## / Descriptions

TO-252 N

N-CHANNEL MOSFET in a TO-252 Plastic Package.

## / Features

$R_{DS(on)}$ $C_{rss}$ AEC-Q101

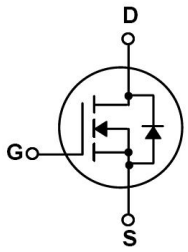
Low $R_{DS(on)}$,low gate charge, low $C_{rss}$, fast switching, Qualified to AEC-Q101 Standards for High Reliability, HF Product.

## / Applications

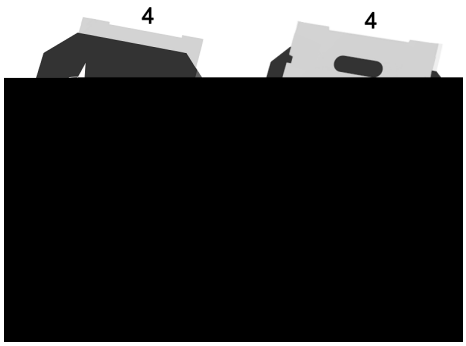
DC/DC

Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products, Meet the stringent requirements of automotive applications.

## / Equivalent Circuit




## / Pinning




PIN1 G PIN 2 D PIN 3 S PIN 4 D

## / Marking

See Marking Instructions.

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DSS}$ | 40 | V |
| Drain Current | | $I_D$(Tc=25 ) | 150 | A |
| Drain Current - Pulsed | | $I_{DM}$ | 304 | A |
| Gate-Source Voltage | | $V_{GS}$ | ± 20 | V |
| Avalanche Current | | $I_{AS}$ | 33 | A |
| Single Pulsed Avalanche Energy(L=0.5mH) | | $E_{AS}$ | 435 | mJ |
| Power Dissipation | | $P_D$(Tc=25 ) | 120 | W |
| Junction and Storage Temperature Range | | $T_J$, $T_{STG}$ | -55 to 150 | |
| Thermal Resistance-Junction to Ambient | t ≤ 10s | $R_{\theta JA}$ | 20 | /W |
| | Steady-State | | 50 | |
| Thermal Resistance-Junction to Case | Steady-State | $R_{\theta JC}$ | 1.04 | |

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V $I_D$=250εA | 40 | | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=40V $V_{GS}$=0V | | | 1.0 | εA |
| Gate-Body Leakage Current Forward | $I_{GSS}$ | $V_{GS}$=±20V $V_{DS}$=0V | | | ± 100 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$ $I_D$=250εA | 1.0 | 1.7 | 2.5 | V |

Static Drain-Source
On-Resist DS31 Tw.49(on4958 0 0 10.5 256.92 308.3 Tm0-.0016 Tcj-1.8865 -.00 18.90c810(72 0 0 7.02 282.72 308.1

