



SANYO Semiconductors

## DATA SHEET

# BMS4003 — N-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- ON-resistance  $R_{DS(on)}=50\text{m}\Omega$  (typ.)
- Input capacitance  $C_{iss}=680\text{pF}$  (typ.)
- 10V drive

### Specifications

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

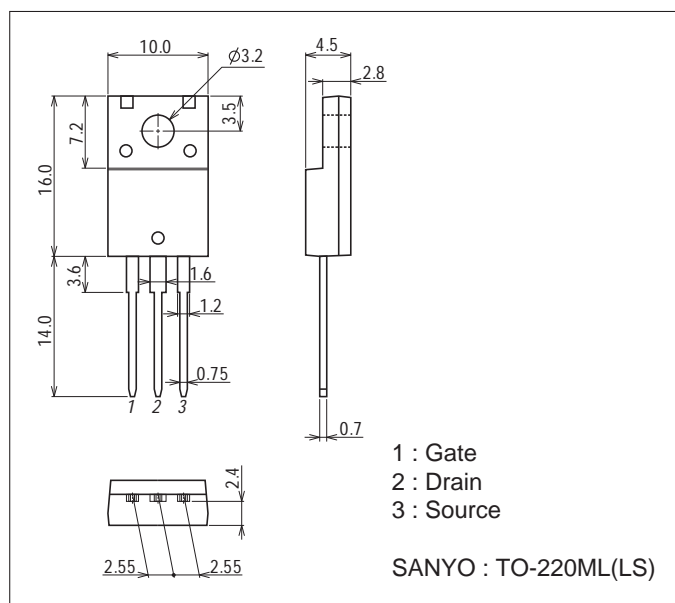
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DS}$		100	V
Gate-to-Source Voltage	$V_{GS}$		$\pm 30$	V
Drain Current (DC)	$I_D$		18	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	72	A
Allowable Power Dissipation	$P_D$		2.0	W
		$T_c=25^\circ\text{C}$	25	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		$-55$ to $+150$	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	$E_{AS}$		53	mJ
Avalanche Current *2	$I_{AV}$		15	A

Note : \*1  $V_{DD}=60\text{V}$ ,  $L=200\mu\text{H}$ ,  $I_{AV}=15\text{A}$  (Fig.1)\*2  $L \leq 200\mu\text{H}$ , Single pulse

### Package Dimensions

unit : mm (typ)

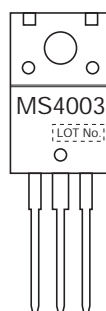
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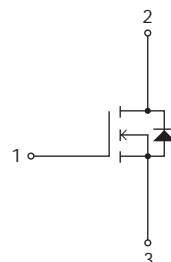
### Product & Package Information

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

### Marking



### Electrical Connection



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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$ , $V_{GS}=0\text{V}$	100			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 30\text{V}$ , $V_{DS}=0\text{V}$			$\pm 100$	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$ , $I_D=1\text{mA}$	3		5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}$ , $I_D=9\text{A}$		7.8		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=9\text{A}$ , $V_{GS}=10\text{V}$		50	65	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=20\text{V}$ , $f=1\text{MHz}$		680		pF
Output Capacitance	$C_{oss}$			130		pF
Reverse Transfer Capacitance	$C_{rss}$			33		pF
Turn-ON Delay Time	$t_{d(on)}$			16		ns
Rise Time	$t_r$	See Fig.2		33		ns
Turn-OFF Delay Time	$t_{d(off)}$			27		ns
Fall Time	$t_f$			15		ns
Total Gate Charge	$Q_g$	$V_{DS}=60\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=18\text{A}$		11.4		nC
Gate-to-Source Charge	$Q_{gs}$			4.1		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$			3.8		nC
Diode Forward Voltage	$V_{SD}$	$I_S=18\text{A}$ , $V_{GS}=0\text{V}$		0.9	1.2	V
Reverse Recovery Time	$t_{rr}$	See Fig.3		60		ns
Reverse Recovery Charge	$Q_{rr}$			114		nC

