

### / Descriptions

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

### / Features

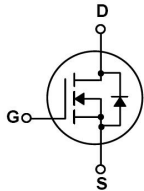
$R_{DS(on)}$        $C_{rss}$   
Low  $R_{DS(on)}$ , low gate charge, low  $C_{rss}$ , fast switching.

### / Applications

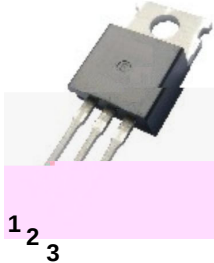
DC/DC

Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products.

### / Equivalent Circuit



### / Pinning



PIN1   G      PIN 2   D      PIN 3   S

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

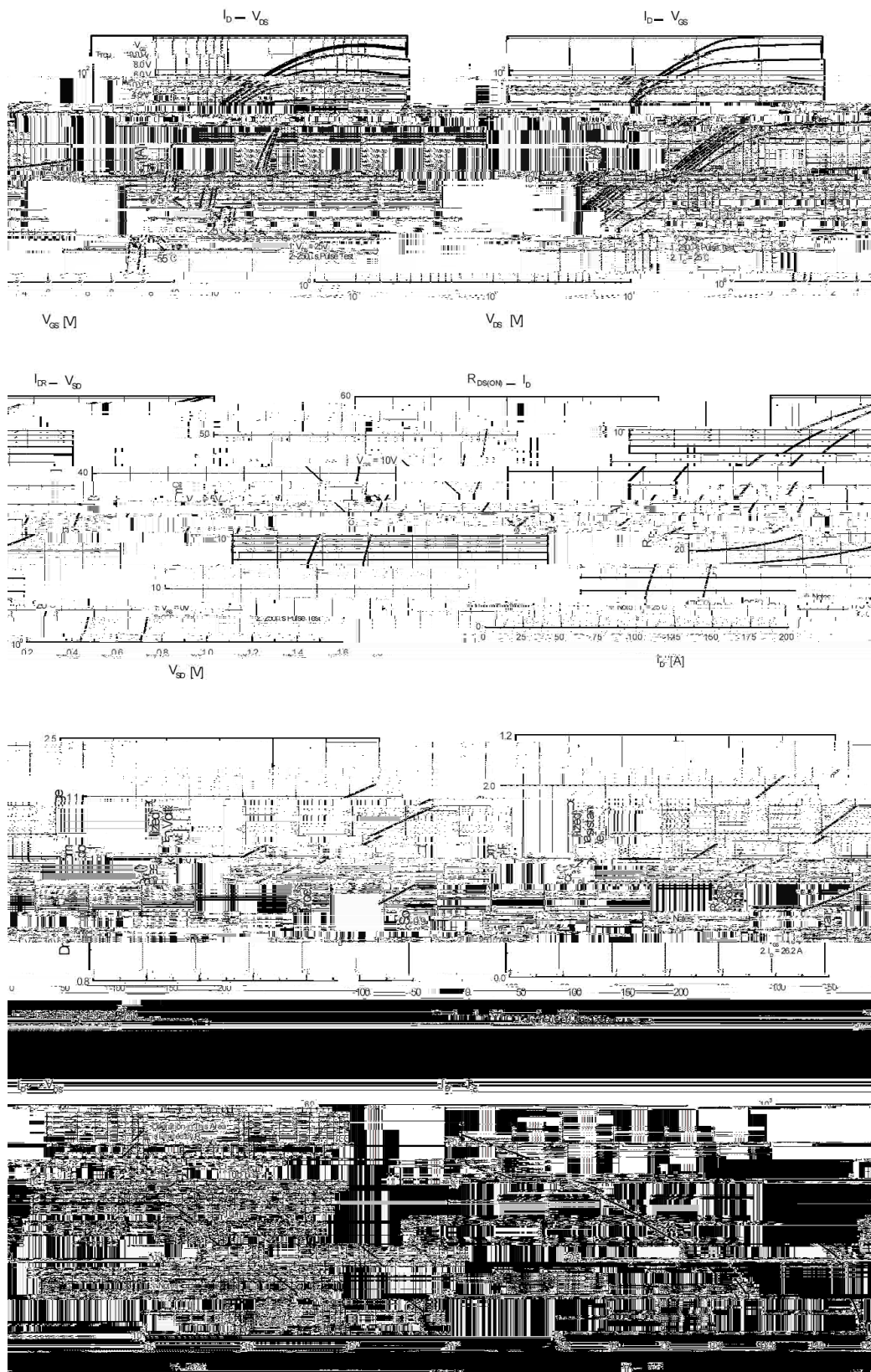
See Marking Instructions.

