



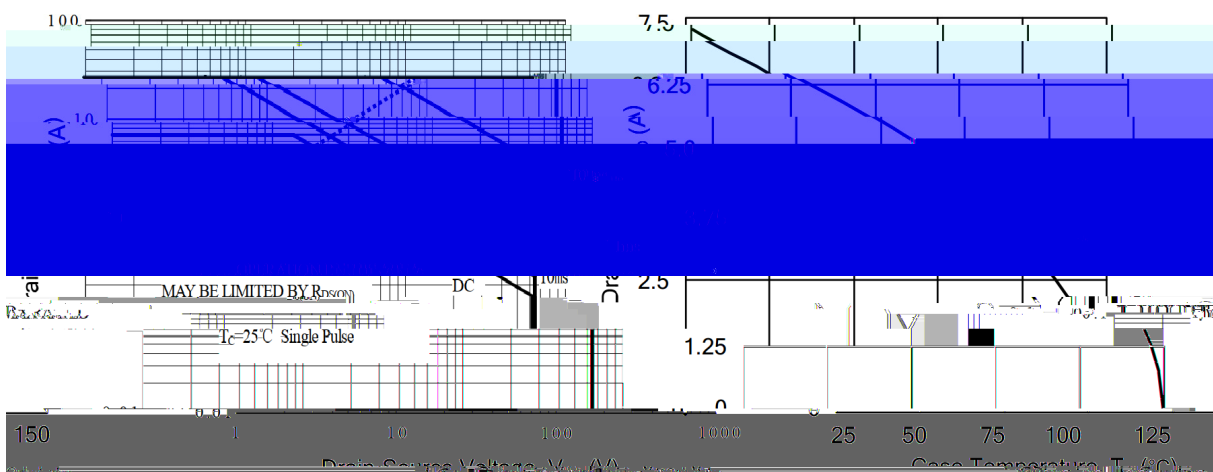
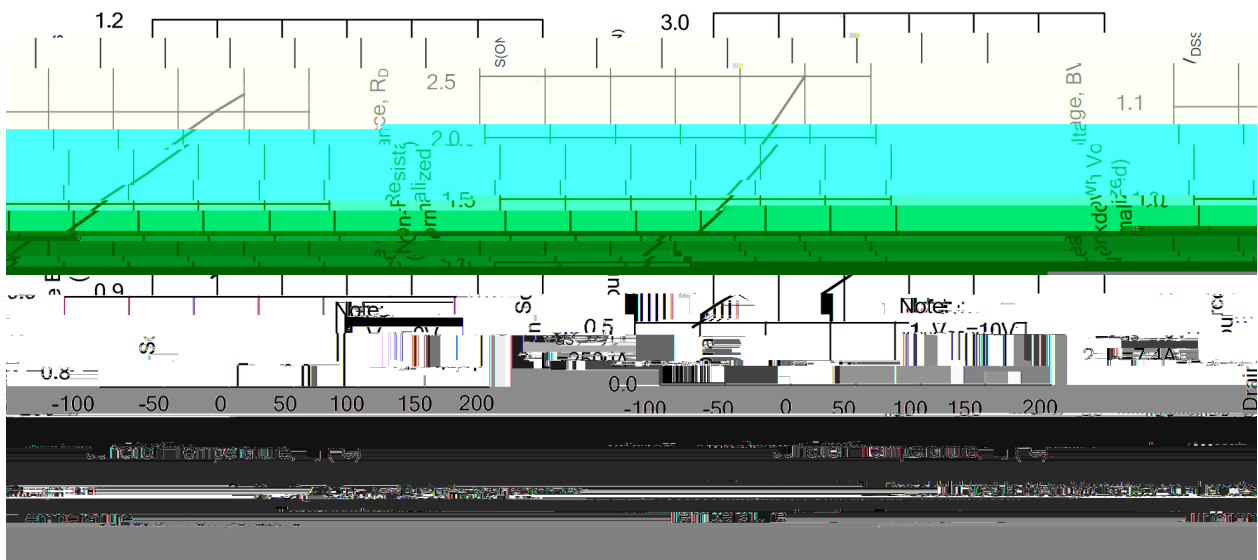
## / Absolute Maximum Ratings(Ta=25 )

| Parameter                               | Symbol                       | Rating     | Unit |
|-----------------------------------------|------------------------------|------------|------|
| Drain-Source Voltage                    | $V_{DS}$                     | 650        | V    |
| Drain Current                           | $I_D(T_c=25^\circ\text{C})$  | 7.0        | A    |
| Drain Current                           | $I_D(T_c=100^\circ\text{C})$ | 4.4        | A    |
| Drain Current - Pulsed                  | $I_{DM}$                     | 28         | A    |
| Gate-Source Voltage                     | $V_{GS}$                     | $\pm 30$   | V    |
| Single Pulsed Avalanche Energy          | $E_{AS}$                     | 425        | mJ   |
| Avalanche Current                       | $I_{AR}$                     | 9.9        | A    |
| Power Dissipation                       | $P_D(T_c=25^\circ\text{C})$  | 100        | W    |
| Operating and Storage Temperature Range | $T_j, T_{stg}$               | -55 to 150 |      |
| Junction to Ambient                     | $R_{\theta JA}$              | 110        | /W   |
| Junction to Case                        | $R_{\theta JC}$              | 1.25       | /W   |