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|

Tu.0037 Twp4 3ditions

## / Electrical Characteristic Curve

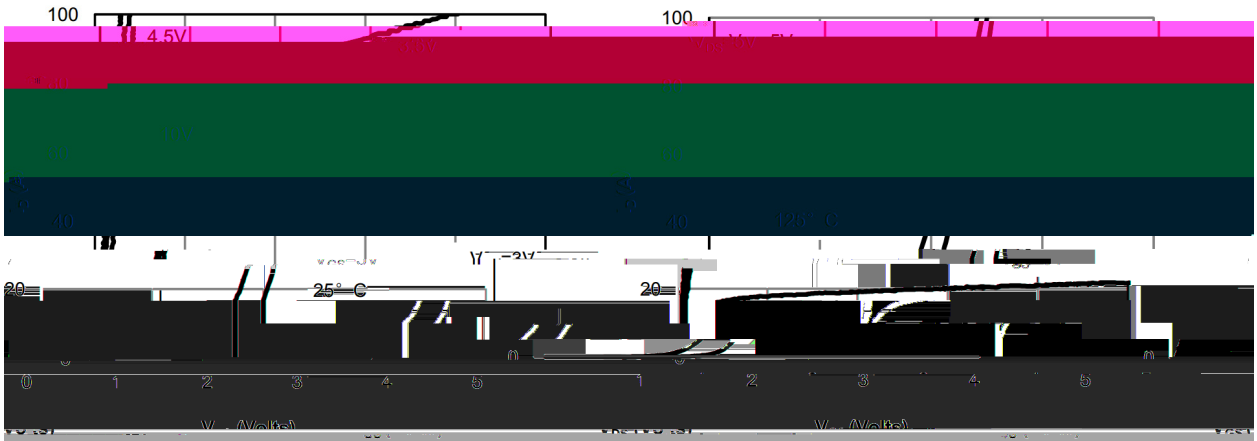
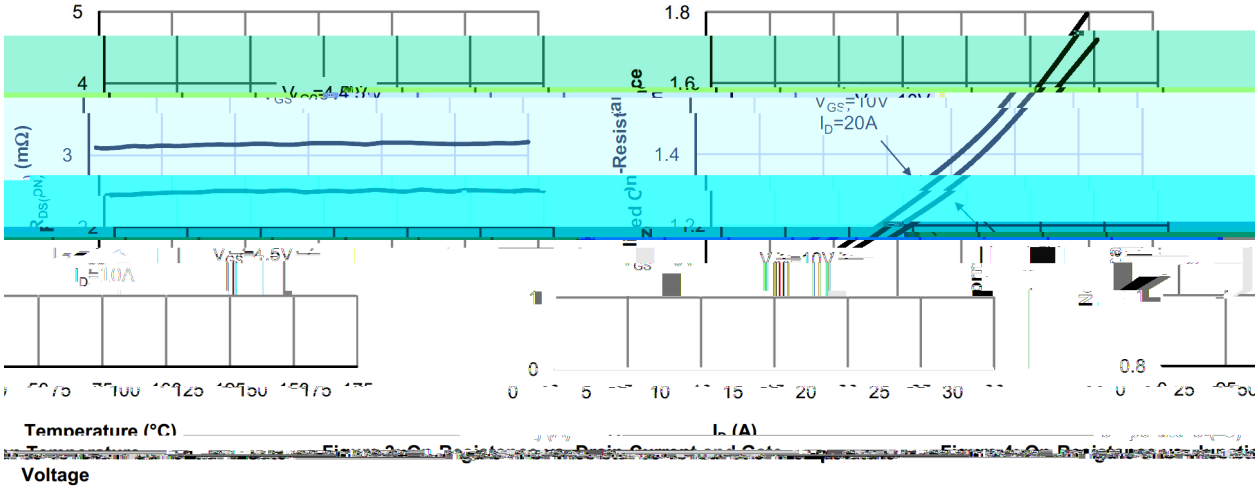
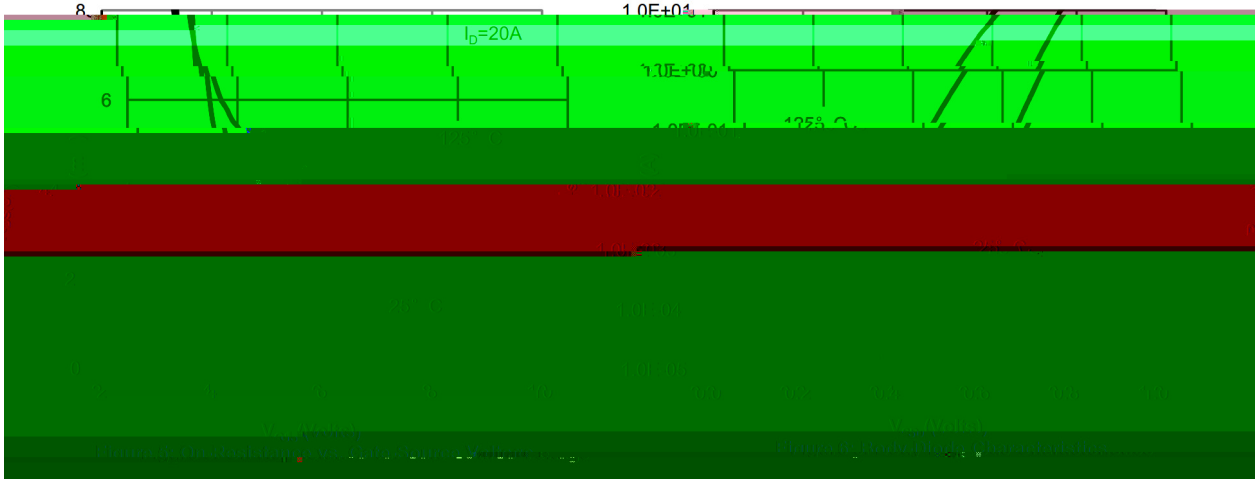



