



BMS3003 — P-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

- ON-resistance $R_{DS(on)1}=5.0m\Omega$ (typ.)
- Input capacitance $C_{iss}=13200pF$ (typ.)
- 4V drive

Specifications

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

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------------|-----------|---|-------------|------------|
| Drain-to-Source Voltage | V_{DSS} | | -60 | V |
| Gate-to-Source Voltage | V_{GSS} | | ± 20 | V |
| Drain Current (DC) | I_D | | -78 | A |
| Drain Current (Pulse) | I_{DP} | $PW \leq 10\mu s$, duty cycle $\leq 1\%$ | -312 | A |
| Allowable Power Dissipation | PD | | 2.0 | W |
| | | $T_c=25^\circ C$ | 40 | W |
| Channel Temperature | T_{ch} | | 150 | $^\circ C$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ C$ |
| Avalanche Energy (Single Pulse) *1 | E_{AS} | | 420 | mJ |
| Avalanche Current *2 | I_{AV} | | -60 | A |

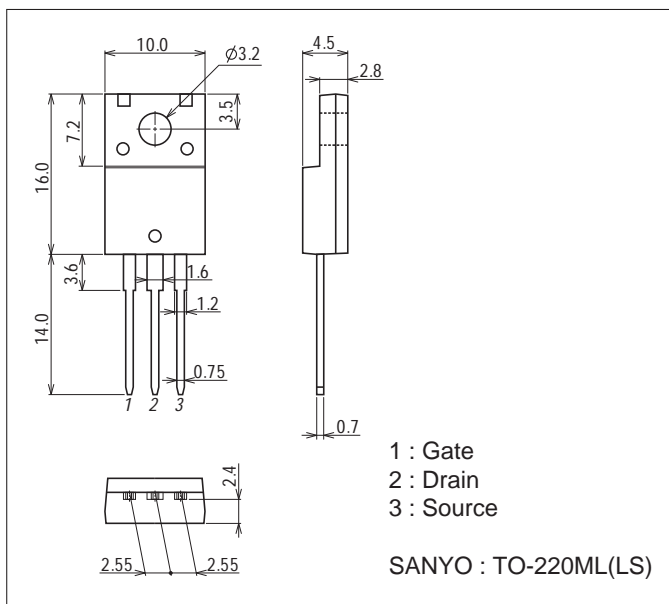
Note : *1 $V_{DD}=-36V$, $L=100\mu H$, $I_{AV}=-60A$ (Fig.1)

*2 $L \leq 100\mu H$, Single pulse

Package Dimensions

unit : mm (typ)

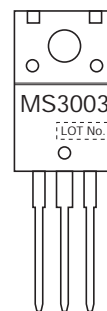
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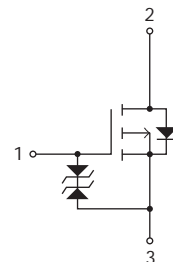
Product & Package Information

- Package : TO-220ML(LS)
- JEITA, JEDEC : SC-67, SOT-186A
- Minimum Packing Quantity : 100 pcs./bag or 50pcs./magazine

