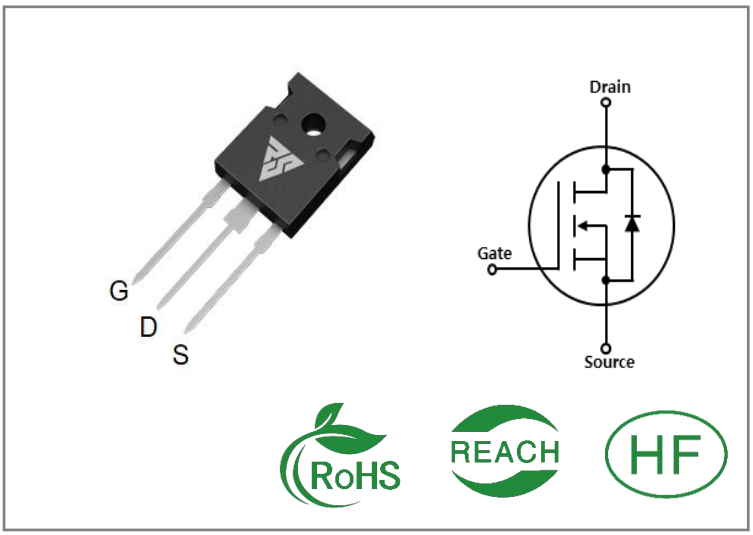
| ID | $R_{DS}$(ON)(Typ ) | VDSS |
|---|---|---|
| 30A | 110mΩ | 600V |




## Applications:

- Switch Mode Power Supply(SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)
- AC-DC Switching Power Supply

## Features:

- Fast switching speed
- 100% avalanche tested
- Improved dv/dt capability

## Ordering Information

| Part Number | Package | Marking | Packing | Qty. |
|---|---|---|---|---|
| RS60R130W | T0-247 | RS60R130W | Tube | 30 PCS |

## Absolute Maximun Ratings Tc= 2 5℃ unless otherwise specified

| Symbol | Parameter | RS60R130W | Units |
|---|---|---|---|
| VDSS | Drain-to-Source Voltage | 600 | V |
| ID | Continuous Drain Current TC=25℃ | 30 | A |
| ID | Continuous Drain Current TC=100℃ | 19.5 | |
| IDM | Pulsed Drain Current (Note*1) | 90 | |
| PD | Power Dissipation | 162 | W |
| VGS | Gate- to- Source Voltage | ±30 | V |
| EAS | Single Pulse Avalanche Engergy<br>IAS=2A,VDD =50V, RG = 25 Ω，TC=25℃ | 330 | mJ |
| dv/dt | MOSFET dv/ dt ruggedness VDS = 0...400V | 50 | V/ns |
| dv/dt | Reverse diode dv/dt VDS = 0...400V, Tj = 25℃, ISD≤ID | 15 | V/ns |
| TL TPKG | Maximum Temperature for Soldering<br>Leads at 0.063in(1.6mm)from Case for 10 seconds<br>Package Body for 10 seconds | 300<br>260 | ℃ |
| TJ and TSTG | Operating Junction and Storage Temperature Range | -55 to 150 | |

* Drain Current Limited by Maximum Junction Temperature

Caution: Stresses greater than those listed in the“ Absolute Maximum Ratings” Table may cause permanent damage to the device.

## Thermal Resistance

| Symbol | Parameter | RS60R130W | Units | Test Conditions |
|---|---|---|---|---|
| RθJC | Junction-to-Case | 0.77 | ℃/ W | Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 ℃ |
| RθJA | Junction-to- Ambient | 62.5 | | 1 cubic foot chamber,free air. |

## OFF Characteristics TJ= 25℃ unless otherwise specified

| Symbol | Parameter | Min. | Typ. | Max. | Units | Test Conditions |
|---|---|---|---|---|---|---|
| BVDSS | Drain- to- source Breakdown Voltage | 600 | -- | -- | V | VGS=0V,ID=250μA |
| IDSS | Drain- to- Source Leakage Current | -- | -- | 1 | μA | VDS=600V,VGS=0 V |
| IGSS | Gate- to- Source Forward Leakage | -- | -- | 100 | nA | VGS=30V ,VDS=0V |
| | Gate- to- Source Reverse Leakage | -- | -- | -100 | | VGS=-30V ,VDS=0 V |

