

## N-Channel Enhancement Mode MOSFET

### Product Information

#### Features

- ◆ Advanced trench cell design
- ◆ Low Thermal Resistance

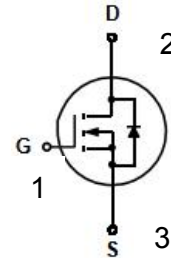
#### Applications

- ◆ Motor drivers
- ◆ DC - DC Converter
- ◆ Automotive applications
- ◆ Uninterruptible power supply

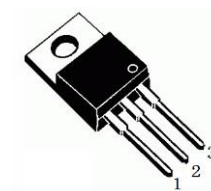
#### Quick reference

- ◆  $BV \cong 80\text{ V}$
- ◆  $P_{tot} \cong 250\text{ W}$
- ◆  $ID \cong 70\text{ A}$
- ◆  $R_{DS(ON)} \cong 12\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- ◆  $R_{DS(ON)} \cong 19\text{ m}\Omega @ V_{GS} = 6\text{ V}$

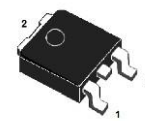
#### Symbol



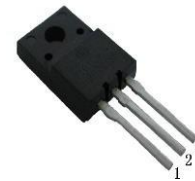
#### Simplified Outline



TO-220-3L



TO-252-2L



TO-220F-3L

### Marking Information



| Product Name | Package    | Marking   | Quantity | RoHS             |
|--------------|------------|-----------|----------|------------------|
| SR080N08T    | TO-220-3L  | SR080N08T | 50       | meet a criterion |
| SR08N08F     | TO-220F-3L | SR08N08F  | 50       | meet a criterion |
| SR08N08D     | TO-252-2L  | SR08N08D  | 3000     | meet a criterion |

**Note:** NHCX defines “ Green ” as lead-free ( RoHS compliant ) and halogen free ( Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC / JEDEC J-STD-020C )

**Limiting Values**

| Symbol               | Parameter                               | Conditions                                      | Min  | Max  | Unit   |
|----------------------|---|---|------|------|--------|
| V <sub>DS</sub>      | Drain-Source Voltage                    | T <sub>C</sub> = 25 °C                          | 80   | -    | V      |
| V <sub>GS</sub>      | Gate-Source Voltage                     | T <sub>C</sub> = 25 °C                          | -    | ± 20 | V      |
| I <sub>D</sub> *     | Drain Current ( DC )                    | T <sub>C</sub> = 25 °C, V <sub>GS</sub> = 10 V  | -    | 70   | A      |
|                      |   | T <sub>C</sub> = 100 °C, V <sub>GS</sub> = 10 V | -    | 50   | A      |
| I <sub>DM</sub> *,** | Drain Current ( Pulsed )                | T <sub>C</sub> = 25 °C, V <sub>GS</sub> = 10 V  | -    | 280  | A      |
| P <sub>tot</sub> *   | Total Power Dissipation                 | T <sub>C</sub> = 25 °C                          | -    | 250  | W      |
| T <sub>stg</sub>     | Storage Temperature                     |   | - 55 | 150  | °C     |
| T <sub>J</sub>       | Junction Temperature                    |   | -    | 150  | °C     |
| I <sub>S</sub>       | Diode Forward Current                   | T <sub>C</sub> = 25 °C                          | -    | 70   | A      |
| E <sub>AS</sub> *    | Single Pulsed Avalanche Energy          | V <sub>DD</sub> = 50 V , L= 0.5 mH              | -    | 40   | mJ     |
| R <sub>θJA</sub> *   | Thermal Resistance- Junction to Ambient |   | -    | 42   | °C / W |
| R <sub>θJC</sub> *   | Thermal Resistance- Junction to Case    |   | -    | 0.5  |        |

**Notes :**

- \* Pulse width ≤ 300 μs, duty cycle ≤ 2 %
- \*\* Surface Mounted on 1 in<sup>2</sup> pad area, t 10 sec
- \*\*\* Limited by bonding wire

