## / Absolute Maximum Ratings($T_C$=25 )

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 120 | V |
| Drain Current - Continuous | | $I_D$ | 260 | A |
| Drain Current - Continuous | | $I_D$($T_c$=100℃) | 185 | A |
| Drain Current – Pulsed | | $I_{DM}$ | 1040 | A |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Power Dissipation | | $P_{tot}$ | 300 | W |
| Continuous-Source Current | | $I_S$ | 260 | A |
| Single Pulse Avalanche Energy($V_{DD}$=50V,L=1mH) | | $E_{AS}$ | 2450 | mJ |
| Junction and Storage Temperature Range | | $T_j$, $T_{stg}$ | -55 to 175 | |
| Thermal resistance, junction - ambient | Steady-State | $R_{\theta JA}$ | 45 | / W |
| Thermal resistance, junction - case | Steady-State | $R_{\theta JC}$ | 0.4 | |

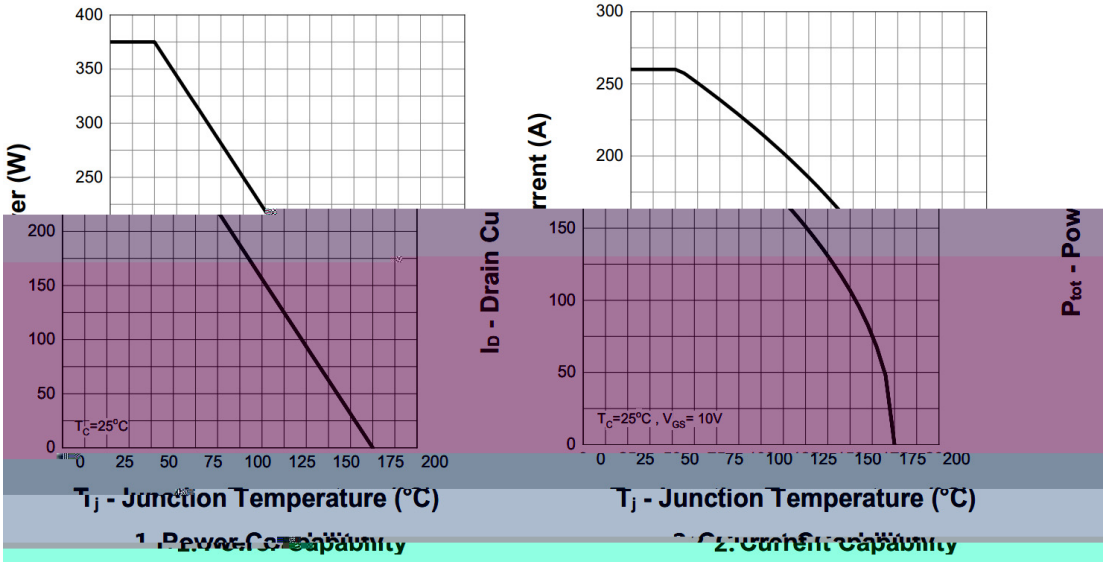
## / Electrical Characteristics(Ta=25 )

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $I_D$=250uA, $V_{GS}$=0V | 120 | | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=96V, $V_{GS}$=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 | 2.0 | | 4.0 | V |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}$=10V, $I_D$=50A | | 1.6 | 2.2 | mΩ |
| | $R_{DS(ON)}$ | $V_{GS}$=6V, $I_D$=30A | | 2.3 | 2.8 | mΩ |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=50A, $V_{GS}$=0V | | | 1.3 | V |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=60V $V_{GS}$=0V f=1.0MHz | | 11834 | | pF |
| Output Capacitance | $C_{oss}$ | | | 1350 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 78 | | |
| Total Gate Charge | $Q_g$ | $V_{GS}$=10V, $V_{DS}$=60V $I_{DS}$=50A | | 213 | | nC |
| Gate Source Charge | $Q_{gs}$ | | | 62 | | |
| Gate Drain Charge | $Q_{gd}$ | | | 54 | | |