| Parameter                      | Symbol                       | Rating   | Unit |
|--------------------------------|------------------------------|----------|------|
| Drain-Source Voltage           | $V_{DS}$                     | 60       | V    |
| Drain Current                  | $I_D(T_c=25^\circ\text{C})$  | 50       | A    |
| Drain Current                  | $I_D(T_c=100^\circ\text{C})$ | 35.4     | A    |
| Drain Current - Pulsed         | $I_{DM}$                     | 200      | A    |
| Gate-Source Voltage            | $V_{GS}$                     | $\pm 20$ | V    |
| Single Pulsed Avalanche Energy | $E_{AS}$                     | 490      | mJ   |
| Avalanche Current              | $E_{AR}$                     | 12       | mJ   |
| Power Dissipation              | $P_D(T_c=25^\circ\text{C})$  | 120      | W    |
| Operating Temperature Range    | $T_j$                        | 150      |      |
| Storage Temperature Range      | $T_{stg}$                    | -55 150  |      |

| Parameter                          | Symbol       | Test Conditions                        | Min | Typ   | Max       | Unit |
|------------------------------------|--------------|----------------------------------------|-----|-------|-----------|------|
| Drain-Source Breakdown Voltage     | $BV_{DSS}$   | $V_{GS}=0V$ $I_D=250\text{ A}$         | 60  |       |           | V    |
| Zero Gate Voltage Drain Current    | $I_{DSS}$    | $V_{DS}=60V$ $V_{GS}=0V$               |     |       | 1.0       | A    |
|                                    |              | $V_{DS}=48V$ $T_C=150$                 |     |       | 10        |      |
| Gate-Body Leakage Current, Forward | $I_{GSS}$    | $V_{GS}=\pm 20V$ $V_{DS}=0V$           |     |       | $\pm 0.1$ | A    |
| Gate Threshold Voltage             | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ $I_D=250\text{ A}$     | 2   |       | 4         | V    |
| Total Gate Charge                  | $Q_g$        | $V_{DS}=48V$ $I_D=50A$<br>$V_{GS}=10V$ |     | 32    | 42        | nC   |
| Static Drain-Source On-Resistance  | $R_{DS(on)}$ | $V_{GS}=10V$ $I_D=25A$                 |     | 0.018 | 0.022     |      |
| Drain-Source Diode Forward Voltage | $V_{SD}$     | $V_{GS}=0V$ $I_S=50A$                  |     |       | 1.5       | V    |
| Input Capacitance                  | $C_{iss}$    | $V_{DS}=25V$ $V_{GS}=0V$<br>$f=1.0MHz$ |     | 1050  | 1365      | pF   |
| Output Capacitance                 | $C_{oss}$    |                                        |     | 460   | 600       |      |

