

**/ Descriptions**

TO-263 N

N-CHANNEL MOSFET in a TO-263 Plastic Package.

**/ Features** $V_{DS}=60V$   $I_D=162A$  $R_{DS(on)}@10V$  3.5m (Type.3.3m )

AEC-Q101

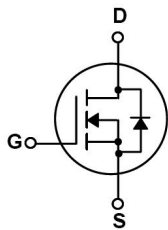
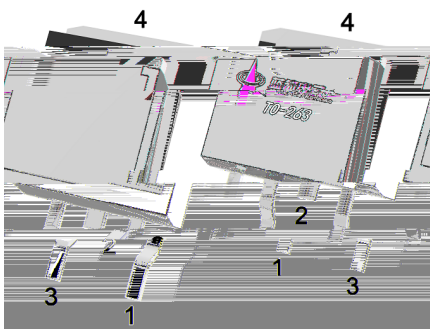
Qualified to AEC-Q101 Standards for High Reliability,

HF Product.

**/ Applications**

BMS

High frequency switching and synchronous rectification,BMS,Motor, Meet the stringent requirements of automotive applications.

**/ Equivalent Circuit****/ Pinning**

PIN1 G      PIN 2 4 D      PIN 3 S

**/ Marking**

See Marking Instructions.

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

| Parameter                               |              | Symbol                                 | Rating     | Unit |
|-----------------------------------------|--------------|----------------------------------------|------------|------|
| Drain-Source Voltage                    |              | V <sub>DSS</sub>                       | 60         | V    |
| Drain Current                           |              | I <sub>D</sub> (T <sub>c</sub> =25 °C) | 162        | A    |
| Pulsed Drain Current                    |              | I <sub>DM</sub>                        | 466        | A    |
| Gate-Source Voltage                     |              | V <sub>GS</sub>                        | ± 20       | V    |
| Single Pulsed Avalanche Energy(L=0.5mH) |              | E <sub>AS</sub>                        | 820        | mJ   |
| Avalanche Current                       |              | I <sub>AS</sub>                        | 40.5       | A    |
| Total Power Dissipation                 |              | P <sub>D</sub> (T <sub>c</sub> =25 °C) | 170        | W    |
| Junction and Storage Temperature Range  |              | T <sub>J</sub> ,T <sub>STG</sub>       | -55 to 150 |      |
| Thermal Resistance-Junction to Ambient  | t ≤ 10s      | R <sub>JA</sub>                        | 23         | /W   |
|                                         | Steady-State |                                        | 75         |      |
| Thermal Resistance-Junction to Case     | Steady-State | R <sub>JC</sub>                        | 0.74       |      |