## ON Characteristics TJ=25℃ unless otherwise specified

| Symbol | Parameter | Min. | Typ. | Max. | Units | Test Conditions |
|---|---|---|---|---|---|---|
| RDS(on) | Static Drain- to- Source On-Resistance(Note*2) | -- | 110 | 130 | mΩ | VGS=10V,ID=15A |
| VGS(TH) | Gate Threshold Voltage | 2 | -- | 4 | V | VGS=VDS,ID=250μA |

## Resistive Switching Characteristics Essentially independent of operating temperature

| Symbol | Parameter | Min. | Typ. | Max. | Units | Test Conditions |
|---|---|---|---|---|---|---|
| td(ON) | Turn- on Delay Time | -- | 30 | -- | nS | VDS=300V ID=30A RG=25Ω |
| trise | Rise Time | -- | 45 | -- | | |
| td(OFF) | Turn- OFF Delay Time | -- | 145 | -- | | |
| tfall | Fall Time | -- | 36 | -- | | |

**Dynamic Characteristics** Essentially independent of operating temperature

| Symbol | Parameter | Min. | Typ. | Max. | Units | Test Conditions |
|---|---|---|---|---|---|---|
| Ciss | Input Capacitance | -- | 1908 | -- | pF | VGS=0V<br>VDS=50V<br>f=400kHz |
| Coss | Output Capacitance | -- | 129 | -- | | |
| Crss | Reverse Transfer Capacitance | -- | 2.9 | -- | | |
| Qg | Total Gate Charge | -- | 50 | -- | nC | VDS=480V<br>ID=30A<br>VGS=10V |
| Qgs | Gate- to- Source Charge | -- | 10 | -- | | |
| Qgd | Gate-to-Drain(" Miller") Charge | -- | 14 | -- | | |

**Source- Drain Diode Characteristics**

| Symbol | Parameter | Min. | Typ. | Max. | Units | Test Conditions |
|---|---|---|---|---|---|---|
| IS | Continuous Source Current | -- | -- | 30 | A | Integral pn- diode in MOSFET |
| ISM | Maximum Pulsed Current | -- | -- | 90 | A | |
| VSD | Diode Forward Voltage | -- | -- | 1.4 | V | IS=30A,VGS=0V |
| trr | Reverse Recovery Time | -- | 445 | -- | nS | VDD=100V<br>IS=30A,di/dt=100A /μs |
| Qrr | Reverse Recovery Charge | -- | 6.4 | -- | μC | |

**Notes:**

* 1. Repetitive rating,pulse width limited by maximum junction temperature.
* 2. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 2%