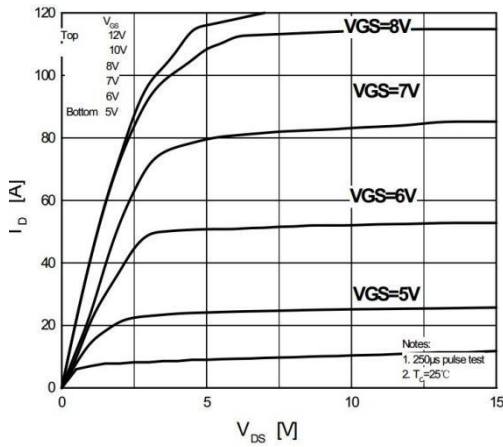
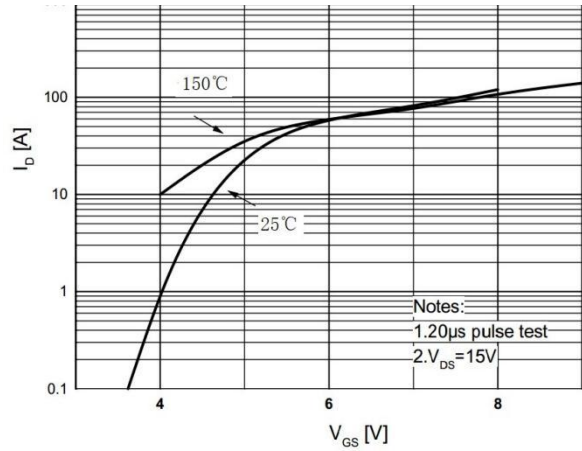
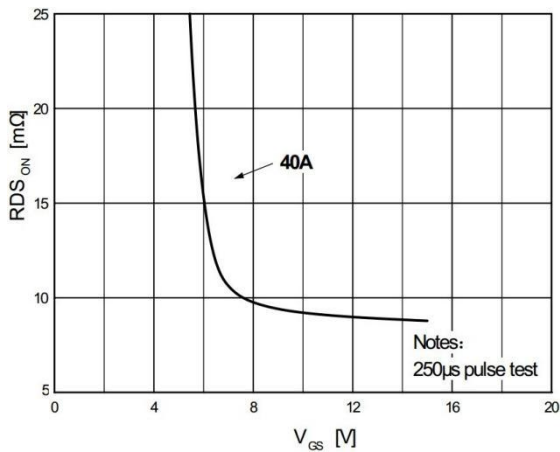
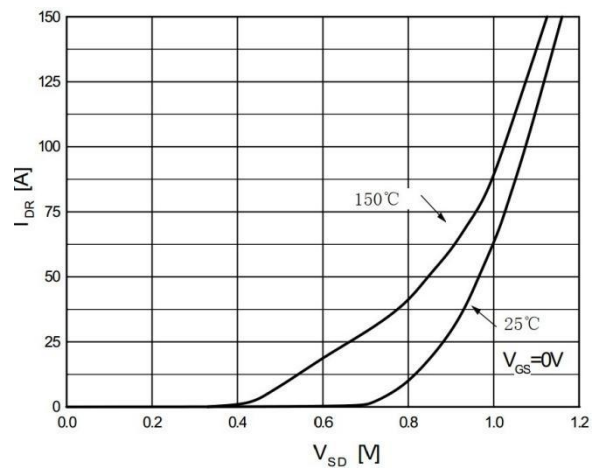
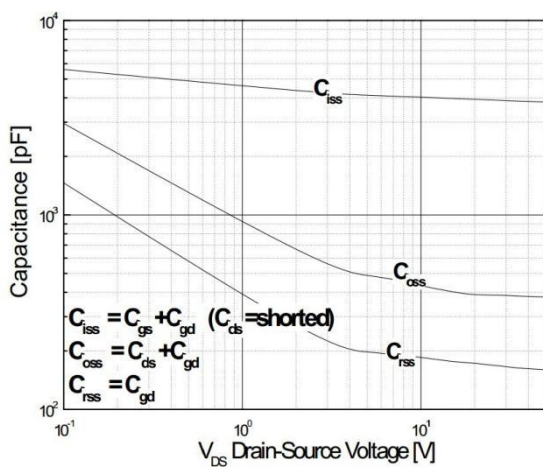
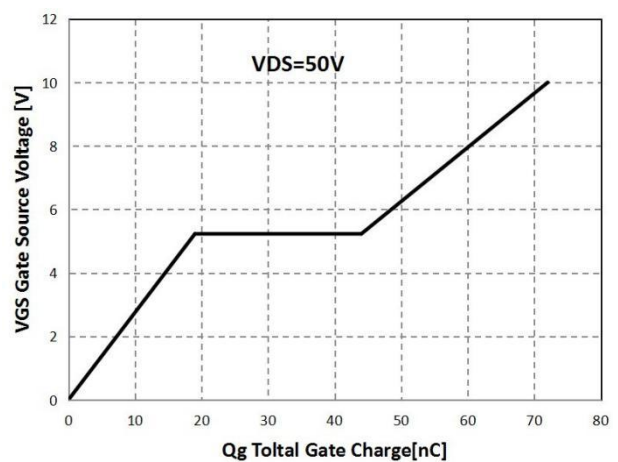
**Electrical Characteristics ( TA=25 °C Unless Otherwise Noted )**

