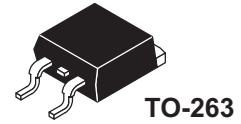




SMP3003

P-Channel Power MOSFET -75V, -100A, 8.0mΩ, TO-263-2L/TO-263

ON Semiconductor®

<http://onsemi.com>

Features

- ON-resistance $R_{DS(on)1}=6.2\text{m}\Omega$ (typ.)
- Input capacitance $C_{iss}=13400\text{pF}$ (typ.)
- 4V drive

Specifications

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------------|-----------|---|-------------|------------------|
| Drain to Source Voltage | V_{DSS} | | -75 | V |
| Gate to Source Voltage | V_{GSS} | | ± 20 | V |
| Drain Current (DC) | I_D | | -100 | A |
| Drain Current (Pulse) | I_{DP} | $PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$ | -400 | A |
| Allowable Power Dissipation | P_D | $T_c=25^\circ\text{C}$ | 90 | W |
| Channel Temperature | T_{ch} | | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ\text{C}$ |
| Avalanche Energy (Single Pulse) *1 | E_{AS} | | 468 | mJ |
| Avalanche Current *2 | I_{AV} | | -60 | A |

Note : *1 $V_{DD}=-48\text{V}$, $L=100\mu\text{H}$, $I_{AV}=-60\text{A}$ (Fig.1)*2 $L \leq 100\mu\text{H}$, Single pulse