## Typical Feature Curve

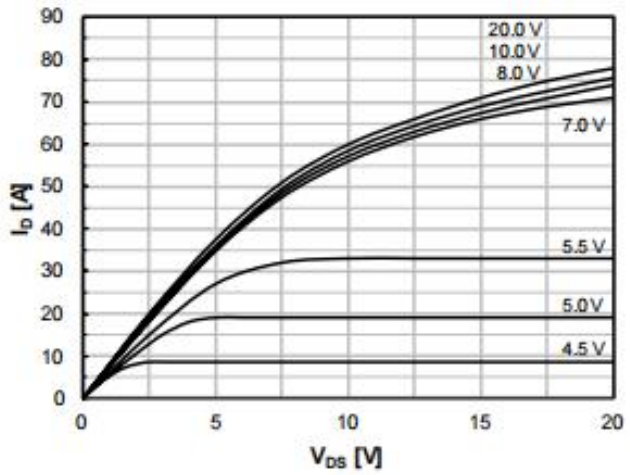



Fig. 1 Output Characteristics

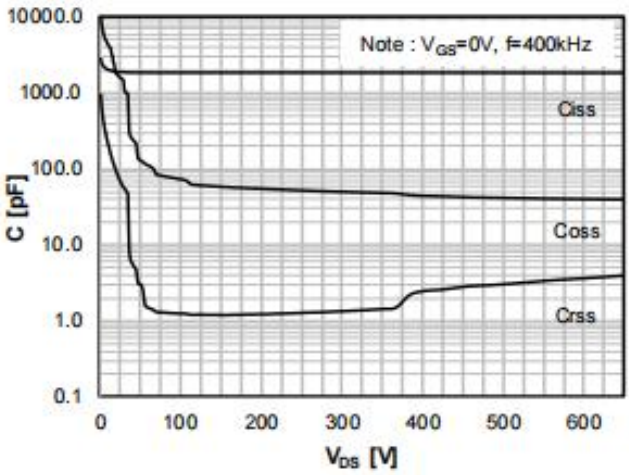



Fig. 2 Capacitances

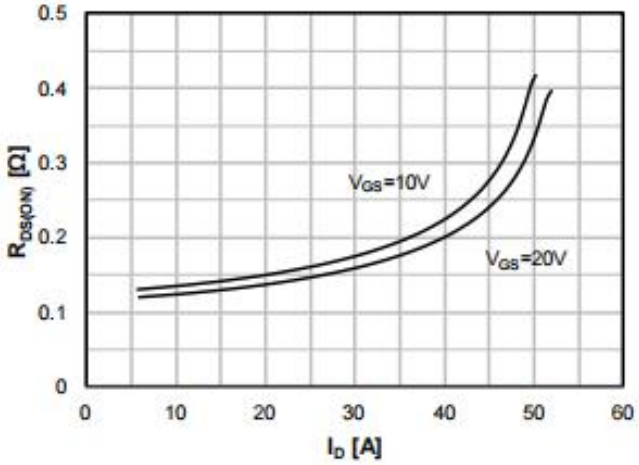



Fig. 3 On-state Resistance

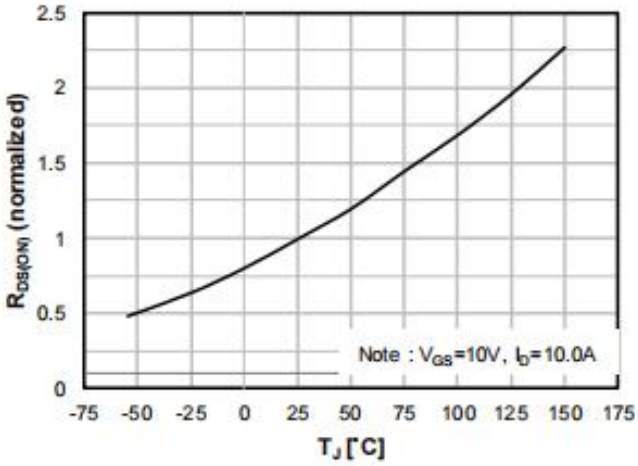



Fig. 4 On-state Resistance with Temperature

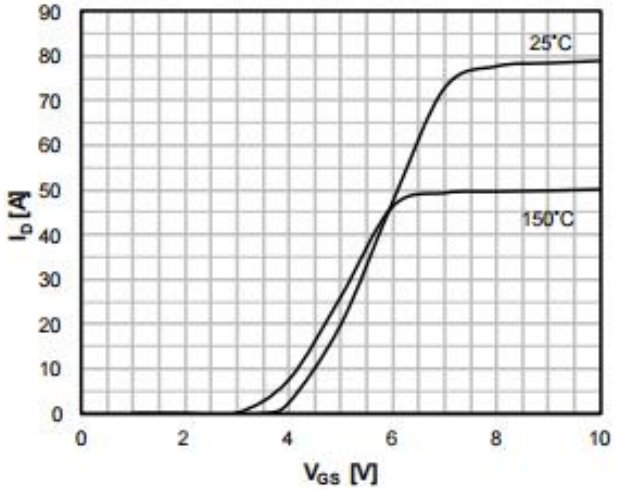



Fig 5. Transfer Characteristics

