

# BRD65R380C

Rev.B May.-2022



DATA SHEET

## / Revised record

| A | 2022.4.21 | ALL     | AOS-AOD380A60         |  |  |
|---|-----------|---------|-----------------------|--|--|
| B | 2022.5.26 | 2,3,4,5 | YC-RMX65R380SN_ReV1.0 |  |  |
|   |           |         |                       |  |  |
|   |           |         |                       |  |  |
|   |           |         |                       |  |  |
|   |           |         |                       |  |  |
|   |           |         |                       |  |  |
|   |           |         |                       |  |  |
|   |           |         |                       |  |  |

# BRD65R380C

Rev.B May.-2022



DATA SHEET

## / Descriptions

TO-252                      N                      650V

N-CHANNEL 650V Super-Junction Power MOSFET in a TO-252 Plastic Package.

## / Features

$R_{DS(on)}$                        $C_{rss}$

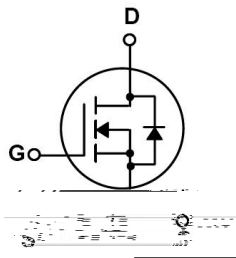
Low  $R_{DS(on)}$ , low gate charge, low  $C_{rss}$ , fast switching, HF Product.

## / Applications

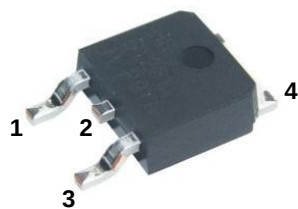
DC/DC

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

PIN 4    D

## / Marking

See Marking Instructions.

| Parameter                               | Symbol                        | Rating     | Unit                 |
|-----------------------------------------|-------------------------------|------------|----------------------|
| Drain-Source Voltage                    | $V_{DSS}$                     | 650        | V                    |
| Drain Current                           | $I_D(T_C=25^{\circ}\text{C})$ | 11         | A                    |
| Drain Current - Pulsed                  | $I_{DM}$                      | 44         | A                    |
| Gate-Source Voltage                     | $V_{GS}$                      | $\pm 30$   | V                    |
| Single Pulsed Avalanche Energy          | $E_{AS}$                      | 277        | mJ                   |
| Avalanche Current                       | $I_{AS}$                      | 8          | A                    |
| Power Dissipation                       | $P_D(T_C=25^{\circ}\text{C})$ | 125        | W                    |
| Operating and Storage Temperature Range | $T_J, T_{STG}$                | -55 to 150 | $^{\circ}\text{C}$   |
| Junction-to-Case                        | $R_{\theta JC}$               | 1          | $^{\circ}\text{C/W}$ |
| Junction-to-Ambient                     | $R_{\theta JA}$               | 55         | $^{\circ}\text{C/W}$ |

| Parameter                          | Symbol       | Test Conditions                                       | Min | Typ  | Max       | Unit       |
|------------------------------------|--------------|-------------------------------------------------------|-----|------|-----------|------------|
| Drain-Source Breakdown Voltage     | $BV_{DSS}$   | $V_{GS}=0V$ $I_D=250\mu A$                            | 650 | 700  |           | V          |
| Zero Gate Voltage Drain Current    | $I_{DSS}$    | $V_{DS}=650V$ $V_{GS}=0V$<br>$T_J=25^{\circ}\text{C}$ |     |      | 1.0       | $\mu A$    |
| Gate-Body Leakage Current, Forward | $I_{GSS}$    | $V_{GS}=\pm 30V$                                      |     | DS   | $\pm 100$ | nA         |
| Gate Threshold Voltage             | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ $I_D=250\mu A$                        | 2.5 | 3.3  | 4.5       | V          |
| Static Drain-Source On-Resistance  | $R_{DS(on)}$ | $V_{GS}=10V$ $I_D=5.5A$                               |     | 320  | 380       | m $\Omega$ |
| Drain-Source Diode Forward Voltage | $V_{SD}$     | $V_{GS}=0V$ $I_{SD}=1A$<br>$T_J=25^{\circ}\text{C}$   |     |      | 1.2       | V          |
| Gate Resistance                    | $R_g$        | $V_{GS}=0V$ $f=1.0\text{MHz}$                         |     | 4.1  |           | $\Omega$   |
| Input Capacitance                  | $C_{iss}$    | $V_{DS}=100V$ $V_{GS}=0V$<br>$f=1.0\text{MHz}$        |     | 735  |           | pF         |
| Output Capacitance                 | $C_{oss}$    |                                                       |     | 35   |           | pF         |
| Reverse Transfer Capacitance       | $C_{rss}$    |                                                       |     | 0.45 |           | pF         |

