

## / Descriptions

TOLL-8L N

N-Channel MOSFET in a TOLL-8L Plastic Package .

## / Features

 $V_{DS}(V)=100V$   $I_D=259A$  $R_{DS(ON)}@10V \leq 2.0m\Omega$  (Typ.  $1.6m\Omega$ )

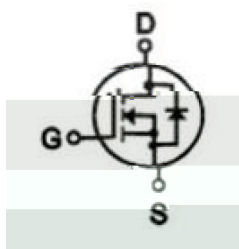
HF Product.

## / Applications

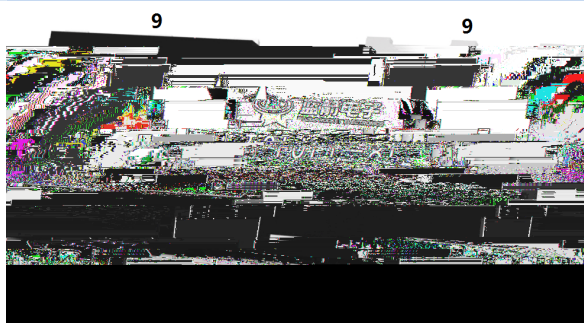
DC/DC

DC/DC converter, Power switch, Motor drives.

## / Equivalent Circuit



## / Pinning



PIN1 G      PIN2 3 4 5 6 7 8 S      PIN9 D

## / Marking

See Marking Instructions.

/ Absolute Maximum Ratings( $T_C=25^\circ\text{C}$ )

| Parameter                                              |              | Symbol          | Rating     | Unit |
|--------------------------------------------------------|--------------|-----------------|------------|------|
| Drain-Source Voltage                                   |              | $V_{DS}$        | 100        | V    |
| Drain Current - Continuous                             |              | $I_D$           | 259        | A    |
| Drain Current – Pulsed                                 |              | $I_{DM}$        | 1036       | A    |
| Gate-Source Voltage                                    |              | $V_{GS}$        | $\pm 20$   | V    |
| Power Dissipation                                      |              | $P_{tot}$       | 250        | W    |
| Single Pulse Avalanche Energy( $V_{DD}=50V, L=0.1mH$ ) |              | $E_{AS}$        | 205        | mJ   |
| Junction and Storage Temperature Range                 |              | $T_j, T_{stg}$  | -55 to 150 |      |
| Thermal resistance, junction - ambient                 | Steady-State | $R_{\theta JA}$ | 40         | / W  |
| Thermal resistance, junction - case                    | Steady-State | $R_{\theta JC}$ | 0.5        |      |

