



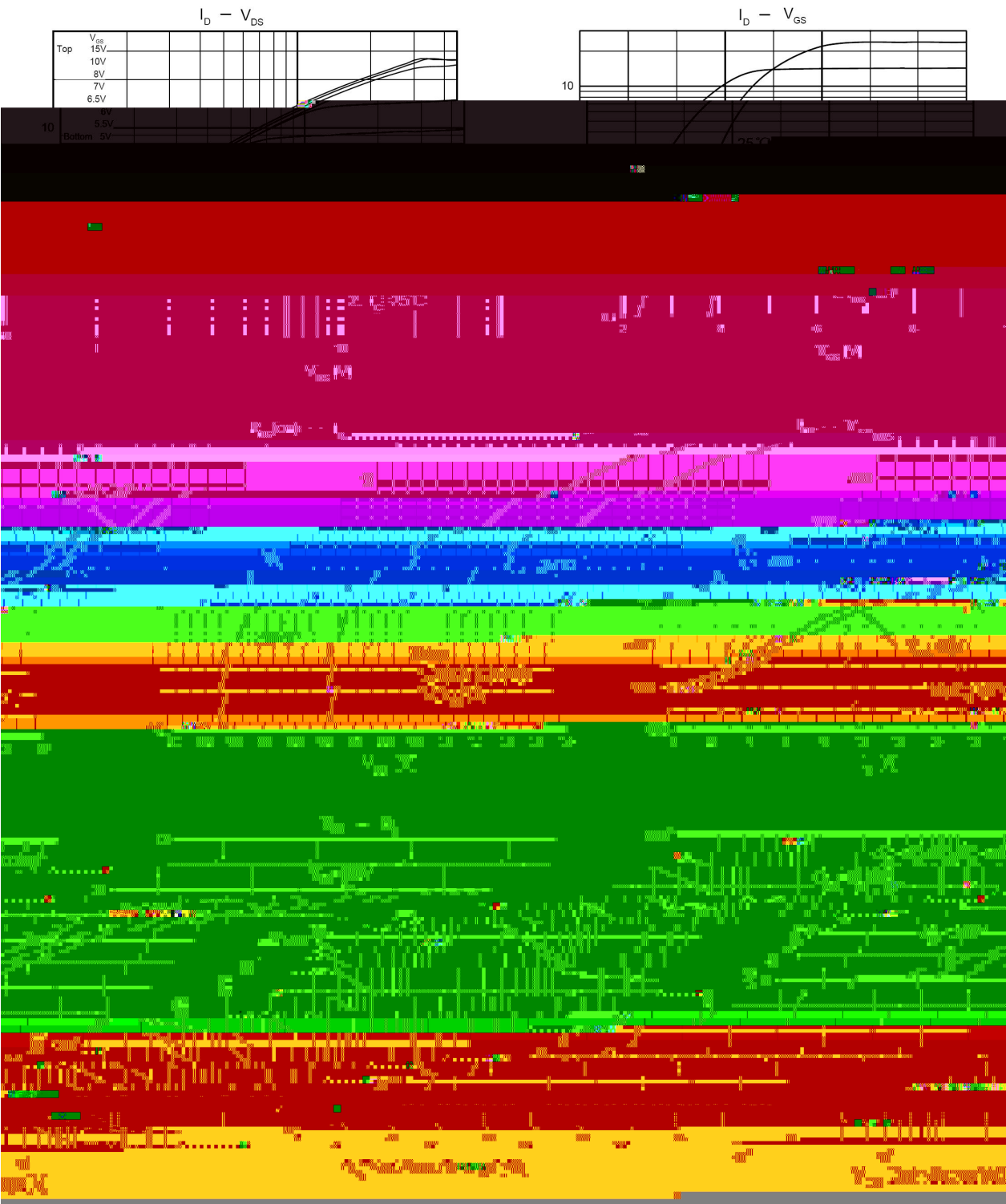
## / Absolute Maximum Ratings(Ta=25 )

