# BRGB15N65FL

Rev.A Sep.-2023

**DATA SHEET**

## / Descriptions

TO-220FL ṂṂꝈ ꟿ ⅄ ᴥ ǁ ὒ ɥ ᒉ

Insulated-Gate Bipolar Transistor in a TO-220FL Plastic Package

## / Features

650V/15A $V_{CE(SAT)}$= 1.60V(typ.) @$I_C$= 15A

ὃ ᢀ Ȃ ʜ Fast Switching

Ḫ $V_{CE(SAT)}$ Low $V_{CE(SAT)}$

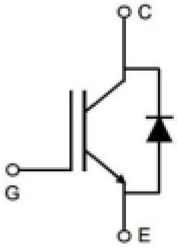
ṇ̇ ғ ᵝ HF Product.

## / Applications

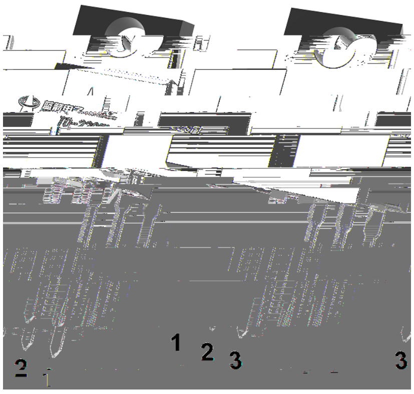
Ͻ ἰ Ʊ ɩ ج ڗ Χ Ͻ ᴴ ɩ ∩ ج ǐ ♬ ᴴ

Motor Drives, OBC,PTC.

## / Equivalent Circuit



## / Pinning



PIN1 χ G PIN 2 χ C PIN 3 χ E

## / Marking

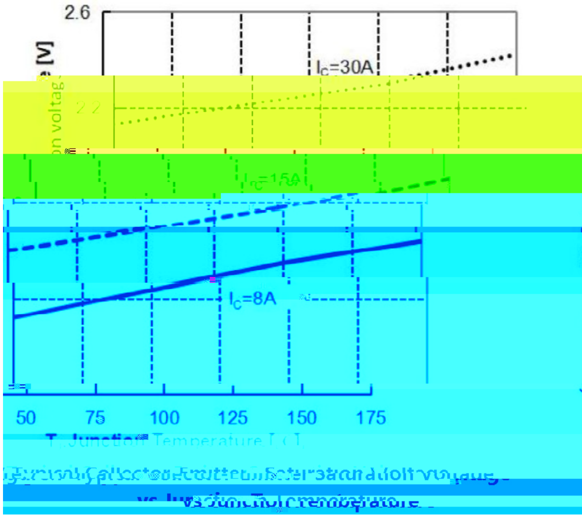
ὃ ᴍ ˥ ب ˝

See Marking Instructions.

| v ˝Ω̡<br>Parameter | | ɿ ᴺ<br>Symbol | ˝Ω̡Ӫ<br>Rating | ᴅ Ɉ<br>Unit |
|---|---|---|---|---|
| Collector-Emitter Voltage | | $V_{CES}$ | 650 | V |
| Gate-Emitter Voltage | | $V_{GES}$ | ± 30 | V |
| Continuous Collector Current | $T_C$=+25 | $I_C$ | 30 | A |
| | $T_C$=+100 | | 15 | A |