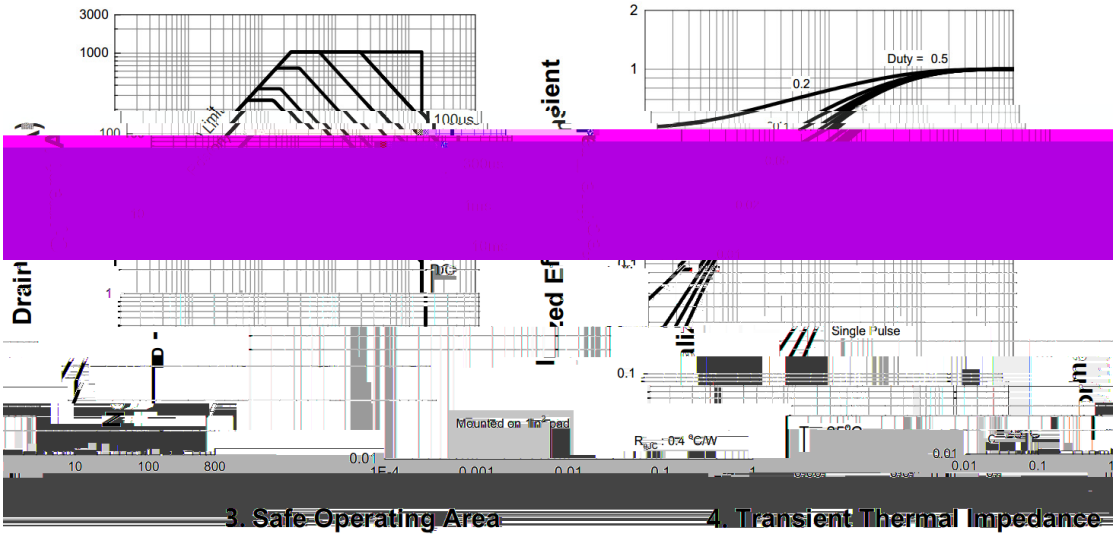
## / Electrical Characteristics(Ta=25 )

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Turn-On Delay Time | $t_{d(on)}$ | $V_{GS}$=10V $V_{DS}$=60V<br>$R_L$=1.2Ω $R_G$=3.9Ω<br>$I_{DS}$=50A | | 30 | | ns |
| Turn-On Rise Time | $t_r$ | | | 102 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 143 | | |
| Turn-Off Fall Time | $t_f$ | | | 101 | | |
| Reverse Recovery Time | $t_{rr}$ | $I_{DS}$ = 50 A, $V_{GS}$ = 0 V<br>$dI_{SD}/dt$ = 100 A/μs | | 137 | | nS |
| Reverse Recovery Charge | $Q_{rr}$ | | | 474 | | nC |