| Parameter                               | Symbol                  | Rating     | Unit |
|-----------------------------------------|-------------------------|------------|------|
| Drain-Source Voltage                    | $V_{DS}$                | 650        | V    |
| Drain Current                           | $I_D(T_C=25^{\circ}C)$  | 12         | A    |
| Drain Current                           | $I_D(T_C=100^{\circ}C)$ | 7.6        | A    |
| Drain Current - Pulsed                  | $I_{DM}$                | 48         | A    |
| Gate-Source Voltage                     | $V_{GS}$                | $\pm 30$   | V    |
| Single Pulsed Avalanche Energy          | $E_{AS}$                | 880        | mJ   |
| Repetitive Avalanche Energy             | $E_{AR}$                | 25         | mJ   |
| Avalanche Current                       | $I_{AR}$                | 12         | A    |
| Thermal Resistance, Junction to Case    | $R_{\theta JC}$         | 2.45       | /W   |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$         | 62.5       | /W   |
| Power Dissipation                       | $P_D$                   | 51         | W    |
| Operating and Storage Temperature Range | $T_J, T_{STG}$          | -55 to 150 |      |

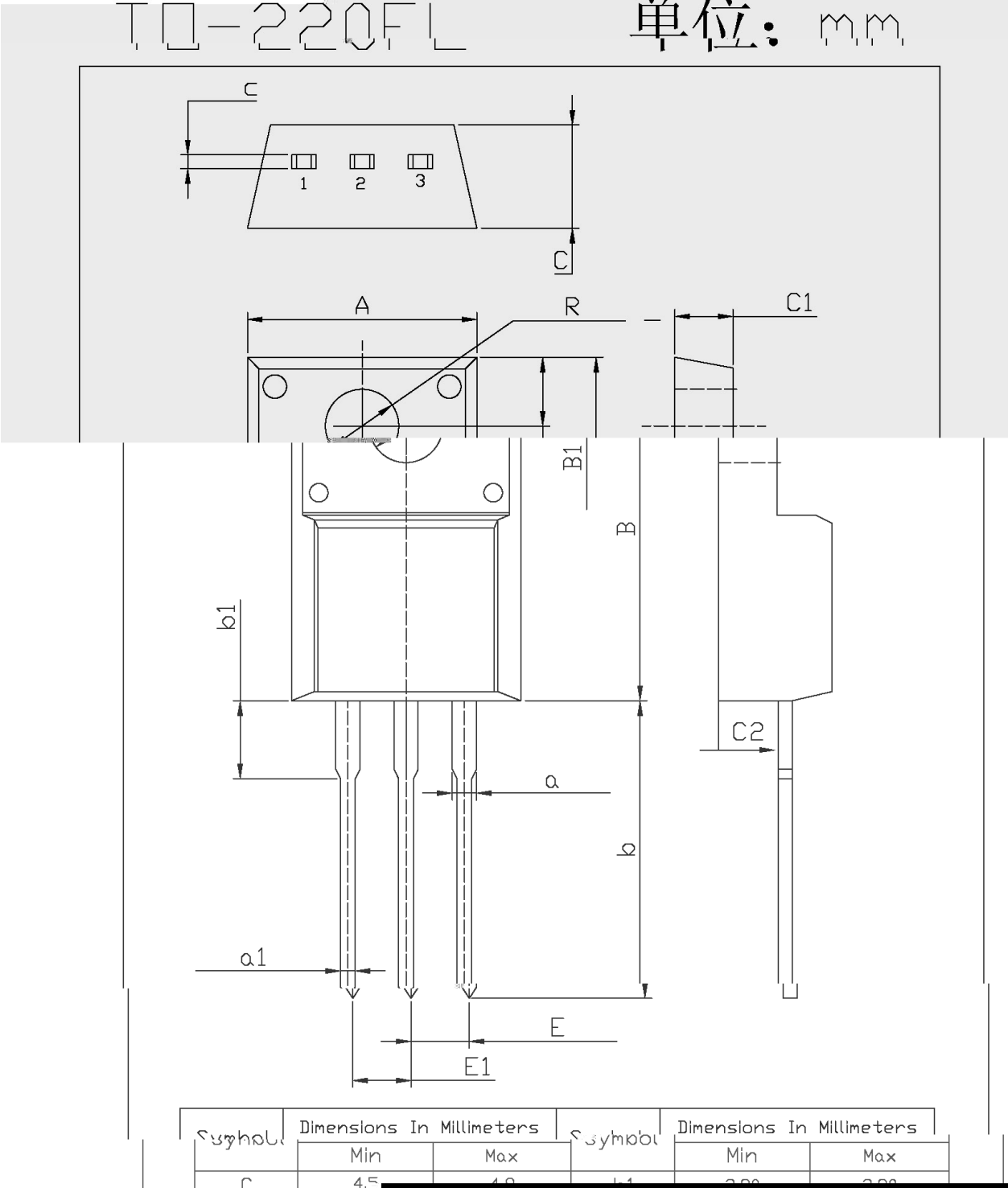
## / Electrical Characteristics(Ta=25 )