Marking



Electrical Connection



BMS3003

Electrical Characteristics at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|---------------|---|-----------|-------|----------|------------------|
| | | | min | typ | max | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D = -1\text{mA}, V_{GS} = 0\text{V}$ | -60 | | | V |
| Zero-Gate Voltage Drain Current | I_{DSS} | $V_{DS} = -60\text{V}, V_{GS} = 0\text{V}$ | | | -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} $ | $V_{DS} = -10\text{V}, I_D = -39\text{A}$ | | 130 | | S |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D = -39\text{A}, V_{GS} = -10\text{V}$ | | 5.0 | 6.5 | $\text{m}\Omega$ |
| | $R_{DS(on)2}$ | $I_D = -39\text{A}, V_{GS} = -4\text{V}$ | | 6.5 | 9.0 | $\text{m}\Omega$ |
| Input Capacitance | C_{iss} | $V_{DS} = -20\text{V}, f = 1\text{MHz}$ | | 13200 | | pF |
| Output Capacitance | C_{oss} | | | 1300 | | pF |
| Reverse Transfer Capacitance | C_{rss} | | | 950 | | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | | See Fig.2 | | 90 | |
| Rise Time | t_r | | | 360 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | | | 1200 | | ns |
| Fall Time | t_f | | | 680 | | ns |
| Total Gate Charge | Q_g | $V_{DS} = -36\text{V}, V_{GS} = -10\text{V}, I_D = -78\text{A}$ | | | 285 | |
| Gate-to-Source Charge | Q_{gs} | | | 35 | | nC |
| Gate-to-Drain "Miller" Charge | Q_{gd} | | | 70 | | nC |
| Diode Forward Voltage | V_{SD} | $I_S = -78\text{A}, V_{GS} = 0\text{V}$ | | -0.95 | -1.5 | V |
| Reverse Recovery Time | t_{rr} | See Fig.3 | | 150 | | ns |
| Reverse Recovery Charge | Q_{rr} | $I_S = -78\text{A}, V_{GS} = 0\text{V}, di/dt = -100\text{A}/\mu\text{s}$ | | 470 | | nC |

