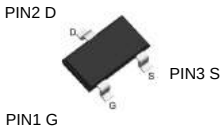
## Description

The 8P01 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.




SOT23-3L

## General Features

$V_{DS}$ = -18V $I_D$ =-8 A

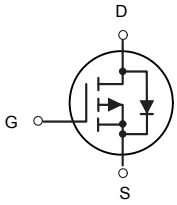
$R_{DS(ON)}$ < 18mΩ @ $V_{GS}$=10V

## Application

Battery protection

Load switch

Uninterruptible power supply




P-Channel MOSFET

## Absolute Maximum Ratings (TA=25℃ unless otherwise noted)

| parameter | symbol | limit | unit |
|---|---|---|---|
| Drain-source voltage | $V_{DS}$ | -18 | V |
| Gate-source voltage | $V_{GS}$ | ±12 | V |
| Drain current-continuous[a]@Tj=125℃ | $I_D$ | -8 | A |
| -pulse | $I_{DM}$ | -32 | A |
| Drain-source Diode forward current | Is | -8 | A |
| Maximum power dissipation | $P_D$ | 1.2 | W |
| Operating junction Temperature range | Tj | -55—150 | ℃ |
| Thermal Resistance junction-to ambient | Rth JA | 100 | ℃/W |

## Electrical Characteristics (TA=25℃ unless otherwise noted)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-source breakdown voltage | $BV_{DSS}$ | $V_{GS}$=0V, $I_D$=-250μA | -15 | -18 | - | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$=-12V, $V_{GS}$=0V | - | - | -1 | μA |
| Gate-body leakage | $I_{GSS}$ | $V_{DS}$=0V, $V_{GS}$=±12V | - | - | ±100 | nA |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=-250μA | -0.4 | -0.68 | -1.2 | V |
| Drain-source on-state resistance | $R_{DS(ON)}$ | $V_{GS}$=-4.5V, $I_D$=-8A | - | 15.4 | 18 | mΩ |
| | | $V_{GS}$=-2.5V, $I_D$=-6A | - | 20.7 | 28 | |
| Forward transconductance | gfs | $V_{GS}$=-5V, $I_D$=-8A | - | 5 | - | S |
| Input capacitance | $C_{ISS}$ | $V_{DS}$=-6V ,$V_{GS}$=0V f=1.0MHz | | 2700 | | pF |
| Output capacitance | $C_{OSS}$ | | | 680 | | |
| Reverse transfer capacitance | $C_{RSS}$ | | | 590 | | |
| Turn-on delay time | $t_{D(ON)}$ | $V_{DD}$=-6V $I_D$=-5A $V_{GEN}$=-4.5V $R_L$=1。2ohm $R_{GEN}$=1ohm | - | 11 | - | ns |
| Rise time | tr | | - | 35 | - | |
| Turn-off delay time | $t_{D(OFF)}$ | | - | 30 | - | |
| Fall time | tf | | - | 10 | - | |
| Total gate charge | Qg | $V_{DS}$=-6V,$I_D$=-5A $V_{GS}$=-4.5V | - | 35 | - | nC |
| Gate-source charge | Qgs | | - | 5 | - | |
| Gate-drain charge | Qgd | | - | 10 | - | |
| Diode forward voltage | $V_{SD}$ | $V_{GS}$=0V,Is=-1.25A | - | -0.81 | -1.2 | V |

