## Features

- AEC-Q101qualified
- Low on resistance
- Low reverse transfer capacitances
- 100% single pulse avalanche energy test
- 100% ΔVDS test
- Pb-Free plating / Halogen-Free / RoHS compliant

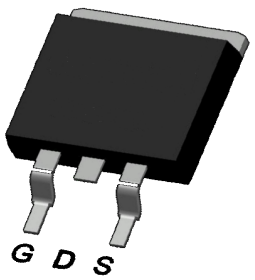
## Key Parameters

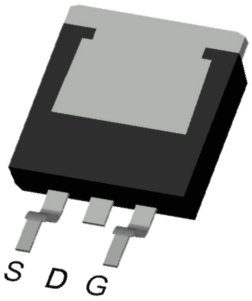
| | |
|---|---|
| $V_{DS}$ | 200V |
| $R_{DS(on)typ.}$ | 11mΩ |
| $I_D$ | 110A |
| $Ciss_{@10V}$ | 4217pF |
| Qgd | 9nC |

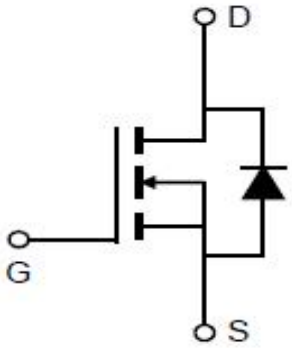
## Applications

- Power switching applications
- DC-DC converters
- Full bridge control

## TO-263




## Marking & Packing Information

| Part # | Package | Marking | Tube/Reel | Qty(pcs) |
|---|---|---|---|---|
| SUM90142E-GE3-CN | TO-263 | 108N20NA | Reel | 800/box |

## Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-source voltage | $V_{DS}$ | 200 | V |
| Gate-Source voltage | $V_{GS}$ | ±20 | V |
| Continuous drain current<br>$T_C$ = 25°C<br>$T_C$ = 100°C | $I_D$ | <br>110<br>78 | A |
| Pulsed drain current ($T_C$ = 25°C, $t_p$ limited by $T_{jmax}$) | $I_{D\ pulse}$ | 440 | A |
| Avalanche energy, single pulse (L=0.5mH, Rg=25Ω) | $E_{AS}$ | 1122 | mJ |
| Power dissipation ($T_C$ = 25°C) | $P_{tot}$ | 333 | W |
| Operating junction and storage temperature | $T_j$ , $T_{stg}$ | -55...+175 | °C |

## Thermal Resistance

| Parameter | Symbol | Max | Unit |
|---|---|---|---|
| Thermal resistance, junction – case. | $R_{thJC}$ | 0.45 | °C/W |
| Thermal resistance, junction – ambient(min. footprint) | $R_{thJA}$ | 65 | |

## Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

### Static Characteristic

| Parameter | Symbol | Value | | | Unit | Test Condition |
|---|---|---|---|---|---|---|
| | | min. | typ. | max. | | |
| Drain-source breakdown voltage | $BV_{DSS}$ | 200 | - | - | V | $V_{GS}$=0V, $I_D$=250uA |
| Gate threshold voltage | $V_{GS(th)}$ | 2.5 | - | 4.5 | V | $V_{DS}$=$V_{GS}$,$I_D$=250uA |
| Zero gate voltage drain current | $I_{DSS}$ | <br>-<br>- | <br>-<br>- | <br>1<br>100 | μA | $V_{DS}$=180V,$V_{GS}$=0V<br>$T_j$=25°C<br>$T_j$=125°C |
| Gate-source leakage current | $I_{GSS}$ | - | - | 100 | nA | $V_{GS}$=20V,$V_{DS}$=0V |
| Drain-source on-state resistance | $R_{DS(on)}$ | | 11 | 13.0 | mΩ | $V_{GS}$=10V, $I_D$=60A, Tj=25°C |