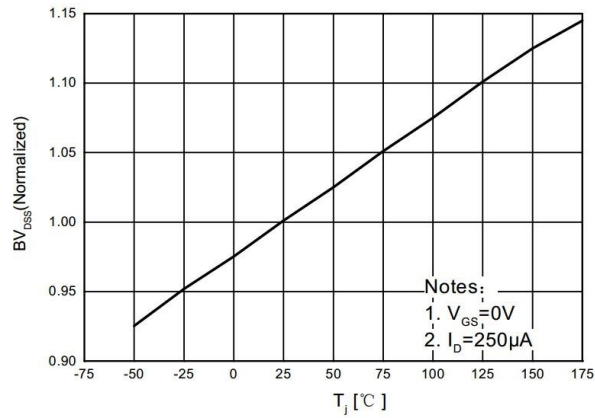
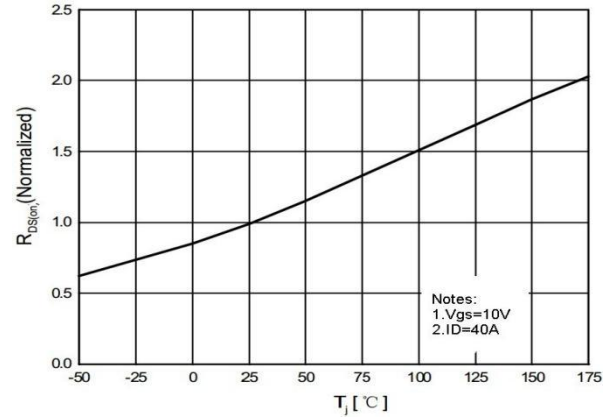
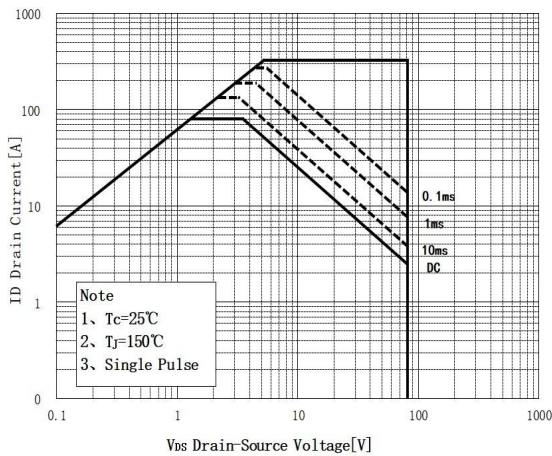
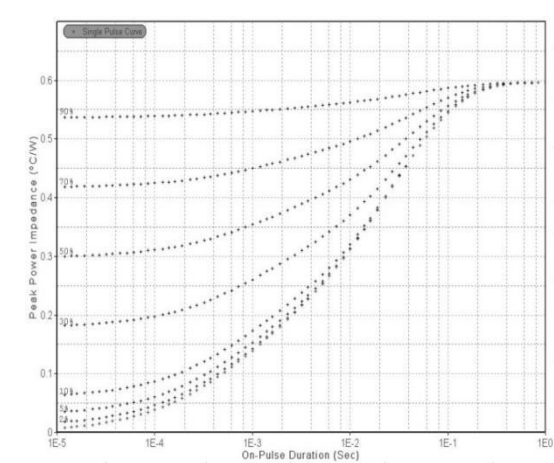
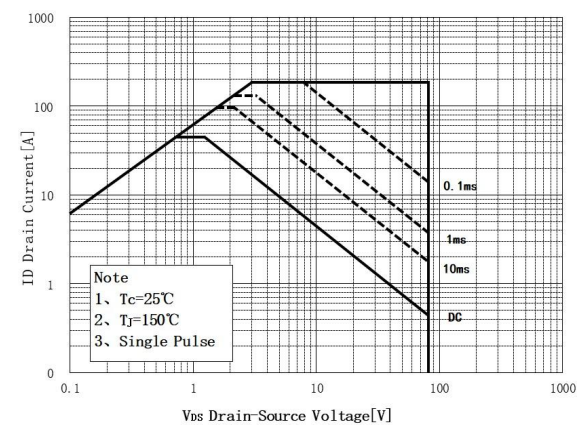
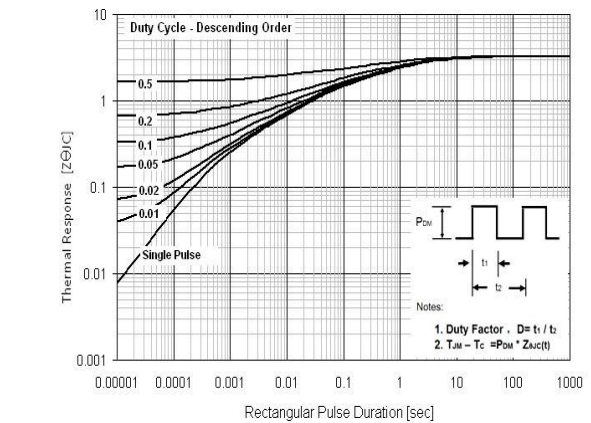
| Symbol   | Parameter                        | Conditions   | Min | Typ  | Max       | Unit       |
|--|----------------------------------|--|-----|------|-----------|------------|
| <b>Static Characteristics</b>                  |                                  |  |     |      |           |            |
| BVDSS  | Drain-Source Breakdown Voltage   | VGS = 0 V, ID = 250 $\mu$ A  | 80  | -    | -         | V          |
| VGS(th)  | Gate Threshold Voltage           | VDS = VGS, IDS = 250 $\mu$ A   | 2.0 | 3.0  | 4.0       | V          |
| IDSS   | Zero Gate Voltage Source Current | VDS = 160 V, VGS = 0 V   | -   | -    | 1         | $\mu$ A    |
| IGSS   | Gate Leakage Current             | VGS = $\pm$ 20 V, VDS = 0 V  | -   | -    | $\pm$ 100 | nA         |
| RDS(ON)<br>a                                   | Drain-Source On-State Resistance | VGS = 10 V, ID = 1 A   | -   | 9    | 12        | m $\Omega$ |
|  | Drain-Source On-State Resistance | VGS = 6 V, ID = 1 A  | -   | 15   | 19        | m $\Omega$ |
| <b>Diode Characteristics</b>                   |                                  |  |     |      |           |            |
| VSDa   | Diode Forward Voltage            | ISD = 30A, VGS = 0 V   | -   | -    | 1.3       | V          |
