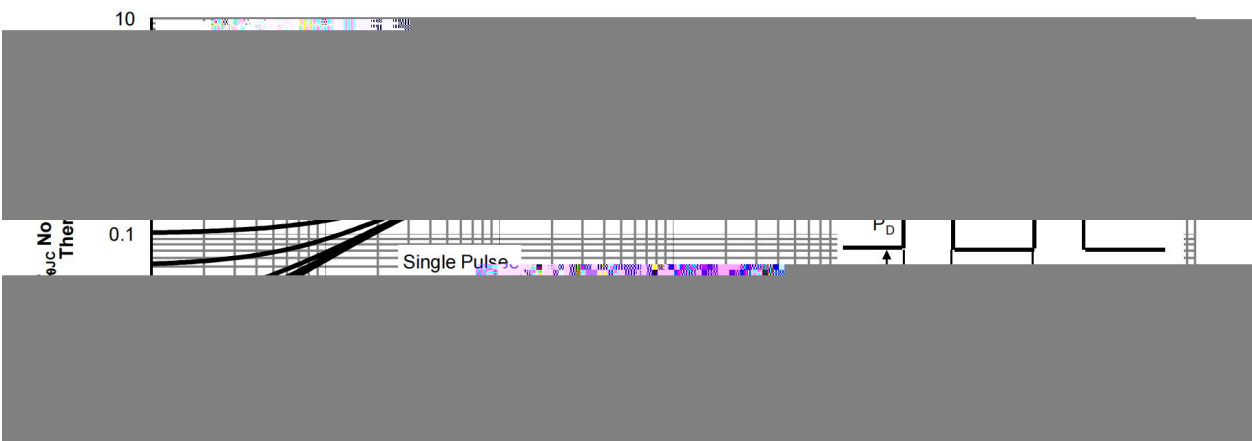
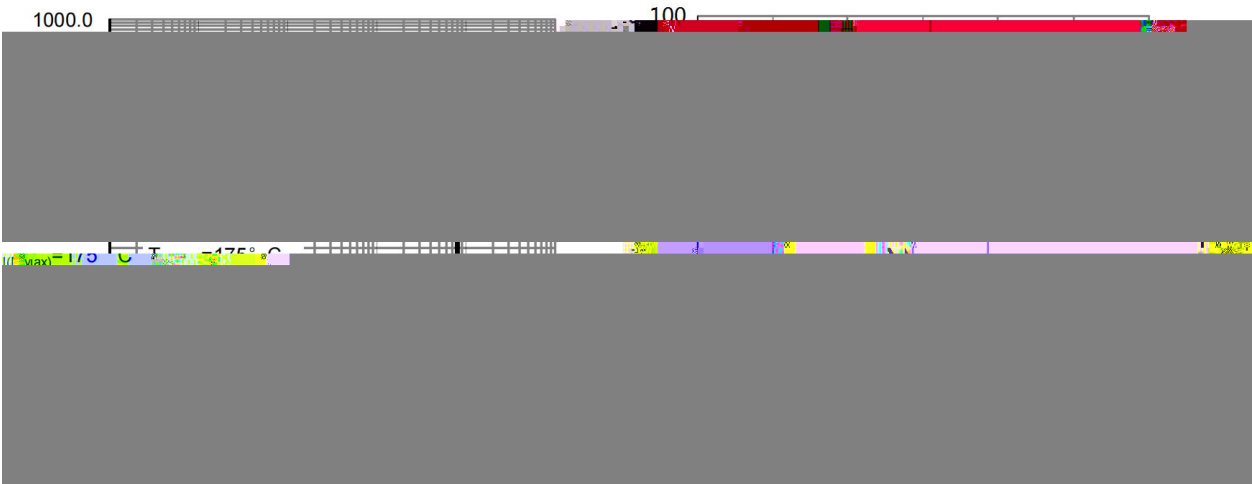
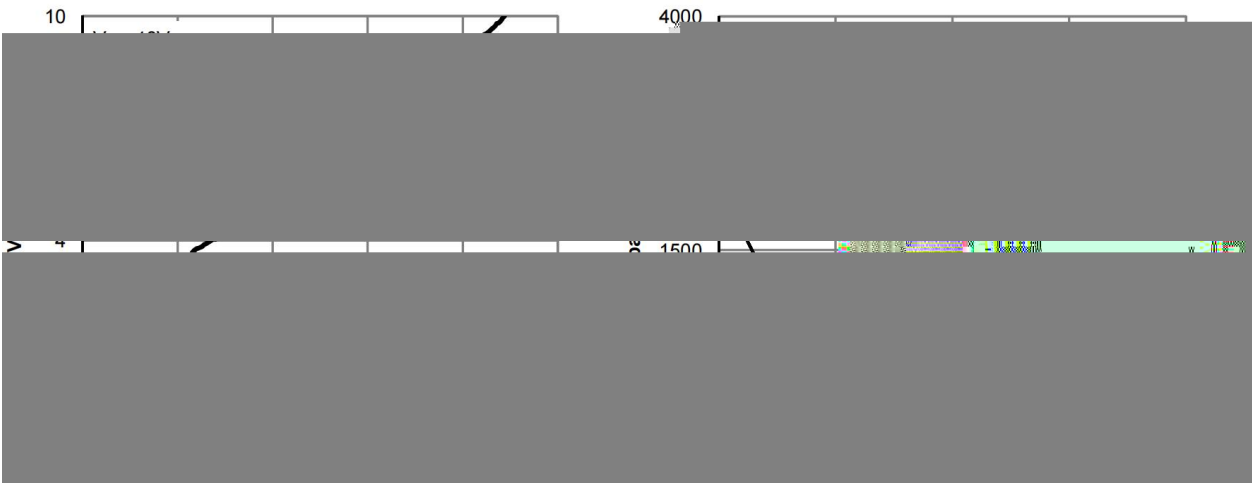
## / Electrical Characteristics(Ta=25 )