## Dynamic Characteristic

| Parameter | Symbol | Value | | | Unit | Test Condition |
|---|---|---|---|---|---|---|
| | | min. | typ. | max. | | |
| Input Capacitance | $C_{iss}$ | - | 4217 | - | pF | $V_{GS}$=0V, $V_{DS}$=100V, f=1MHz |
| Output Capacitance | $C_{oss}$ | - | 358 | - | | |
| Reverse Transfer Capacitance | $C_{rss}$ | - | 7.78 | - | | |
| Gate Total Charge | $Q_G$ | - | 57 | - | nC | $V_{GS}$=10V, $V_{DS}$=100V, $I_D$=60A, f=1MHz |
| Gate-Source charge | $Q_{gs}$ | - | 25 | - | | |
| Gate-Drain charge | $Q_{gd}$ | - | 9 | - | | |
| Turn-on delay time | $t_{d(on)}$ | - | 19 | - | ns | $V_{GS}$=10V, $V_{DD}$=100V, ID=60A, $R_{G\_ext}$=3Ω |
| Rise time | $t_r$ | - | 72 | - | | |
| Turn-off delay time | $t_{d(off)}$ | - | 43 | - | | |
| Fall time | $t_f$ | - | 12 | - | | |
| Gate resistance | $R_G$ | - | 2.5 | - | Ω | $V_{GS}$=0V, $V_{DS}$=0V, f=1MHz |

## Body Diode Characteristic

| Parameter | Symbol | Value | | | Unit | Test Condition |
|---|---|---|---|---|---|---|
| | | min. | typ. | max. | | |
| Diode Max Current | $I_S$ | | - | 110 | A | - |
| Diode Forward Voltage | $V_{SD}$ | - | - | 1.2 | V | $V_{GS}$=0V,$I_{SD}$=60A |
| Diode Reverse Recovery Time | $t_{rr}$ | - | 123 | - | ns | $I_F$=60A, dI/dt=100A/μs |
| Diode Reverse Recovery Charge | $Q_{rr}$ | - | 953 | - | nC | |