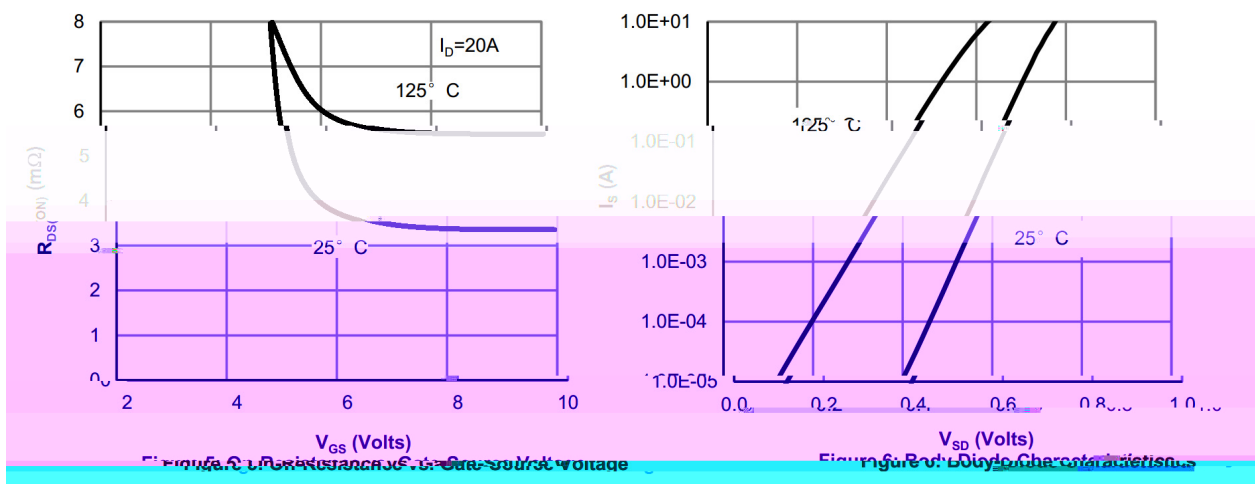
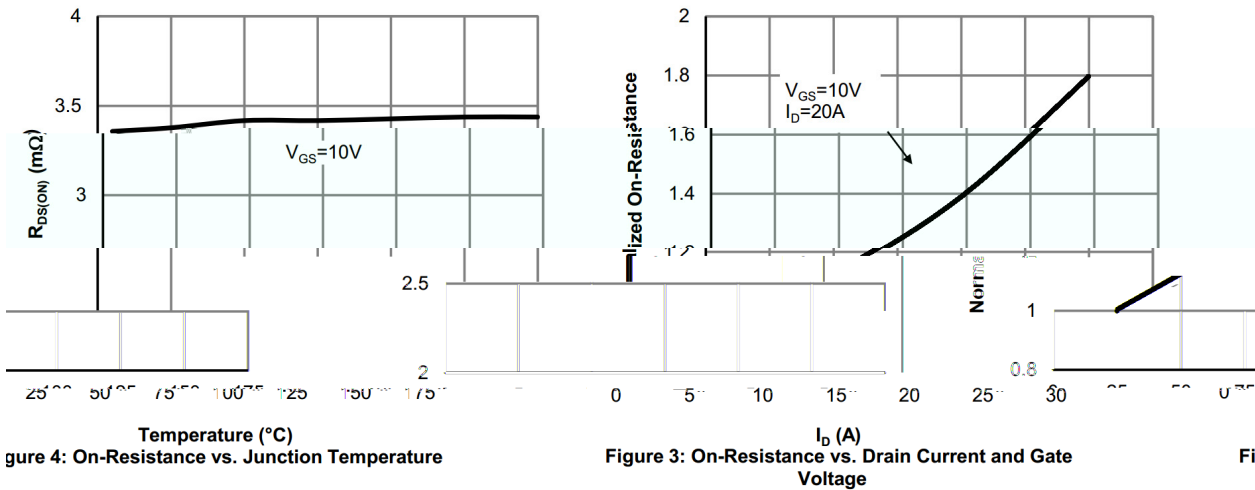
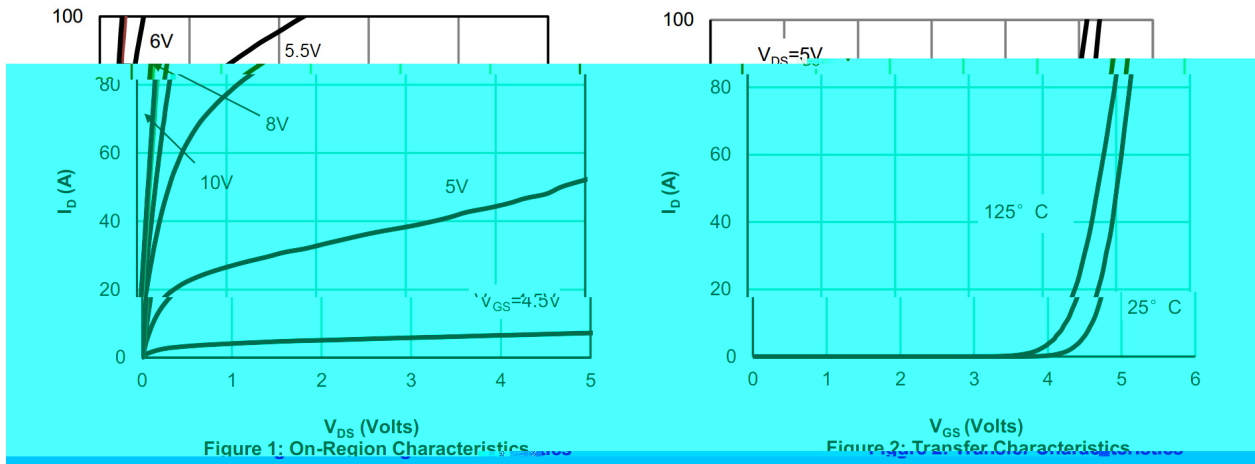
/ Electrical Characteristics( $T_a=25^\circ\text{C}$ )