Fig.1 Avalanche Resistance Test Circuit

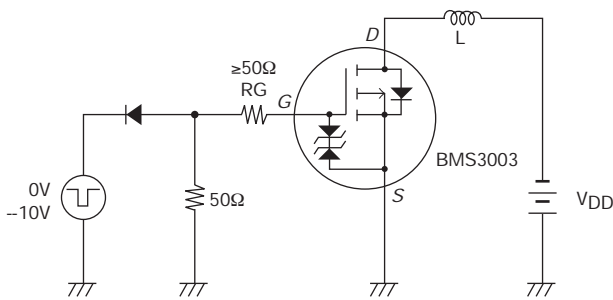


Fig.2 Switching Time Test Circuit

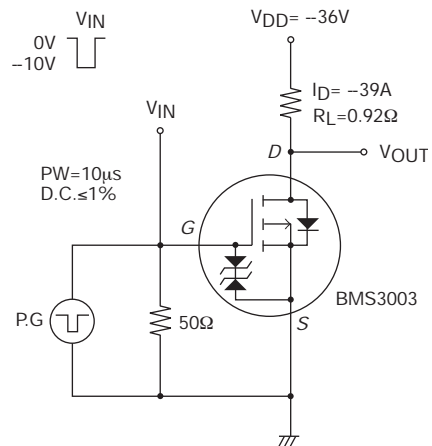
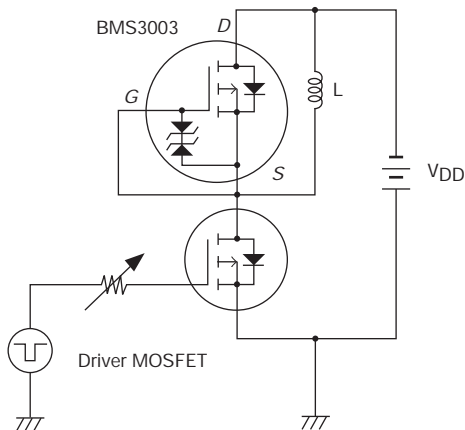
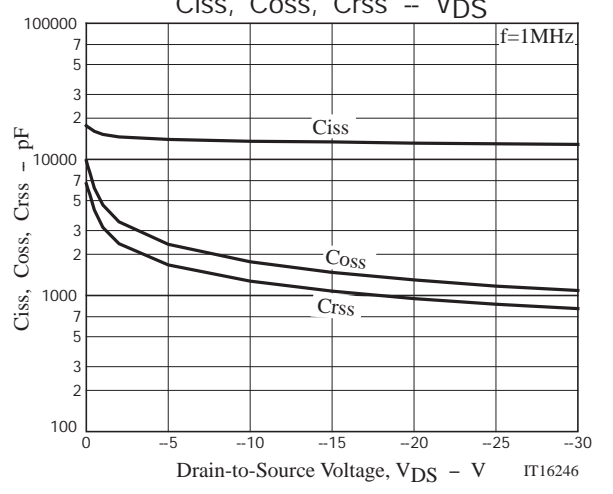
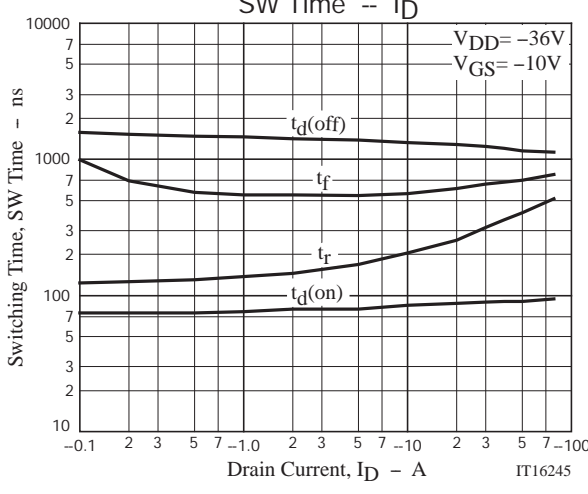
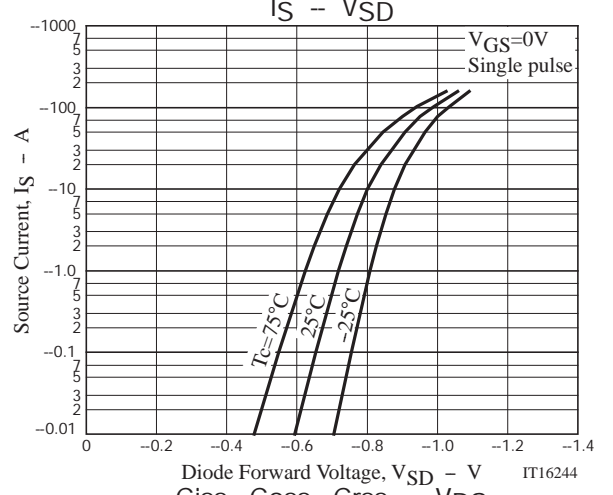