**Notes:**

a. surface mounted on FR4 board,t≤10sec

b. pulse test: pulse width≤300μs,duty≤2%

c. guaranteed by design, not subject to production testing

## Typical Performance Characteristics

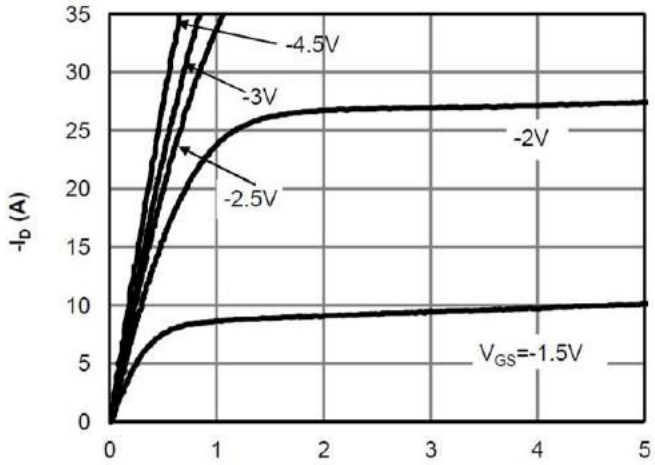



Fig 1: On-Region Characteristics

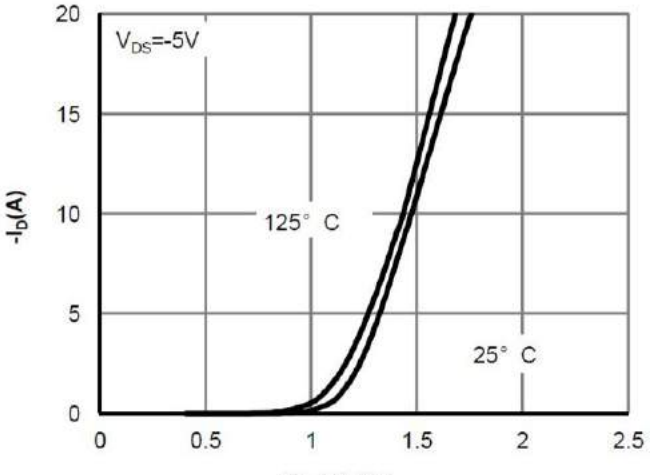