## Typical Characteristics Diagram

Fig1. Output Characteristics

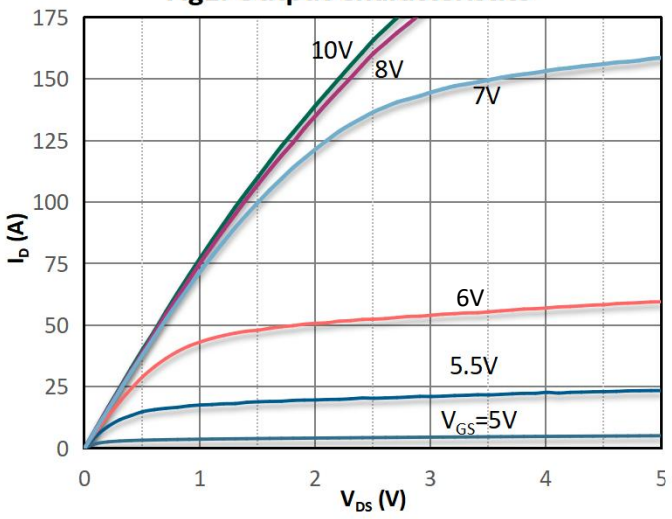



Fig2. Transfer Characteristics

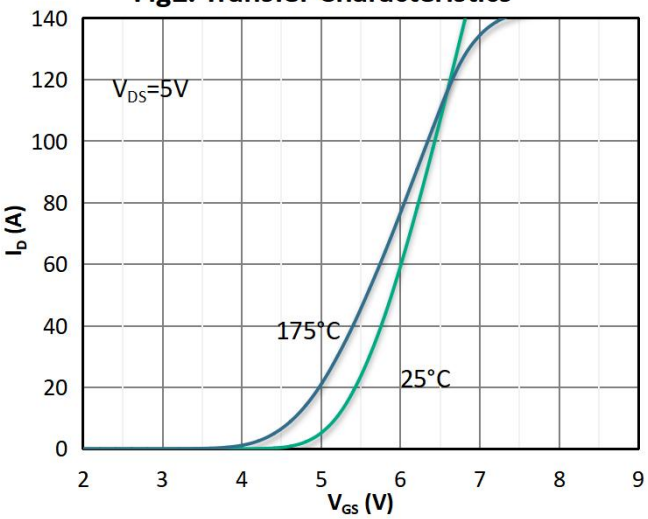



Fig3. Body-diode Forward Characteristics