Fig.1 Avalanche Resistance Test Circuit

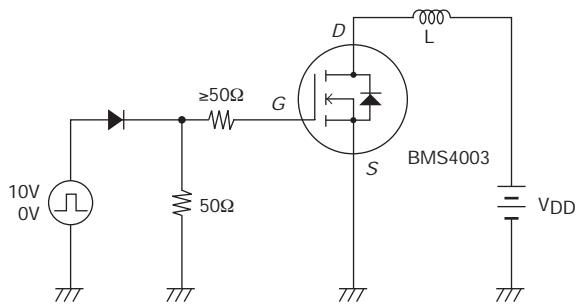


Fig.2 Switching Time Test Circuit

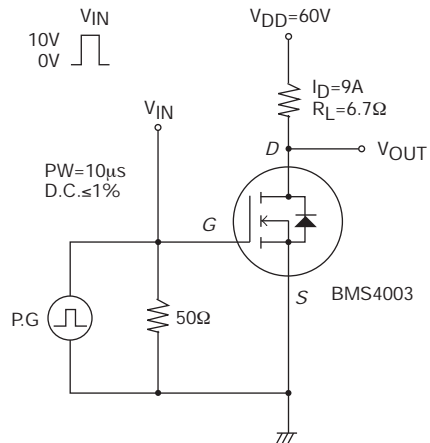
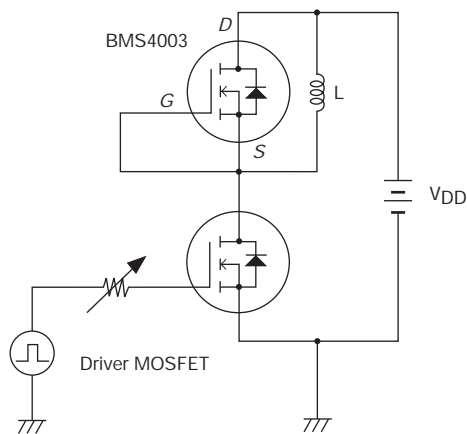
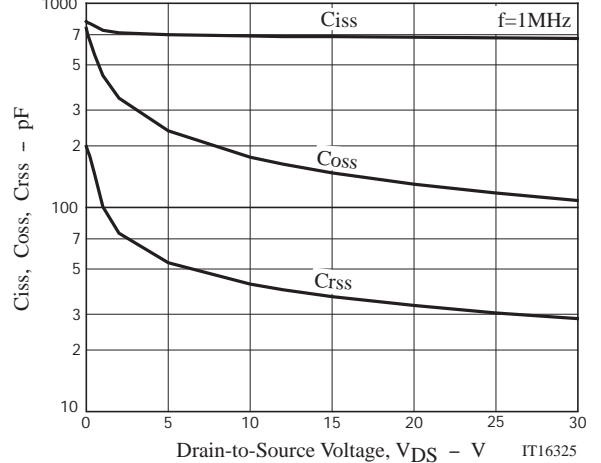
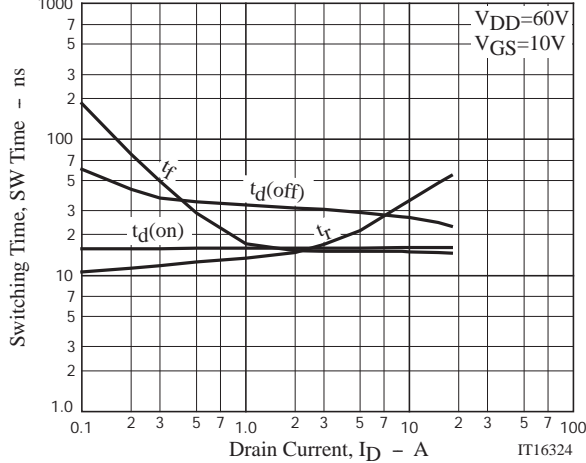
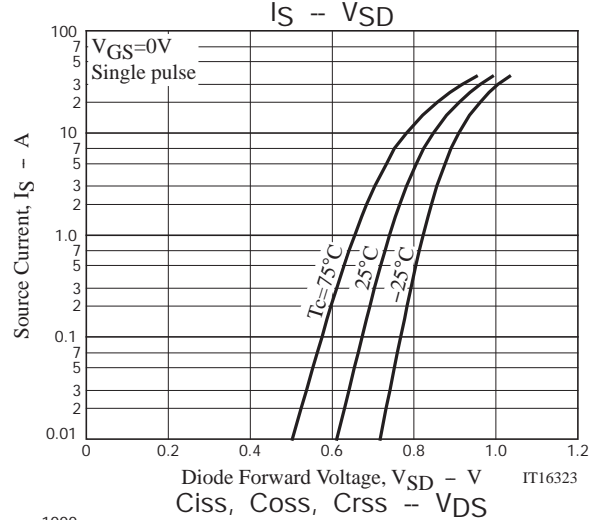