Figure 2: Transfer Characteristics

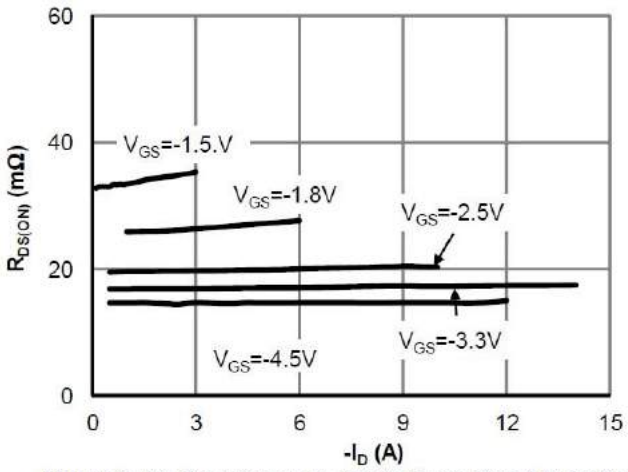



Figure 3: On-Resistance vs. Drain Current and Gate Voltage

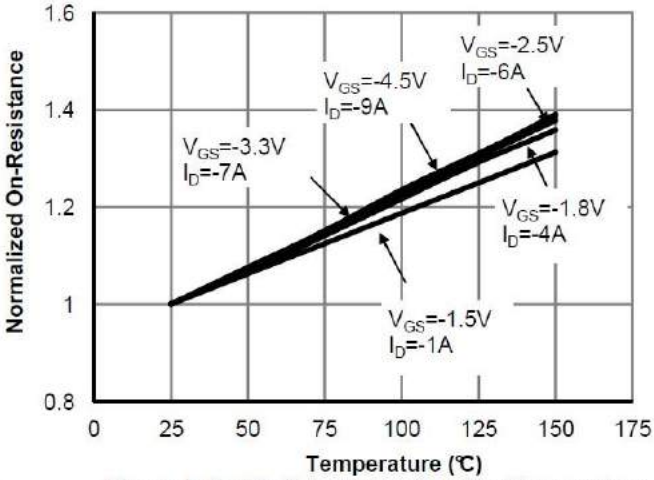



Figure 4: On-Resistance vs. Junction Temperature

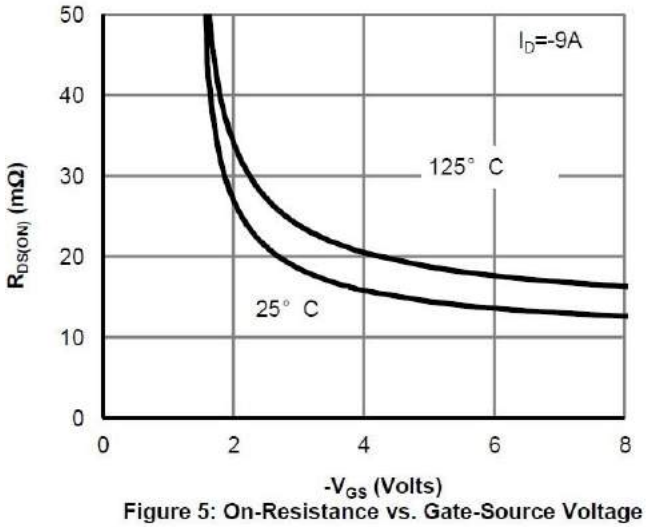



Figure 5: On-Resistance vs. Gate-Source Voltage

