## / 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≤2.0mΩ(Typ. 1.6mΩ)

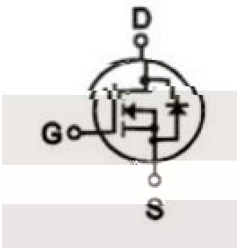
HF Product.

## / Applications

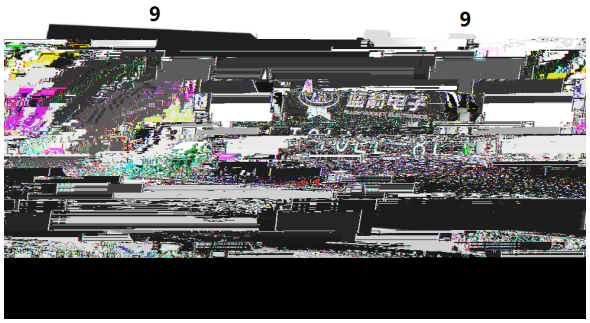
DC/DC

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 )

| 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 | | $V_{GS}$ | ± 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(Ta=25 )

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $I_D$=250uA, $V_{GS}$=0V | 100 | | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=100V, $V_{GS}$=0V | | | 1 | uA |
| Gate-Body leakage current | $I_{GSS}$ | $V_{DS}$=0V, $V_{GS}$= ±20V | | | ±100 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=250uA | 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 | mΩ |
| 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 | | Ω |
| 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, $V_{DS}$=50V $I_{DS}$=100A | | 176 | | nC |
| Gate Source Charge | $Q_{gs}$ | | | 47 | | |
| Gate Drain Charge | $Q_{gd}$ | | | 54 | | |

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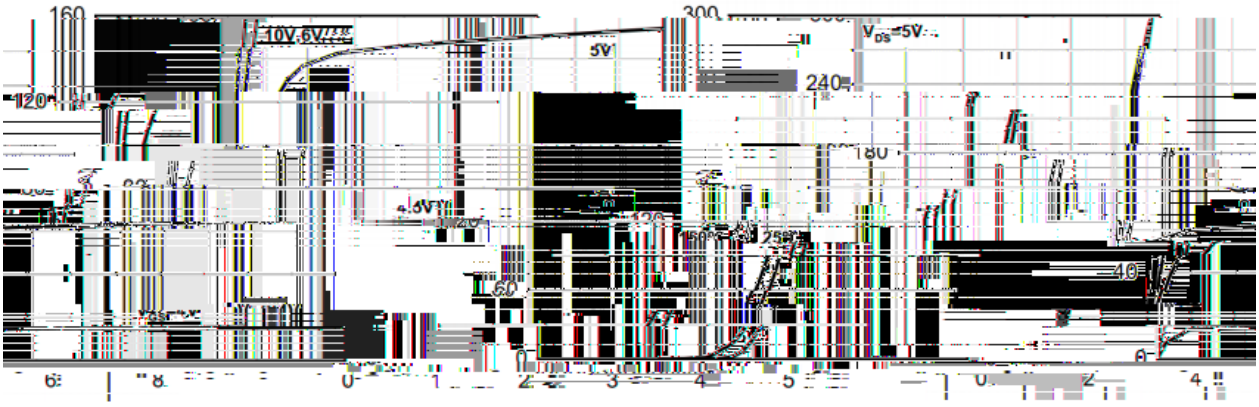
| Parameter | Symbol | Test Conditions |
|---|---|---|