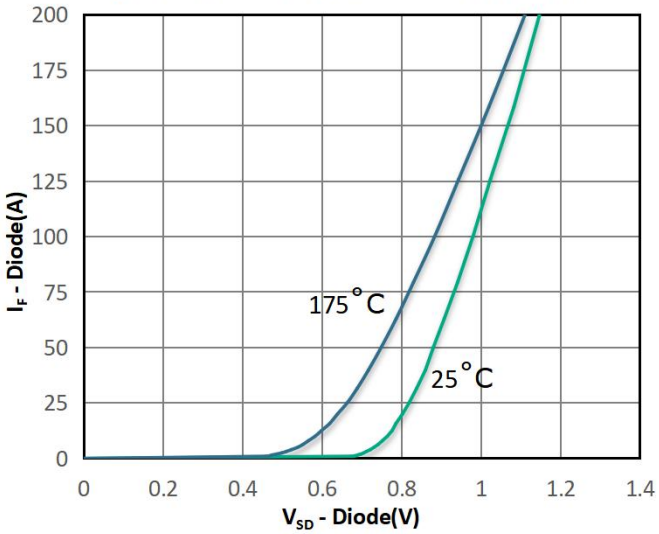



Fig 4. Rds(on) vs Gate Voltage

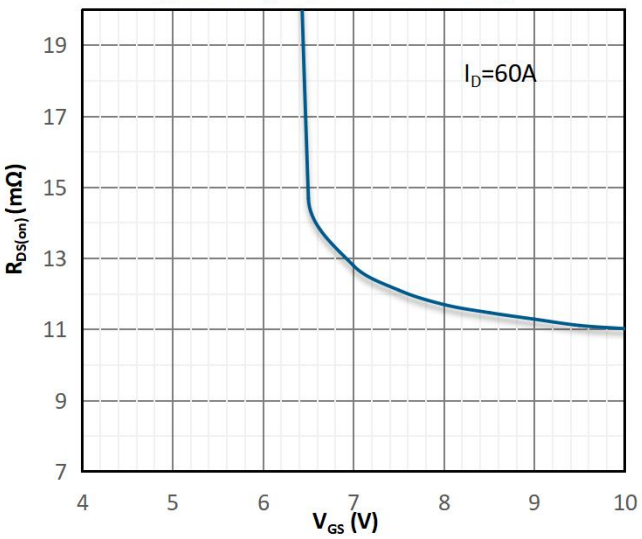



Fig5. Rds(on) vs. Temperature

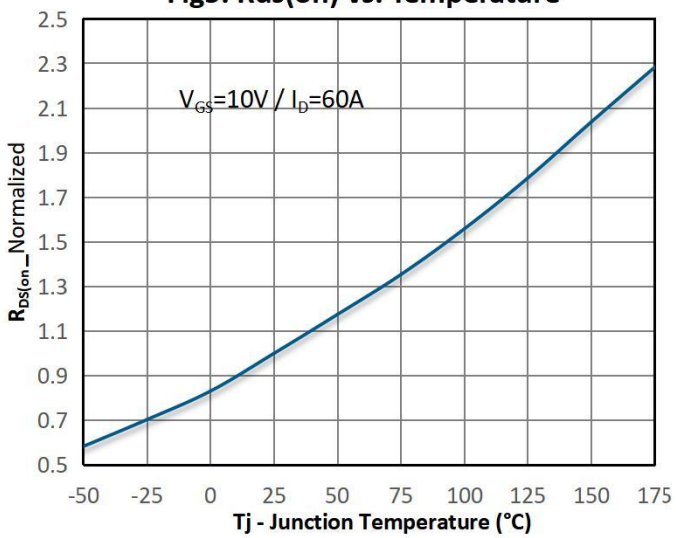
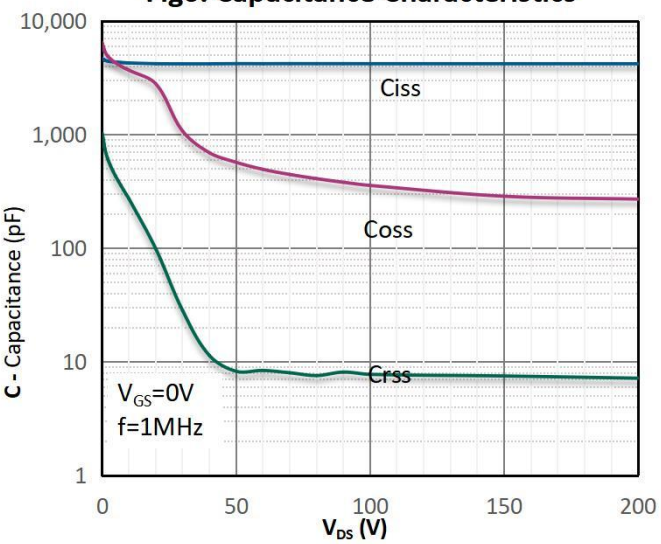



