

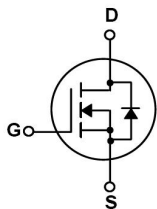
## / Descriptions

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

## / Features

Low gate charge, low crss, fast switching.

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies.



PIN1   G      PIN 2   D      PIN 3   S

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

See Marking Instructions.

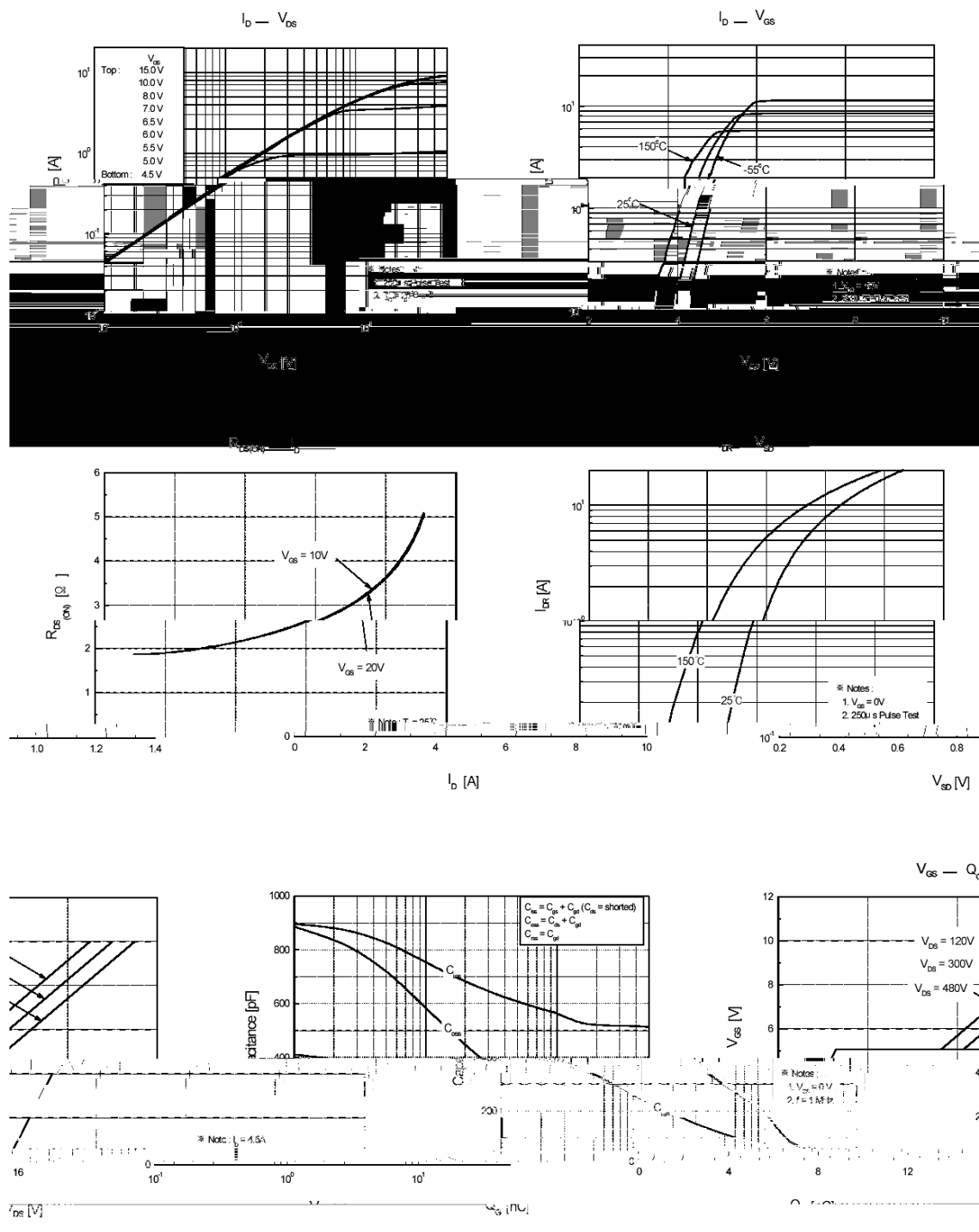
**/ Absolute Maximum Ratings(Ta=25 )**

| Parameter                               | Symbol                  | Rating     | Unit |
|-----------------------------------------|-------------------------|------------|------|
| Drain-Source Voltage                    | $V_{DSS}$               | 650        | V    |
| Drain Current                           | $I_D(T_C=25^{\circ}C)$  | 5.0        | A    |
| Drain Current                           | $I_D(T_C=100^{\circ}C)$ | 2.6        | A    |
| Drain Current - Pulsed                  | $I_{DM}$                | 18         | A    |
| Gate-Source Voltage                     | $V_{GSS}$               | $\pm 30$   | V    |
| Single Pulsed Avalanche Energy          | $E_{AS}$                | 210        | mJ   |
| Repetitive Avalanche Energy             | $E_{AR}$                | 10         | mJ   |
| Avalanche Current                       | $I_{AR}$                | 4.5        | A    |
| Power Dissipation                       | $P_D(T_C=25^{\circ}C)$  | 54         | W    |
| Operating and Storage Temperature Range | $T_J, T_{STG}$          | -55 to 150 |      |