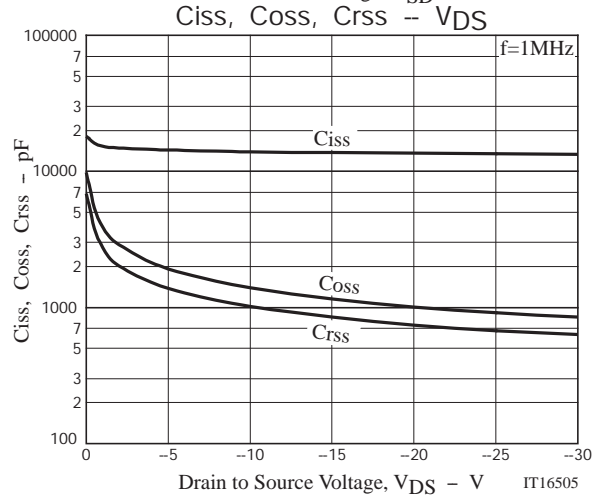
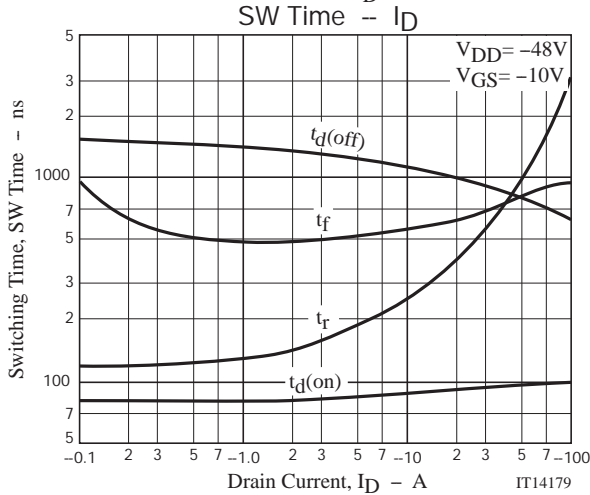
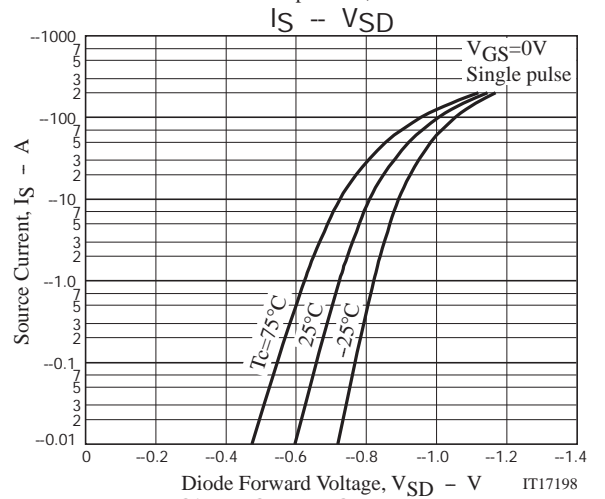
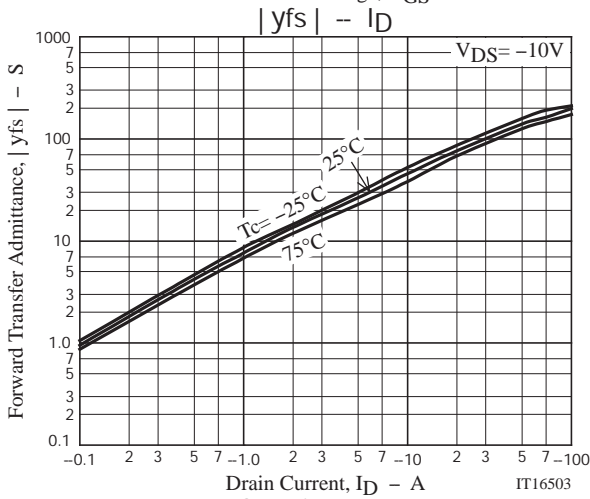
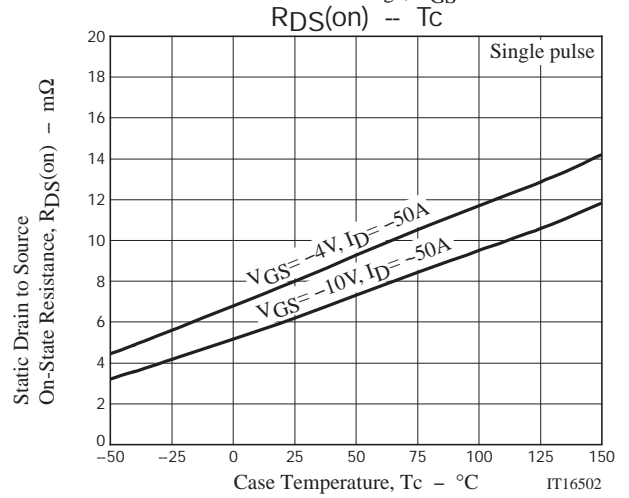
