

SDM3400AV

30V N-Channel MOSFETs

Rev A.0

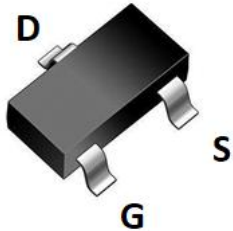
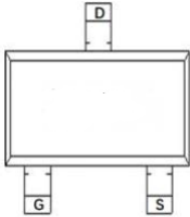
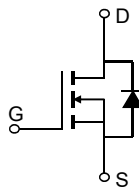
Feature

- ✧ Excellent $R_{DS(ON)}$
- ✧ Low Gate Charge
- ✧ Advanced Trench Technology
- ✧ Green product (RoHS compliant), lead free

Product Summary

| | | |
|---|------|------------|
| V_{DS} | 30 | V |
| $V_{GS(th)}_{Typ}$ | 0.95 | V |
| $R_{DS(ON)}_{Typ}$ (at $V_{GS} = 10V$) | 20.5 | m Ω |
| I_D (at $V_{GS} = 10V$) | 5.8 | A |

| Type | Package | Marking | Outline | Media | Quantity (pcs) |
|-----------|-----------|---------|---------|---------|----------------|
| SDM3400AV | SOT-23-3L | 3400 | Tape | 7" Reel | 3000 |

| | | |
|--|---|--|
|  <p>SOT-23 top view</p> |  <p>Pin Assignment</p> |  <p>Schematic Diagram</p> |
|--|---|--|

Absolute Maximum Ratings (Rating at $T_A=25^\circ C$ unless otherwise noted)

| Parameter | | Symbol | Maximum | Unit |
|--|-------------------|----------------|-------------|------------|
| Drain-Source Voltage | | V_{DS} | 30 | V |
| Gate-Source Voltage | | V_{GS} | ± 12 | V |
| Continuous Drain Current | $T_A=25^\circ C$ | I_D | 5.8 | A |
| | $T_A=100^\circ C$ | | 4 | |
| Pulsed Drain Current ⁽¹⁾ | | I_{DM} | 23 | A |
| Maximum Body-Diode Continuous Current | | I_S | 5.8 | A |
| Power Dissipation | $T_A=25^\circ C$ | P_D | 1.3 | W |
| Junction and Storage Temperature Range | | T_J, T_{STG} | -55 to +150 | $^\circ C$ |

Electrical Characteristics (Rating at $T_J=25^{\circ}\text{C}$ unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|-----------------------------|--|---|-----|------|-----------|---------------|
| STATIC PARAMETERS | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$ | 30 | - | - | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=0\text{V}$, $V_{GS}=0\text{V}$ | - | - | 1 | μA |
| I_{GSS} | Gate-Body Leakage Current | $V_{DS}=0\text{V}$, $V_{GS}=\pm 12\text{V}$ | - | - | ± 100 | nA |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$ | 0.6 | 0.95 | 1.3 | V |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance ⁽³⁾ | $V_{GS}=10\text{V}$, $I_D=4.2\text{A}$ | - | 20.5 | 26.7 | m Ω |
| | | $V_{GS}=4.5\text{V}$, $I_D=4\text{A}$ | - | 22 | 28.6 | |
| | | $V_{GS}=2.5\text{V}$, $I_D=1\text{A}$ | - | 27.1 | 35.2 | |
| V_{SD} | Diode Forward Voltage | $I_S=2\text{A}$, $V_{GS}=0\text{V}$ | - | - | 1.2 | V |
| DYNAMIC PARAMETERS | | | | | | |
| C_{iss} | Input Capacitance | $V_{GS}=0\text{V}$, $V_{DS}=15\text{V}$, $f=1\text{MHz}$ | - | 783 | - | pF |
| C_{oss} | Output Capacitance | | - | 67 | - | pF |
| C_{rss} | Reverse Transfer Capacitance | | - | 53 | - | pF |
| SWITCHING PARAMETERS | | | | | | |
| Q_g | Total Gate Charge | $V_{GS}=0\sim 10\text{V}$, $V_{DS}=15\text{V}$, $I_D=3\text{A}$ | - | 21 | - | nC |
| Q_{gs} | Gate Source Charge | | - | 2.1 | - | nC |
| Q_{gd} | Gate Drain Charge | | - | 2.3 | - | nC |
| $t_{D(on)}$ | Turn-On Delay Time | $V_{GS}=10\text{V}$, $V_{DD}=15\text{V}$, $R_G=3.0\Omega$, $I_D=3\text{A}$ | - | 4.1 | - | ns |
| t_r | Turn-On Rise Time | | - | 13 | - | ns |
| $t_{D(off)}$ | Turn-Off Delay Time | | - | 25 | - | ns |
| t_f | Turn-Off Fall Time | | - | 2.1 | - | ns |
| t_{rr} | Body Diode Reverse Recovery Time | $I_F=3\text{A}$, $di/dt=100\text{A}/\mu\text{s}$ | - | 8.5 | - | ns |
| Q_{rr} | Body Diode Reverse Recovery Charge | $I_F=3\text{A}$, $di/dt=100\text{A}/\mu\text{s}$ | - | 3.3 | - | nC |