| trr  | Reverse Recovery Time            | ISD = 30A,<br>dISD/dt = 100 A/ $\mu$ s                                       | -   | 46   | -         | nS         |
| Qrr  | Reverse Recovery Charge          |  | -   | 56   | -         | nC         |
| <b>Dynamic Characteristics<sup>b</sup></b>     |                                  |  |     |      |           |            |
| Ciss   | Input Capacitance                | VGS = 0 V, VDS = 25 V<br>Frequency = 1 MHz                                   | -   | 1460 | -         | pF         |
| Coss   | Output Capacitance               |  | -   | 640  | -         |            |
| Crss   | Reverse Transfer Capacitance     |  | -   | 35   | -         |            |
| td(on)   | Turn-on Delay Time               | VDS = 40V, VGEN = 10 V,<br>RG = 3.9 $\Omega$ , RL = 3.3 $\Omega$ , ID = 30 A | -   | 30   | -         | nS         |
| tr   | Turn-on Rise Time                |  | -   | 81   | -         |            |
| td(off)  | Turn-off Delay Time              |  | -   | 116  | -         |            |
| tf   | Turn-off Fall Time               |  | -   | 62   | -         |            |
| <b>Gate Charge Characteristics<sup>b</sup></b> |                                  |  |     |      |           |            |
| Qg   | Total Gate Charge                | VGS = 10 V, VDS = 50 V,<br>IDS = 30A   | -   | 72   | -         | nC         |
| Qgs  | Gate-Source Charge               |  | -   | 19   | -         |            |
| Qgd  | Gate-Drain Charge                |  | -   | 26   | -         |            |