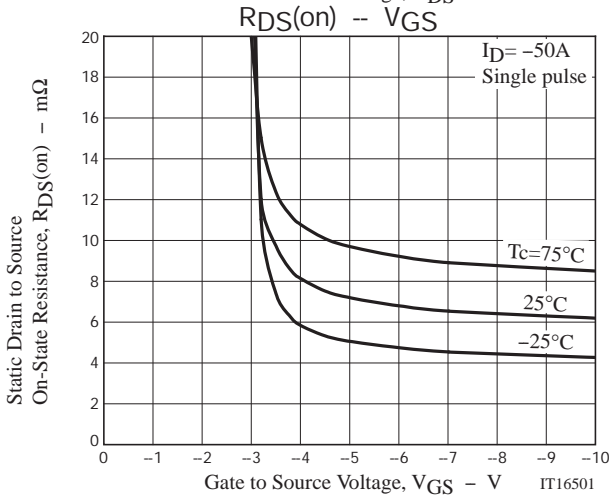
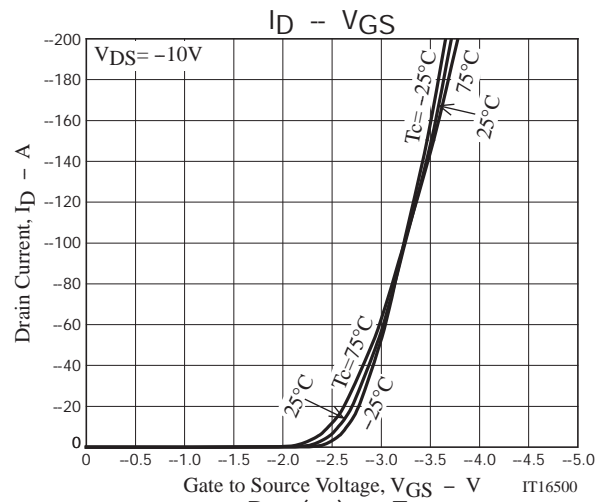
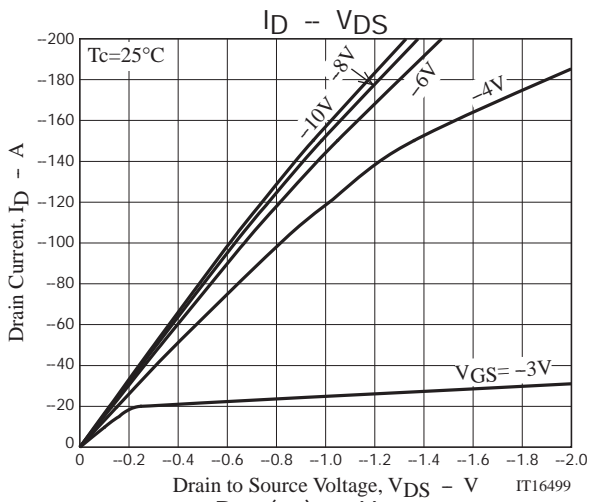
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Electrical Characteristics at $T_a=25^\circ\text{C}$