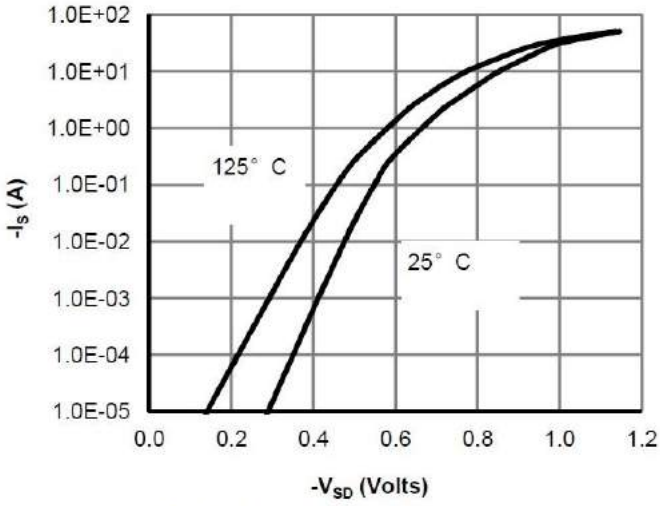



Figure 6: Body-Diode Characteristics

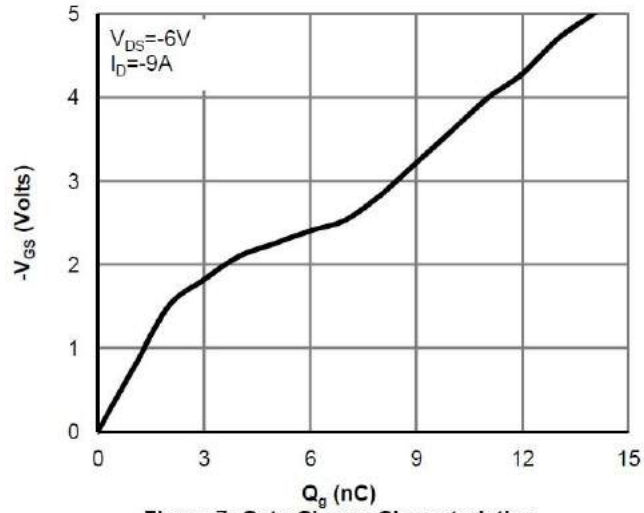



Figure 7: Gate-Charge Characteristics

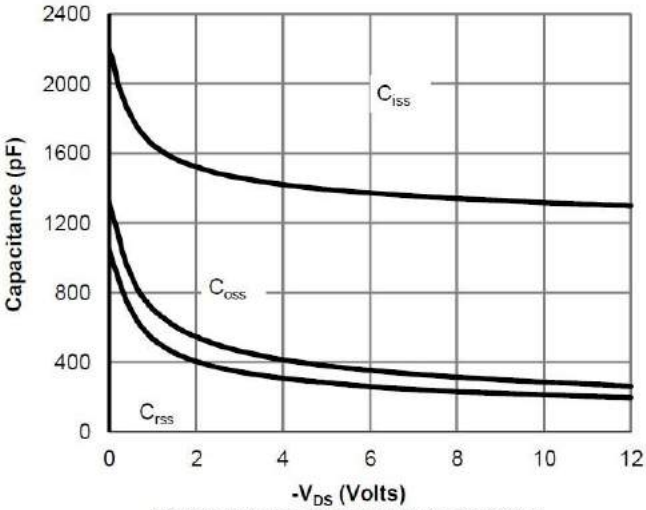



Figure 8: Capacitance Characteristics

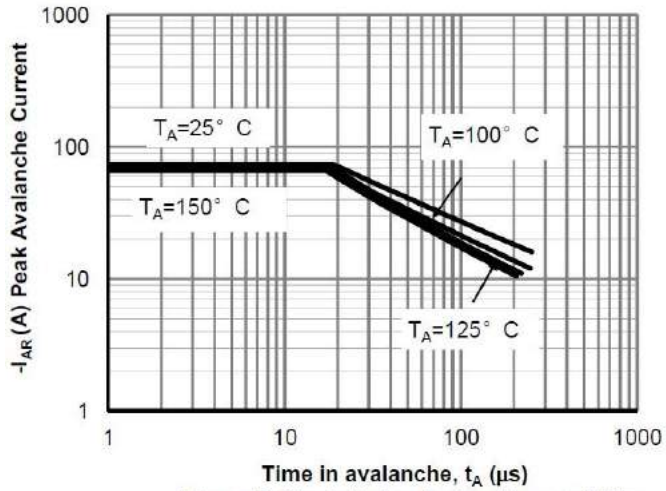



Figure 9: Single Pulse Avalanche capability