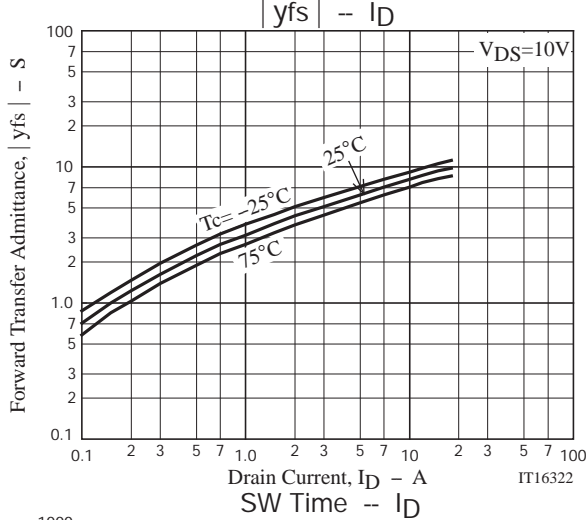
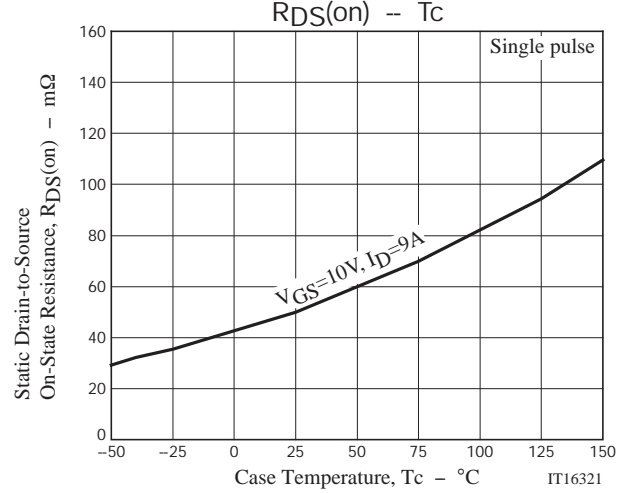
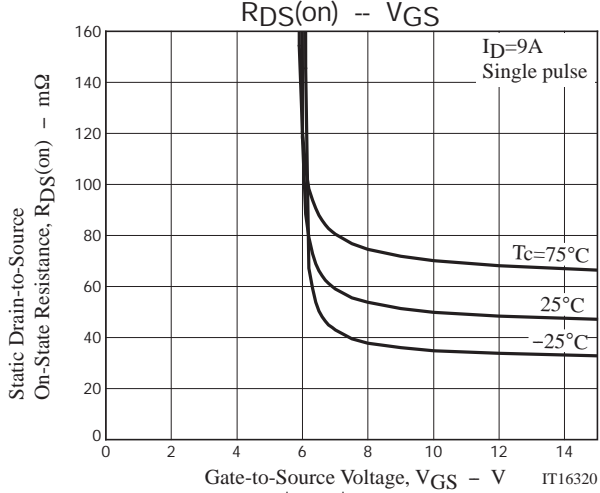
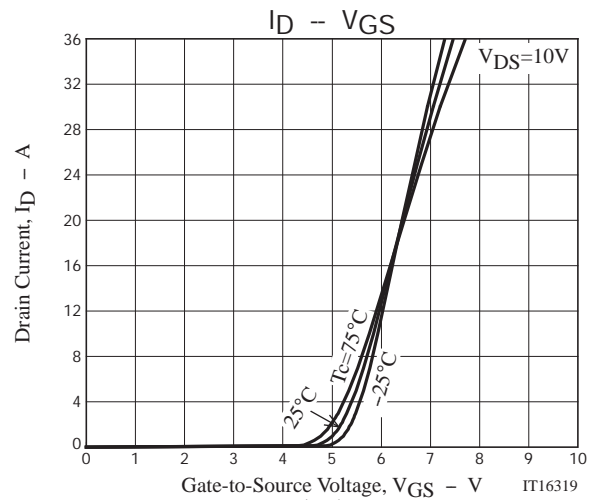
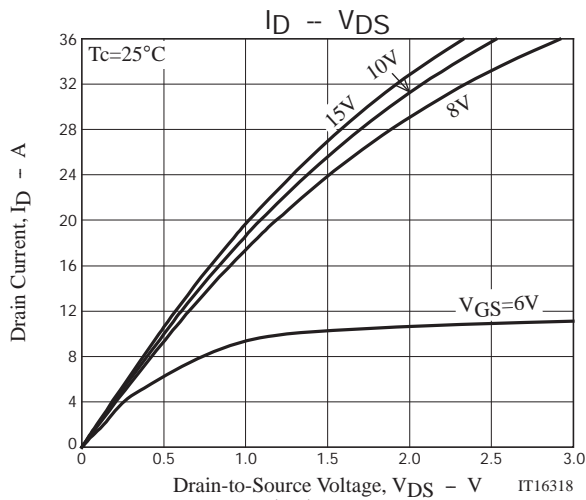
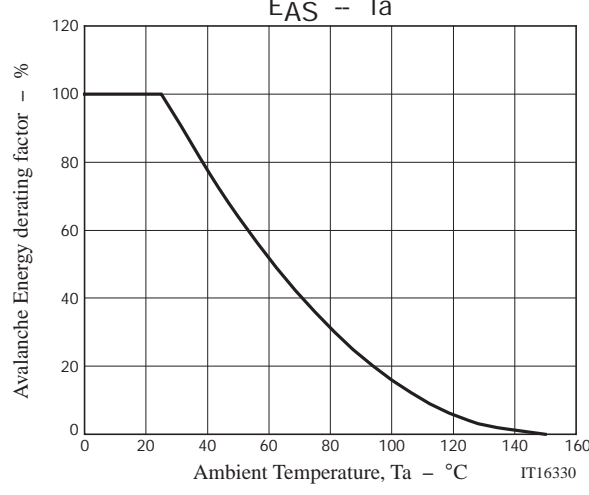
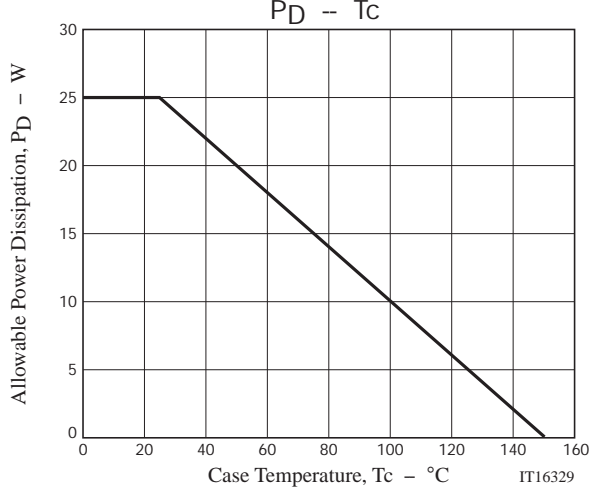
