

BMS3003 — General-Purpose Switching Device Applications

Features

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

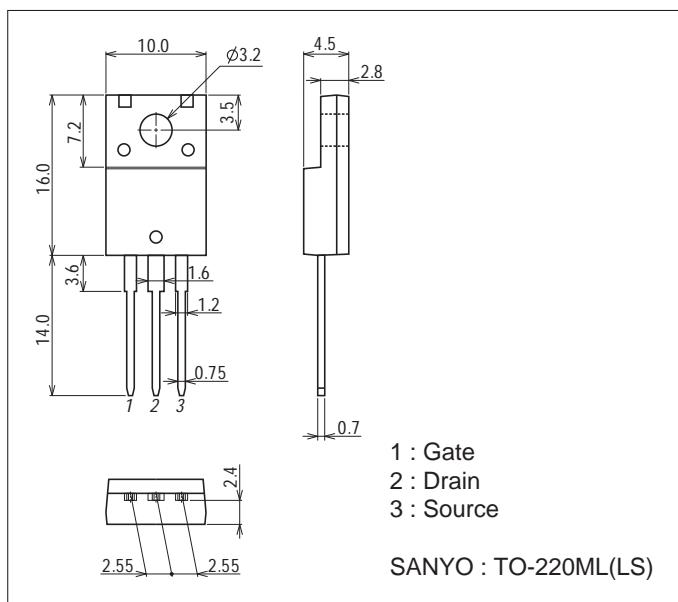
Note : *1 $V_{DD} = -36V$, $L = 100\mu H$, $I_{AV} = -60A$ (Fig.1)

*2 L≤100μH, Single pulse

Package Dimensions

unit : mm (typ)

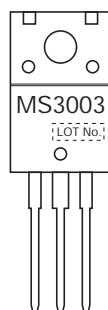
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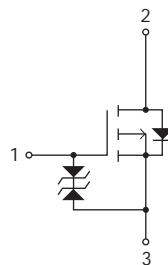
Product & Package Information

- 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	$V_{(\text{BR})\text{DSS}}$	$I_D=-1\text{mA}, V_{GS}=0\text{V}$	-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	$V_{GS(\text{off})}$	$V_{DS}=-10\text{V}, I_D=-1\text{mA}$	-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	$R_{\text{DS(on)1}}$	$I_D=-39\text{A}, V_{GS}=-10\text{V}$		5.0	6.5	$\text{m}\Omega$
	$R_{\text{DS(on)2}}$	$I_D=-39\text{A}, V_{GS}=-4\text{V}$		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	$t_{\text{d(on)}}$	See Fig.2		90		ns
Rise Time	t_r			360		ns
Turn-OFF Delay Time	$t_{\text{d(off)}}$			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		nC
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