| Parameter                         | Symbol       | Test Conditions                                        | Min | Typ  | Max       | Unit             |
|-----------------------------------|--------------|--------------------------------------------------------|-----|------|-----------|------------------|
| Drain-Source Breakdown Voltage    | $BV_{DS}$    | $I_D=250\mu\text{A}, V_{GS}=0\text{V}$                 | 60  | 70   |           | V                |
| Zero Gate Voltage Drain Current   | $I_{DSS}$    | $V_{DS}=60\text{V}, V_{GS}=0\text{V}$                  |     |      | 1.0       | $\mu\text{A}$    |
| Gate-Body leakage current         | $I_{GSS}$    | $V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$              |     |      | $\pm 100$ | nA               |
| Gate Threshold Voltage            | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu\text{A}$                    | 2.0 |      | 4.0       | V                |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}=10\text{V}, I_D=20\text{A}$                    |     | 3.3  | 3.5       | $\text{m}\Omega$ |
| Diode Forward Voltage             | $V_{SD}$     | $I_S=1\text{A}, V_{GS}=0\text{V}$                      |     |      | 1.2       | V                |
| Input Capacitance                 | $C_{iss}$    | $V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$ |     | 4400 |           | pF               |
| Output Capacitance                | $C_{oss}$    |                                                        |     | 1400 |           |                  |
| Reverse Transfer Capacitance      | $C_{rss}$    |                                                        |     | 73   |           |                  |
| Gate resistance                   | $R_g$        | $V_{GS}=0\text{V}, V_{DS}=0\text{V}, f=1\text{MHz}$    |     | 1.1  |           |                  |
| Total Gate Charge                 | $Q_g$        | $V_{GS}=10\text{V}, V_{DS}=30\text{V}, I_D=20\text{A}$ |     | 42   |           | nC               |
| Gate Source Charge                | $Q_{gs}$     |                                                        |     | 14   |           |                  |
| Gate Drain Charge                 | $Q_{gd}$     |                                                        |     | 11   |           |                  |