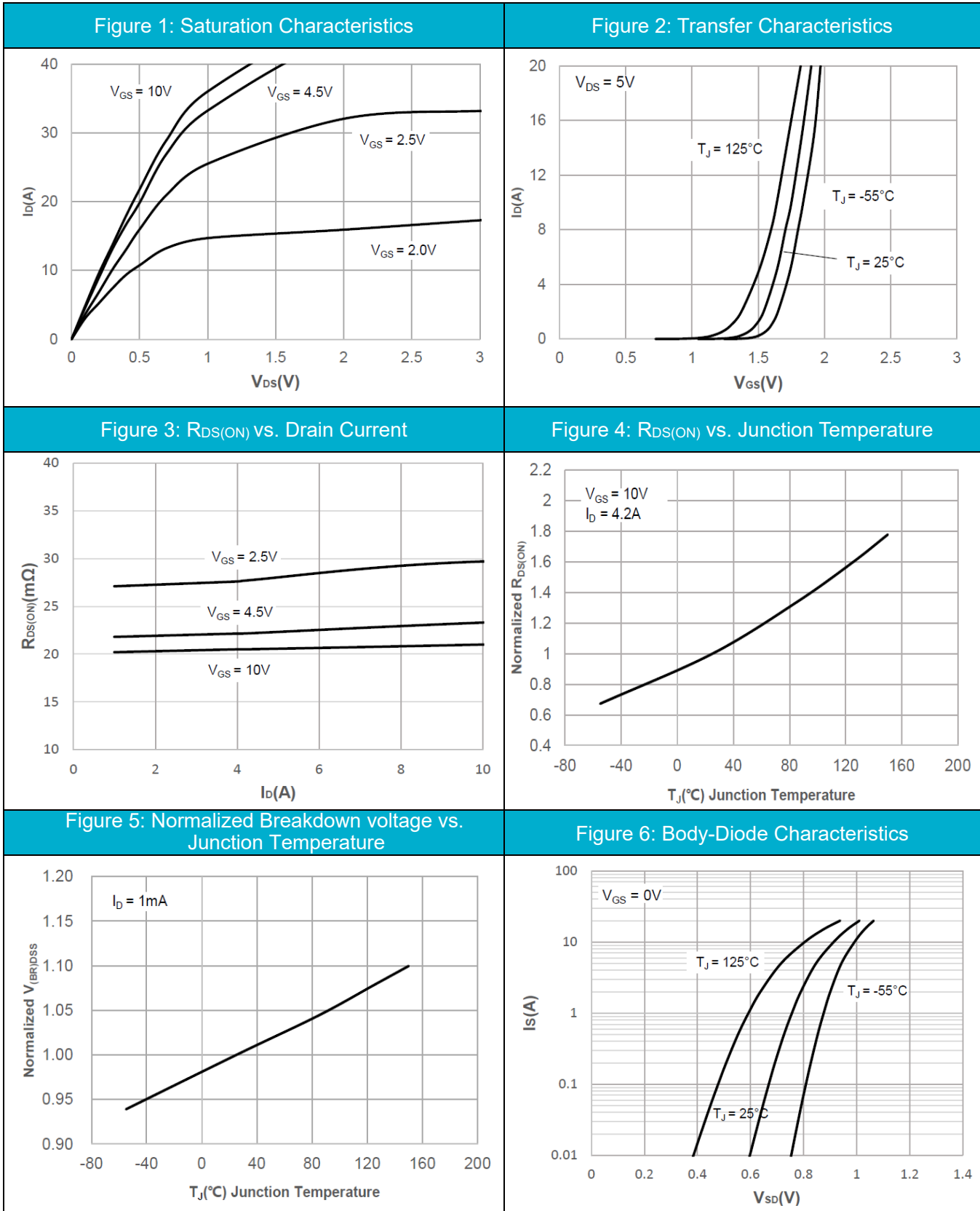
Thermal Resistances

| Symbol | Parameter | Typ | Max | Unit |
|-----------------|--|-----|-----|-------|
| $R_{\theta JA}$ | Thermal resistance from junction to