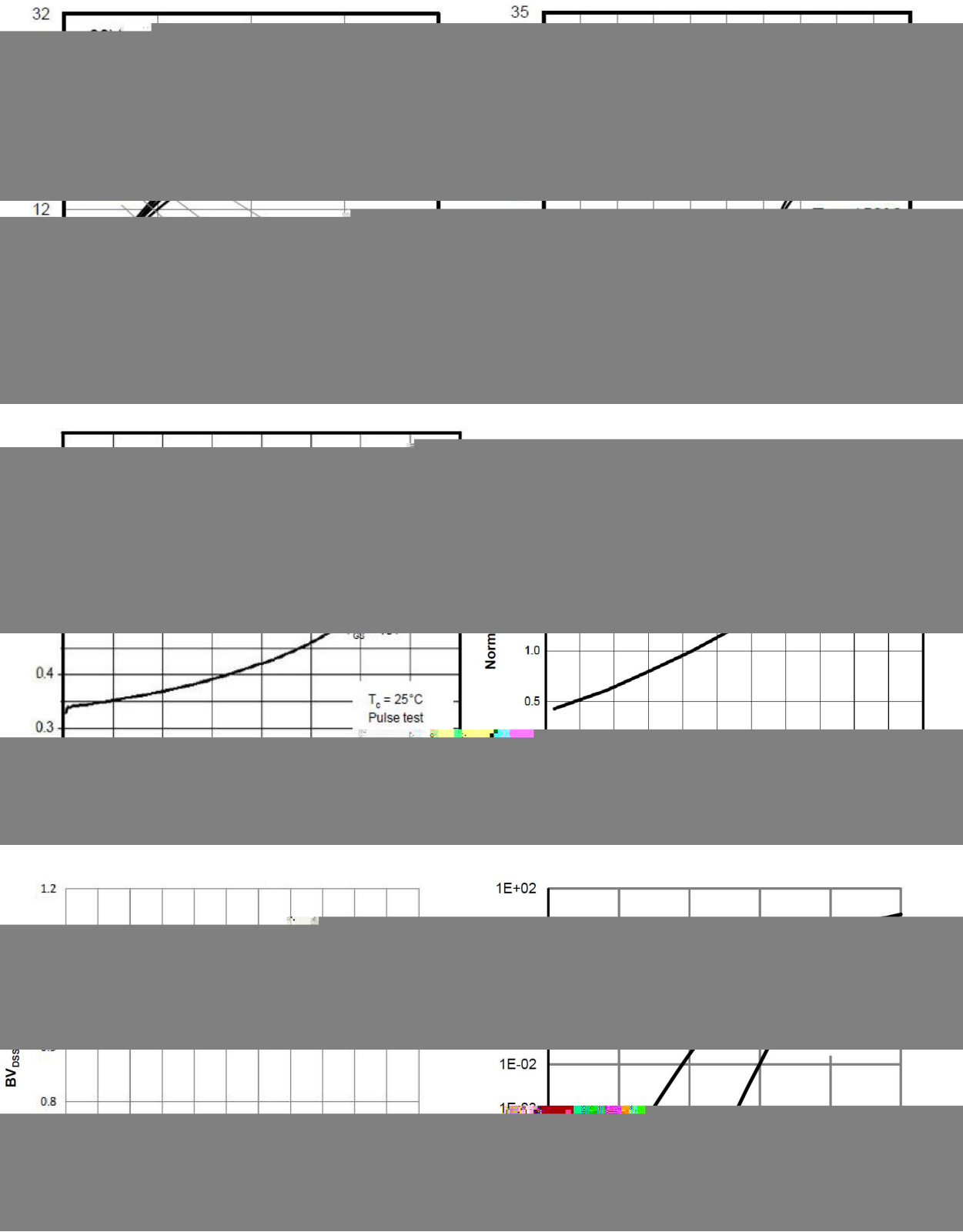
Turn

V

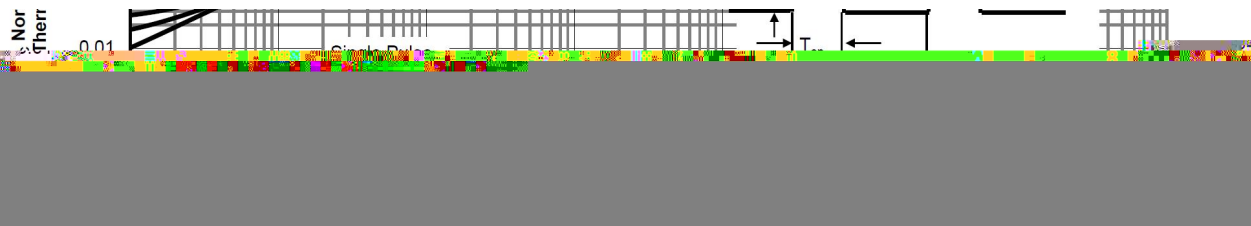