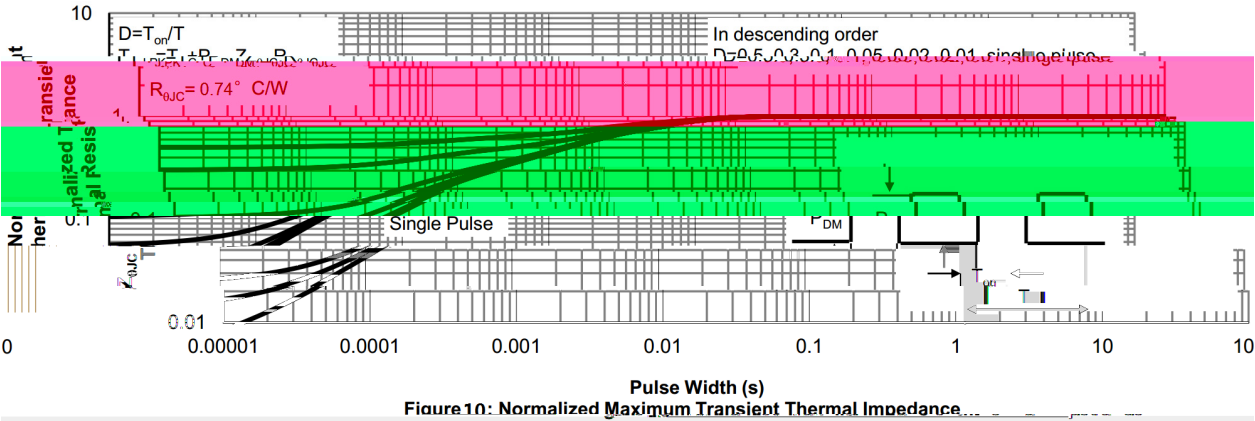
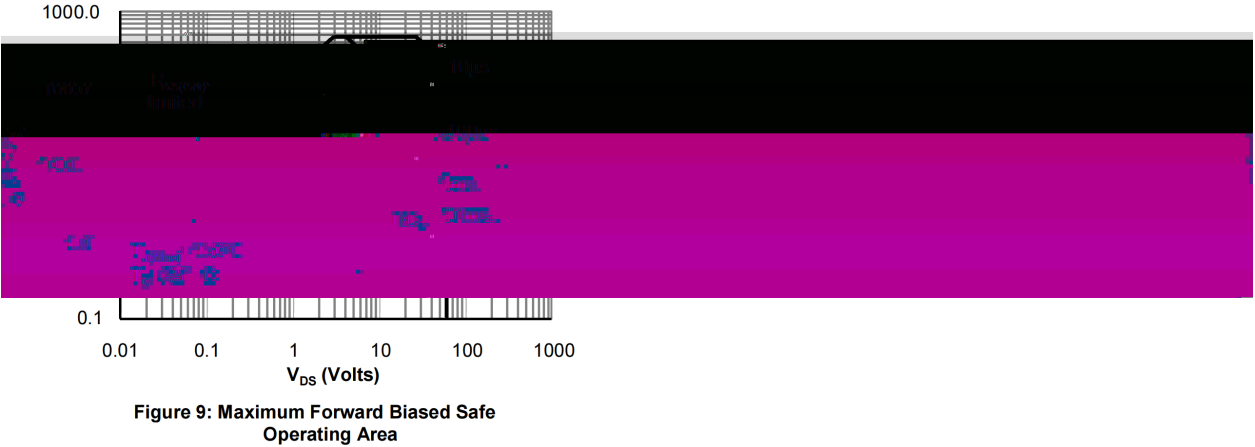
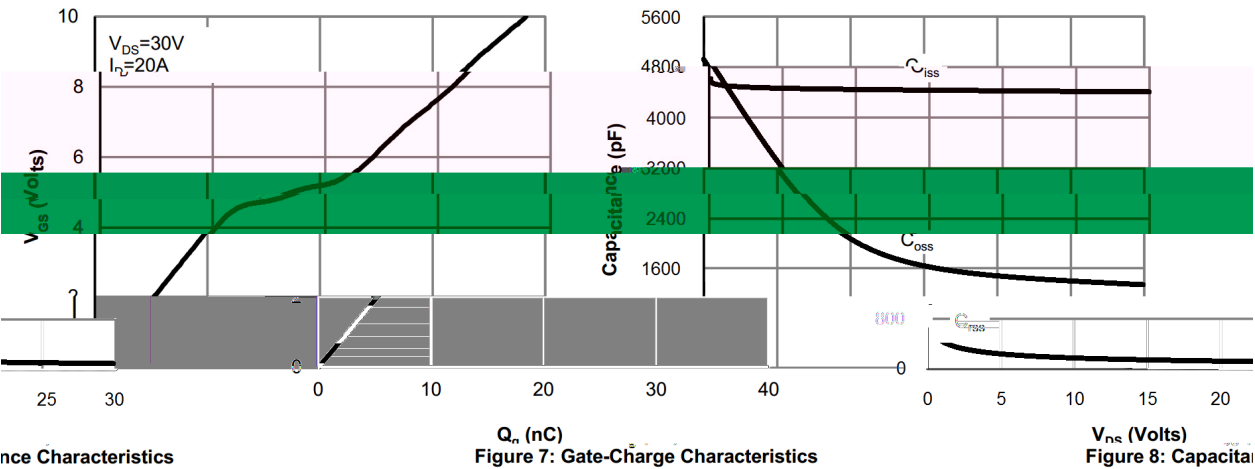
## / Electrical Characteristics(Ta=25 )

| Parameter           | Symbol       | Test Conditions                                                | Min | Typ | Max | Unit |
|---------------------|--------------|----------------------------------------------------------------|-----|-----|-----|------|
| Turn-On Delay Time  | $t_{d(on)}$  | $V_{GS}=10V$ $V_{DS}=30V$<br>$R_L=1.5\Omega$ $R_{GEN}=3\Omega$ |     | 13  |     | ns   |
| Turn-On Rise Time   | $t_r$        |                                                                |     | 4   |     |      |
| Turn-Off Delay Time | $t_{d(off)}$ |                                                                |     | 47  |     |      |
| Turn-Off Fall Time  | $t_f$        |                                                                |     | 6.5 |     |      |