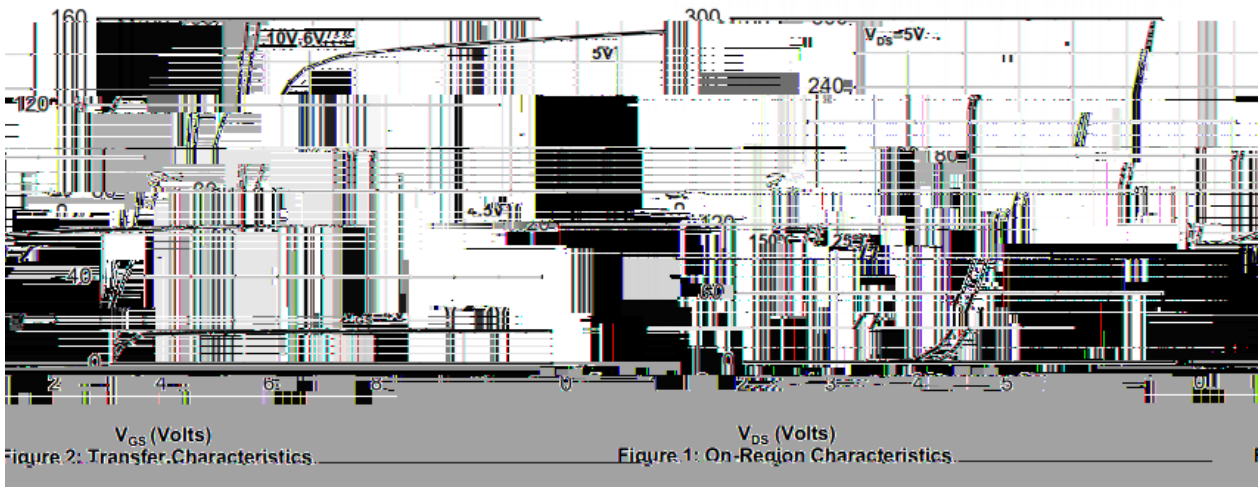
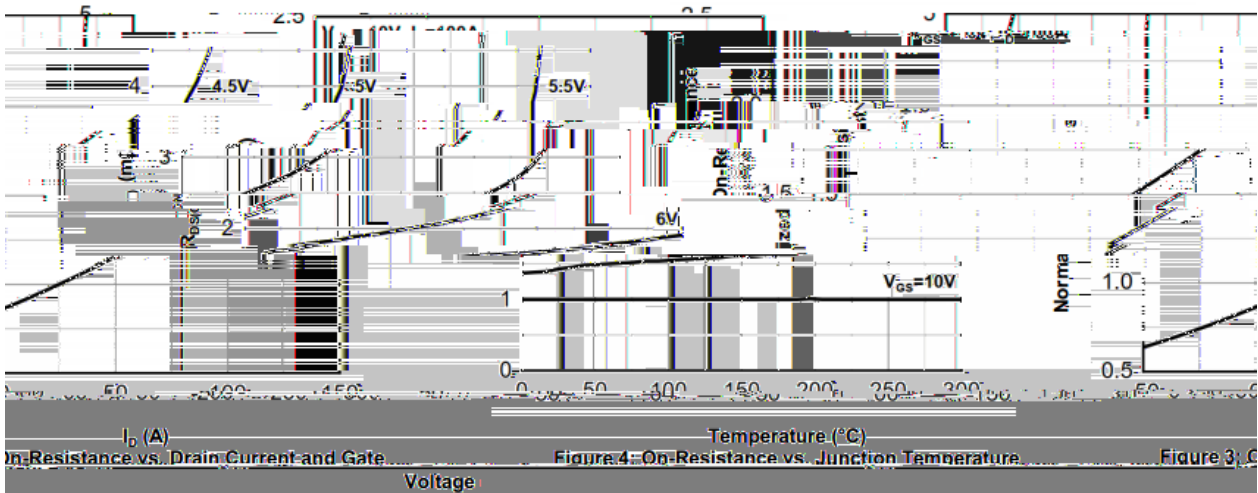
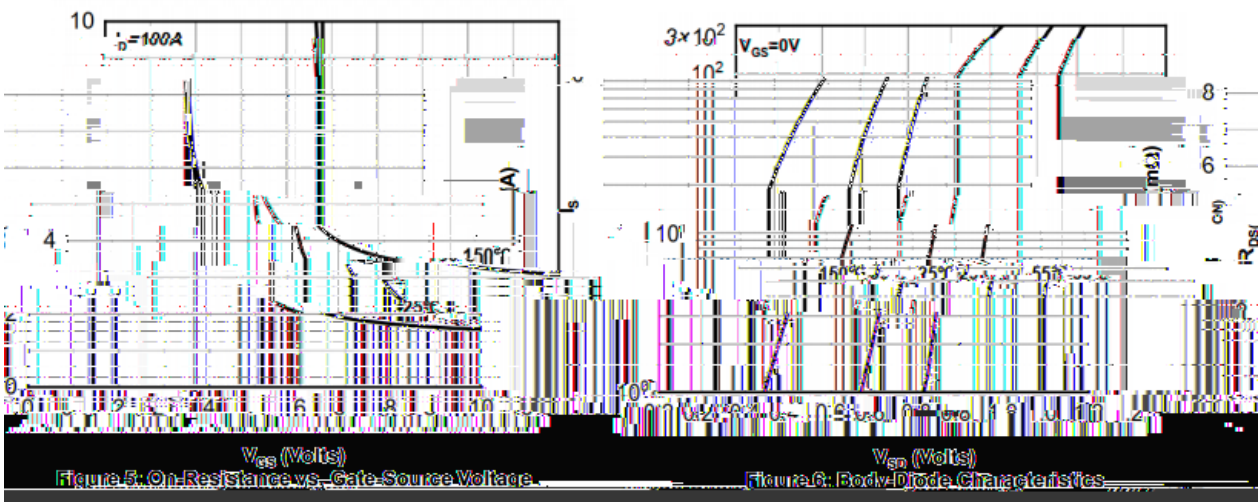
/ Electrical Characteristics( $T_a=25^\circ\text{C}$ )