## / Electrical Characteristics(Ta=25 )

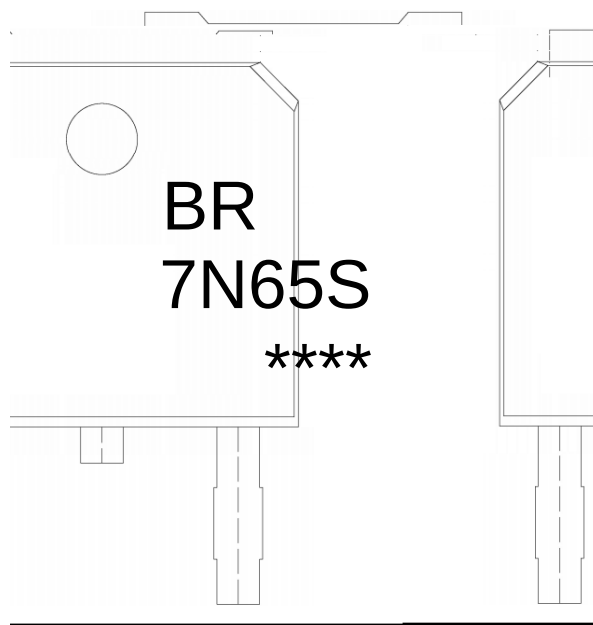
| Parameter                          | Symbol       | Test Conditions                                         | Min | Typ  | Max       | Unit     |
|------------------------------------|--------------|---------------------------------------------------------|-----|------|-----------|----------|
| Drain-Source Breakdown Voltage     | $BV_{DS}$    | $V_{GS}=0V$ $I_D=250\mu A$                              | 650 | 690  |           | 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 | 3.2  | 4.0       | V        |
| Static Drain-Source On-Resistance  | $R_{DS(on)}$ | $V_{GS}=10V$ $I_D=3.5A$                                 |     | 1.1  | 1.5       | $\Omega$ |
| Input Capacitance                  | $C_{iss}$    | $V_{DS}=25V$ $V_{GS}=0V$<br>$f=1.0MHz$                  |     | 1000 |           | pF       |
| Output Capacitance                 | $C_{oss}$    |                                                         |     | 180  |           |          |
| Reverse Transfer Capacitance       | $C_{rss}$    |                                                         |     | 4    |           |          |
| Total Gate Charge                  | $Q_G$        | $V_{DS}=520V$ $I_D=7.0A$ ,<br>$V_{GS}=10V$              |     | 30   |           | nC       |
| Gate-Source Charge                 | $Q_{GS}$     |                                                         |     | 10   |           |          |
| Gate-Drain Charge                  | $Q_{GD}$     |                                                         |     | 21   |           |          |
| Turn-On Delay Time                 | $t_{d(on)}$  | $V_{DD}=325V$ $I_D=7.0A$<br>$R_G=25\Omega$ $V_{GS}=10V$ |     | 52   |           | ns       |
| Turn-On Rise Time                  | $t_r$        |                                                         |     | 160  |           |          |
| Turn-Off Delay Time                | $t_{d(off)}$ |                                                         |     | 400  |           |          |
| Turn-Off Fall Time                 | $t_f$        |                                                         |     | 190  |           |          |
| Drain-Source Diode Forward Voltage | $V_{SD}$     | $V_{GS}=0V$ , $I_S=7.0A$                                |     |      | 1.4       | V        |

/ Electrical Characteristic Curve



**BRD7N65S**  
Rev.A Dec.-2023

/ Marking Instructions



BR

7N65S

----

Note:

BR: Company Code

7N65S: Product Type Code

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

(     ) / Temperature Profile for IR Reflow Soldering(Pb-Free)

|  |
|--|
|  |
|  |
|  |
|  |
|  |
|  |
|  |

- 1

150 180%

60 90sec;
- 2

245 <sup>±</sup> 5%

5 <sup>±</sup> 0.5sec;
- 3

2 10%/sec.
- Note:

1.Preheating:150~180%, Time:60~90sec.
- 2.Peak Temp.:245 <sup>±</sup> 5%, Duration:5 <sup>±</sup> 0.5sec.
3. Cooling Speed: 2~10%/sec.

/ Resistance to Soldering Heat Test Conditions

605 <sup>±</sup> 5%