**Notes :**

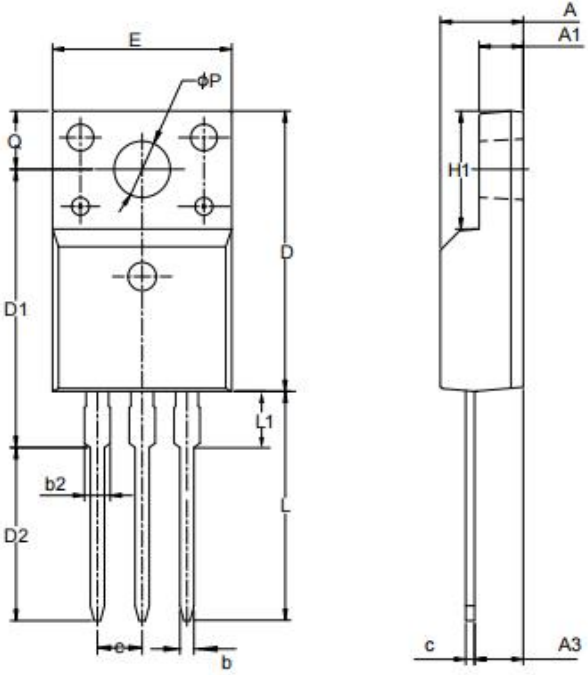
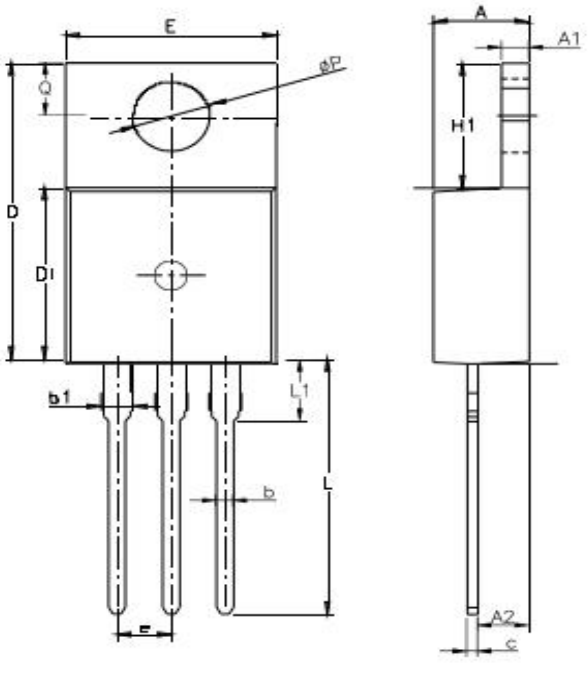
a : Pulse test ; pulse width  $\leq$  300  $\mu$ s, duty cycle  $\leq$  2%