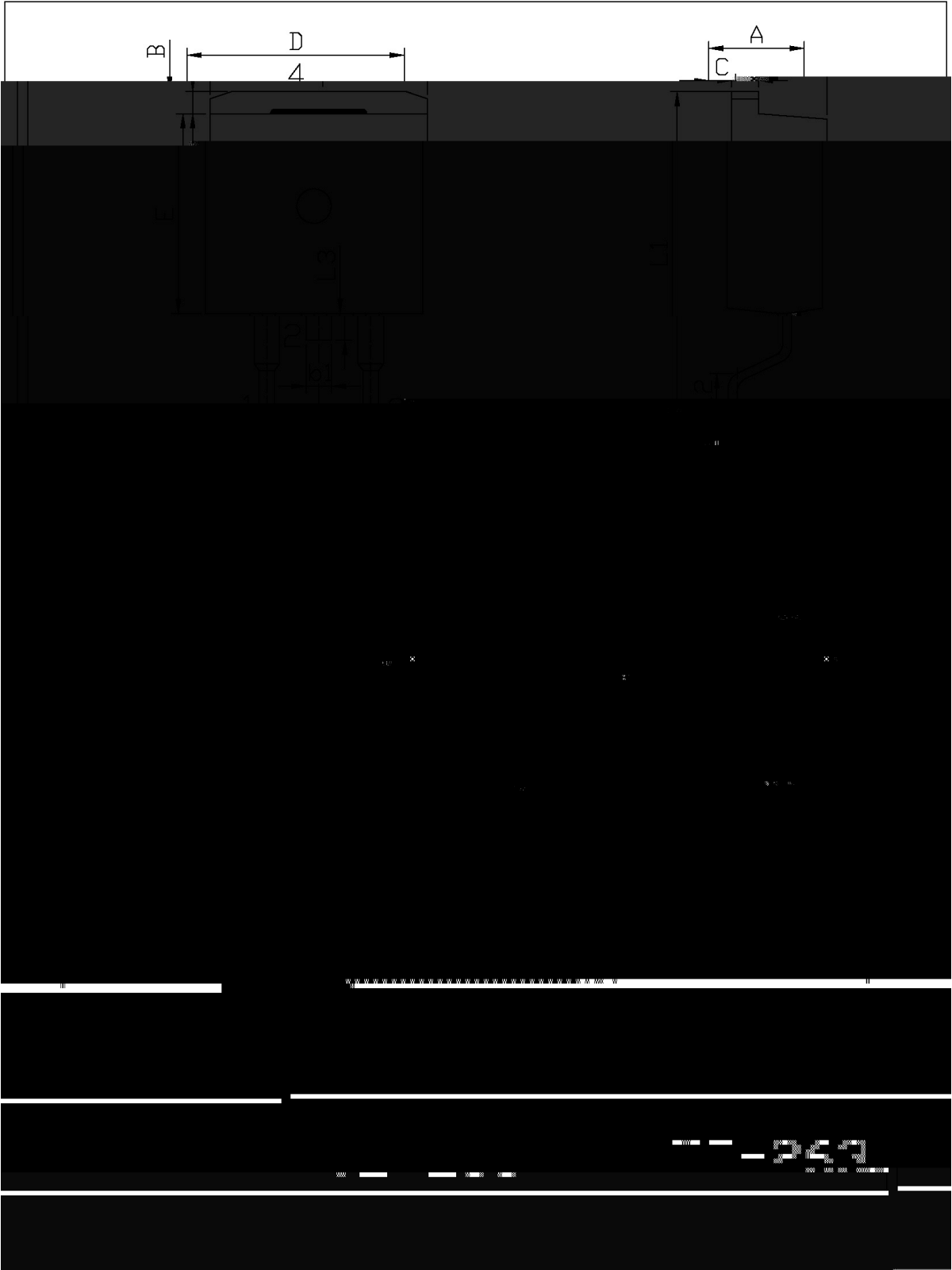
## / Electrical Characteristic Curve



/ Electrical Characteristic Curve

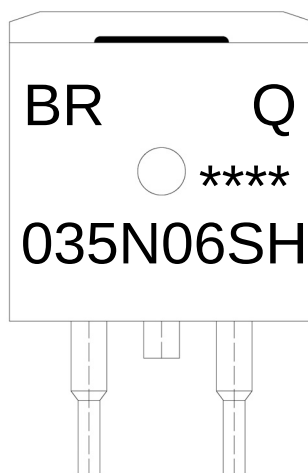


/ Package Dimensions





## / Marking Instructions



BR

Q

035N06SH

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Note:

BR: Company Code

Q: Automobile halogen-free product Code

035N06SH: Product Type Code

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

**BRCS035N06SHBDQ**

Rev.A Feb.-2025



DATA SHEET

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