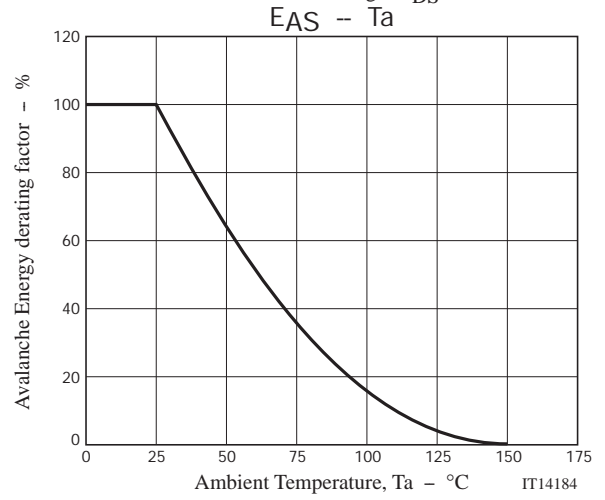
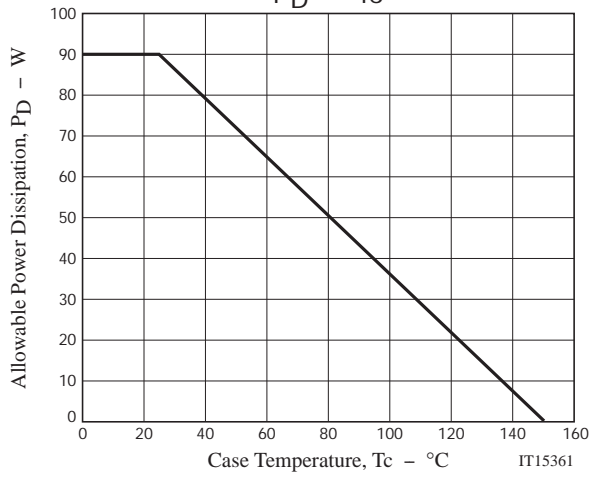
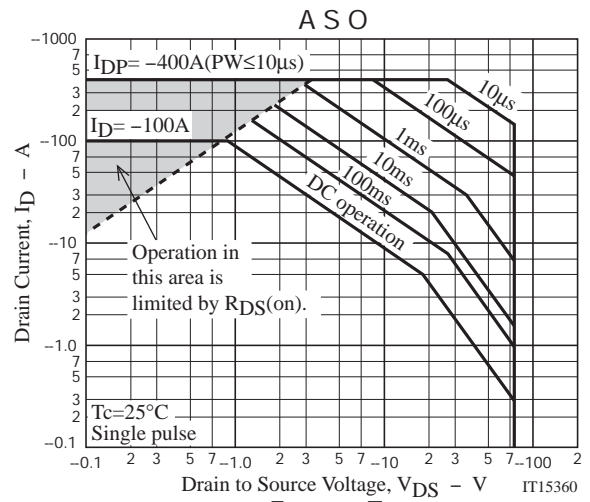
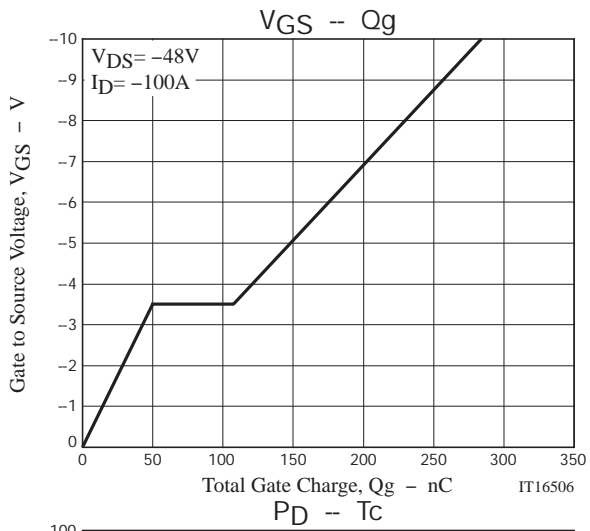
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|---------------|--|---------|-------|----------|------------------|
| | | | min | typ | max | |
| Drain to Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D=-1\text{mA}$, $V_{GS}=0\text{V}$ | -75 | | | V |
| Zero-Gate Voltage Drain Current | I_{DSS} | $V_{DS}=-75\text{V}$, $V_{GS}=0\text{V}$ | | | -10 | μA |
| Gate to Source Leakage Current | I_{GSS} | $V_{GS}=\pm 16\text{V}$, $V_{DS}=0\text{V}$ | | | ± 10 | μA |
| Cutoff Voltage | $V_{GS(off)}$ | $V_{DS}=-10\text{V}$, $I_D=-1\text{mA}$ | -1.2 | | -2.6 | V |
| Forward Transfer Admittance | $ y_{fs} $ | $V_{DS}=-10\text{V}$, $I_D=-50\text{A}$ | | 140 | | S |
| Static Drain to Source On-State Resistance | $R_{DS(on)1}$ | $I_D=-50\text{A}$, $V_{GS}=-10\text{V}$ | | 6.2 | 8.0 | $\text{m}\Omega$ |
| | $R_{DS(on)2}$ | $I_D=-50\text{A}$, $V_{GS}=-4\text{V}$ | | 8.0 | 11 | $\text{m}\Omega$ |
| Input Capacitance | C_{iss} | | | 13400 | | pF |
| Output Capacitance | C_{oss} | $V_{DS}=-20\text{V}$, $f=1\text{MHz}$ | | 1000 | | pF |
| Reverse Transfer Capacitance | C_{rss} | | | 740 | | pF |
| Turn-ON Delay Time | $t_d(on)$ | See Fig.2 | | 95 | | ns |
| Rise Time | t_r | | | 1000 | | ns |
| Turn-OFF Delay Time | $t_d(off)$ | | | 800 | | ns |
| Fall Time | t_f | | | 820 | | ns |
| Total Gate Charge | Q_g | | | | 280 | |
| Gate to Source Charge | Q_{gs} | $V_{DS}=-48\text{V}$, $V_{GS}=-10\text{V}$, $I_D=-100\text{A}$ | | 50 | | nC |
| Gate to Drain "Miller" Charge | Q_{gd} | | | 55 | | nC |
| Diode Forward Voltage | V_{SD} | $I_S=-100\text{A}$, $V_{GS}=0\text{V}$ | | -1.0 | -1.5 | V |
| Reverse Recovery Time | t_{rr} | See Fig.3 | | 120 | | ns |
| Reverse Recovery Charge | Q_{rr} | $I_S=-100\text{A}$, $V_{GS}=0\text{V}$, $di/dt=-100\text{A}/\mu\text{s}$ | | 380 | | nC |