| Parameter           | Symbol       | Test Conditions                                              | Min | Typ  | Max | Unit     |
|---------------------|--------------|--------------------------------------------------------------|-----|------|-----|----------|
| Gate resistance     | $R_g$        | $f=1\text{MHz}$                                              |     | 1.6  |     | $\Omega$ |
| Total Gate Charge   | $Q_g(10V)$   | $V_{GS}=10V$ $V_{DS}=40V$<br>$I_D=20A$                       |     | 44.5 |     | nC       |
| Gate Source Charge  | $Q_{gs}$     |                                                              |     | 12   |     |          |
| Gate Drain Charge   | $Q_{gd}$     |                                                              |     | 8    |     |          |
| Turn-On Delay Time  | $t_{d(on)}$  | $V_{GS}=10V$ $V_{DS}=40V$<br>$R_L=2\Omega$ $R_{GEN}=3\Omega$ |     | 13.5 |     | ns       |
| Turn-On Rise Time   | $t_r$        |                                                              |     | 11   |     |          |
| Turn-Off Delay Time | $t_{d(off)}$ |                                                              |     | 32   |     |          |
| Turn-Off Fall Time  | $t_f$        |                                                              |     | 11   |     |          |

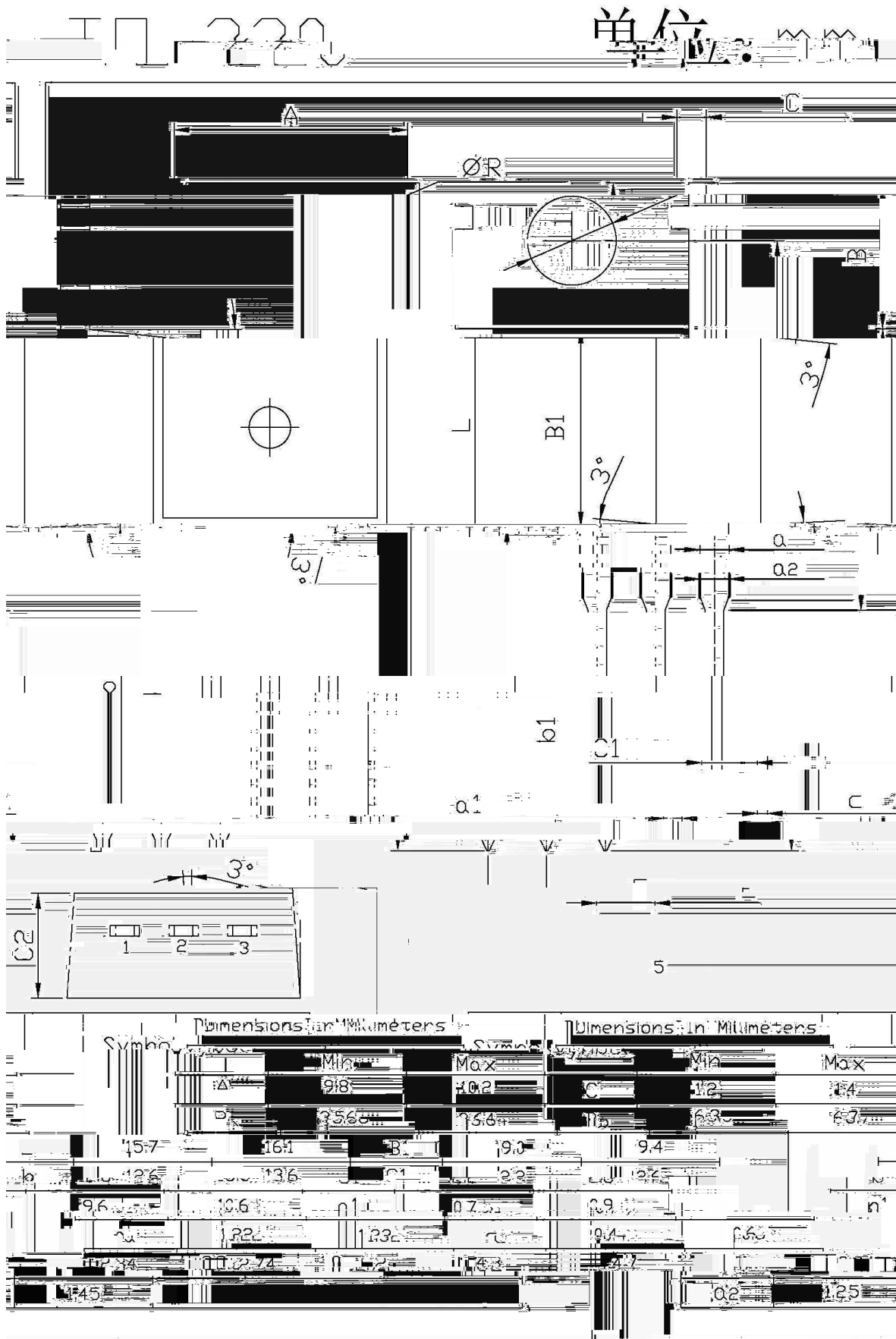
/ Electrical Characteristic Curve

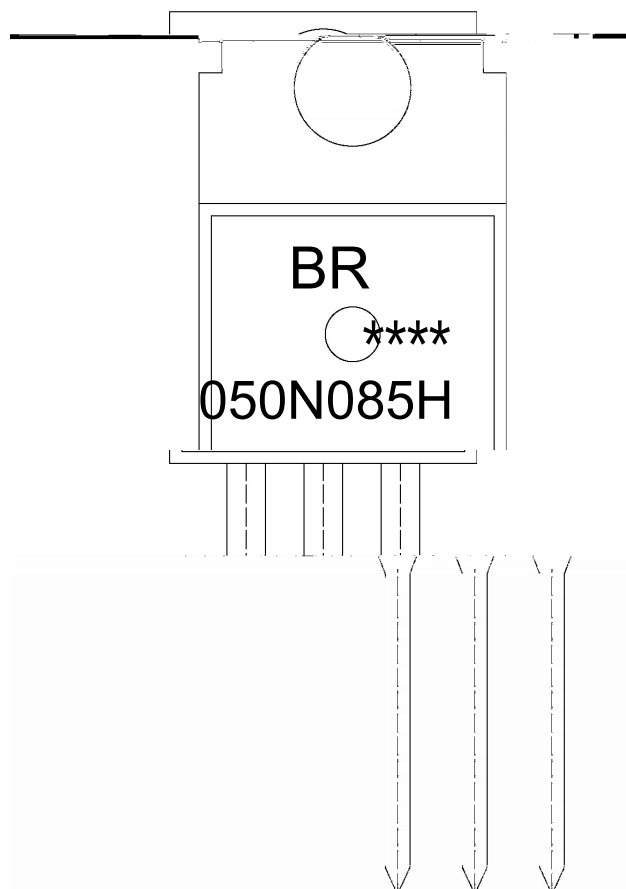


/ Electrical Characteristic Curve



## / Package Dimensions



**/ Marking Instructions**

说明：

BR： 为公司代码

050N085H： 为型号代码

\*\*\*\*： 为生产批号代码，随生产批号变化。

Note:

BR: Company Code

050N085H: Product Type.

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





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