ambient ⁽²⁾ | - | 93 | °C /W |

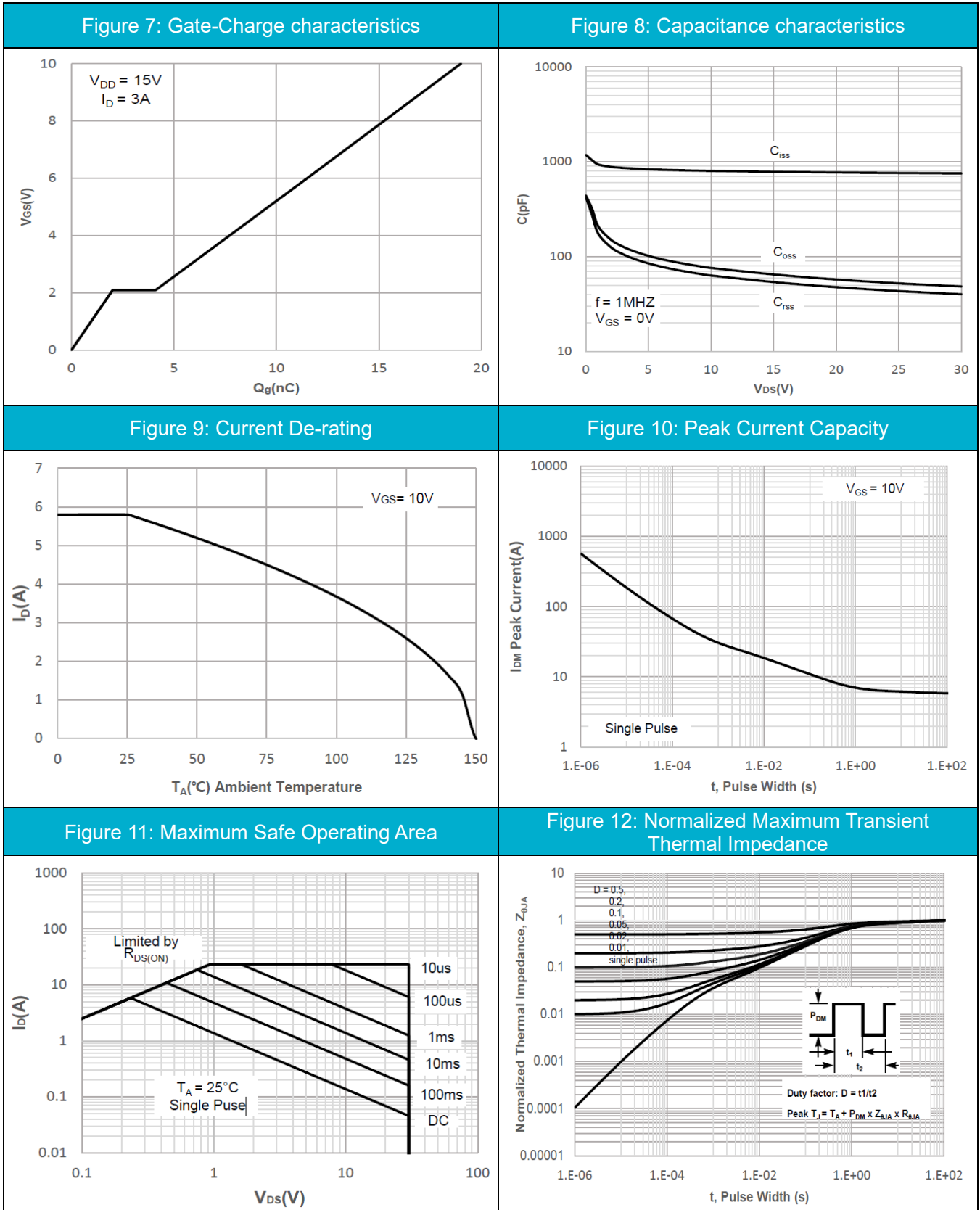
Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. $R_{\theta JA}$ is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.