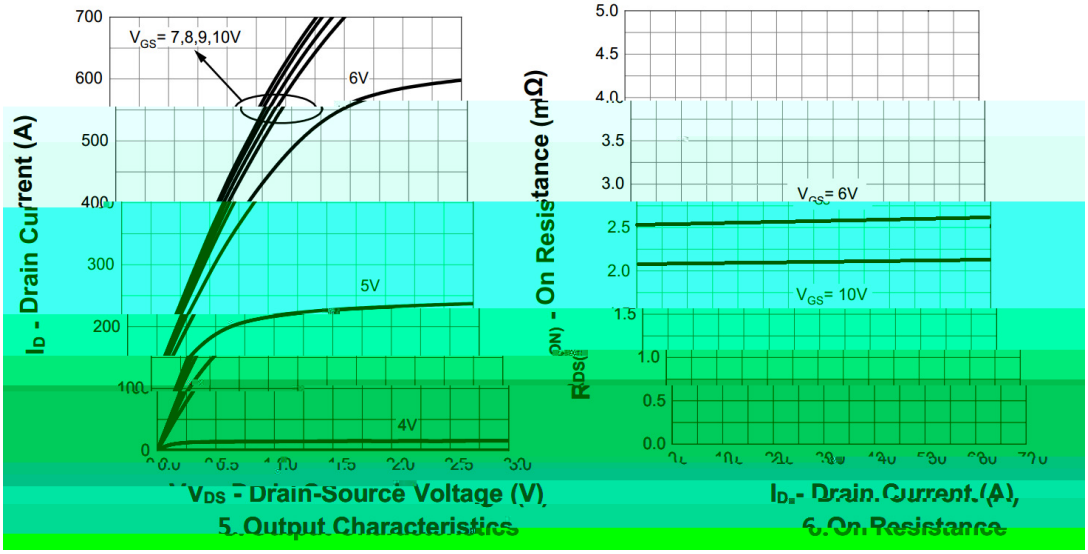
## / Electrical Characteristic Curve




1. Power Capability 2. Current Capability

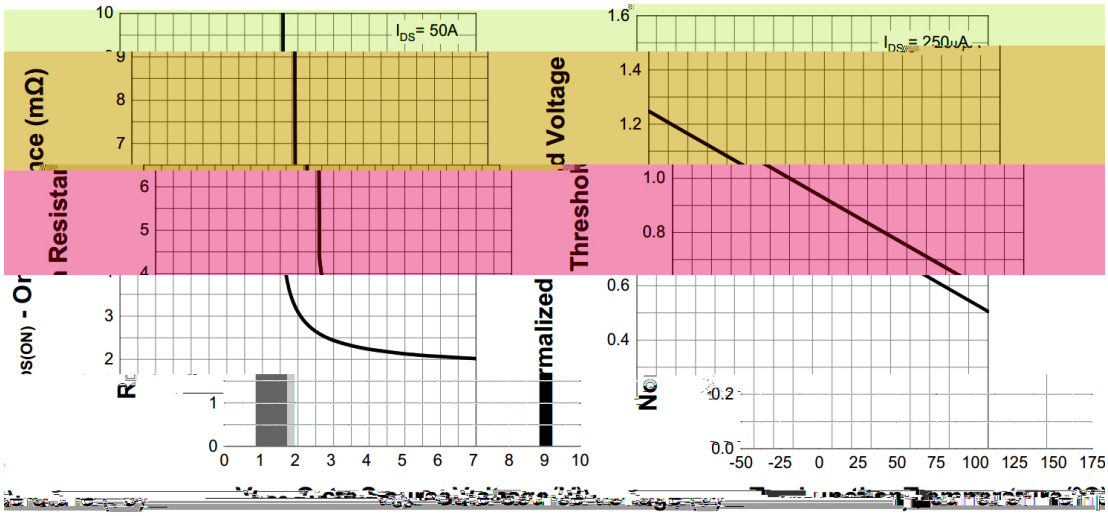



3. Safe Operating Area 4. Transient Thermal Impedance

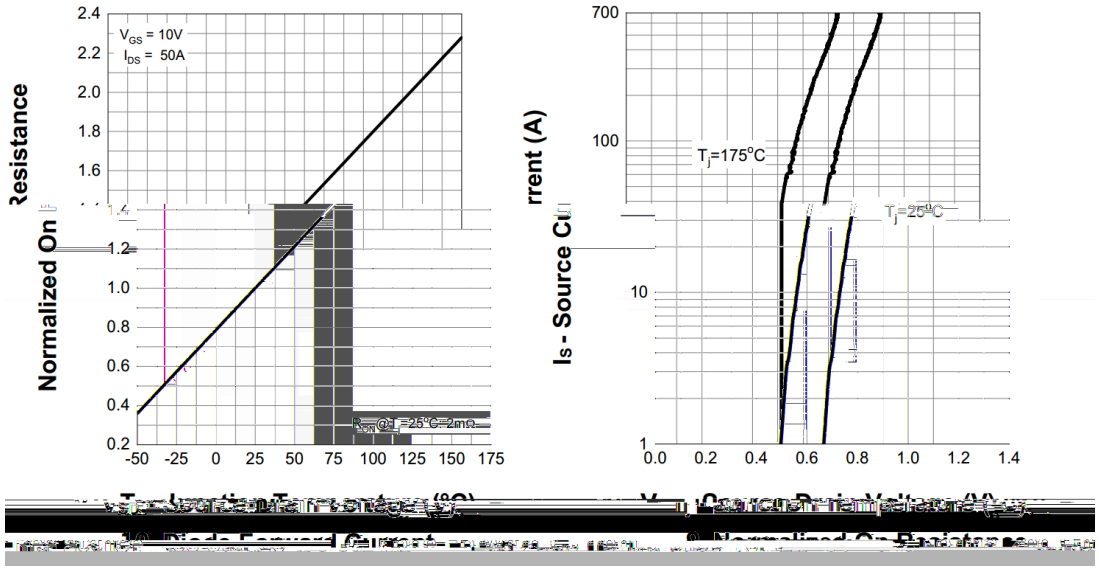


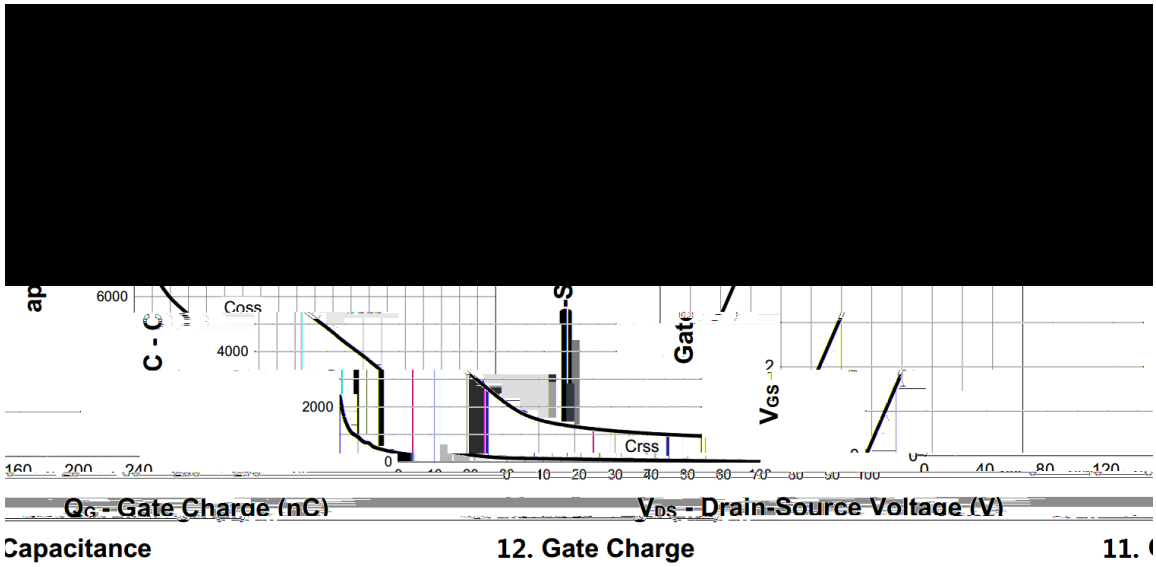

5. Output Characteristics 6. On Resistance