| v ῼ<br>Parameter | ɣ ᴺ<br>Symbol | ╜ ᛬ᛏ ᶵ<br>Test Conditions | ῳ ṇ Ӫ<br>Min | Ɛ ʒ Ӫ<br>Typ | ῳ ᶻ Ӫ<br>Max | ᴅ ɏ<br>Unit |
|---|---|---|---|---|---|---|
| Input Capacitance | $C_{ies}$ | $V_{GE}$=0V, $V_{CE}$=25V, f=1MHz | | 791 | | pF |
| Output Capacitance | $C_{oes}$ | | | 130 | | pF |
| Reverse Transfer Capacitance | $C_{res}$ | | | 33 | | pF |
| Total Gate Charge | $Q_g$ | $V_{GE}$=15V, $V_{CC}$=520V, $I_C$=15A | | 45 | | nC |
| Gate to Emitter Charge | $Q_{ge}$ | | | 7 | | nC |
| Gate to Collector Charge | $Q_{gc}$ | | | 23 | | nC |
| Turn-On Delay Time | $t_{d(on)}$ | $T_J$=25 ,<br>$V_{GE}$=15V,$V_{CC}$=400V,<br>$I_C$=15A, $R_G$=5Ω<br>Inductive Load | | 12 | | ns |
| Turn-On Rise Time | $t_r$ | | | 14 | | ns |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 40 | | ns |
| Turn-Off Fall Time | $t_f$ | | | 74 | | ns |
| Turn-On Energy | $E_{on}$ | | | 0.15 | | mJ |
| Turn-Off Energy | $E_{off}$ | | | 0.26 | | mJ |
| Total Switching Energy | $E_{ts}$ | | | | | |

## / Electrical Characteristic Curve



Typical Collector-Emitter Saturation Voltage vs Junction Temperature

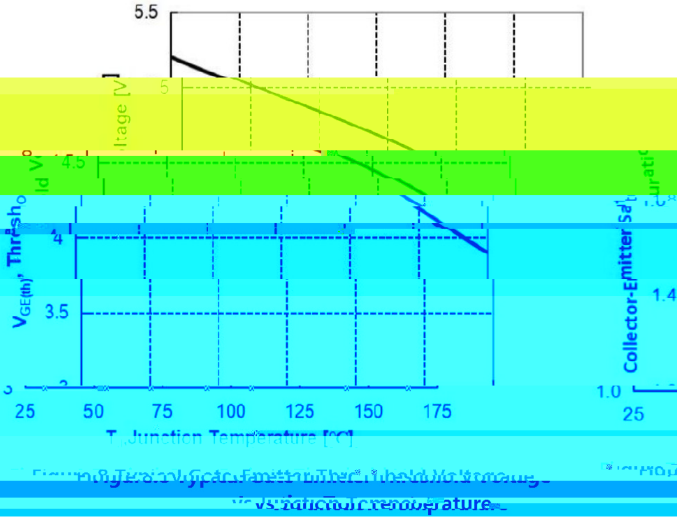
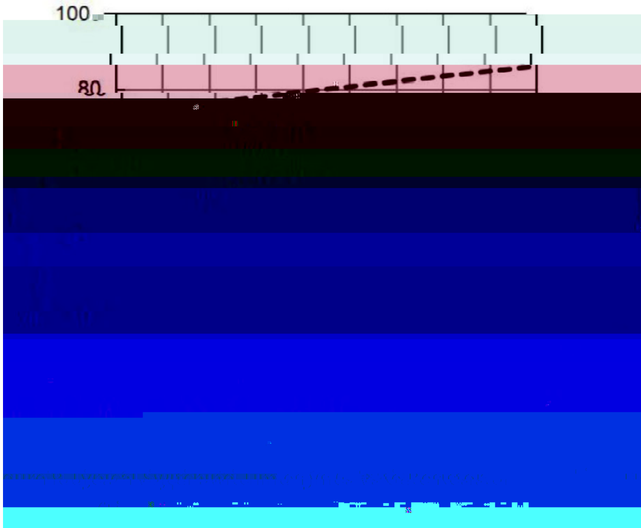
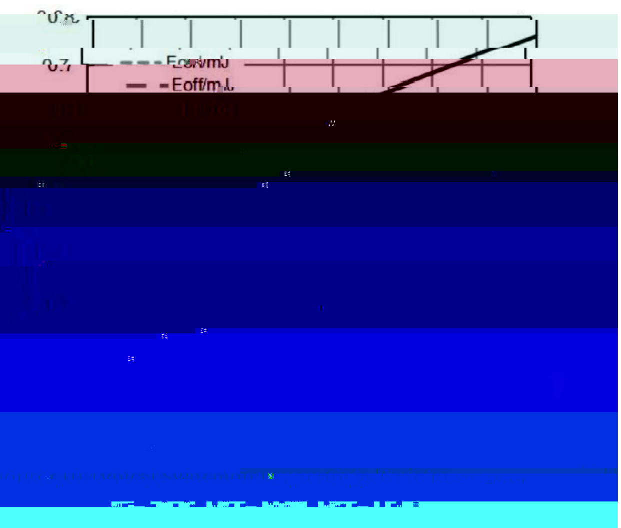
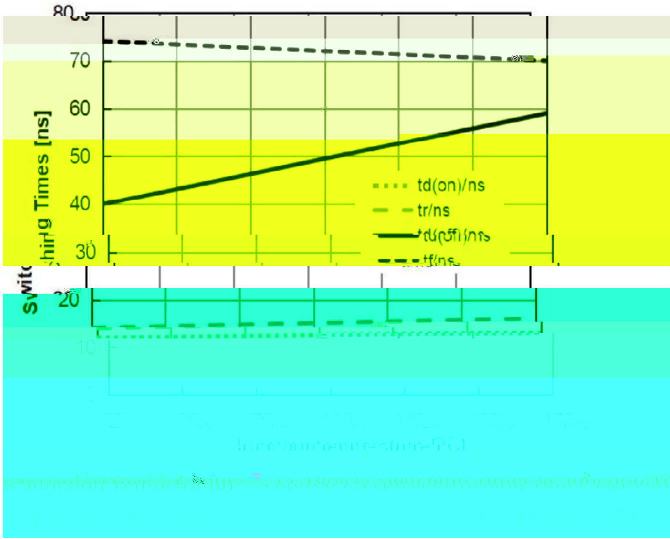
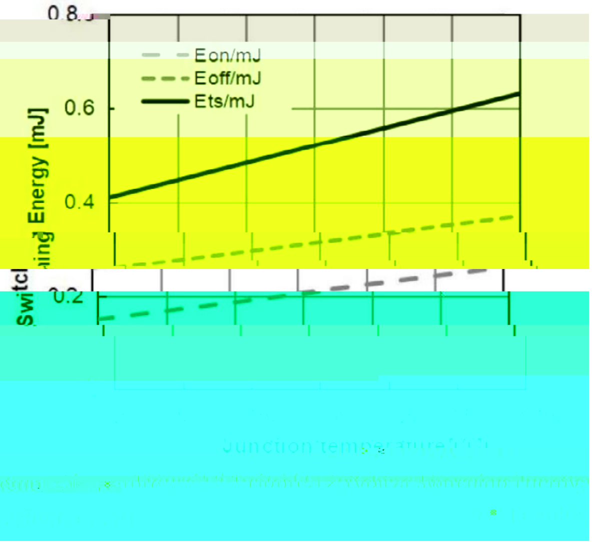