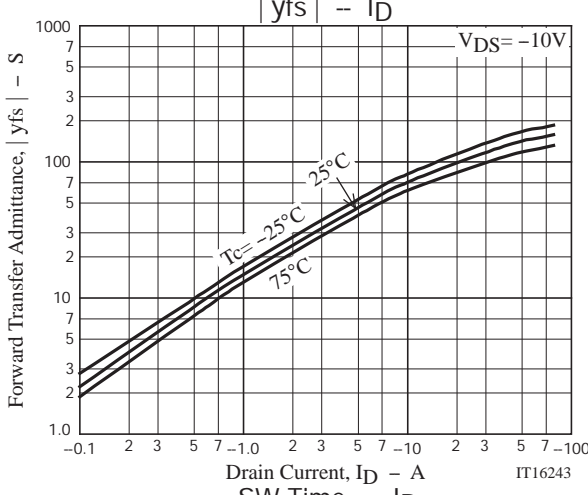
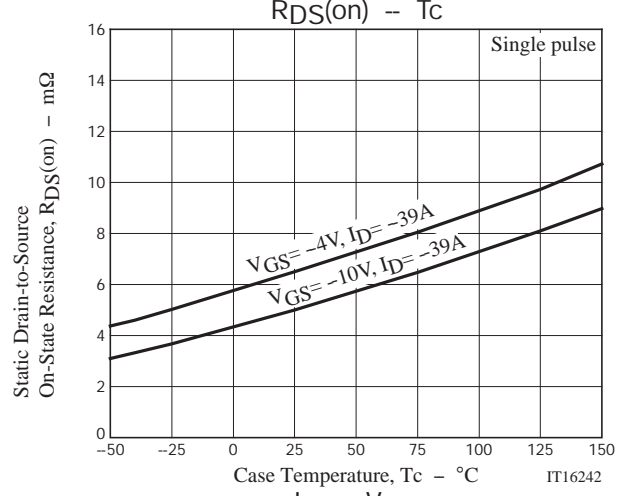
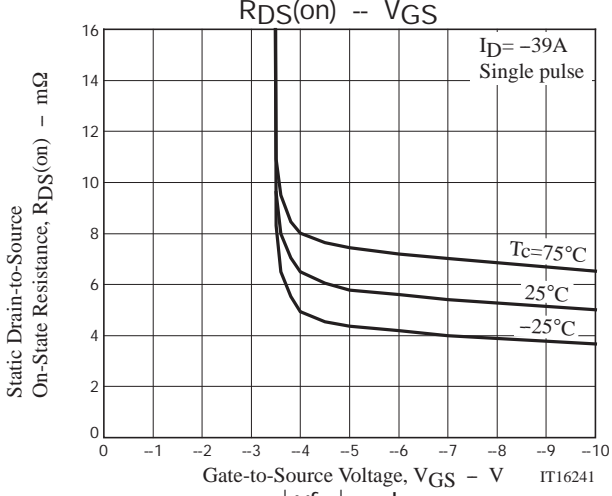
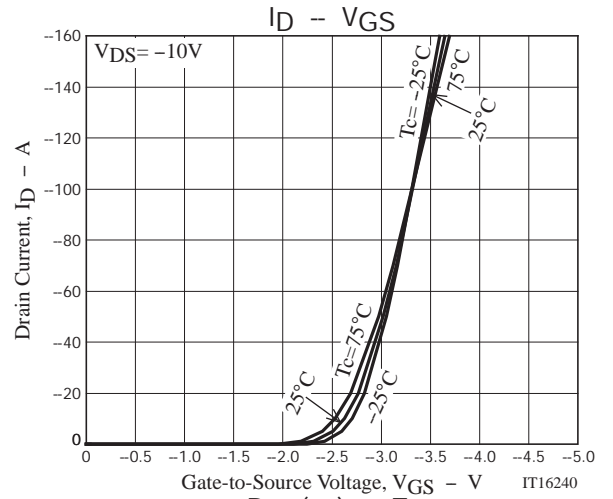
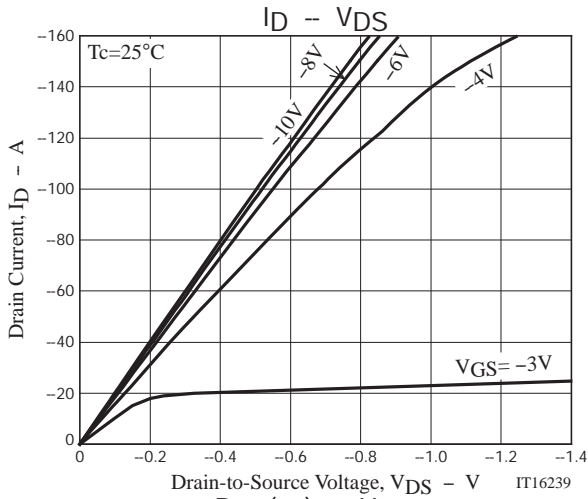
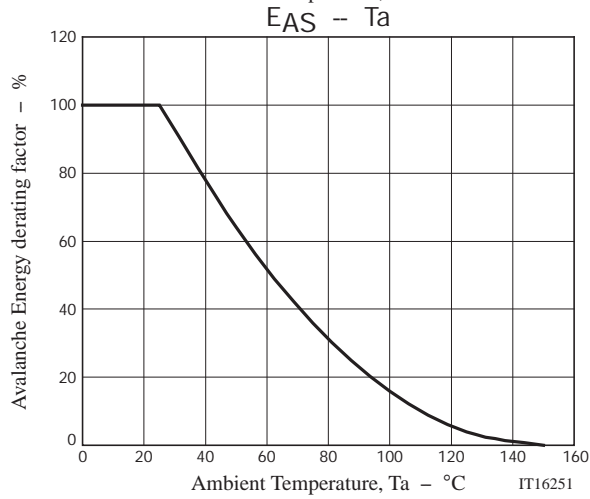
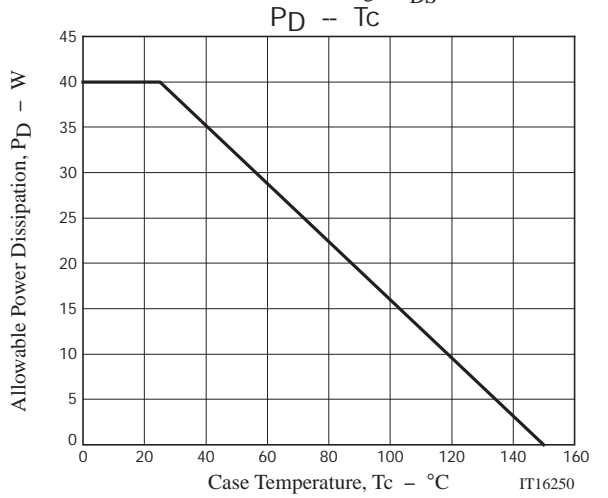