| Parameter                          | Symbol       | Test Conditions                           | Min | Typ  | Max       | Unit     |
|------------------------------------|--------------|-------------------------------------------|-----|------|-----------|----------|
| Drain-Source Breakdown Voltage     | $BV_{DS}$    | $V_{GS}=0V$ $I_D=250\mu A$                | 650 |      |           | V        |
| Zero Gate Voltage Drain Current    | $I_{DSS}$    | $V_{DS}=650V$ $V_{GS}=0V$                 |     |      | 1.0       | $\mu A$  |
| Gate-Body Leakage Current Forward  | $I_{GSS}$    | $V_{GS}=\pm 30V$ $V_{DS}=0V$              |     |      | $\pm 100$ | nA       |
| 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  | $R_{DS(on)}$ | $V_{GS}=10V$ $I_D=6A$                     |     | 0.62 | 0.78      | $\Omega$ |
| Forward Transconductance           | $g_{FS}$     | $V_{DS}=40V$ $I_D=6A$                     |     | 13   |           | S        |
| Drain-Source Diode Forward Voltage | $V_{SD}$     | $V_{GS}=0V$ $I_S=12A$                     |     |      | 1.39      | V        |
| Input Capacitance                  | $C_{iss}$    | $V_{DS}=25V$ $V_{GS}=0V$<br>$f=1.0MHz$    |     | 1790 | 2410      | pF       |
| Output Capacitance                 | $C_{oss}$    |                                           |     | 175  | 229       | pF       |
| Reverse Transfer Capacitance       | $C_{rss}$    |                                           |     | 23   | 31        | pF       |
| Turn-On Delay Time                 | $t_{d(on)}$  | $V_{DD}=300V$ $I_D=12A$<br>$R_G=25\Omega$ |     | 78   | 102       | ns       |
| Turn-On Rise Time                  | $t_r$        |                                           |     | 133  | 175       | ns       |
| Turn-Off Delay Time                | $t_{d(off)}$ |                                           |     | 233  | 305       | ns       |
| Turn-Off Fall Time                 | $t_f$        |                                           |     | 104  | 160       | ns       |