Figure 8 Typical Gate-Emitter Threshold Voltage vs Junction Temperature

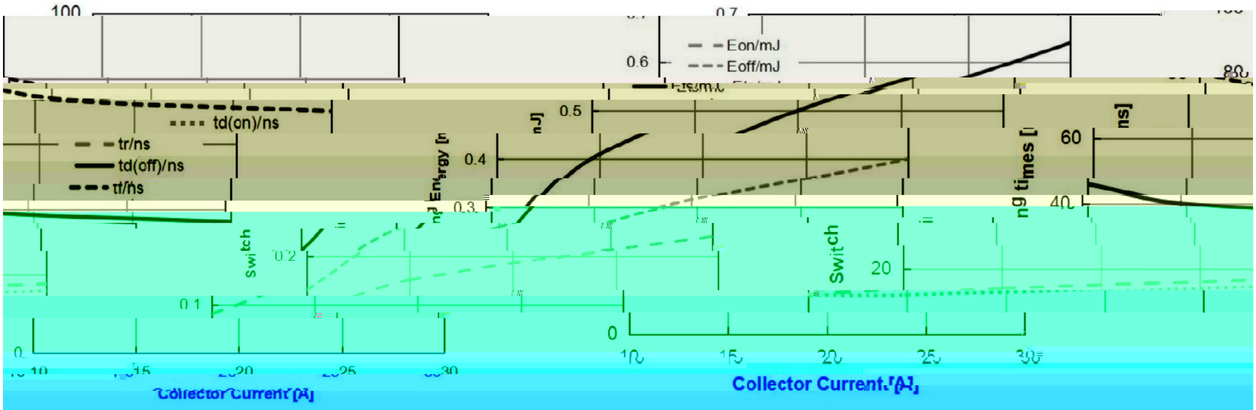




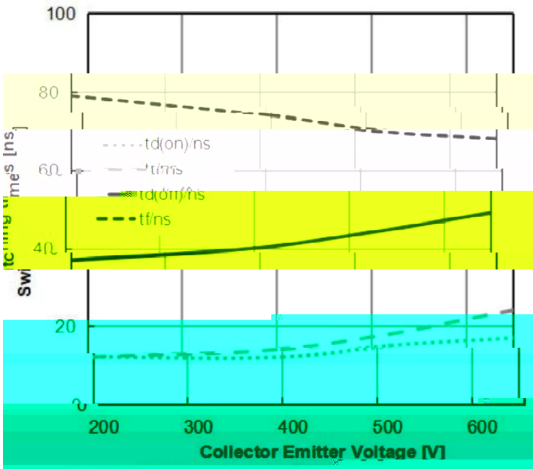


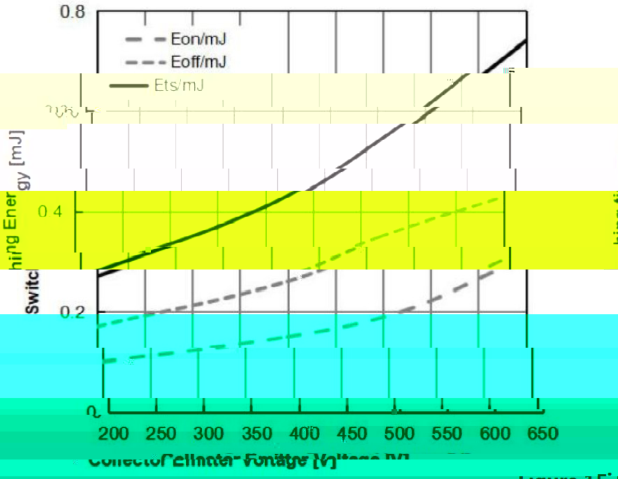


## / Electrical Characteristic Curve

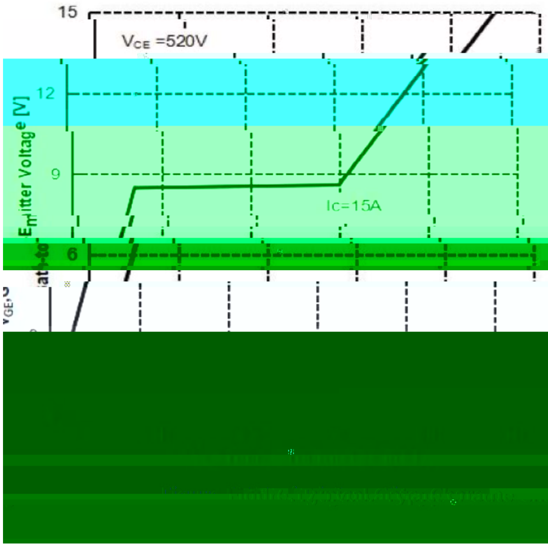


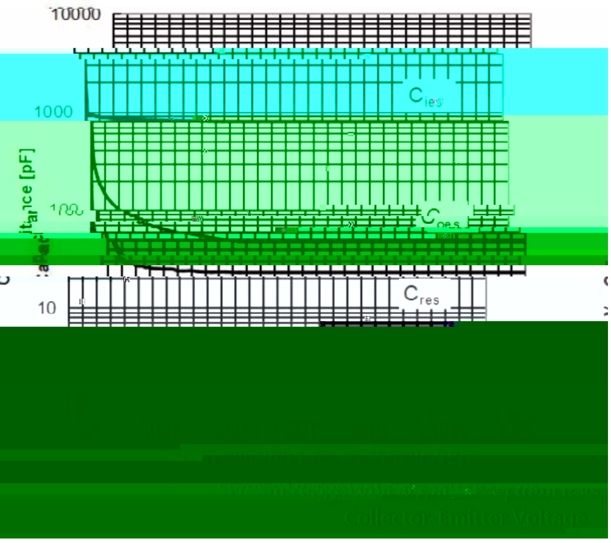
[illegible]