b : Guaranteed by design, not subject to production testing

**Typical Characteristics**
**Fig1 Typical Output Characteristics, Tc=25°C**

**Fig2 Transfer Characteristics**

**Fig3 On-Resistance Variation vs. Drain Current and Gate Voltage**

**Fig4 Body Diode Forward Voltage Variation vs. Source Current and Temperature**

**Fig5 Capacitance Characteristics**

**Fig6 Gate Charge Characteristics**


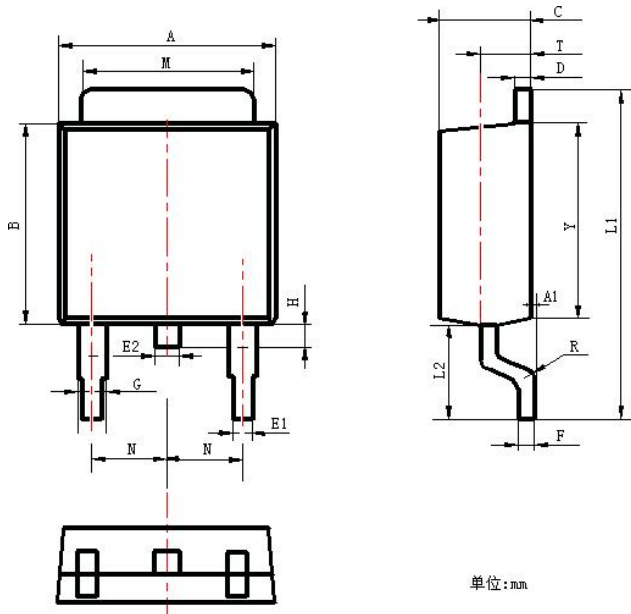
**Typical Characteristics(cont.)**
**Fig7 Breakdown Voltage Variation vs. Temperature**