| Parameter                         | Symbol       | Test Conditions                       | Min | Typ   | Max       | Unit      |
|-----------------------------------|--------------|---------------------------------------|-----|-------|-----------|-----------|
| Drain-Source Breakdown Voltage    | $BV_{DSS}$   | $I_D=250\mu A, V_{GS}=0V$             | 100 |       |           | V         |
| Zero Gate Voltage Drain Current   | $I_{DSS}$    | $V_{DS}=100V, V_{GS}=0V$              |     |       | 1         | $\mu A$   |
| Gate-Body leakage current         | $I_{GSS}$    | $V_{DS}=0V, V_{GS}=\pm 20V$           |     |       | $\pm 100$ | nA        |
| Gate Threshold Voltage            | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$         | 2.2 | 3.0   | 3.8       | V         |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=100A$                |     | 1.6   | 2.0       | $m\Omega$ |
| Diode Forward Voltage             | $V_{SD}$     | $I_S=100A, V_{GS}=0V$                 |     | 0.9   | 1.2       | V         |
| Gate Resistance                   | $R_g$        | $f=1.0MHz$                            |     | 1.2   |           | $\Omega$  |
| Input Capacitance                 | $C_{iss}$    | $V_{DS}=50V, V_{GS}=0V, f=1.0MHz$     |     | 10120 |           | pF        |
| Output Capacitance                | $C_{oss}$    |                                       |     | 1360  |           |           |
| Reverse Transfer Capacitance      | $C_{rss}$    |                                       |     | 50    |           |           |
| Total Gate Charge                 | $Q_g$        | $V_{GS}=10V, I_{DS}=100A, V_{DS}=50V$ |     | 176   |           | nC        |
| Gate Source Charge                | $Q_{gs}$     |                                       |     | 47    |           |           |
| Gate Drain Charge                 | $Q_{gd}$     |                                       |     | 54    |           |           |

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| Parameter | Symbol | Test Conditions |
|-----------|--------|-----------------|
|-----------|--------|-----------------|