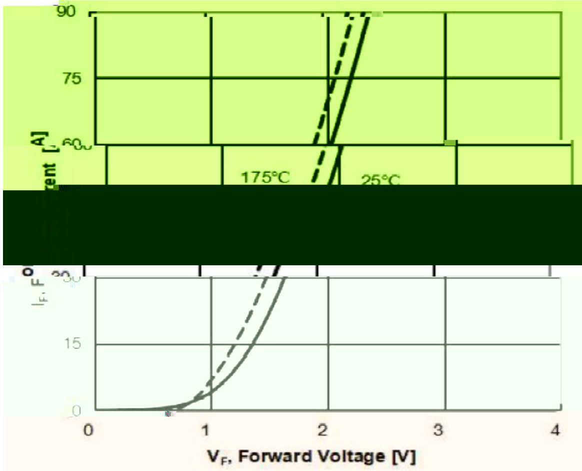
[illegible]





[illegible]

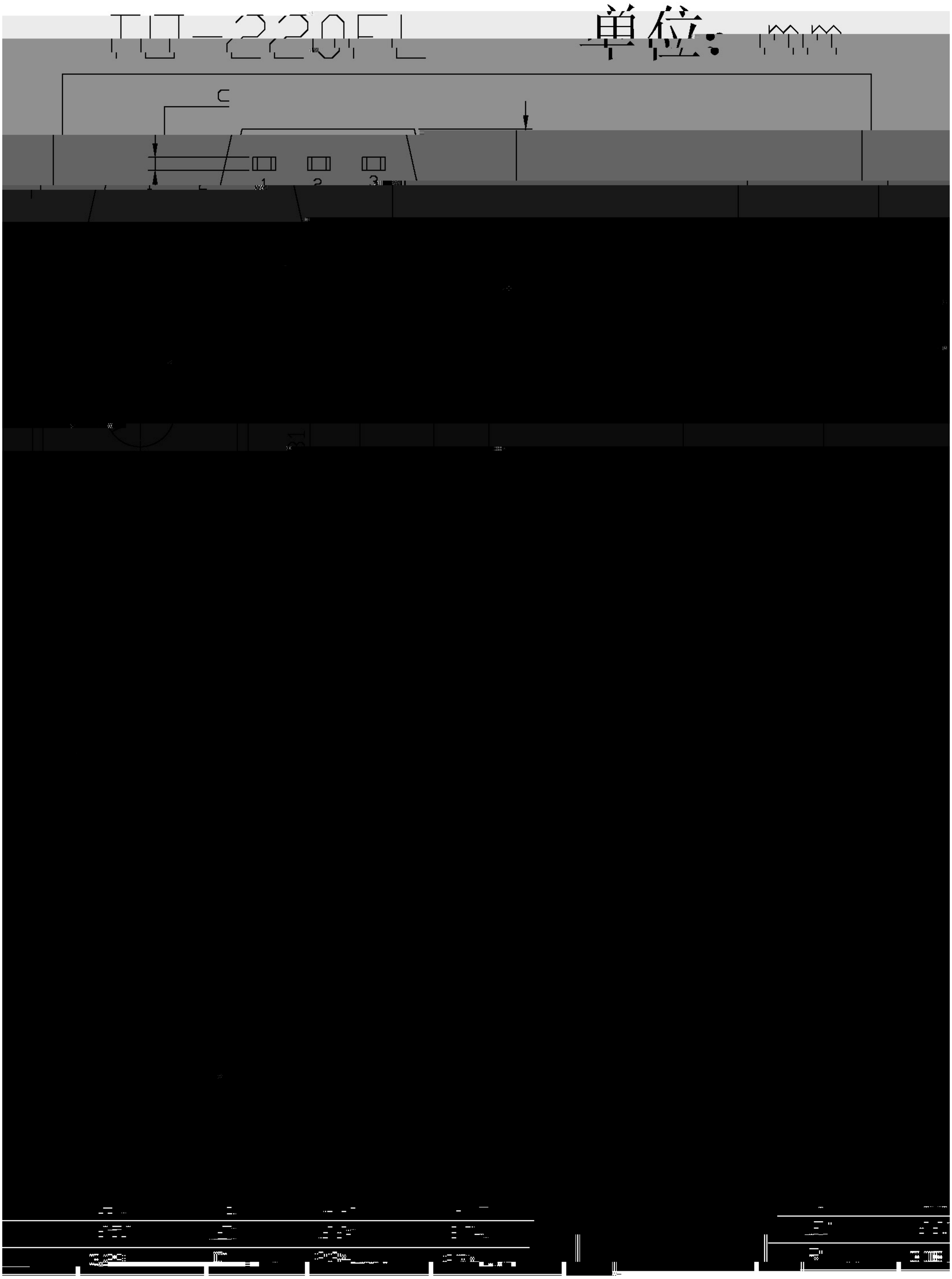
## / Electrical Characteristic Curve



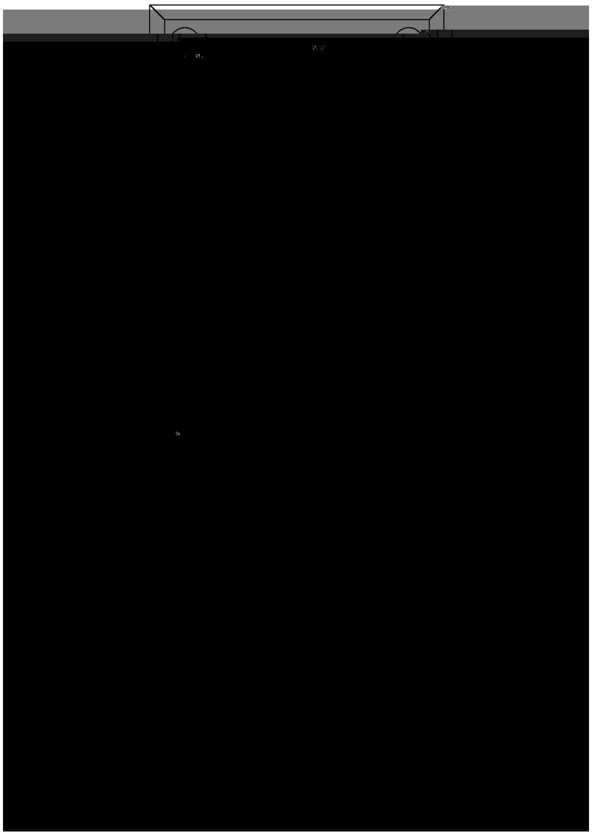
[redacted]

**Typical Diode Forward Current vs Forward Voltage** **Figure.19**

## / Package Dimensions



## / Marking Instructions



ب ˝ χ

BR χ ㅉ ʅ ᴻ Ҧ

GB15N65 χ ㅉ ʒ ᴺ Ҧ

---- χ ㅉ ꟷ ғ ῇ ᴺ Ҧ ι ҿ ꟷ ғ ῇ ᴺ ψ ק

Note:

BR: Company Code

GB15NN65: Product Type Code

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

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

ب ˝ χ
1 ỉ ♬ □ ẙ 25 Ḱ 150 ƚ ı `H ڑ 60 Ḱ 90sec;
2 Š Ӫ □ ẙ 255 ° 5 ƚ ı `H ڑ 'Y ᛀ ᛯ 5 ° 0.5sec;
3 ì ˙ ᛚ ˛ ɔ ঌ ẙ ᛯ 2 Ḱ 10 ƚ /sec.

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

## / Resistance to Soldering Heat Test Conditions

705 ° 5 ƚ ỹ 10 ° (T)10769(e)147(m(.:70±55)]TJ/T107 1 Tf5.05757 0 TD0 Tc0 Tw
#>û ‘UO