**Fig8 On-Resistance Variation vs. Temperature**

**Fig9 Maximum Safe Operating Area(TO-220/TO-252)**

**Fig10 Transient Thermal Response Curve (TO-220/TO-252)**

**Fig11 Maximum Safe Operating Area(TO-220F)**

**Fig12 Transient Thermal Response Curve (TO-220F)**


**Package Dimensions**

| TO-220F-3L  |  | 单位: mm |            |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
|---|--|--------|------------|------------|--|-----|-----|-----|---|------|-----|------|----|-----|------|-----|----|-----|------|-----|---|-----|-----|-----|----|----|----|------|---|------|-----|------|---|-------|-------|-------|----|------|-------|------|----|-----|-----|------|---|---------|-------|-------|----|---------|-----|---|----|------|-------|------|----|-------|-------|-------|----|-----|-----|-----|----|-----|------|-----|---|------|-----|------|--|--|--|
|   | <table border="1"> <thead> <tr> <th rowspan="2">Items</th> <th colspan="3">Values(mm)</th> </tr> <tr> <th>MIN</th> <th>NOM</th> <th>MAX</th> </tr> </thead> <tbody> <tr><td>A</td><td>4.42</td><td>4.7</td><td>5.02</td></tr> <tr><td>A1</td><td>2.3</td><td>2.54</td><td>2.8</td></tr> <tr><td>A3</td><td>2.5</td><td>2.76</td><td>3.1</td></tr> <tr><td>b</td><td>0.7</td><td>0.8</td><td>0.9</td></tr> <tr><td>b2</td><td>--</td><td>--</td><td>1.47</td></tr> <tr><td>c</td><td>0.35</td><td>0.5</td><td>0.65</td></tr> <tr><td>D</td><td>15.25</td><td>15.87</td><td>16.25</td></tr> <tr><td>D1</td><td>15.3</td><td>15.75</td><td>16.3</td></tr> <tr><td>D2</td><td>9.3</td><td>9.8</td><td>10.3</td></tr> <tr><td>E</td><td>9.73</td><td>10.16</td><td>10.36</td></tr> <tr><td>e</td><td colspan="3">2.54BSC</td></tr> <tr><td>H1</td><td>6.4</td><td>6.68</td><td>7</td></tr> <tr><td>L</td><td>12.48</td><td>12.98</td><td>13.48</td></tr> <tr><td>L1</td><td>--</td><td>--</td><td>3.5</td></tr> <tr><td>øP</td><td>3</td><td>3.18</td><td>3.4</td></tr> <tr><td>Q</td><td>3.05</td><td>3.3</td><td>3.55</td></tr> </tbody> </table> | Items  | Values(mm) |            |  | MIN | NOM | MAX | A | 4.42 | 4.7 | 5.02 | A1 | 2.3 | 2.54 | 2.8 | A3 | 2.5 | 2.76 | 3.1 | b | 0.7 | 0.8 | 0.9 | b2 | -- | -- | 1.47 | c | 0.35 | 0.5 | 0.65 | D | 15.25 | 15.87 | 16.25 | D1 | 15.3 | 15.75 | 16.3 | D2 | 9.3 | 9.8 | 10.3 | E | 9.73    | 10.16 | 10.36 | e  | 2.54BSC |     |   | H1 | 6.4  | 6.68  | 7    | L  | 12.48 | 12.98 | 13.48 | L1 | --  | --  | 3.5 | øP | 3   | 3.18 | 3.4 | Q | 3.05 | 3.3 | 3.55 |  |  |  |
|   |  |        | Items      | Values(mm) |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| MIN   | NOM  | MAX    |            |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| A   | 4.42   | 4.7    | 5.02       |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| A1  | 2.3  | 2.54   | 2.8        |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| A3  | 2.5  | 2.76   | 3.1        |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| b   | 0.7  | 0.8    | 0.9        |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| b2  | --   | --     | 1.47       |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| c   | 0.35   | 0.5    | 0.65       |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| D   | 15.25  | 15.87  | 16.25      |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| D1  | 15.3   | 15.75  | 16.3       |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| D2  | 9.3  | 9.8    | 10.3       |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| E   | 9.73   | 10.16  | 10.36      |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| e   | 2.54BSC  |        |            |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| H1  | 6.4  | 6.68   | 7          |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| L   | 12.48  | 12.98  | 13.48      |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| L1  | --   | --     | 3.5        |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| øP  | 3  | 3.18   | 3.4        |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| Q   | 3.05   | 3.3    | 3.55       |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| <b>TO-220-3L</b>  |  | 单位: mm |            |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