## / Electrical Characteristic Curve




$V_{DS}$ (Volts)
Figure 1: On-Region Characteristics

$V_{GS}$ (Volts)
Figure 2: Transfer Characteristics

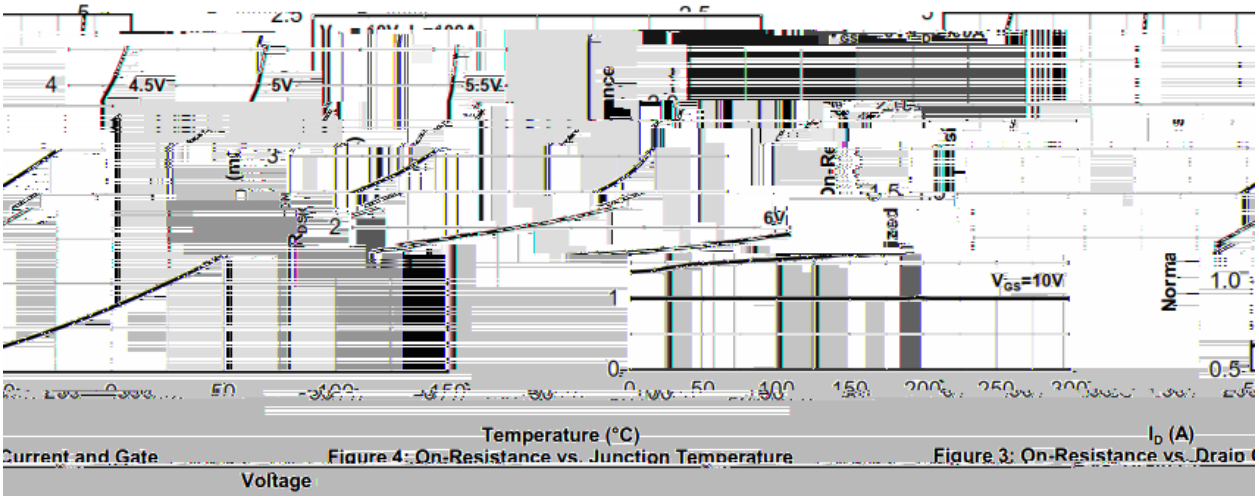
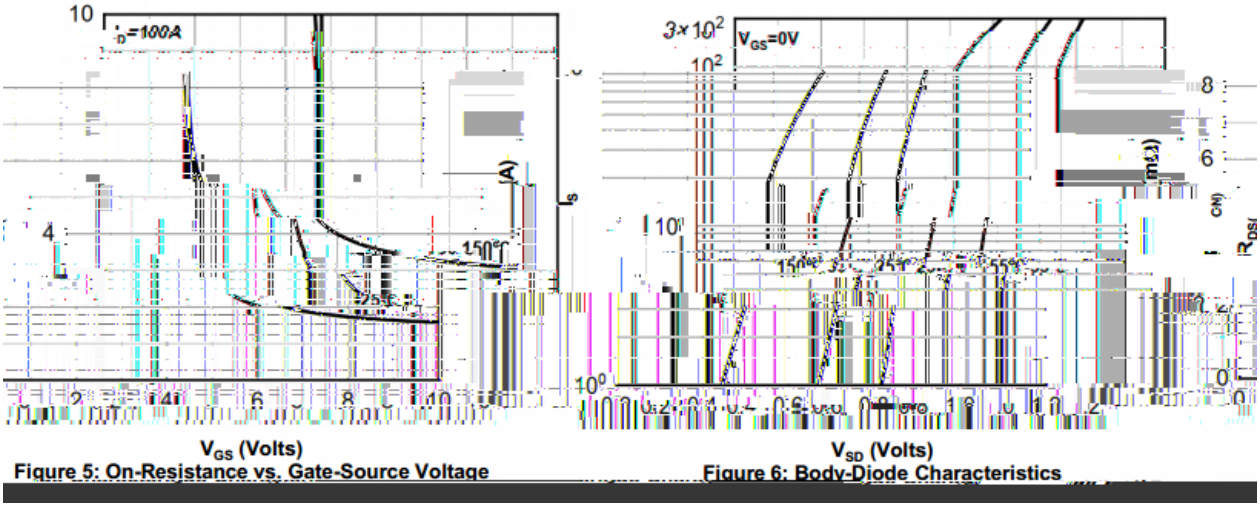