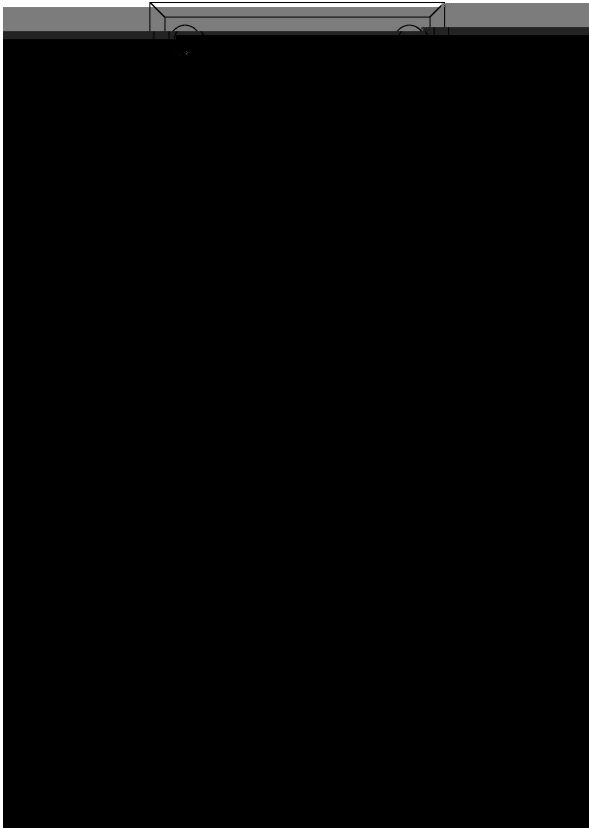
/ Electrical Characteristic Curve



/ Package Dimensions

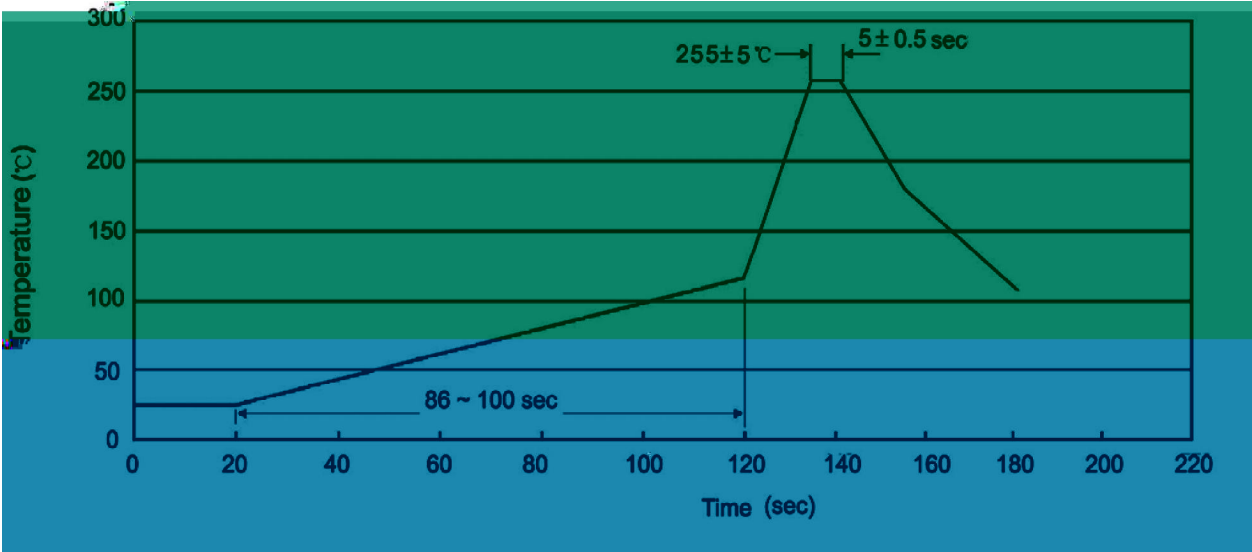


/ Marking Instructions



BR  
12N65  
\*\*\*\*  
Note:  
BR: Company Code  
12N65: Product Type  
\*\*\*\*: Lot No. Code, code change with Lot No

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



Note:

- 1

25 150

60 90sec;
- 2

255±5

5±0.5sec;
- 3

2 10

/sec.
- 1.Preheating:25~150

, Time:60~90sec.
- 2.Peak Temp.:255±5

, Duration:5±0.5sec.
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.

/ TUBE

| Package Type<br>封装形式 | Units 包装数量 |      |       |     |       | Dimension 包装尺寸 (unit: mm³) |            |             |
|----------------------|------------|------|-------|-----|-------|----------------------------|------------|-------------|
|                      | 只 套管       | 套管 盒 | 只 盒   | 盒 箱 | 只 箱   | 套管                         | 盒          | 箱           |
| TO-220FL             | 50         | 20   | 1,000 | 5   | 5,000 | 532×33×7.0                 | 555×164×50 | 575×290×180 |

/ Notices