## / Electrical Characteristic Curve



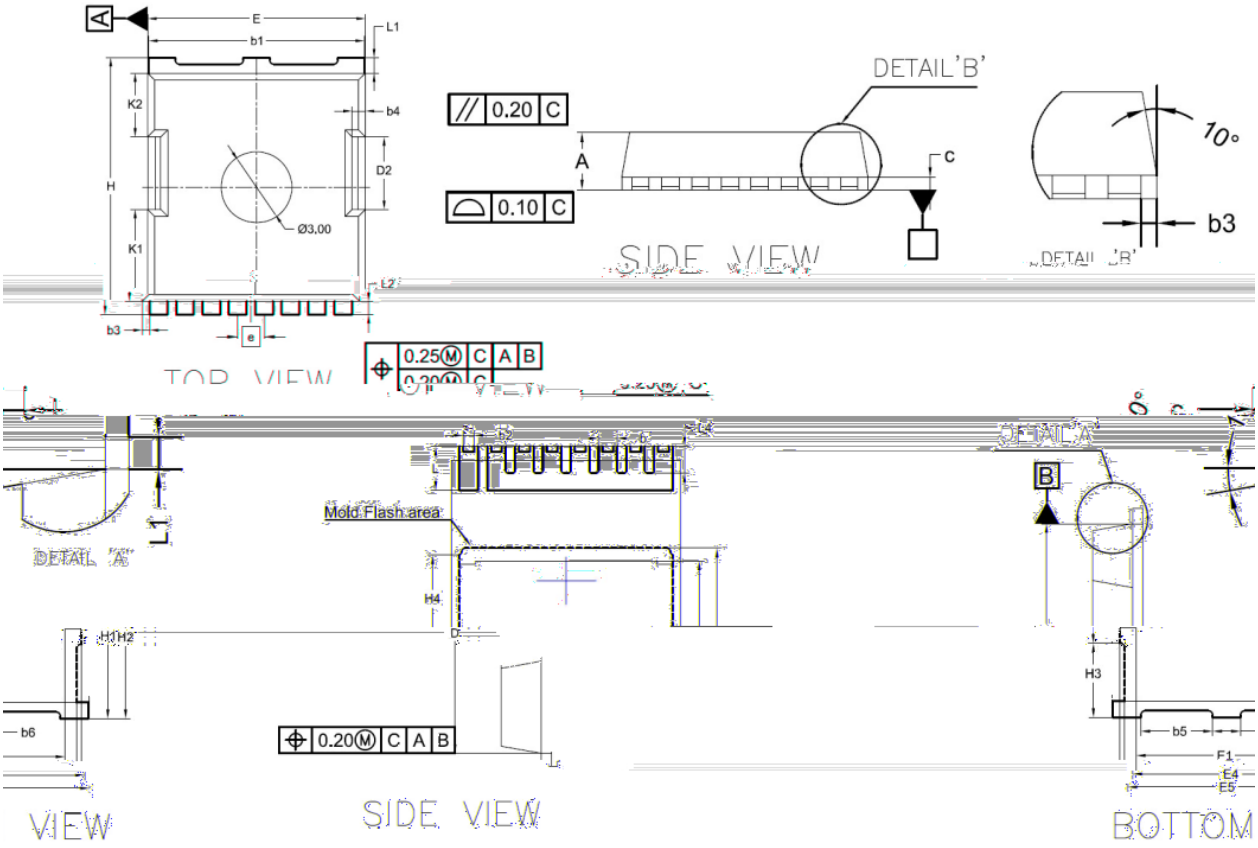

shold Voltage 7. Transfer Characteristics 8. Normalized Thres



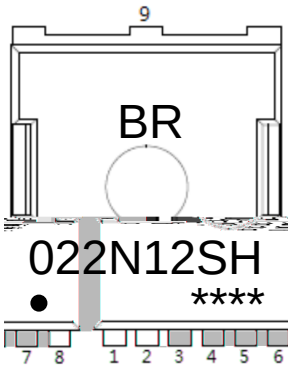

Capacitance 12. Gate Charge 11.

## / 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 | |
| H4 | | 3.800 | | L4 | 1.050 | 1.150 | 1.250 |
| K1 | | 4.180 | | L5 | 0.500 | 0.600 | 0.700 |
| K2 | | 2.900 | | E1 | | 7.800 | |
| D2 | | 3.300 | | E4 | | 8.800 | |
| b | 0.700 | 0.800 | 0.900 | E5 | | 9.200 | |

## / Marking Instructions




BR

022N12SH

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Note

| | |
|---|---|
| BR | Company Code |
| 022N12SH | Product Type Code |
| ****: | Lot No. Code, code change with Lot No |

# BRCS022N12SHTL

Rev.C Apr.-2025