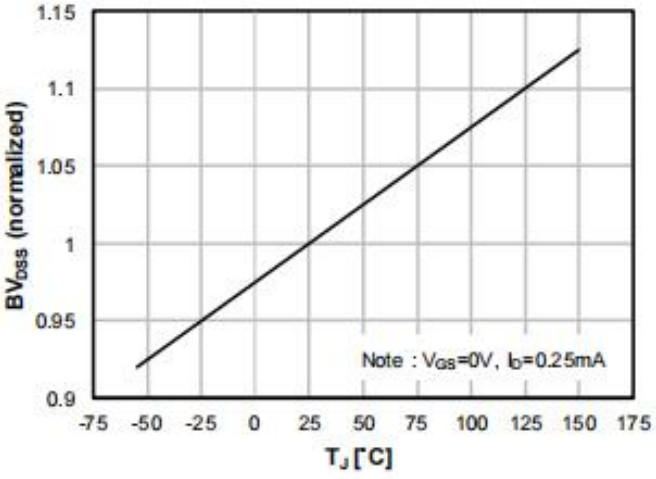



Fig 6. Breakdown Voltage with Temperature

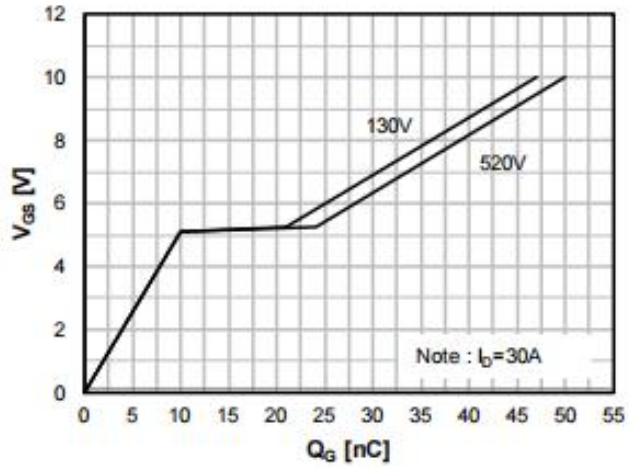



Fig 7. Gate Charge

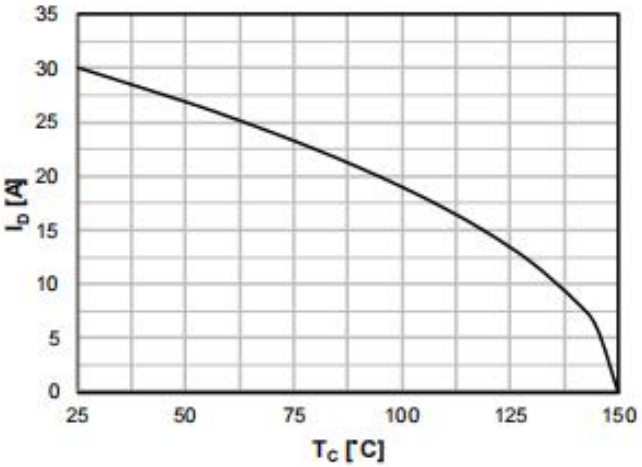



Fig 8. Maximum Drain Current

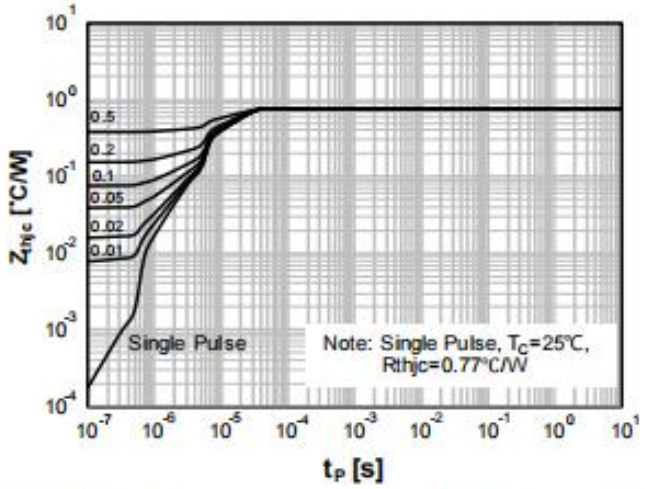



Fig 9. Maximum Transient Thermal Characteristics

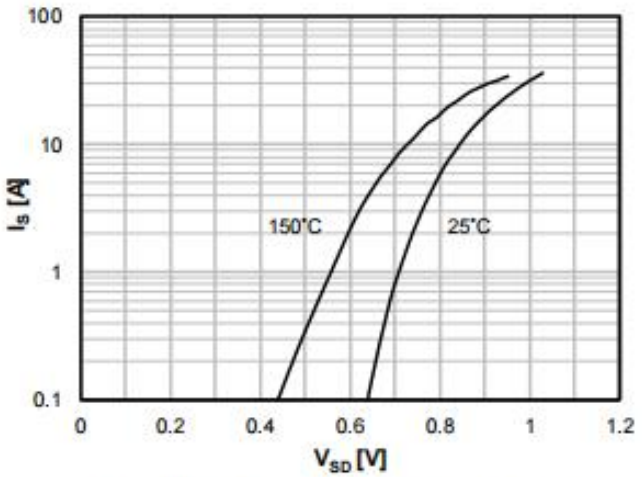



Fig 10. Body Diode Characteristics

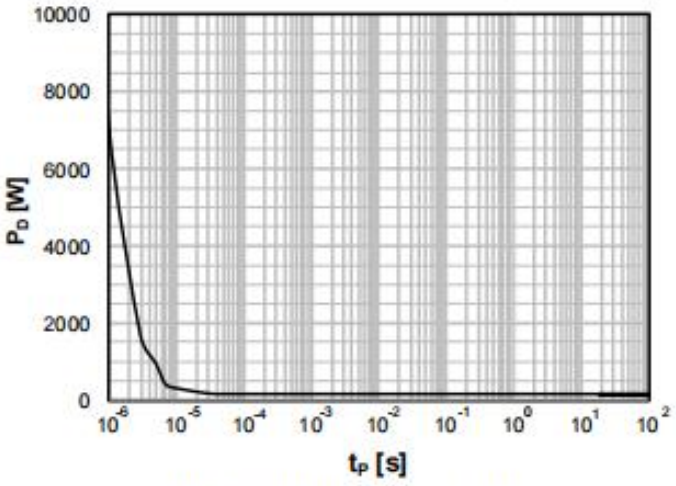