Figure 2: Transfer Characteristics

Figure 1: On-Region Characteristics




Voltage



## / Electrical Characteristic Curve

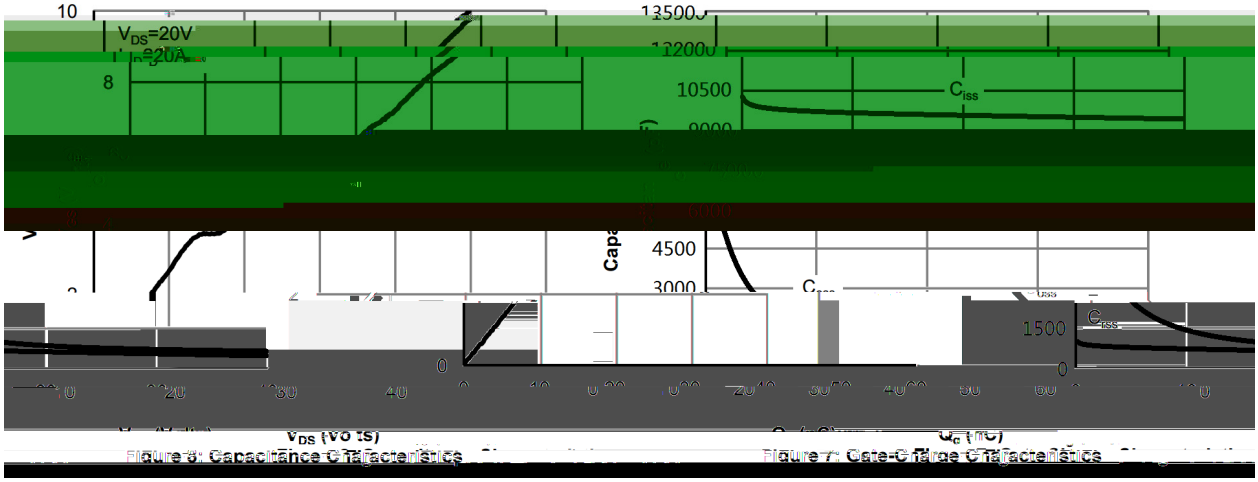
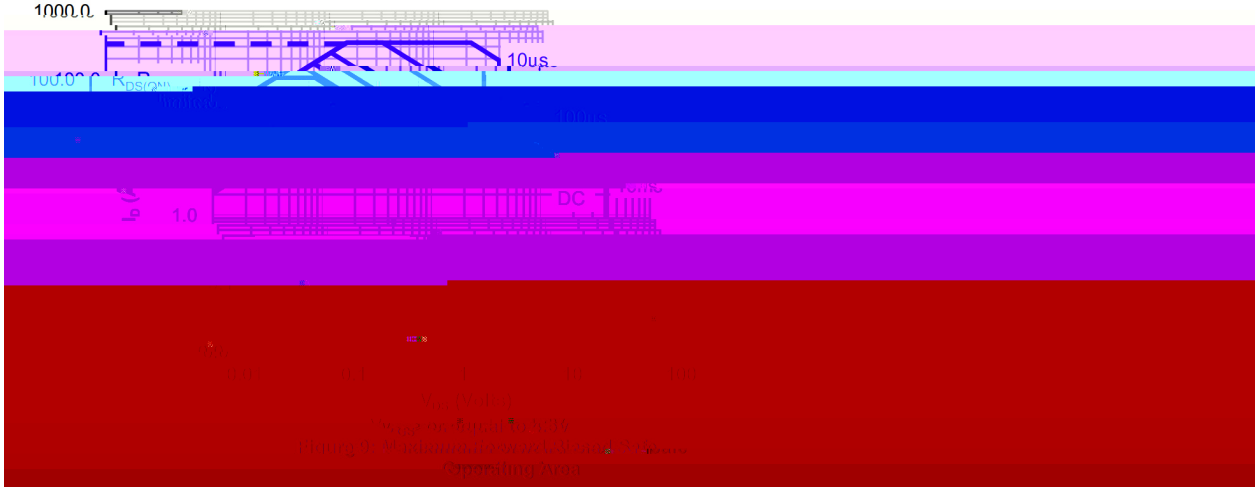