|  | <table border="1"> <thead> <tr> <th rowspan="2">Items</th> <th colspan="3">Values(mm)</th> </tr> <tr> <th>MIN</th> <th>NOM</th> <th>MAX</th> </tr> </thead> <tbody> <tr><td>A</td><td>4.3</td><td>4.5</td><td>4.7</td></tr> <tr><td>A1</td><td>1</td><td>1.3</td><td>1.5</td></tr> <tr><td>A2</td><td>1.8</td><td>2.4</td><td>2.8</td></tr> <tr><td>b</td><td>0.6</td><td>0.8</td><td>1</td></tr> <tr><td>b1</td><td>1</td><td>-</td><td>1.6</td></tr> <tr><td>c</td><td>0.3</td><td>-</td><td>0.7</td></tr> <tr><td>D</td><td>15.1</td><td>15.7</td><td>16.1</td></tr> <tr><td>D1</td><td>8.1</td><td>9.2</td><td>10</td></tr> <tr><td>F</td><td>9.6</td><td>9.9</td><td>10.4</td></tr> <tr><td>e</td><td colspan="3">2.54BSC</td></tr> <tr><td>H1</td><td>6.1</td><td>6.5</td><td>7</td></tr> <tr><td>L</td><td>12.6</td><td>13.08</td><td>13.6</td></tr> <tr><td>L1</td><td></td><td></td><td>3.95</td></tr> <tr><td>ΦP</td><td>3.4</td><td>3.7</td><td>3.9</td></tr> <tr><td>Q</td><td>2.6</td><td></td><td>3.2</td></tr> </tbody> </table>  | Items  | Values(mm) |            |  | MIN | NOM | MAX | A | 4.3  | 4.5 | 4.7  | A1 | 1   | 1.3  | 1.5 | A2 | 1.8 | 2.4  | 2.8 | b | 0.6 | 0.8 | 1   | b1 | 1  | -  | 1.6  | c | 0.3  | -   | 0.7  | D | 15.1  | 15.7  | 16.1  | D1 | 8.1  | 9.2   | 10   | F  | 9.6 | 9.9 | 10.4 | e | 2.54BSC |       |       | H1 | 6.1     | 6.5 | 7 | L  | 12.6 | 13.08 | 13.6 | L1 |       |       | 3.95  | ΦP | 3.4 | 3.7 | 3.9 | Q  | 2.6 |      | 3.2 |   |      |     |      |  |  |  |
|   |  |        | Items      | Values(mm) |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| MIN   | NOM  | MAX    |            |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| A   | 4.3  | 4.5    | 4.7        |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| A1  | 1  | 1.3    | 1.5        |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| A2  | 1.8  | 2.4    | 2.8        |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| b   | 0.6  | 0.8    | 1          |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| b1  | 1  | -      | 1.6        |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| c   | 0.3  | -      | 0.7        |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| D   | 15.1   | 15.7   | 16.1       |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| D1  | 8.1  | 9.2    | 10         |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| F   | 9.6  | 9.9    | 10.4       |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| e   | 2.54BSC  |        |            |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| H1  | 6.1  | 6.5    | 7          |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| L   | 12.6   | 13.08  | 13.6       |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| L1  |  |        | 3.95       |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| ΦP  | 3.4  | 3.7    | 3.9        |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |
| Q   | 2.6  |        | 3.2        |            |  |     |     |     |   |      |     |      |    |     |      |     |    |     |      |     |   |     |     |     |    |    |    |      |   |      |     |      |   |       |       |       |    |      |       |      |    |     |     |      |   |         |       |       |    |         |     |   |    |      |       |      |    |       |       |       |    |     |     |     |    |     |      |     |   |      |     |      |  |  |  |

**Package Dimensions**
**TO-252-2L**

单位: mm



单位: mm

| Items | Values(mm) |      |      |
|-------|------------|------|------|
|       | MIN        | NOM  | MAX  |
| A     | 6.3        | 6.5  | 6.9  |
| A1    | 0          | -    | 0.16 |
| B     | 5.7        | -    | 6.3  |
| C     | 2.1        | 2.3  | 2.5  |
| D     | 0.3        | 0.5  | 0.7  |
| E1    | 0.6        | 0.65 | 0.9  |
| E2    | 0.7        | 0.65 | 1    |
| F     | 0.3        | 0.5  | 0.6  |
| G     | 0.7        | 0.9  | 1.2  |
| L1    | 9.6        | 10   | 10.5 |
| L2    | 2.7        | -    | 3.1  |
| H     | 0.4        | -    | 1    |
| M     | 5.1        | 5.2  | 5.5  |
| N     | 2.09       | 2.2  | 2.49 |
| R     | 0.3        |      |      |
| T     | 1.4        | -    | 1.6  |
| Y     | 5.1        | 5.9  | 6.3  |