Fig 11. Power Dissipation

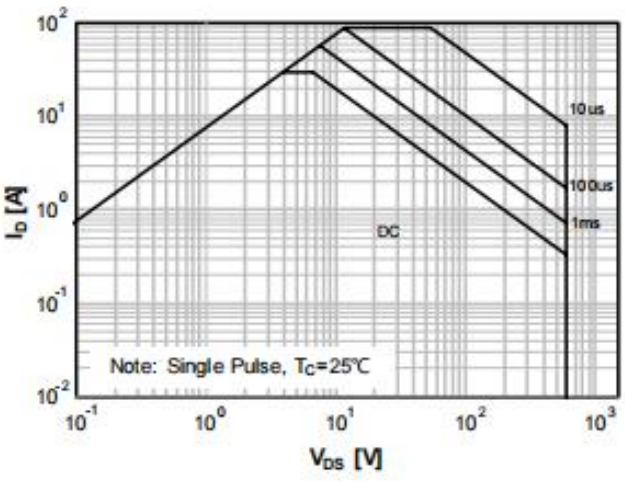



Fig 12. Safe Operating Area

## Test Circuits and Waveforms

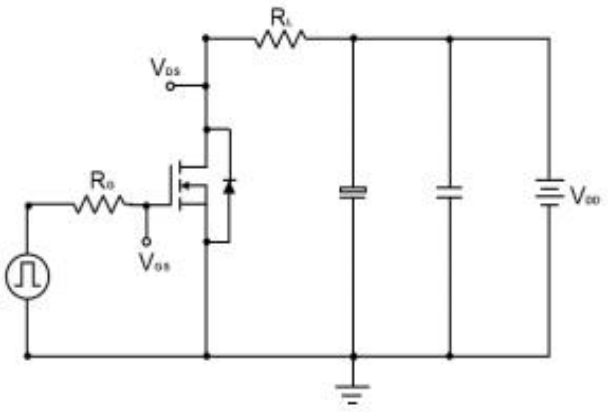



Fig 13. Test circuit for resistive load switching times

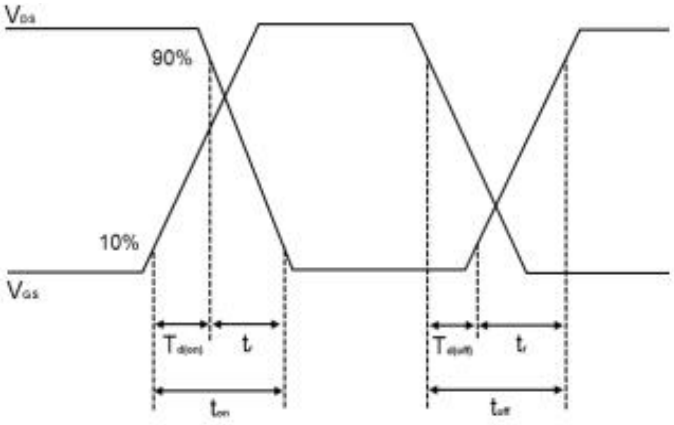



Fig 14. Switching times waveform

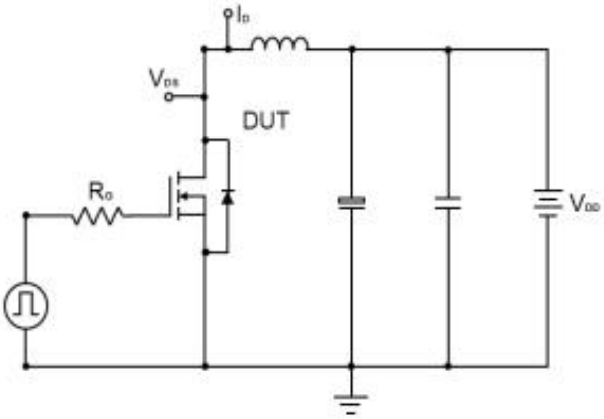



Fig 15. Test circuit for unclamped inductive load