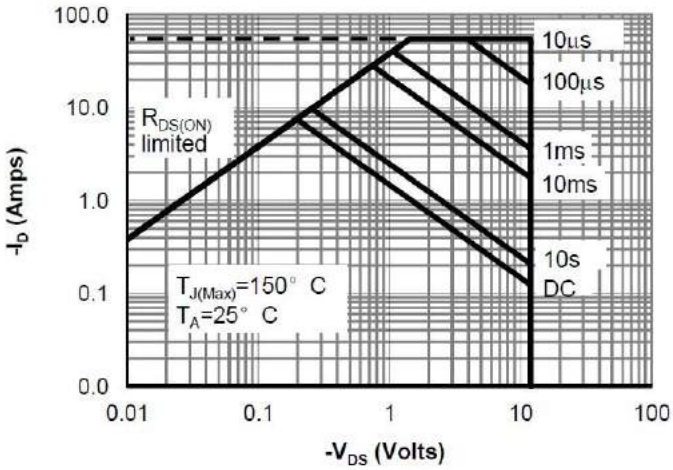



Figure 10: Maximum Forward Biased Safe Operating Area

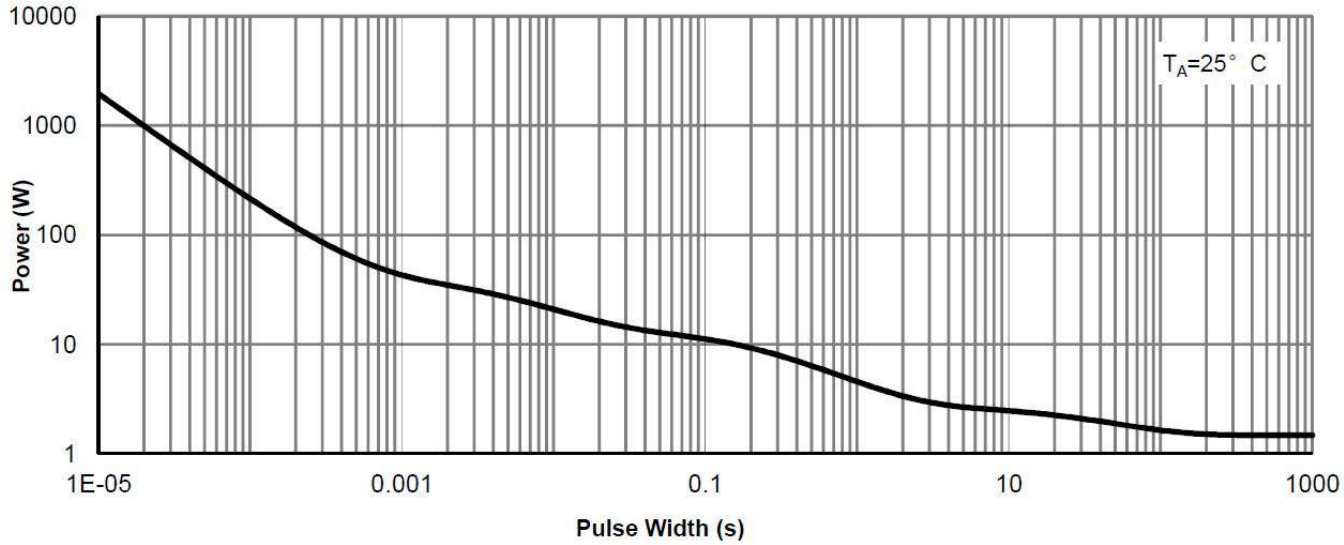



**Figure 11: Single Pulse Power Rating Junction-to-Ambient**

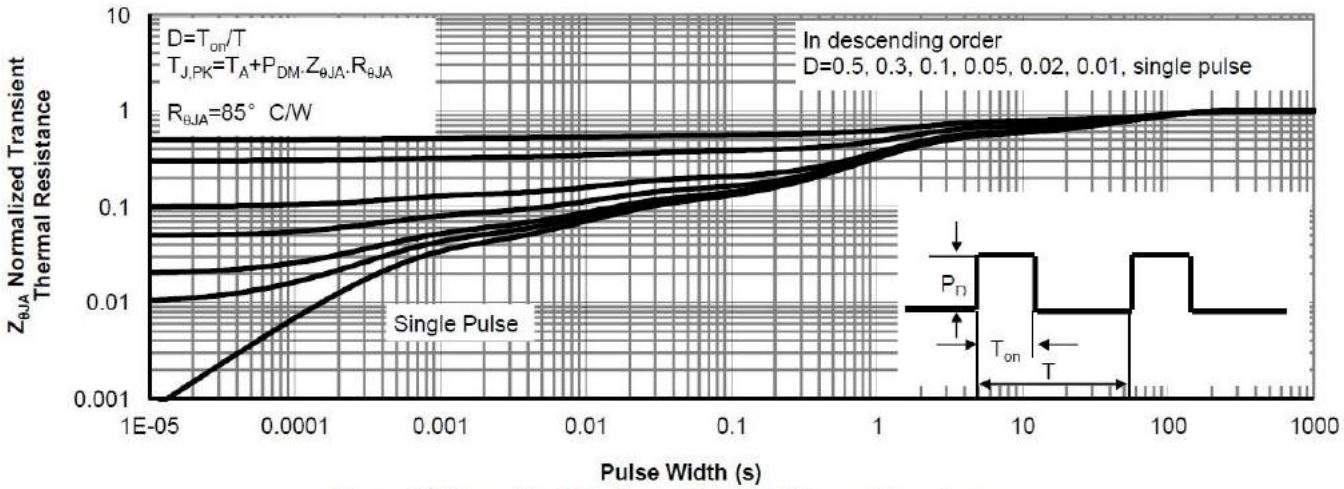
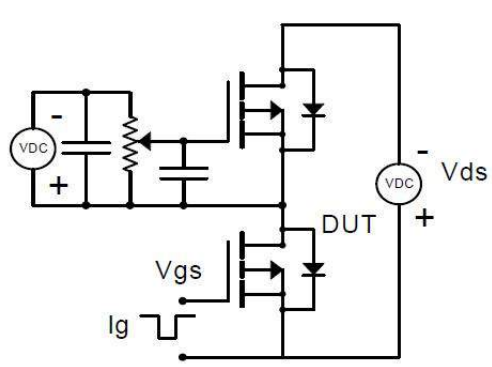
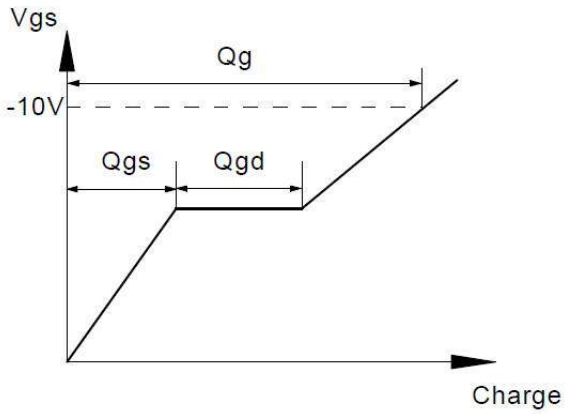