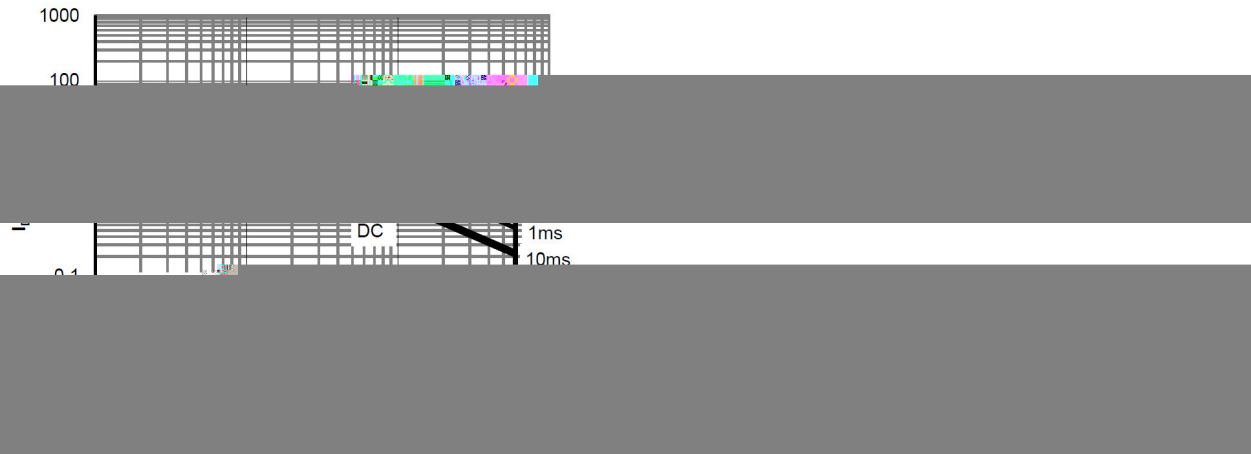
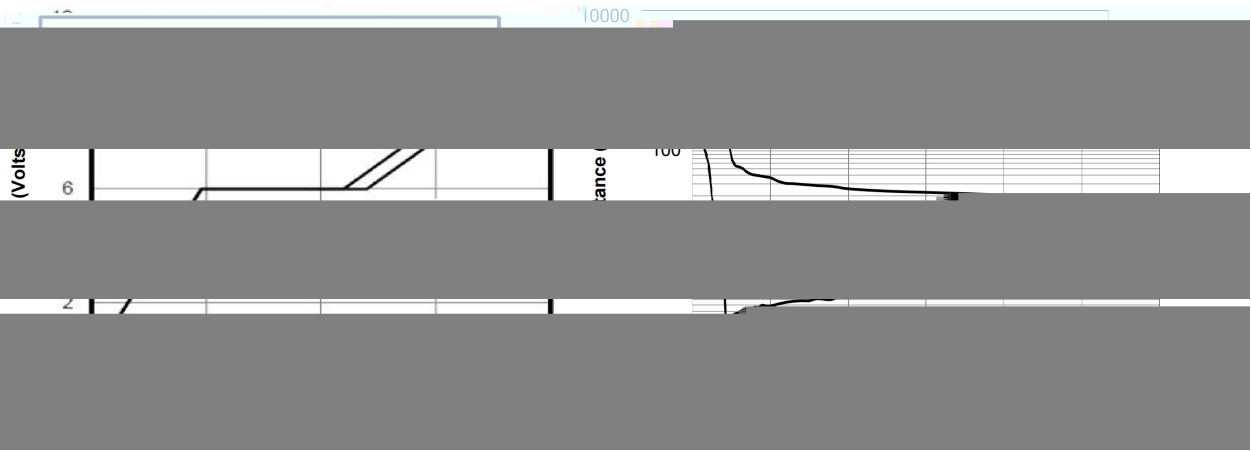