ORDERING INFORMATION

See detailed ordering and shipping information on page 6 of this data sheet.



SMP3003



SMP3003

Package Dimensions

SMP3003-DL-1E

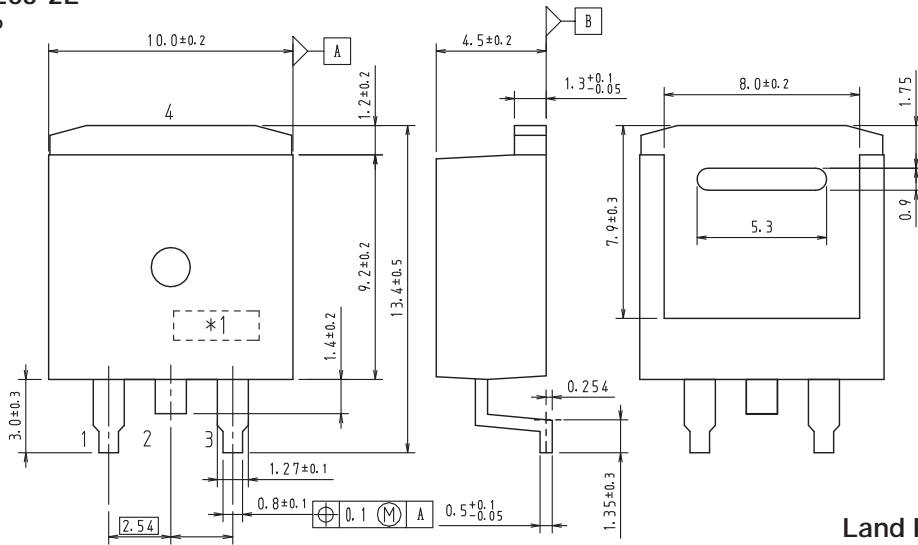
D2PAK/TO-263-2L

CASE 418AP

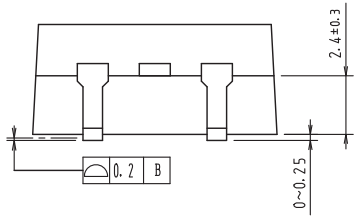
ISSUE O

Unit : mm

- 1: Gate
- 2: Drain
- 3: Source
- 4: Drain

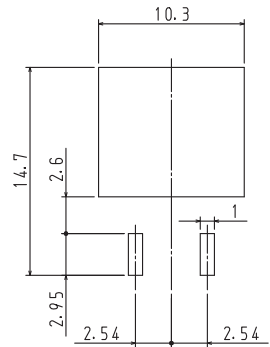


Land Pattern Example

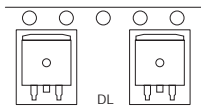


1. These dimension do not include mold protrusion
2. Pin2 is idle pin with electrical designation only carried

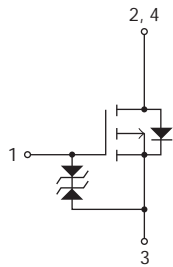
*1: Lot indication



Packing Type: DL



Electrical Connection



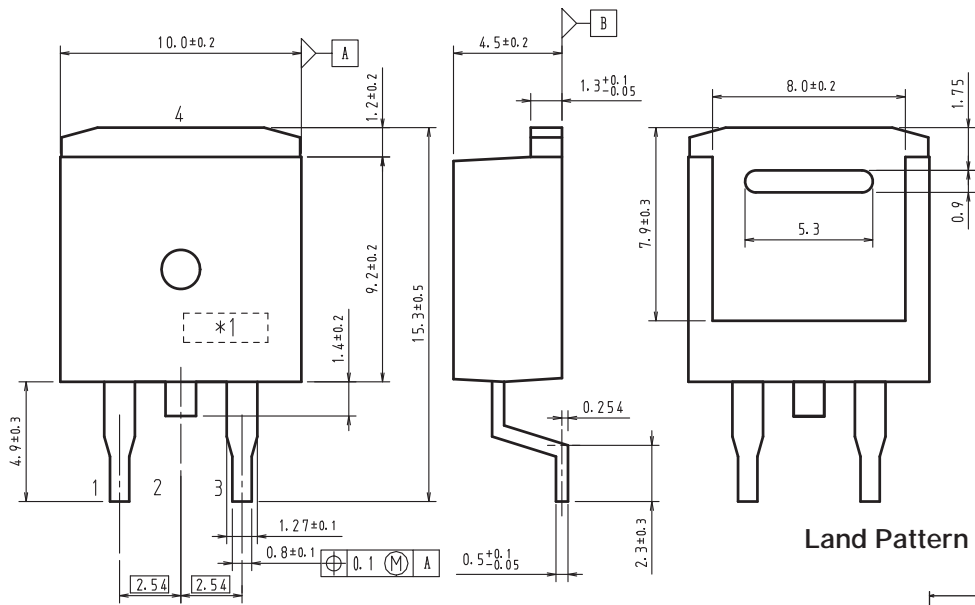
SMP3003

Package Dimensions

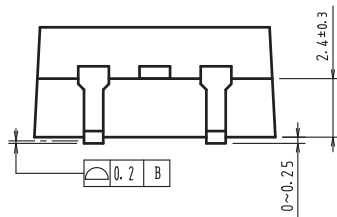
SMP3003-TL-1E

Unit : mm

- 1: Gate
- 2: Drain
- 3: Source
- 4: Drain

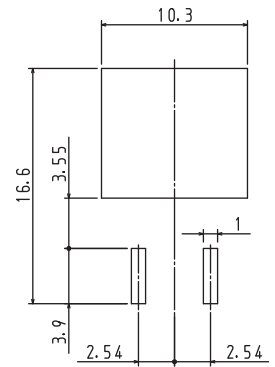


Land Pattern Example

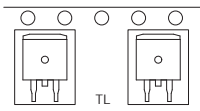