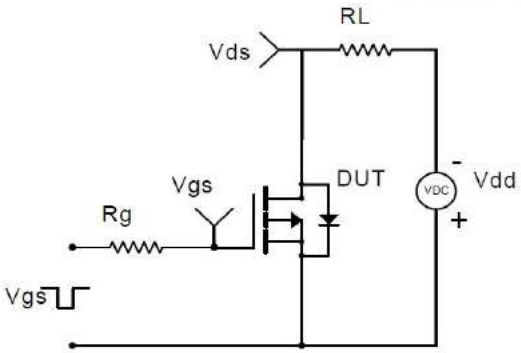

**Figure 12: Normalized Maximum Transient Thermal Impedance**

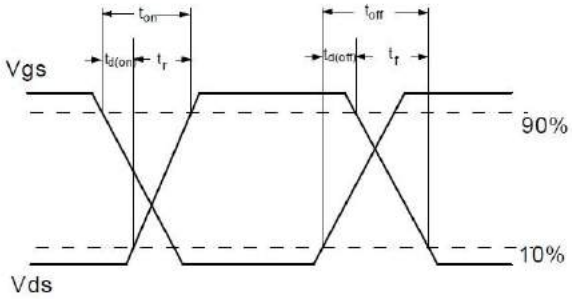
## Gate Charge Test Circuit & Waveform



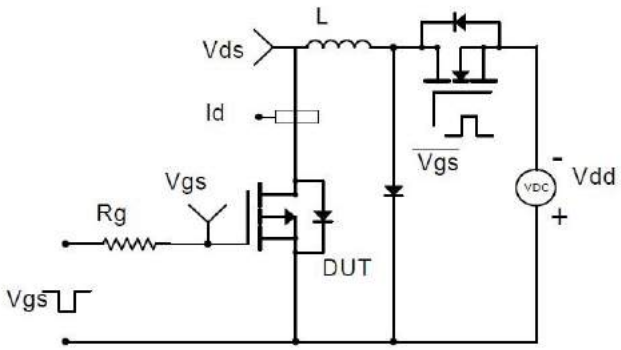



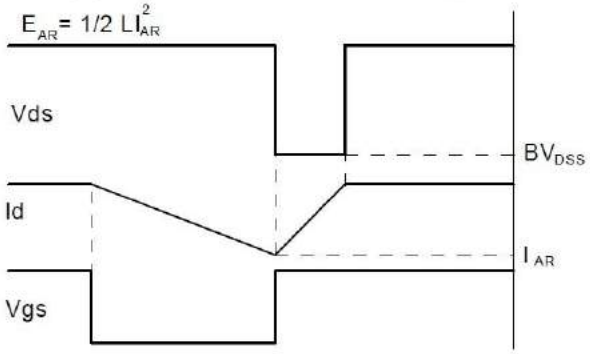

## Resistive Switching Test Circuit & Waveforms



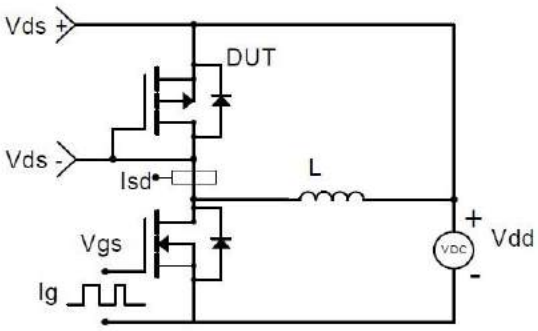



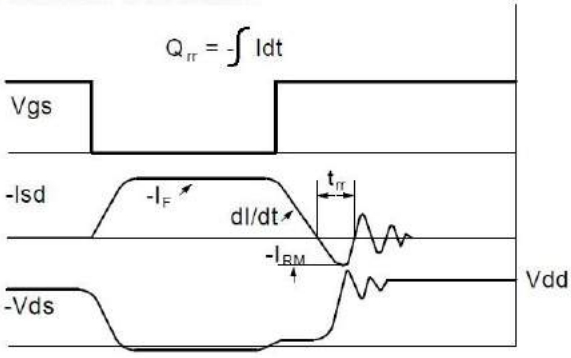

## Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