Figure 4: On-Resistance vs. Junction Temperature

Figure 3: On-Resistance vs. Drain Current and Gate Voltage




$V_{GS}$ (Volts)
Figure 5: On-Resistance vs. Gate-Source Voltage

$V_{SD}$ (Volts)
Figure 6: Body-Diode Characteristics

## / Electrical Characteristic Curve

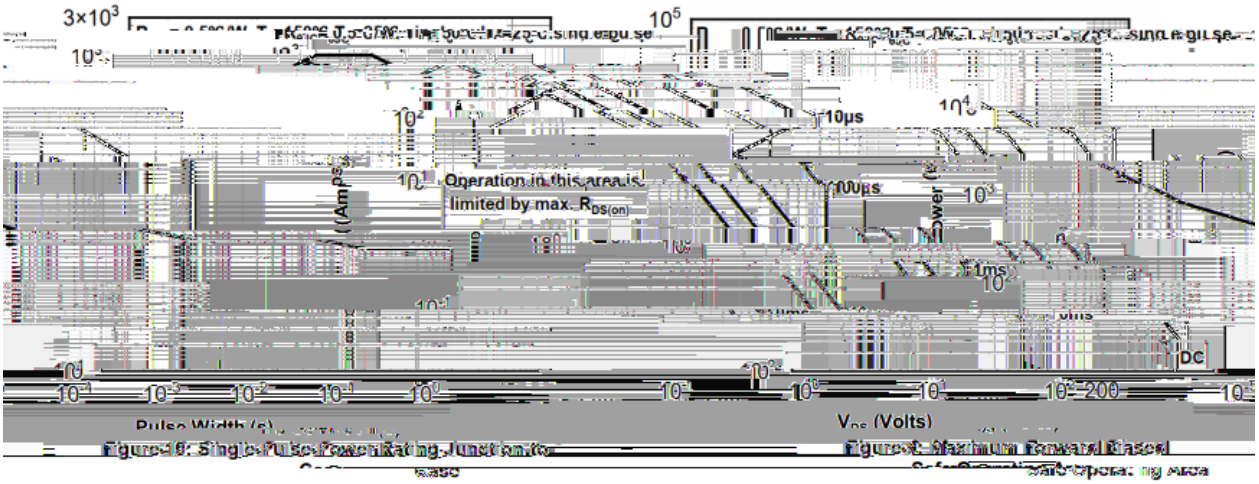




Figure 10: Single Pulse Power Rating Junction-to-

Figure 9: Maximum Forward Biased

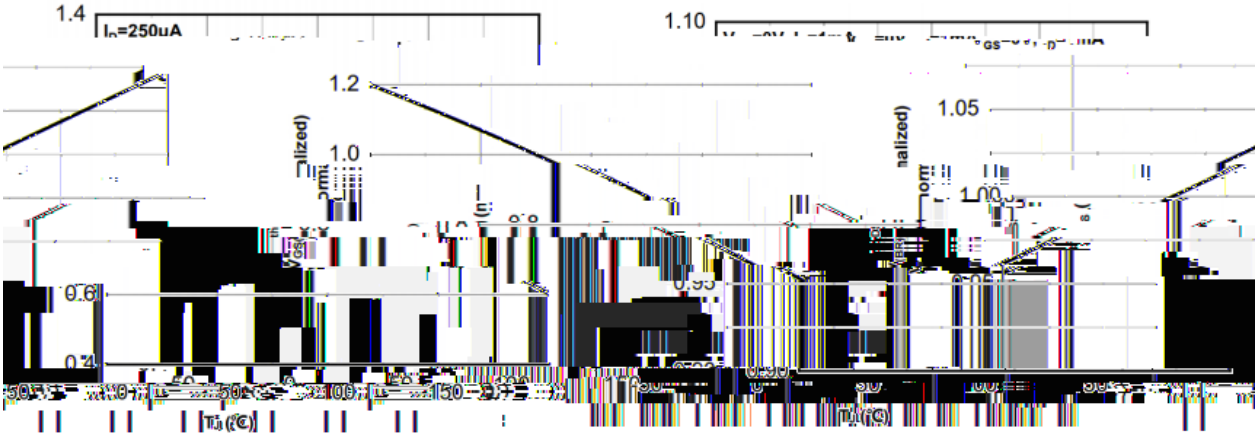
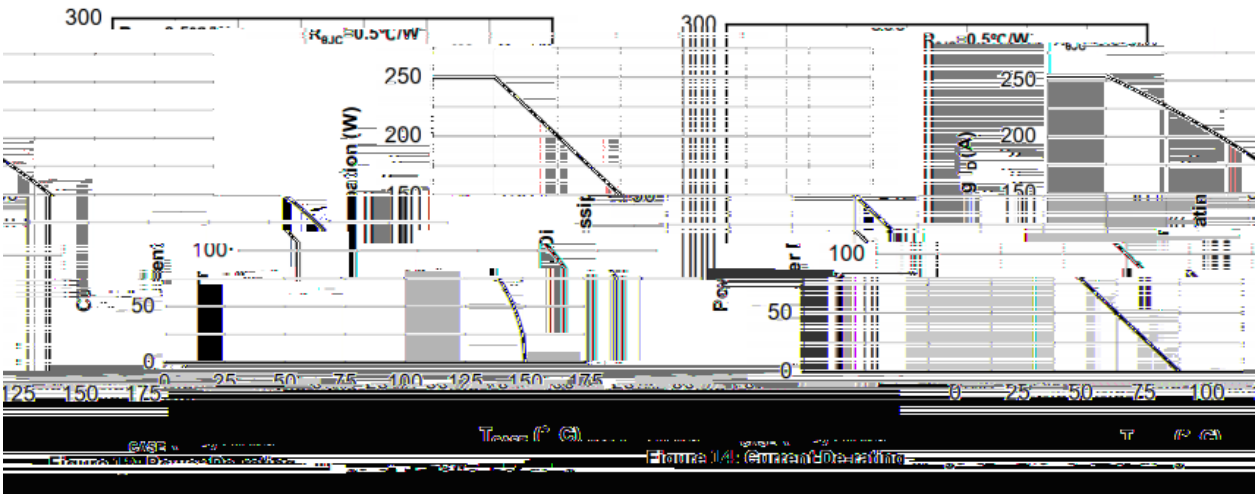