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

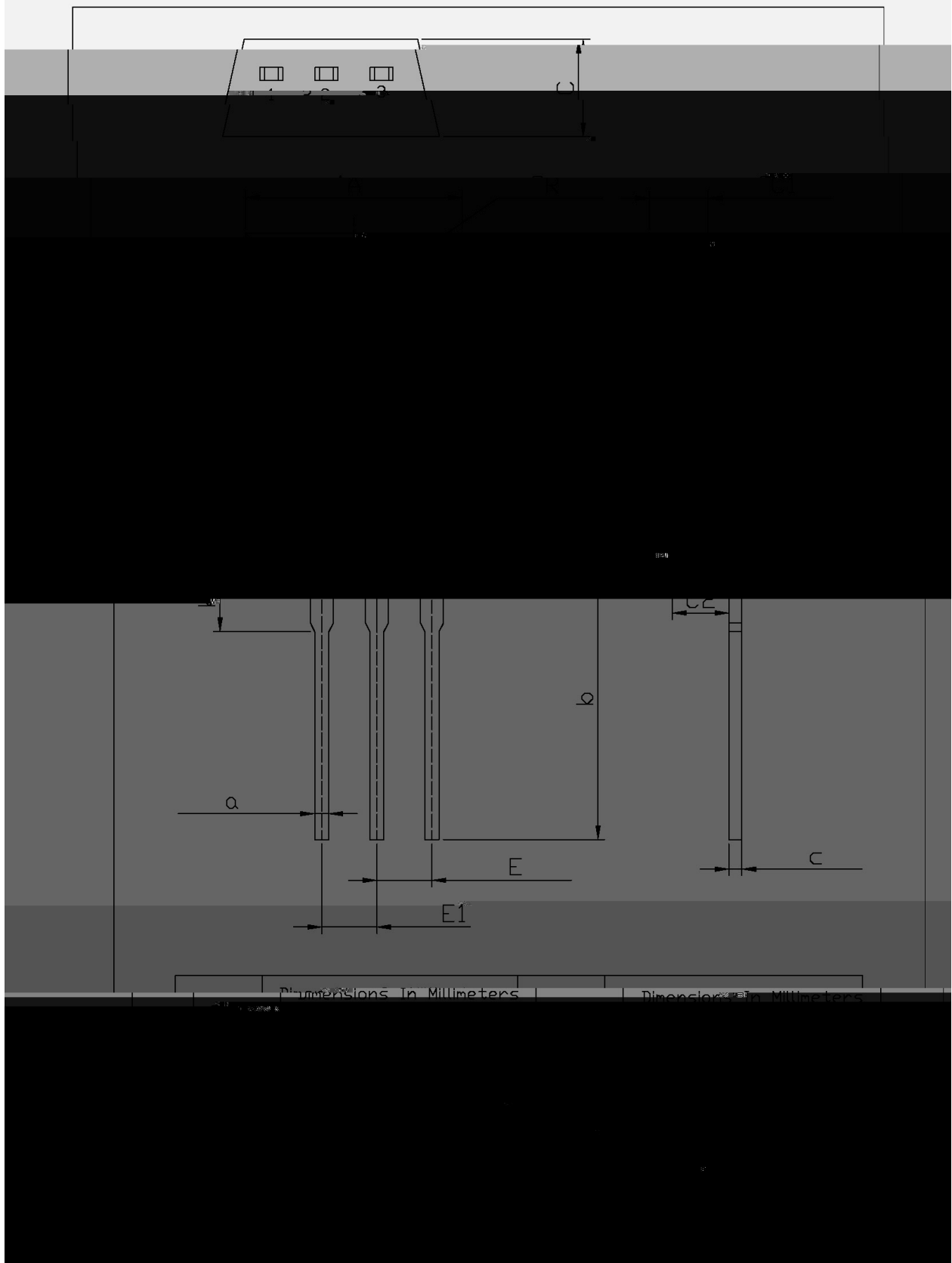
| Parameter                          | Symbol       | Test Conditions                            | Min | Typ | Max       | Unit     |
|------------------------------------|--------------|--------------------------------------------|-----|-----|-----------|----------|
| Drain-Source Breakdown Voltage     | $BV_{DSS}$   | $V_{GS}=0V$ $I_D=250\mu A$                 | 650 |     |           | V        |
| Zero Gate Voltage Drain Current    | $I_{DSS}$    | $V_{DS}=650V$ $V_{GS}=0V$                  |     |     | 1.0       | $\mu A$  |
|                                    |              | $V_{DS}=480V$ $T_C=125$                    |     |     | 10        | $\mu A$  |
| Gate-Body Leakage Current, Forward | $I_{GSS}$    | $V_{GS}=\pm 30V$ $V_{DS}=0V$               |     |     | $\pm 0.1$ | $\mu A$  |
| Gate Threshold Voltage             | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ $I_D=250\mu A$             | 2.0 |     | 4.0       | V        |
| Static Drain-Source On-Resistance  | $R_{DS(on)}$ | $V_{GS}=10V$ $I_D=2.25A$                   |     | 2.0 | 2.5       | $\Omega$ |
| Forward Transconductance           | $g_{FS}$     | $V_{DS}=40V$ $I_D=2.25A$                   |     | 4.7 |           | S        |
| Drain-Source Diode Forward Voltage | $V_{SD}$     | $V_{GS}=0V$ $I_S=4.5A$                     |     |     | 1.4       | V        |
| Input Capacitance                  | $C_{iss}$    | $V_{DS}=25V$ $V_{GS}=0V$<br>$f=1.0MHz$     |     | 515 | 670       | pF       |
| Output Capacitance                 | $C_{oss}$    |                                            |     | 55  | 72        | pF       |
| Reverse Transfer Capacitance       | $C_{rss}$    |                                            |     | 6.5 | 8.5       | pF       |
| Turn-On Delay Time                 | $t_{d(on)}$  | $V_{DD}=300V$ $I_D=4.5A$<br>$R_G=25\Omega$ |     | 10  | 30        | ns       |
| Turn-On Rise Time                  | $t_r$        |                                            |     | 42  | 90        | ns       |
| Turn-Off Delay Time                | $t_{d(off)}$ |                                            |     | 38  | 85        | ns       |
| Turn-Off Fall Time                 | $t_f$        |                                            |     | 46  | 100       | ns       |