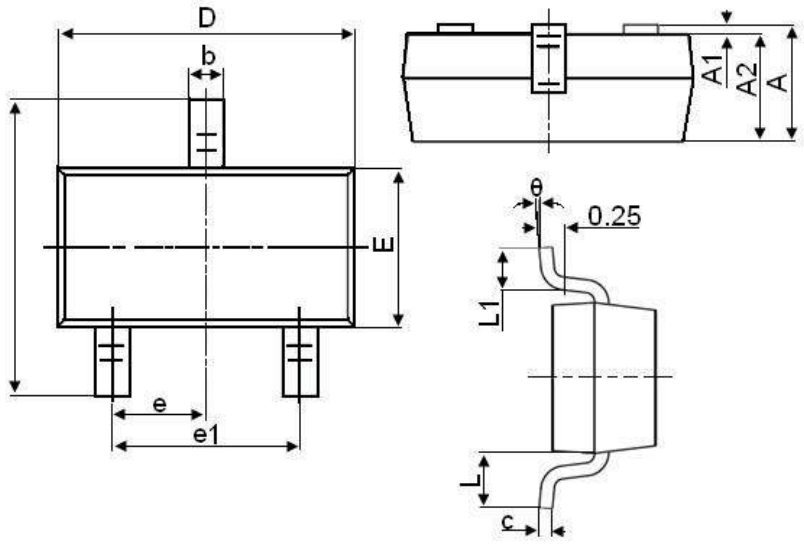

## Diode Recovery Test Circuit & Waveforms




AP8I

## SOT23-3L Package Information




| Symbol | Dimensions in Millimeters | |
|---|---|---|
| | MIN. | MAX. |
| A | 1.050 | 1.250 |
| A1 | 0.000 | 0.100 |
| A2 | 1.050 | 1.150 |
| b | 0.300 | 0.500 |
| c | 0.100 | 0.200 |
| D | 2.800 | 3.000 |
| E | 1.500 | 1.700 |
| E1 | 2.650 | 2.950 |
| e | 0.950TYP | |
| e1 | 1.800 | 2.000 |
| L | 0.550REF | |
| L1 | 0.300 | 0.600 |
| θ | 0° | 8° |