/ Electrical Characteristic Curve



/ Electrical Characteristic Curve

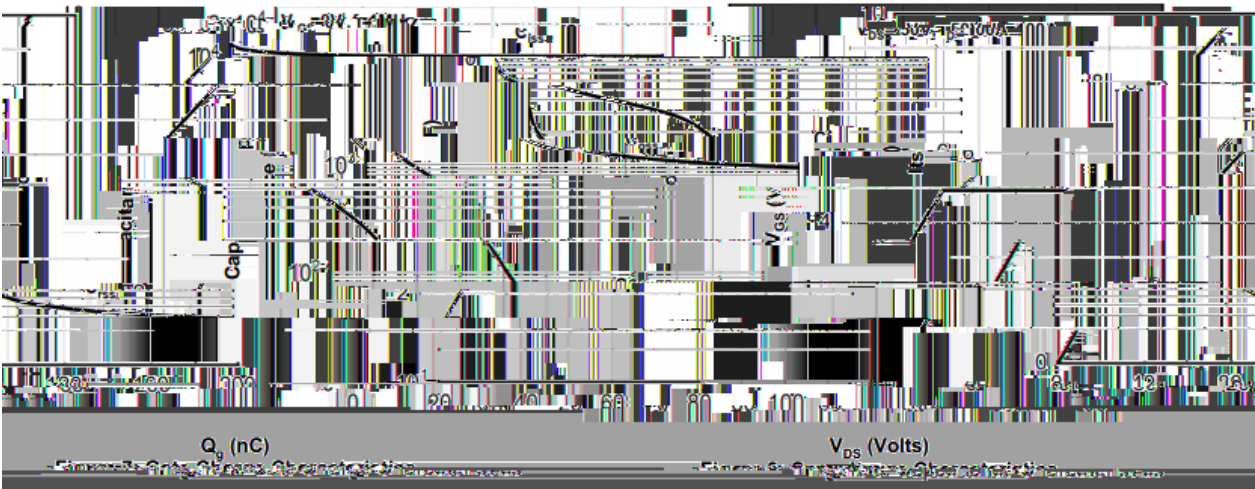
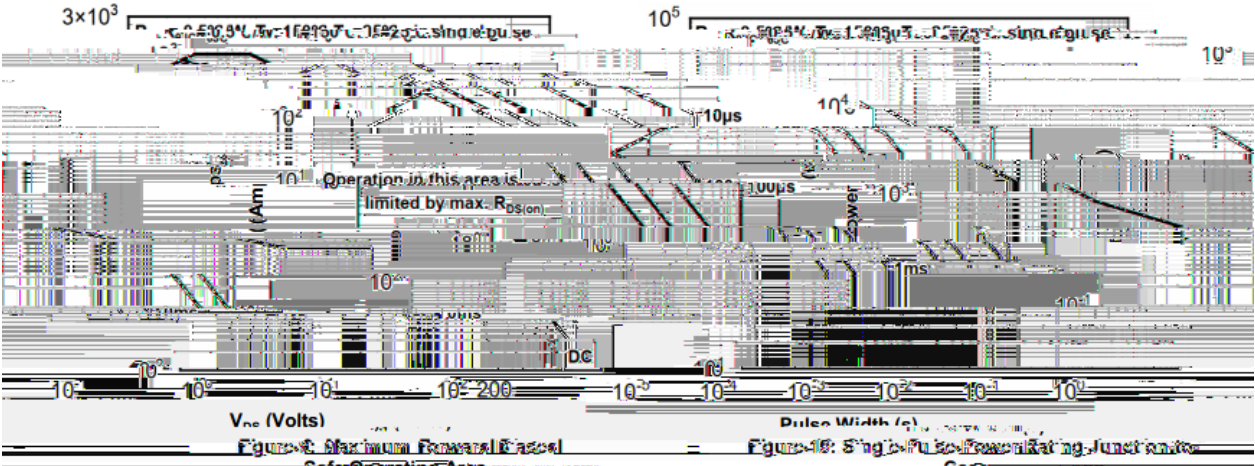
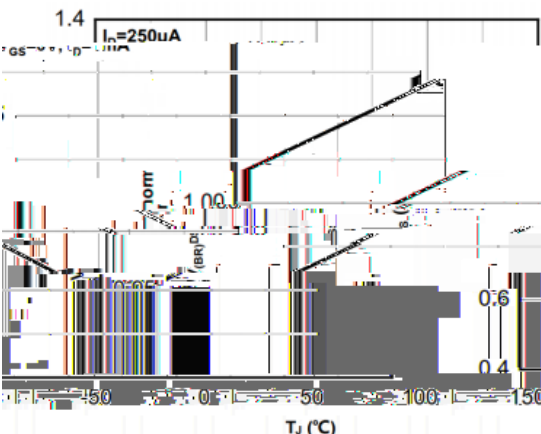