| Parameter                        | Symbol   | Test Conditions                               | Min | Typ  | Max | Unit |
|----------------------------------|----------|-----------------------------------------------|-----|------|-----|------|
| Continuous Diode Forward Current | $I_S$    |                                               |     |      | 11  | A    |
| Total Gate Charge                | $Q_g$    | $V_{DS}=480V \quad I_D=5.5A$<br>$V_{GS}=10V$  |     | 19.2 |     | nC   |
| Gate-Source Charge               | $Q_{gs}$ |                                               |     | 3.1  |     | nC   |
| Gate-Drain Charge                | $Q_{gd}$ |                                               |     | 8.2  |     | nC   |
| Reverse recovery time            | $T_{rr}$ | $V_R=400V, I_F=5.5A,$<br>$dI_F/dt=100A/\mu s$ |     | 310  |     | ns   |
| Reverse recovery charge          | $Q_{rr}$ |                                               |     | 2.8  |     | uC   |

/ Electrical Characteristic Curve

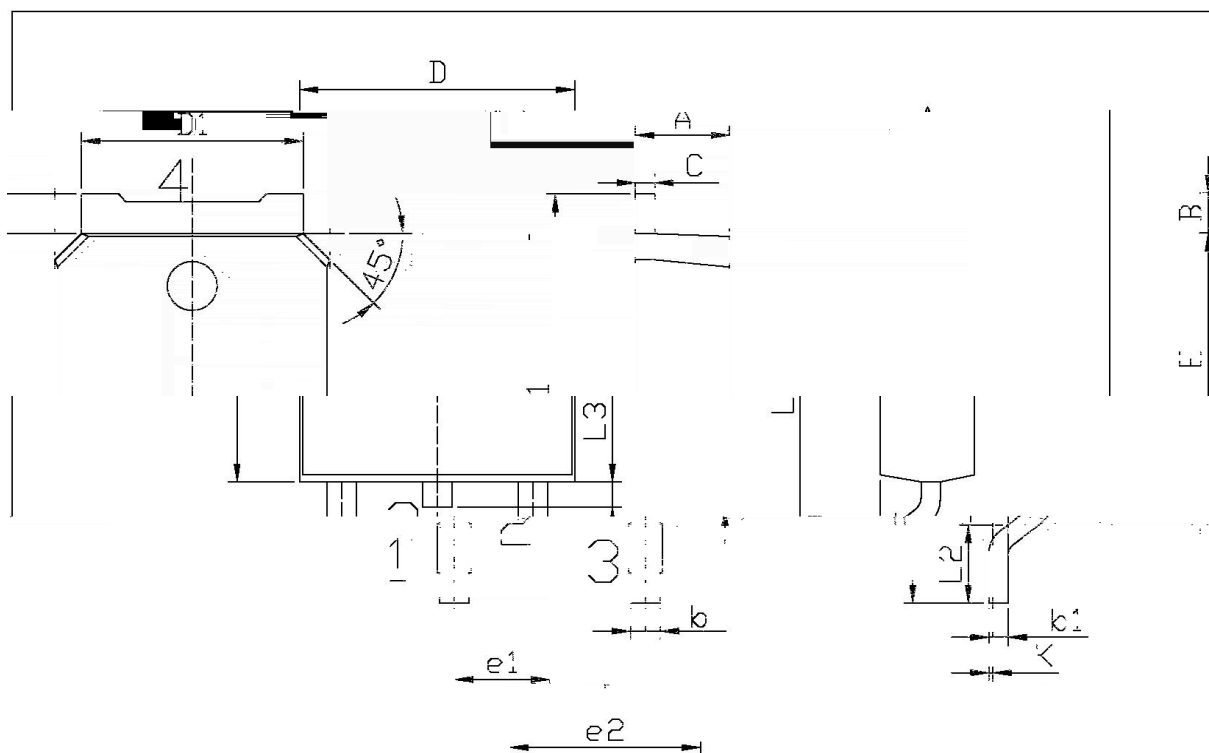


/ Electrical Characteristic Curve





## / Package Dimensions

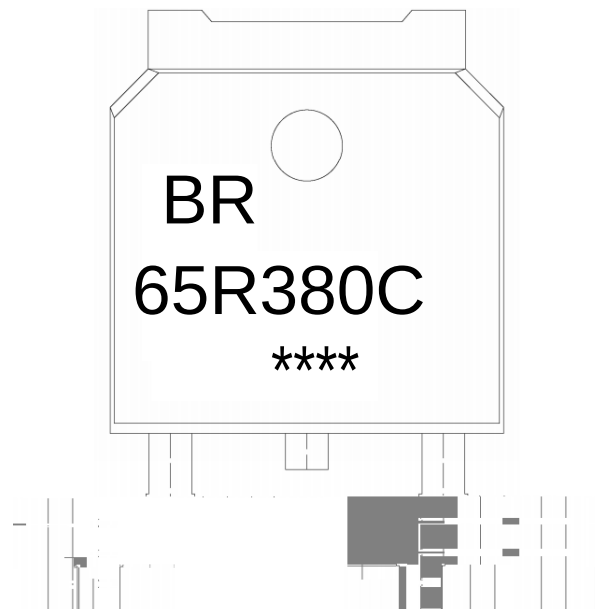


单位: mm

|      |      |      |       |      |      |
|------|------|------|-------|------|------|
| 2.24 | 2.34 | B    | 0.95  | 1.25 | e    |
| 0.30 | 0.55 | 9.85 | 10.35 | b    | 0.50 |
| L2   | 1.70 | 2.00 | 0.45  | 0.55 |      |
| 6.45 | 6.75 | L3   | 0.60  | 0.90 | D    |
| 0.40 | 0.50 | 0.50 | 0.50  | 0.50 | 0.50 |

TP-252

## / Marking Instructions



BR

Note:

BR: . . . . . Company Code

65R380C: . . . . . Product Type Code

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





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

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

Note:

- |   |             |           |                                          |
|---|-------------|-----------|------------------------------------------|