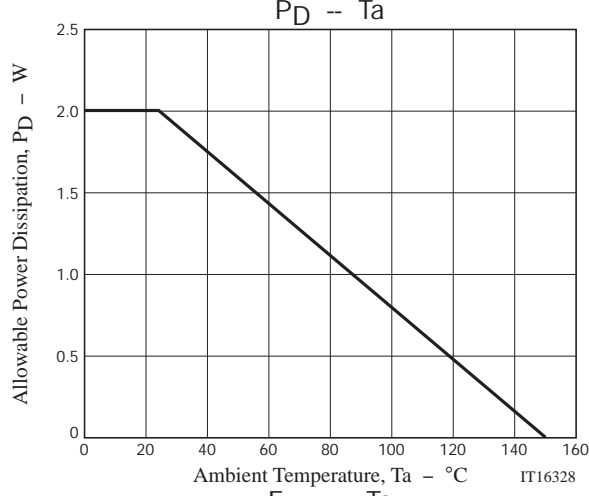
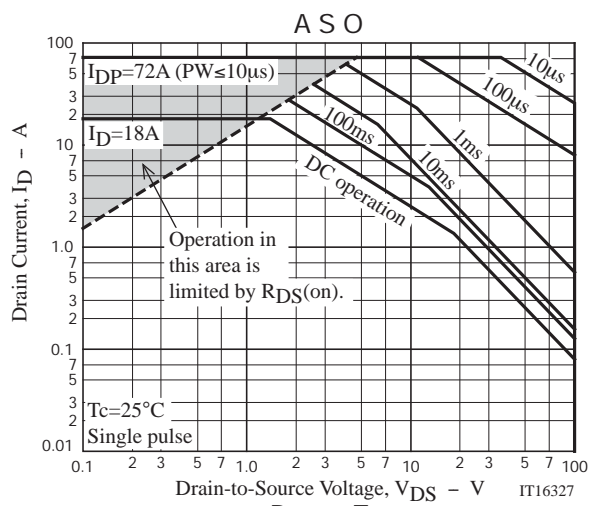
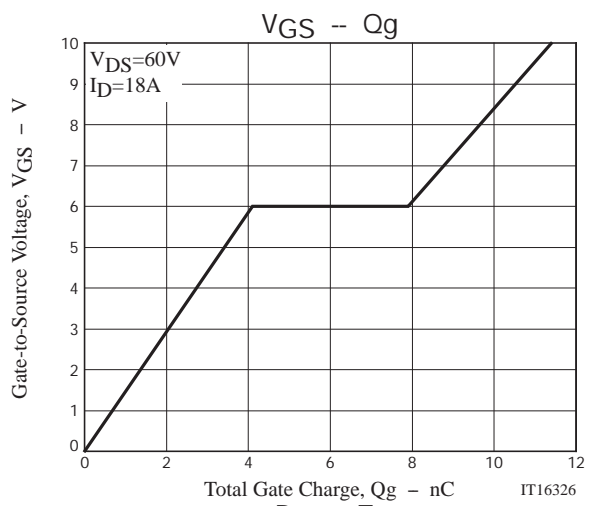


Fig.3 Reverse Recovery Time Test Circuit







Note on usage : Since the BMS4003 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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