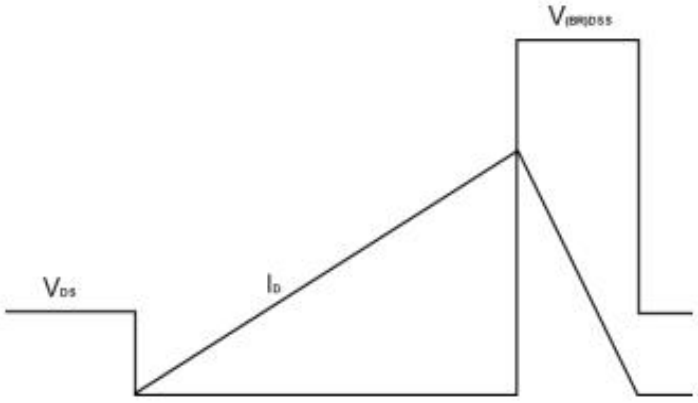



Fig 16. Unclamped inductive waveform

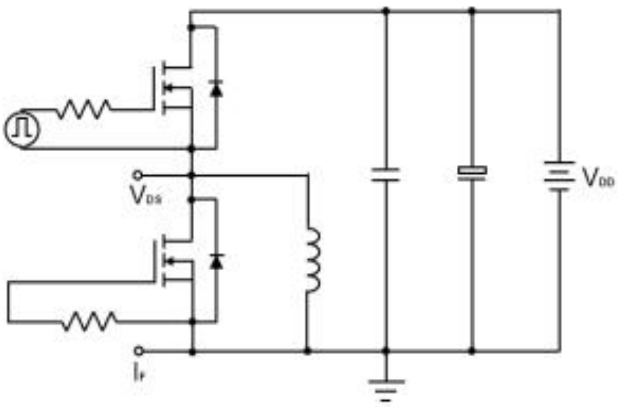



Fig 17. Test circuit for diode

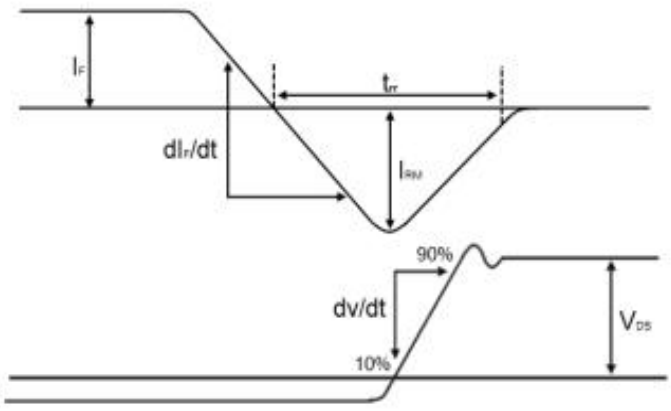
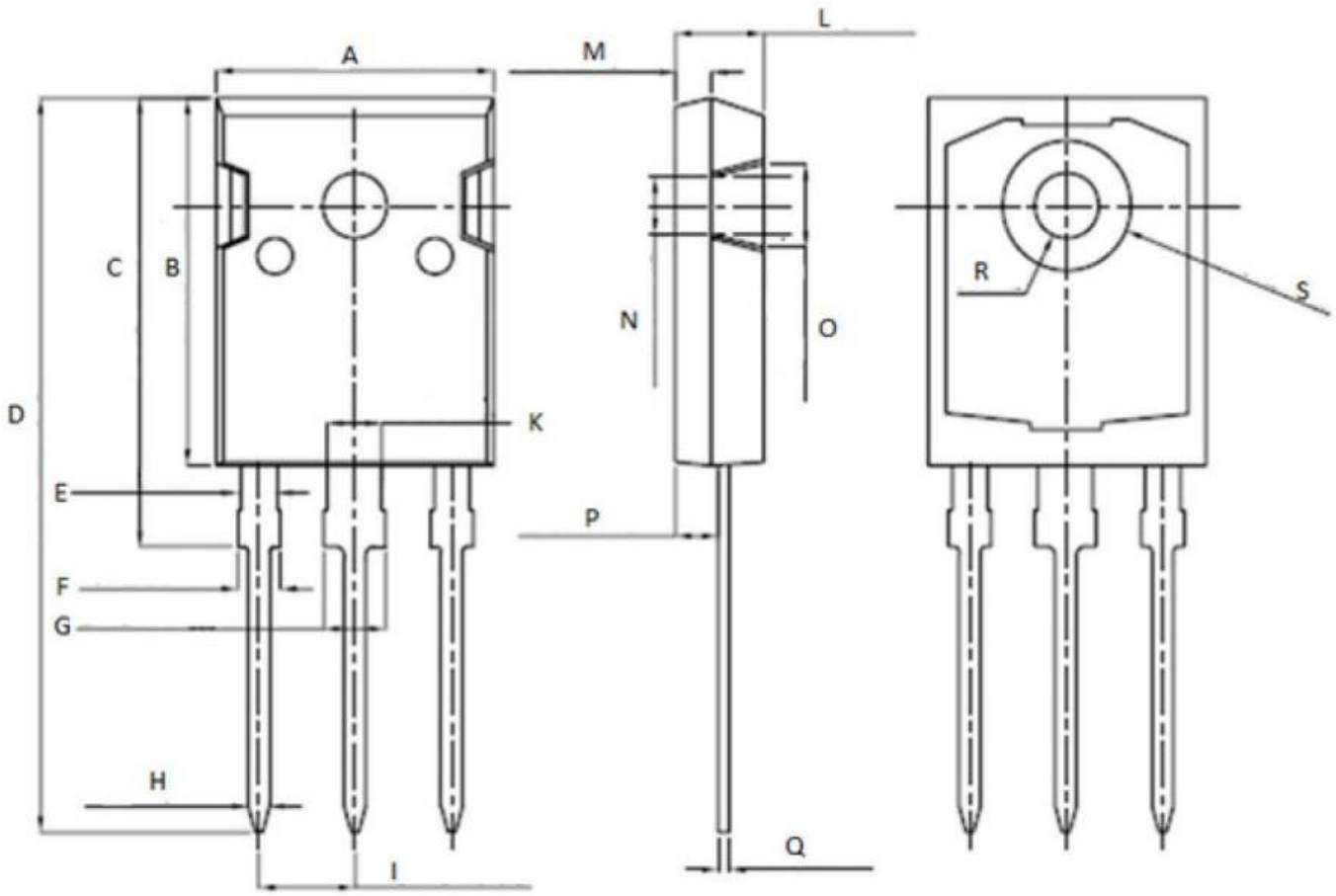



Fig 18. Diode recovery

## Package outline drawing(TO-247 Unit: mm )




| Unit: mm | | |
|---|---|---|
| Symbol | Min. | Max. |
| A | 15.95 | 16.25 |
| B | 20.85 | 21.25 |
| C | 20.95 | 21.35 |
| D | 40.5 | 40.9 |
| E | 1.9 | 2.1 |
| F | 2.1 | 2.25 |
| G | 3.1 | 3.25 |
| H | 1.1 | 1.3 |
| I | 5.40 | 5.50 |

| Unit: mm | | |
|---|---|---|
| Symbol | Min. | Max. |
| K | 2.90 | 3.10 |
| L | 4.90 | 5.30 |
| M | 1.90 | 2.10 |
| N | 4.50 | 4.70 |
| O | 5.40 | 5.60 |
| P | 2.29 | 2.49 |
| Q | 0.51 | 0.71 |
| R | ϕ3.5 | ϕ3.7 |
| S | ϕ7.1 | ϕ7.3 |

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