Fig6. Capacitance Characteristics



## Typical Characteristics Diagram

Fig7. Gate Charge Characteristics

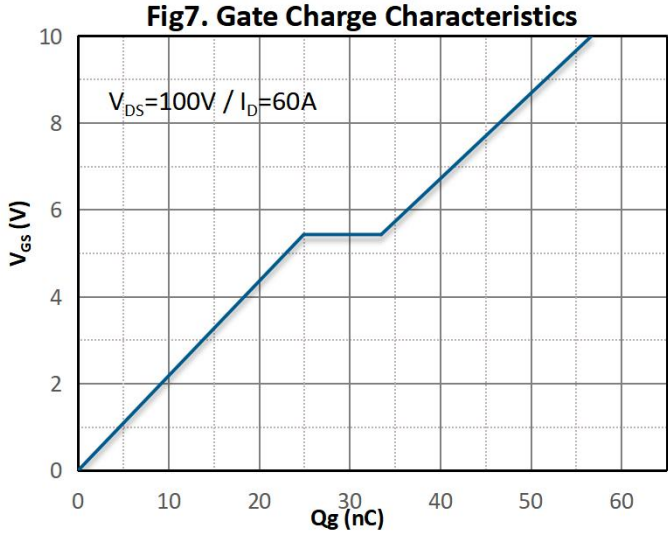



Fig8. Safe Operating Area

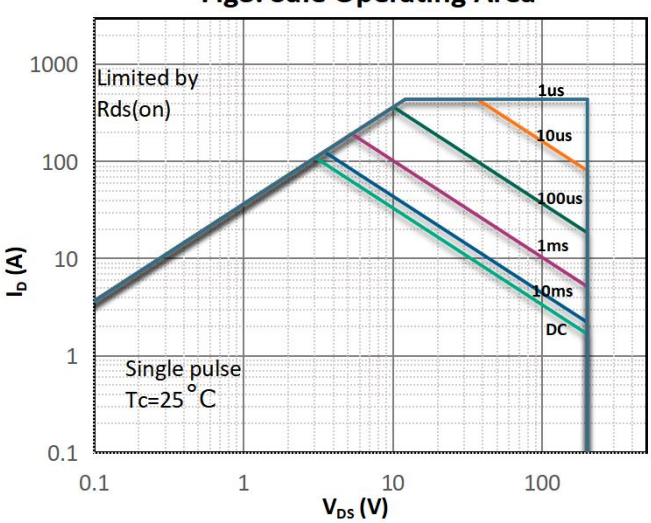



Fig9. Power De-rating

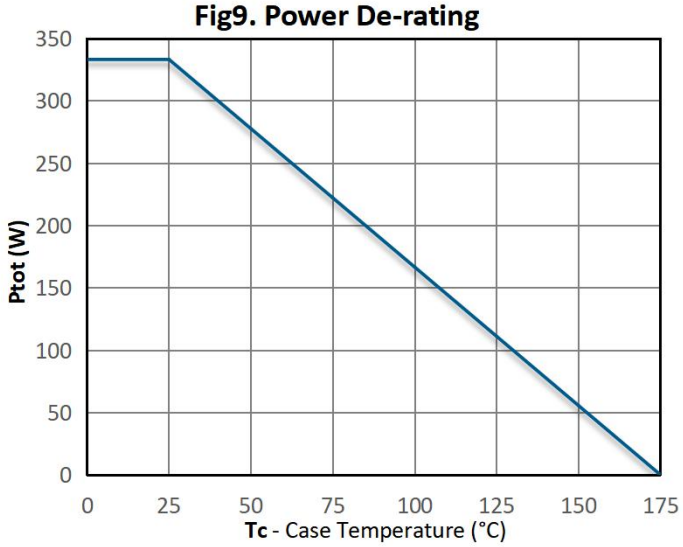



Fig10. Current De-rating

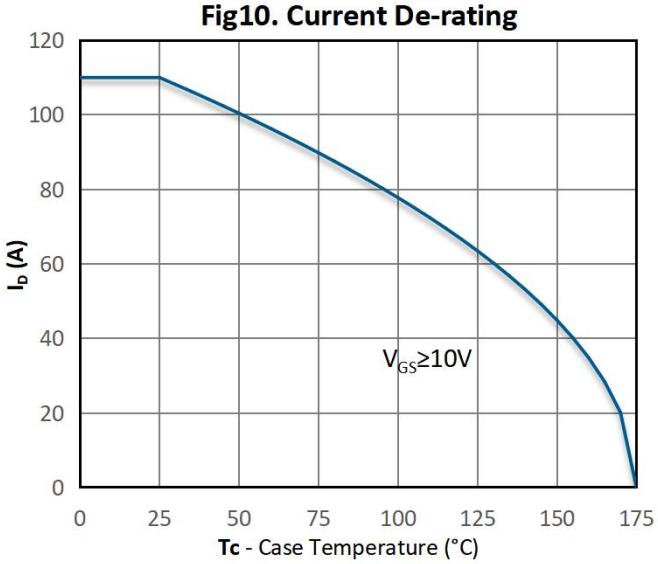
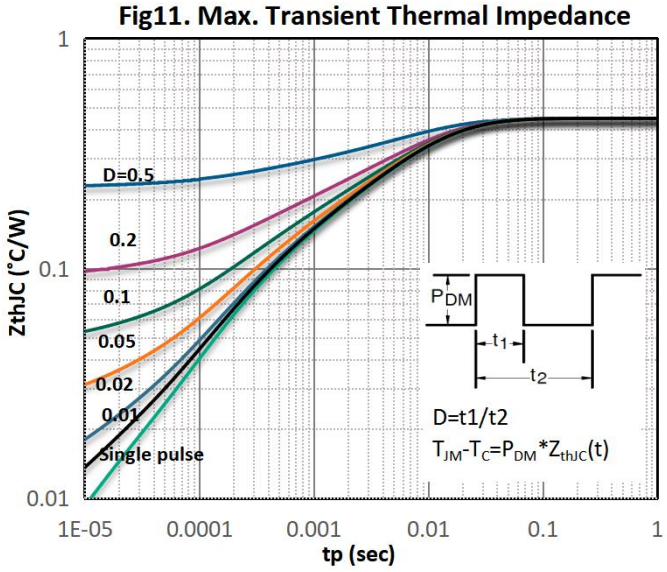
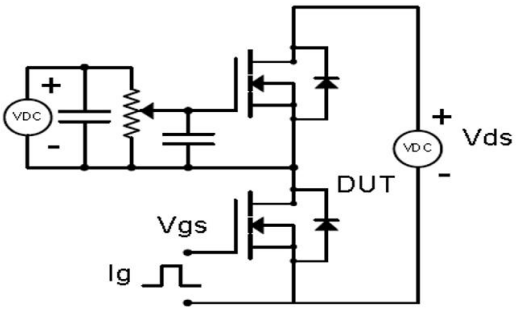