Figure 12: Normalized V(BR)DSS vs. Junction Temperature

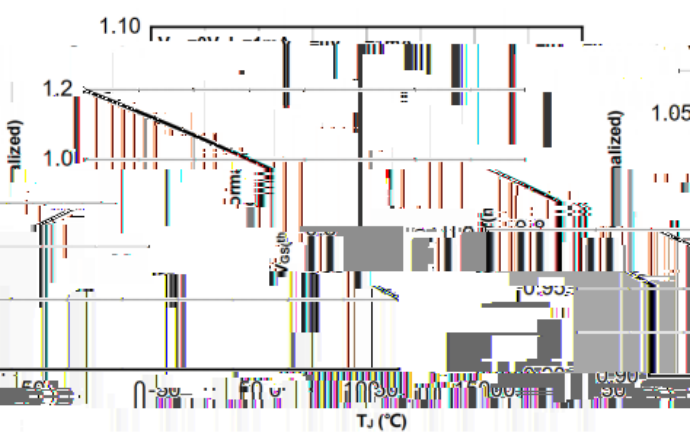
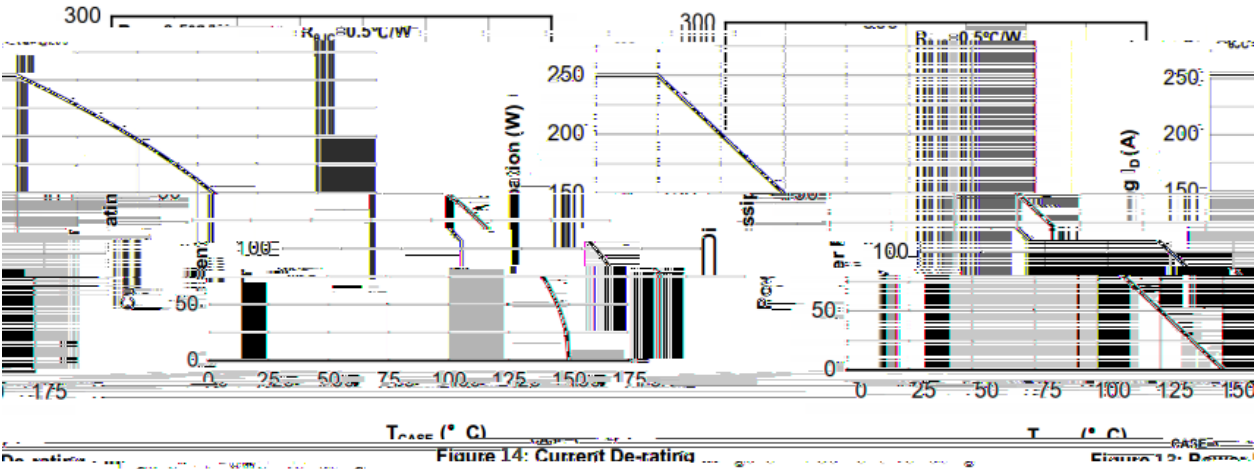
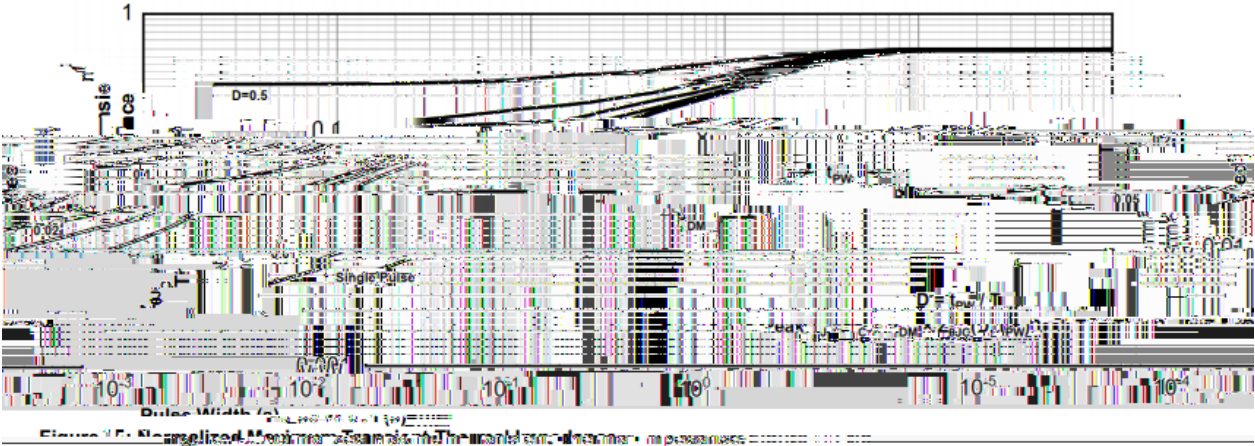
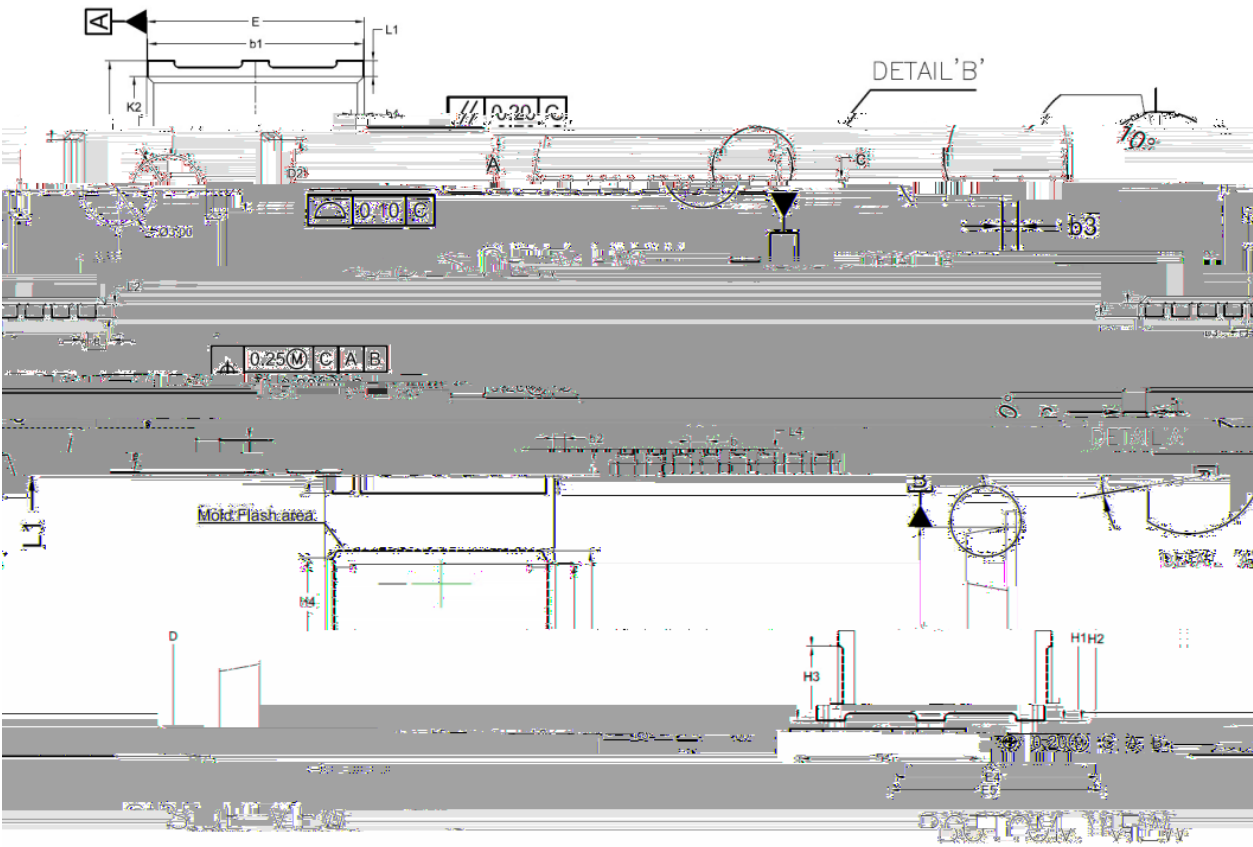