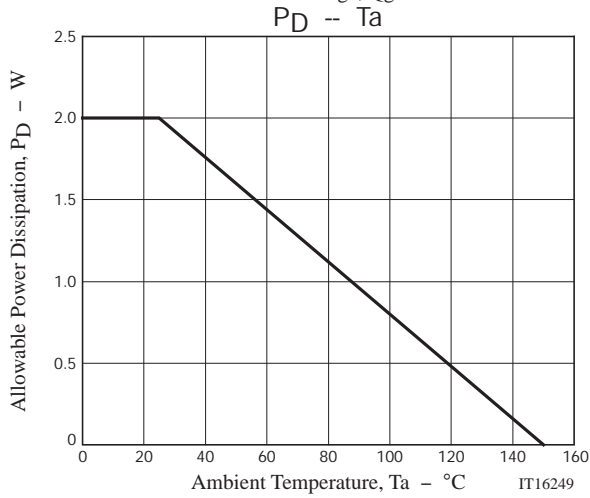
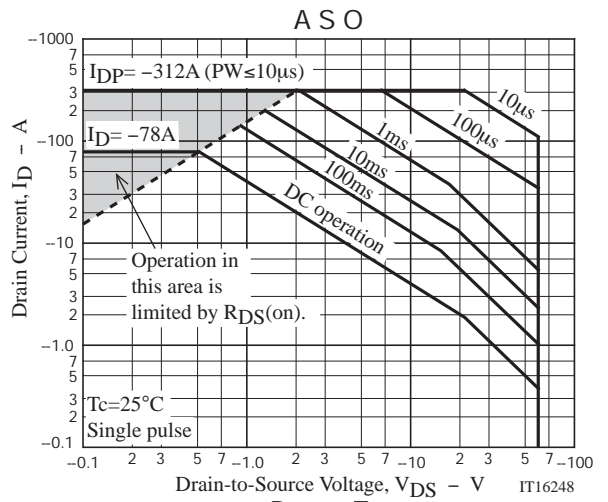
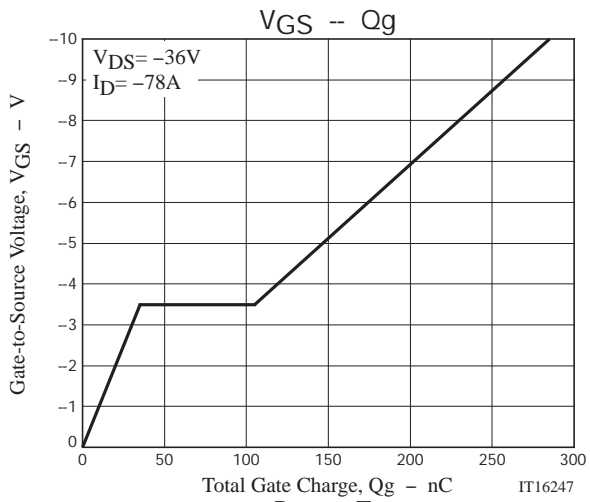


Fig.3 Reverse Recovery Time Test Circuit







Note on usage : Since the BMS3003 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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