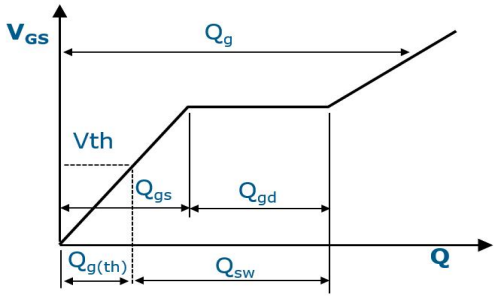

Fig11. Max. Transient Thermal Impedance



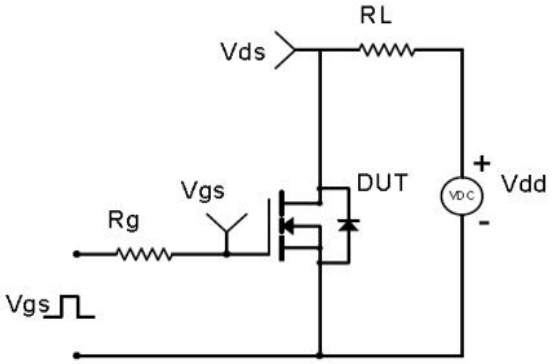
## Test Circuit & Waveform

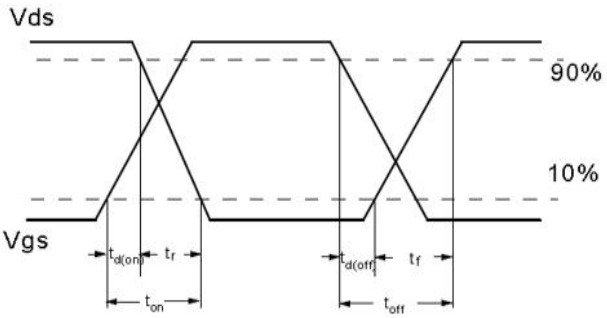
### Gate Charge Test Circuit & Waveform



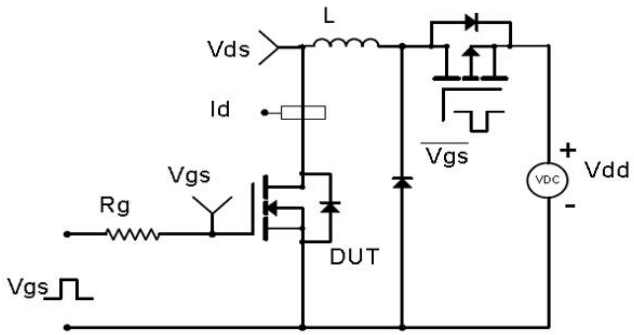



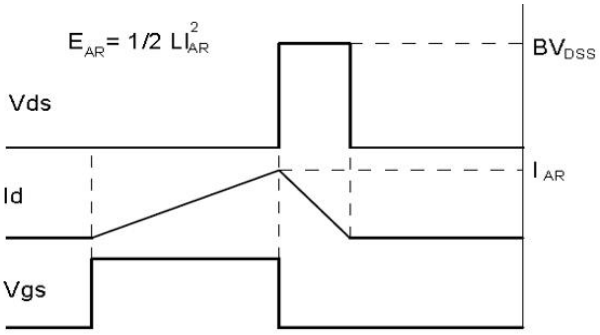

### MOSFET Switching Test Circuit & Waveform



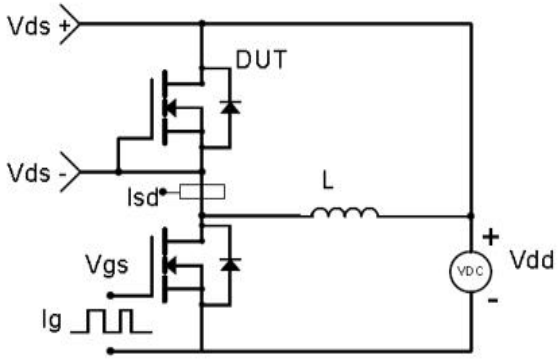



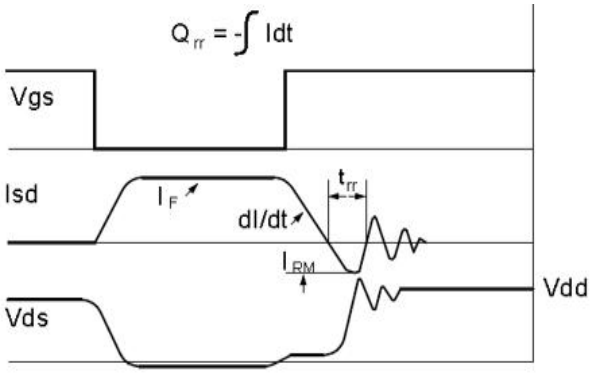

### $E_{AS}$ Test Circuit & Waveform



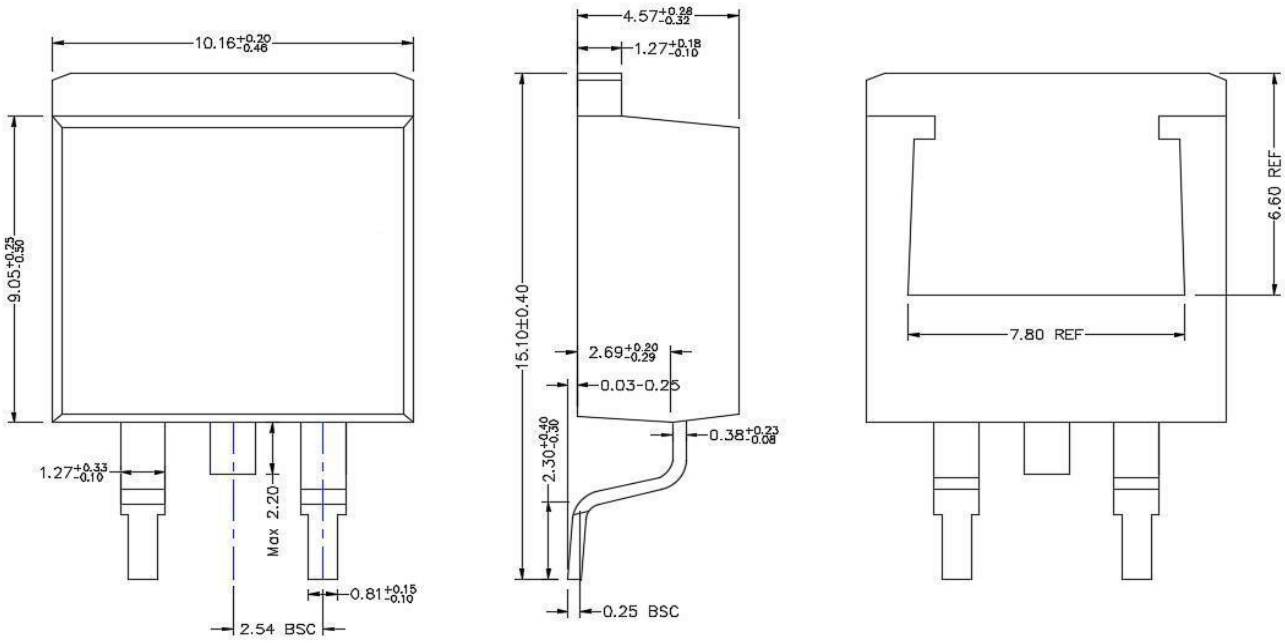

### Diode Recovery Test Circuit & Waveform



## Package Outline : TO-263

*Dimensions in mm



**NOTICE**

The information presented in this document is for reference only. Involving product optimization and productivity improvement, ChipNobo reserves the right to adjust product indicators and upgrade some technical parameters. ChipNobo is entitled to be exempted from liability for any delay or non-delivery of the information disclosure process that occurs.
本文件中提供的信息仅供参考。涉及产品优化和生产效率改善，ChipNobo 有权调整产品指标和部分技术参数的升级，所出现信息披露过程存在延后或者不能送达的情形，ChipNobo 有获免责权。

The product listed herein is designed to be used with residential and commercial equipment, and do not support sensitive items and specialized equipment in areas where sanctions do exist. ChipNobo Co., Ltd or anyone on its behalf, assumes no responsibility or liability for any damages resulting from improper use.
此处列出的产品旨在民用和商业设备上使用，不支持确有制裁地区的敏感项目和特殊设备，ChipNobo 有限公司或其代表，对因不当使用而造成的任何损害不承担任何责任。

For additional information, please visit our website http://www.chipnobo.com, or consult your nearest Chipnobo sales office for further assistance.
欲了解更多信息，请访问我们的网站 http://www.chipnobo.com，或咨询离您最近的 Chipnobo 销售办事处以获得进一步帮助。