| 1 | 150 180     | 60 90sec; | 1.Preheating:150~180°C, Time:60~90sec.   |
| 2 | 245±5       | 5±0.5sec; | 2.Peak Temp.:245±5°C, Duration:5±0.5sec. |
| 3 | 2 10°C/sec. |           | 3. Cooling Speed: 2~10°C/sec.            |

## / Resistance to Soldering Heat Test Conditions

260±5°C      10±1 sec.      Temp.:260±5°C      Time:10±1 sec

## / Packaging SPEC.

## / REEL

| Package Type<br>封装形式 | Units 包装数量         |                         |                        |                              |                        | Dimension 包装尺寸 (unit: mm <sup>3</sup> ) |             |             |
|----------------------|--------------------|-------------------------|------------------------|------------------------------|------------------------|-----------------------------------------|-------------|-------------|
|                      | Units/Reel<br>只/卷盘 | Reels/Inner Box<br>卷盘/盒 | Units/Inner Box<br>只/盒 | Inner Boxes/Outer Box<br>盒/箱 | Units/Outer Box<br>只/箱 | Reel                                    | Inner Box 盒 | Outer Box 箱 |
| TO-252               | 2,500              | 2                       | 5,000                  | 6                            | 30,000                 | 13" ×16                                 | 360×360×50  | 380×335×366 |

## / TUBE

| Package Type<br>封装形式 | Units 包装数量         |                         |                        |                              |                 | Dimension 包装尺寸 (unit: mm <sup>3</sup> ) |  |  |
|----------------------|--------------------|-------------------------|------------------------|------------------------------|-----------------|-----------------------------------------|--|--|
|                      | Units/Tube<br>只/套管 | Tubes/Inner Box<br>套管/盒 | Units/Inner Box<br>只/盒 | Inner Boxes/Outer Box<br>盒/箱 | Units/Outer Box |                                         |  |  |