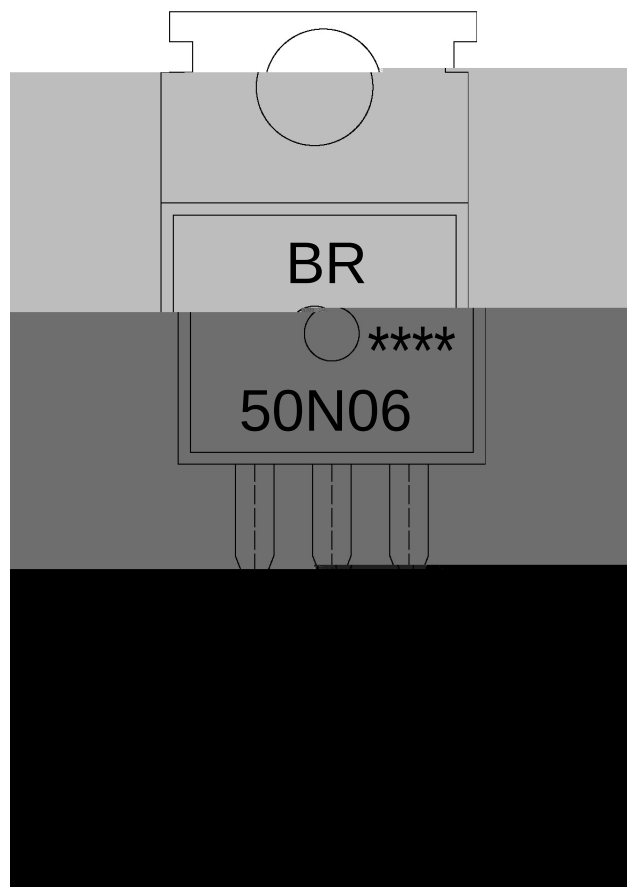
47ev64 48101066.76 206.9606804 22 13( )897DS

/ Electrical Characteristic Curve



[illegible]

**/ Marking Instructions**



BR

50N06

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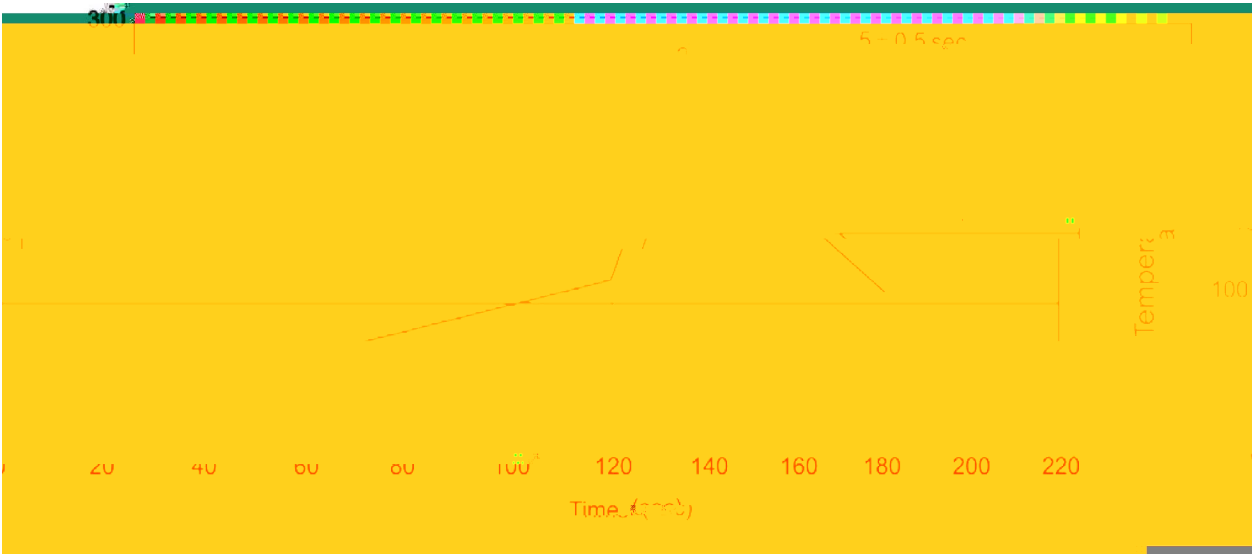
Note:

BR: Company Code

50N06: Product Type Code

\*\*\*\*\*: 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 | Units     |                |                 |                       |                 | Dimension (unit mm <sup>3</sup> ) |             |             |
|--------------|-----------|----------------|-----------------|-----------------------|-----------------|-----------------------------------|-------------|-------------|
|              | Units/Bag | Bags/Inner Box | Units/Inner Box | Inner Boxes/Outer Box | Units/Outer Box | Bag                               | Inner Box   | Outer Box   |
| TO-220/F     | 200       | 10             | 2,000           | 5                     | 10,000          | 135×190                           | 237×172×102 | 560×245×195 |