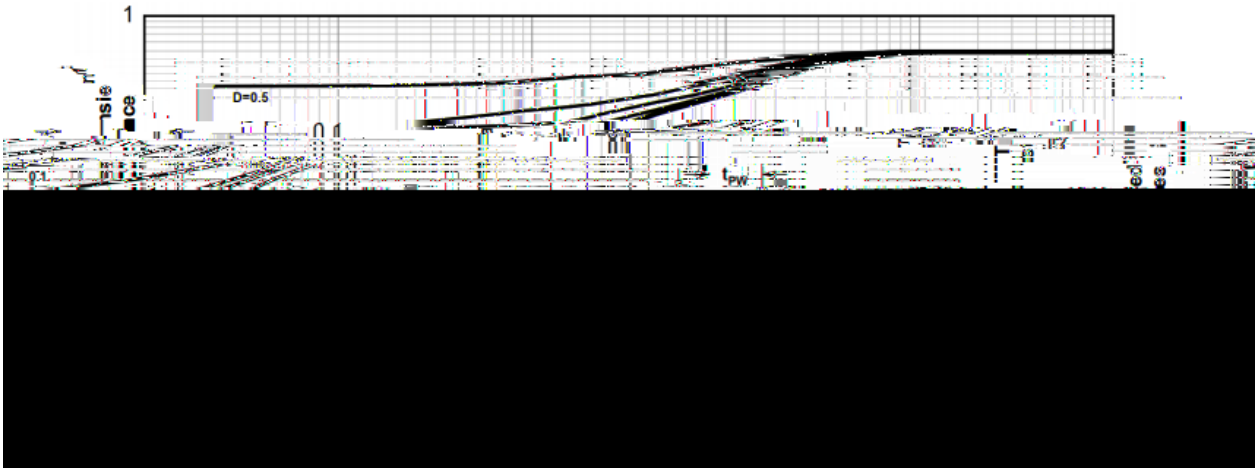

Figure 12: Normalized V(BR)DSS vs. Junction Temperature



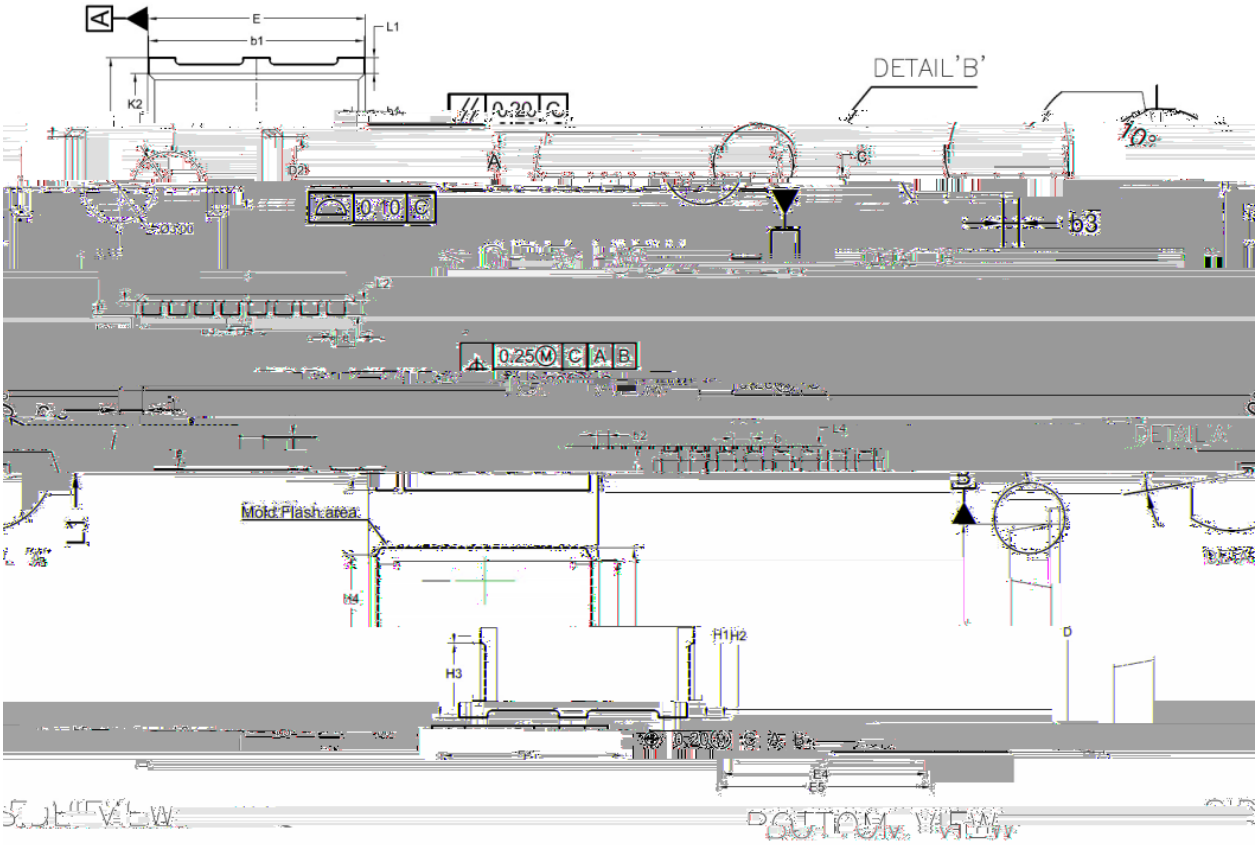

Figure 11: Normalized VGS(th) vs. Junction Temperature

## / Electrical Characteristic Curve



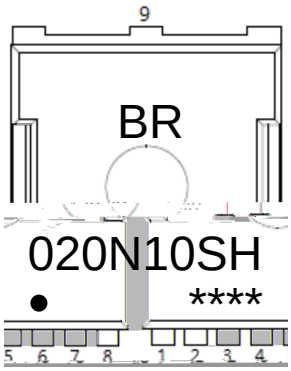



## / Package Dimensions




| 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

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Note

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