Figure 6. Capacitance Characteristics

Figure 7. Gate-Charge Characteristics



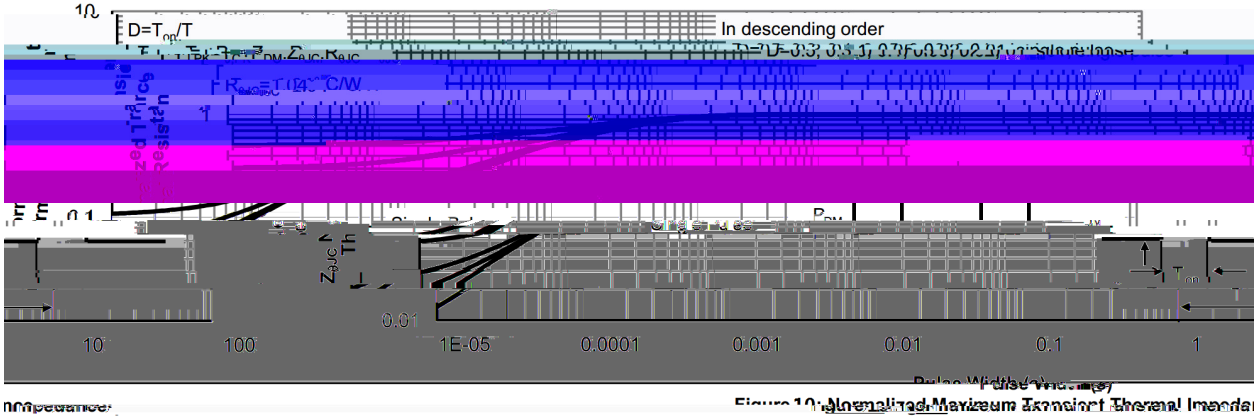
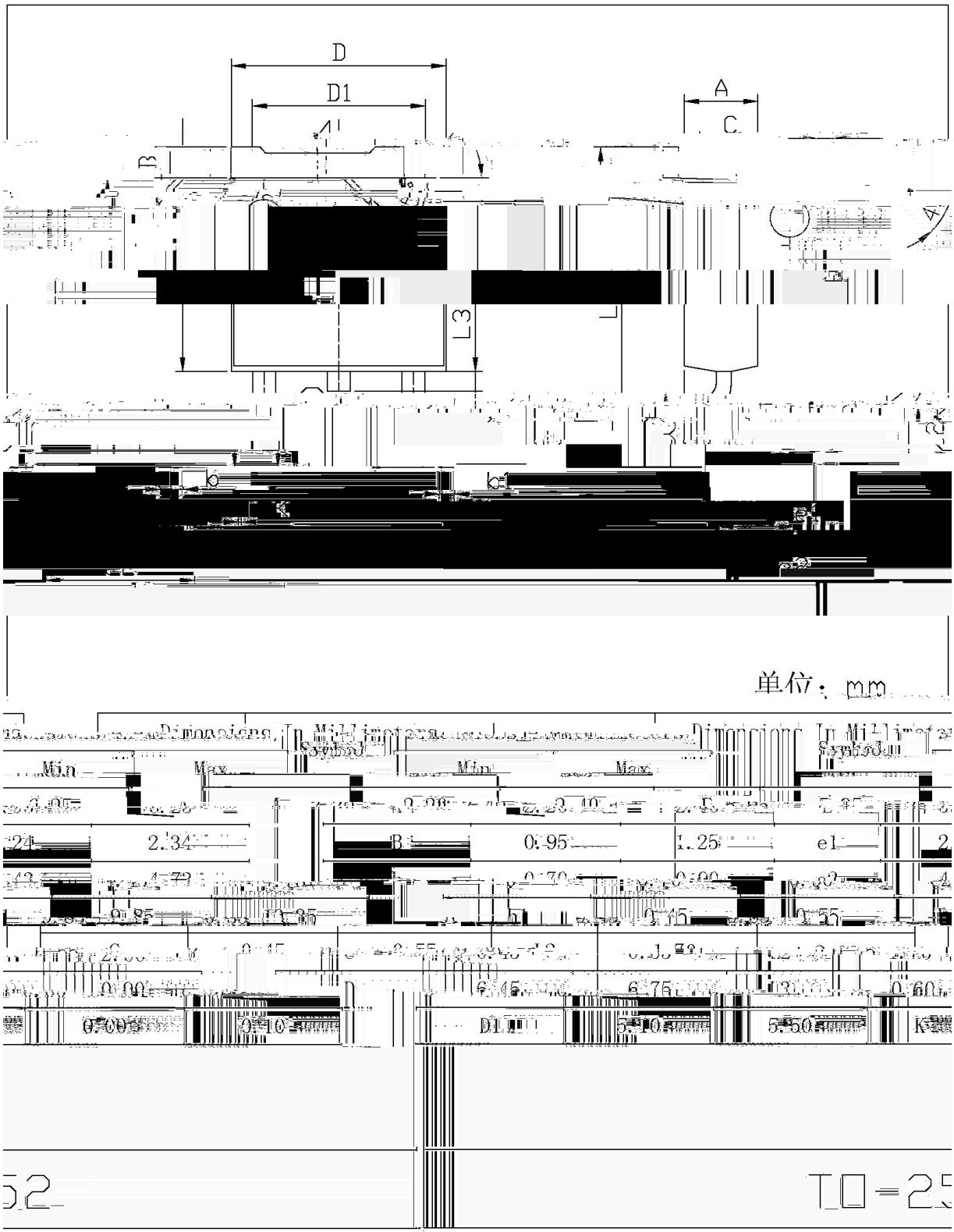
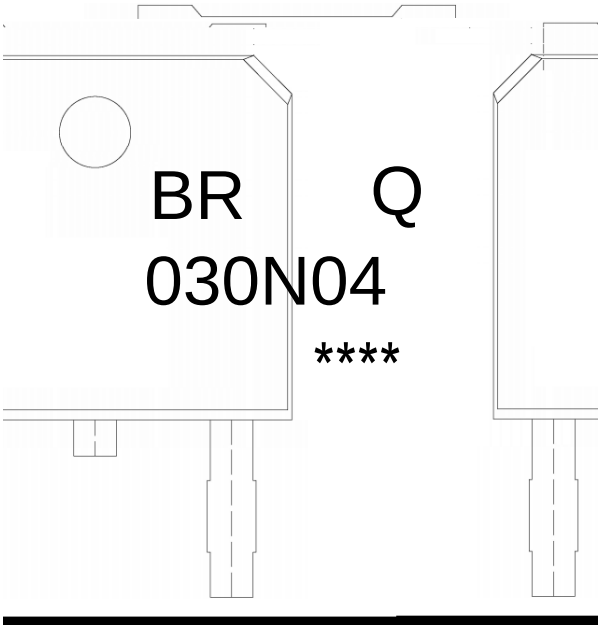




Figure 10. Normalized Maximum Transient Thermal Impedance

## / Package Dimensions



## / Marking Instructions




BR

Q

030N04

****

Note:

| | |
|---|---|
| BR: | Company Code |
| Q: | Automobile halogen-free product Code |
| 030N04: | Product Type Code |
| ****: | Lot No. Code, code change with Lot No |

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

| |
|---|
| |
| |
| |
| |
| |
| |
| |

Note:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | | 150 | 200 | | 60 | 120sec; | 1.Preheating:150~200 | , Time:60~120sec. |
| 2 | | 255±5 | | | | 5±0.5sec; | 2.Peak Temp.:255±5 | , Duration:5±0.5sec. |
| 3 | | | | 2 | 10 | /sec. | 3. Cooling Speed: 2~10 | /sec. |

## / Resistance to Soldering Heat Test Conditions

| | | | |
|---|---|---|---|
| 260±5 | 10±1 sec. | Temp.:260±5 | Time:10±1 sec |

## / Packaging SPEC.

/ REEL