Typical Electrical and Thermal Characteristics



Typical Electrical and Thermal Characteristics



Test Circuit

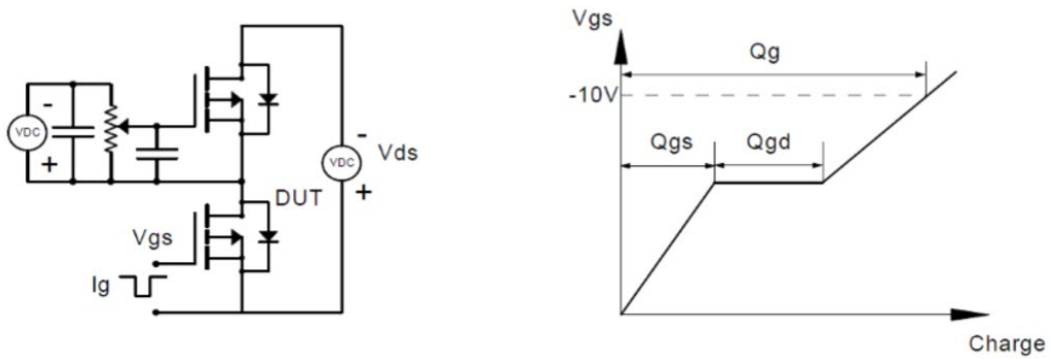


Figure1: Gate Charge Test Circuit & Waveforms

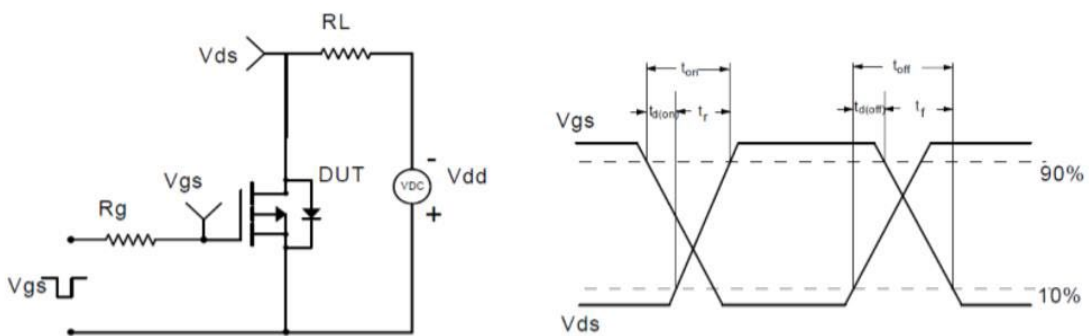


Figure2: Resistive Switching Test Circuit & Waveforms

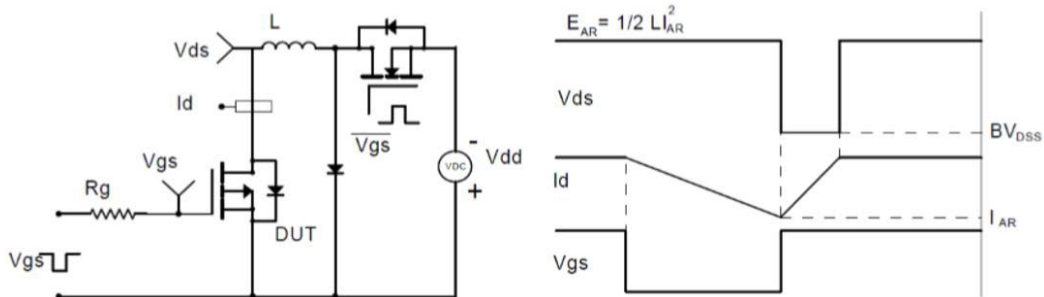


Figure3: Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

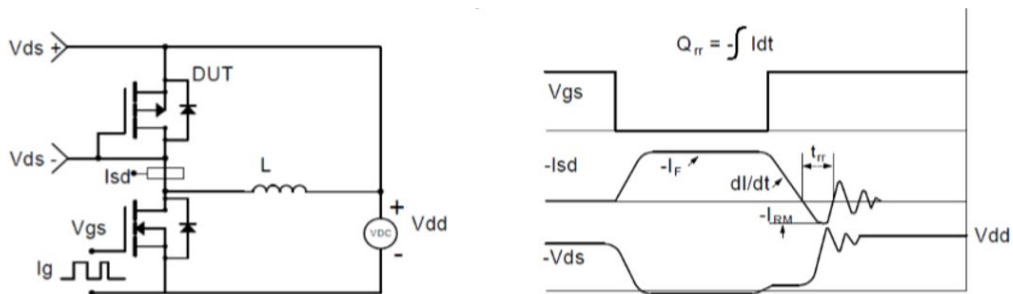
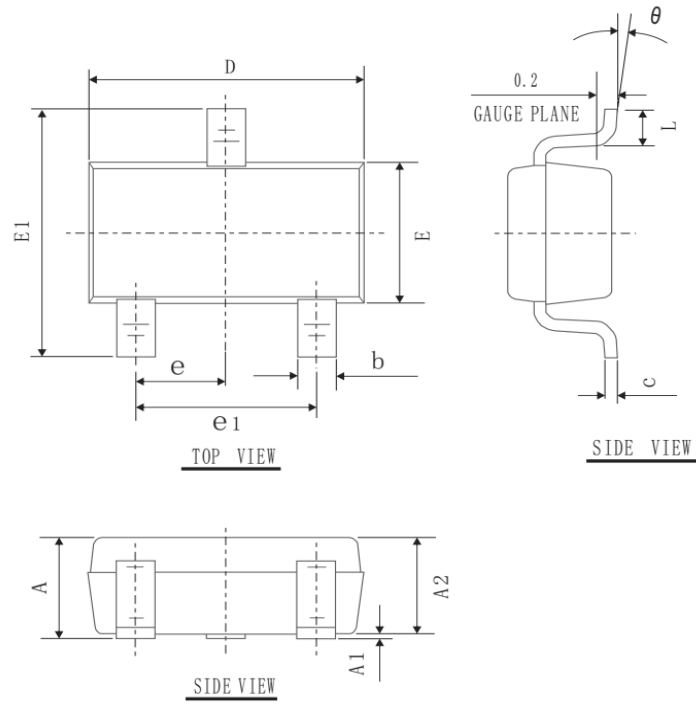


Figure4: Diode Recovery Test Circuit & Waveforms

SOT-23-3L Package Information



COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

| SYMBOL | MIN | NOM | MAX |
|----------|---------|-------|-------|
| A | --- | --- | 1.30 |
| A1 | 0.00 | 0.05 | 0.10 |
| A2 | 1.00 | 1.10 | 1.20 |
| b | 0.30 | 0.40 | 0.50 |
| c | 0.119 | 0.127 | 0.135 |
| e1 | 1.80 | 1.90 | 2.00 |
| D | 2.80 | 2.90 | 3.00 |
| E | 1.50 | 1.60 | 1.70 |
| E1 | 2.60 | 2.80 | 3.00 |
| L | 0.30 | 0.45 | 0.60 |
| θ | 0° | 4° | 8° |
| e | 0.95BSC | | |

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