Figure 11: Normalized VGS(th) vs. Junction Temperature

/ Electrical Characteristic Curve

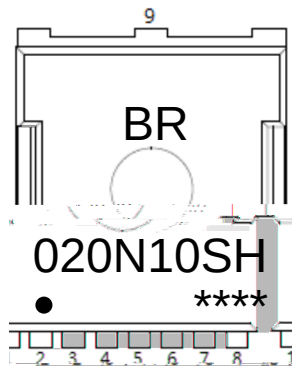


/ Package Dimensions



| Symbol | Dimensions In Millimeters |        |        | Symbol | Dimensions In Millimeters |       |       |
|--------|---------------------------|--------|--------|--------|---------------------------|-------|-------|
|        | MIN.                      | NOM.   | MAX.   |        | MIN.                      | NOM.  | MAX.  |
| A      | 2.200                     | 2.300  | 2.400  | b1     | 9.700                     | 9.800 | 9.900 |
| c      | 0.492                     | 0.500  | 0.508  | b1     | 0.420                     | 0.460 | 0.500 |
| D      | 10.280                    | 10.380 | 10.480 | b3     | 0.350                     |       |       |
| E      | 9.800                     | 9.900  | 10.000 | b4     | 0.600                     |       |       |
| e      | 1.20 BSC                  |        |        | b5     | 3.100                     |       |       |
| H      | 11.580                    | 11.680 | 11.780 | b6     | 1.200                     |       |       |
| H1     | 6.650                     | 6.750  | 6.850  | L      | 1.700                     | 1.900 | 2.100 |
| H2     | 7.300                     |        |        | L1     | 0.700                     |       |       |
| H3     | 3.200                     |        |        | L2     | 0.600 A                   |       |       |

/ Marking Instructions



|          |                                        |
|----------|----------------------------------------|
| BR       |                                        |
| 020N10SH |                                        |
| ****     |                                        |
| Note     |                                        |
| BR       | Company Code                           |
| 020N10SH | Product Type Code                      |
| ****:    | Lot No. Code, code change with Lot No. |