/ Electrical Characteristic Curve

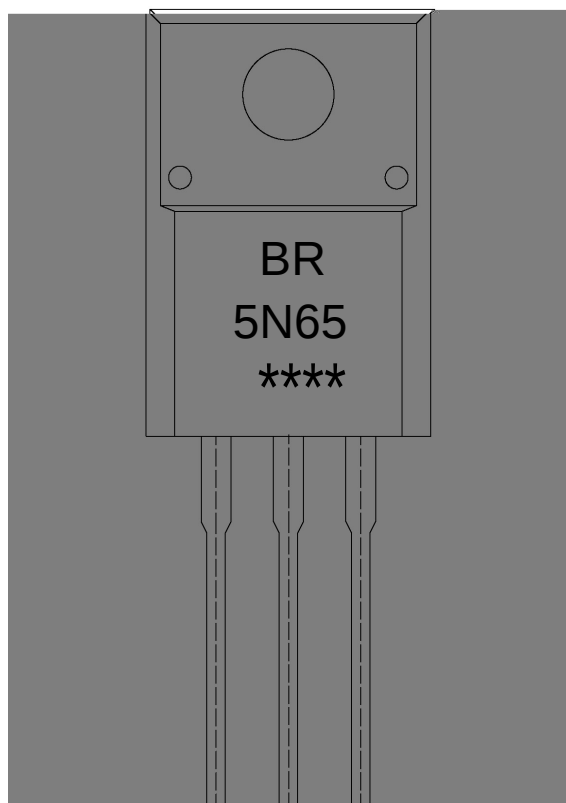


T0-220F

单位: 



**/ Marking Instructions**



BR  
5N65

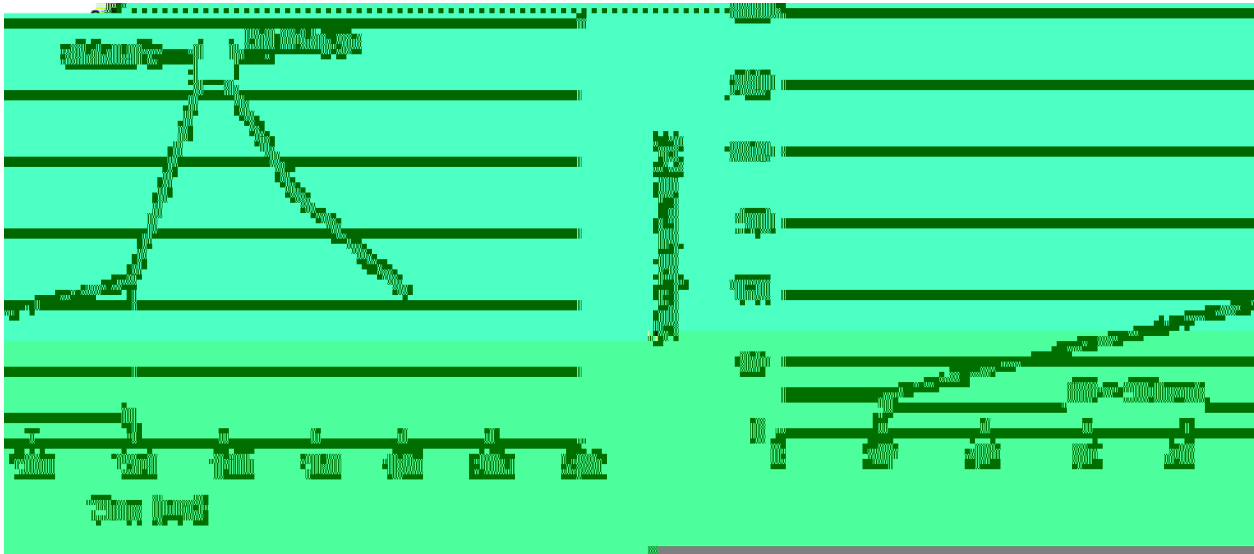
Note:

BR: Company Code

5N65: Product Type.

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

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



- Note:

1. Preheating: 25~150 , Time: 60~90sec.

2. Peak Temp.: 255 5 , Duration: 5 0.5sec.

3. Cooling Speed: 2~10 /sec.
- 1 25 150 60 90sec;

2 255 5 5 0.5sec;

3 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 包装数量       |                       | Dimension 包装尺寸 (unit: mm <sup>3</sup> ) |
|--------------|------------------|-----------------------|-----------------------------------------|
| 封装形式         | Units/Bag<br>只/袋 | Bags/Inner Box<br>袋/盒 | Units/Inner Box<br>只/盒                  |