1. These dimension do not include mold protrusion
2. Pin2 is idle pin with electrical designation only carried

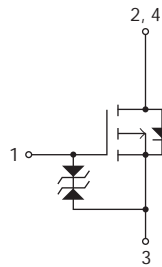
*1: Lot indication



Packing Type: TL



Electrical Connection



SMP3003

Ordering & Package Information

| Device | Package | Shipping | memo |
|---------------|----------------------------|------------------|---------|
| SMP3003-DL-1E | TO-263-2L SC-83, TO-263 | 800 pcs./reel | Pb-Free |
| SMP3003-TL-1E | TO-263 | | |

Marking

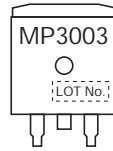


Fig.1 Unclamped Inductive Switching Test Circuit

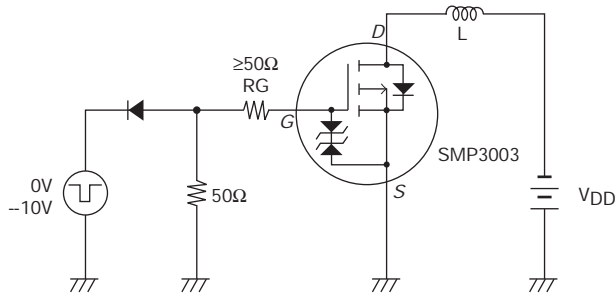


Fig.2 Switching Time Test Circuit

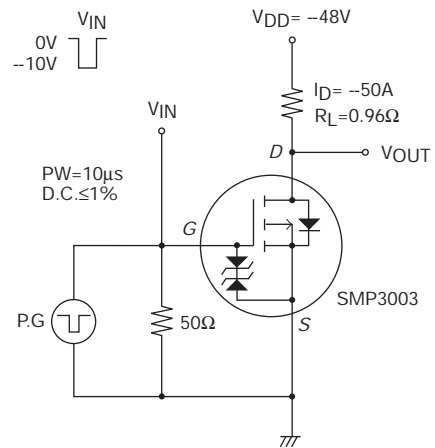
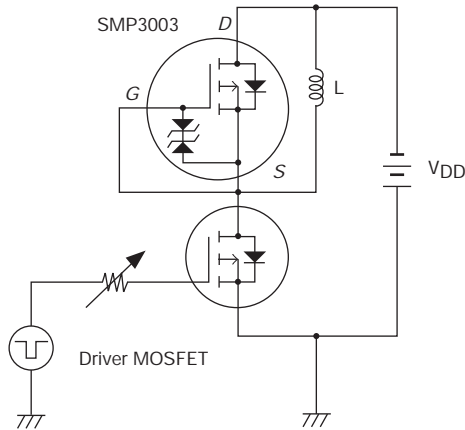


Fig.3 Reverse Recovery Time Test Circuit



Note on usage : Since the SMP3003 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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