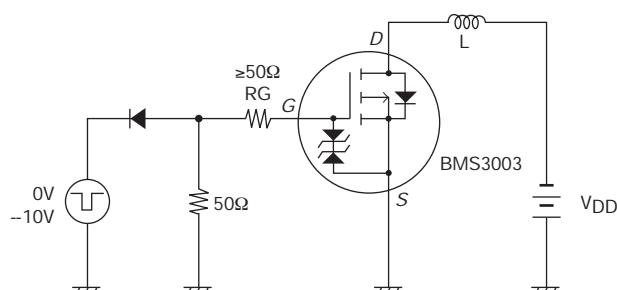


Fig.2 Switching Time Test Circuit

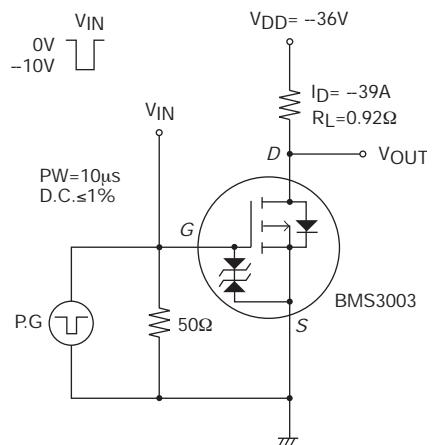
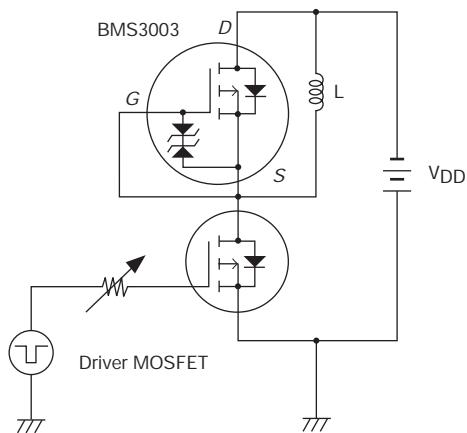
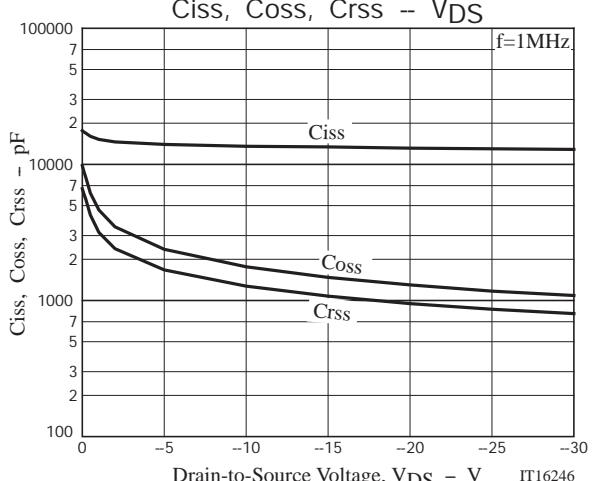
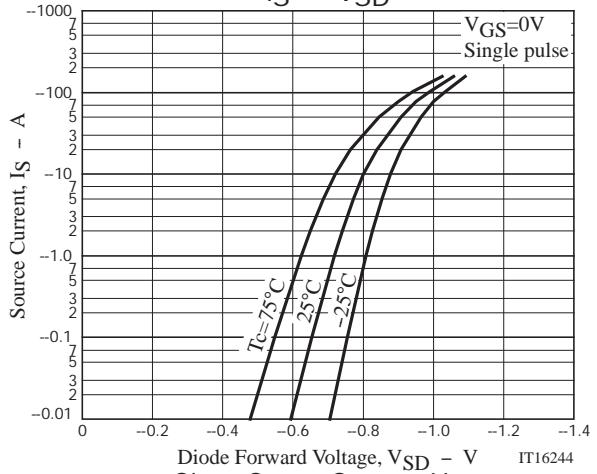
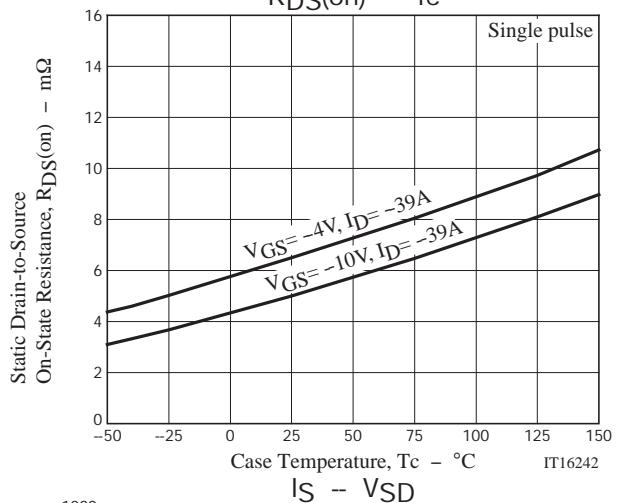
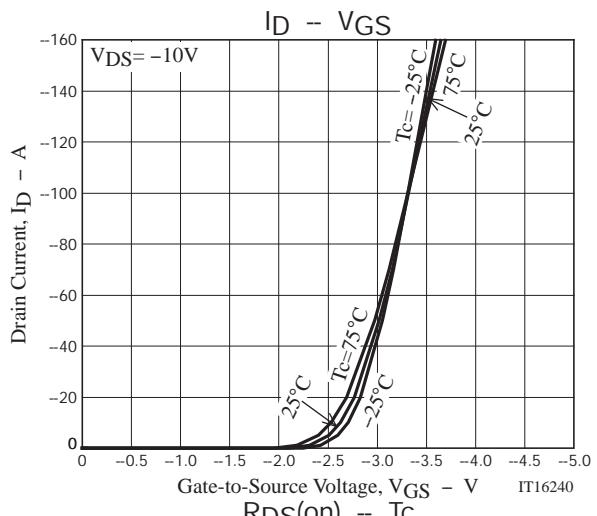
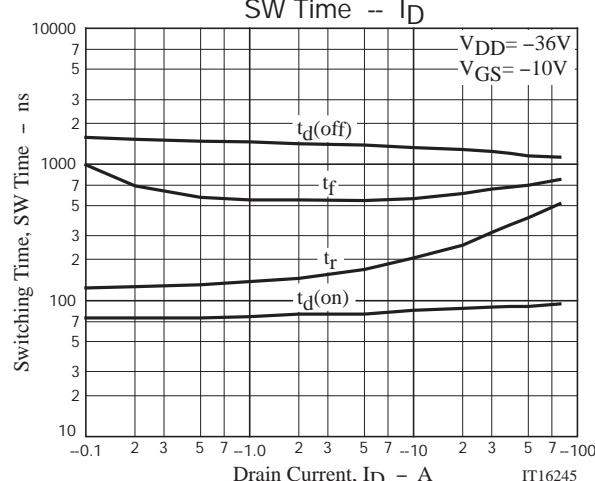
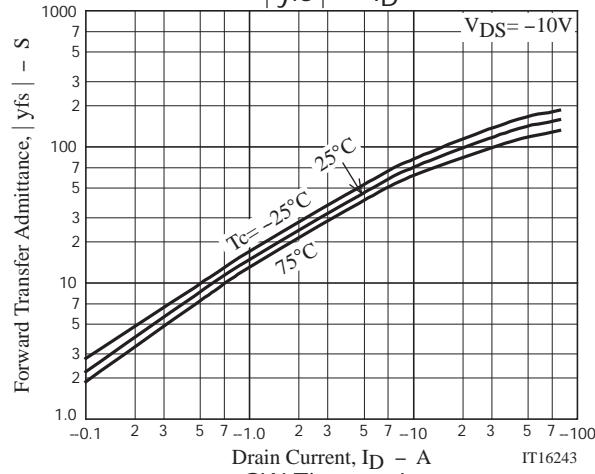
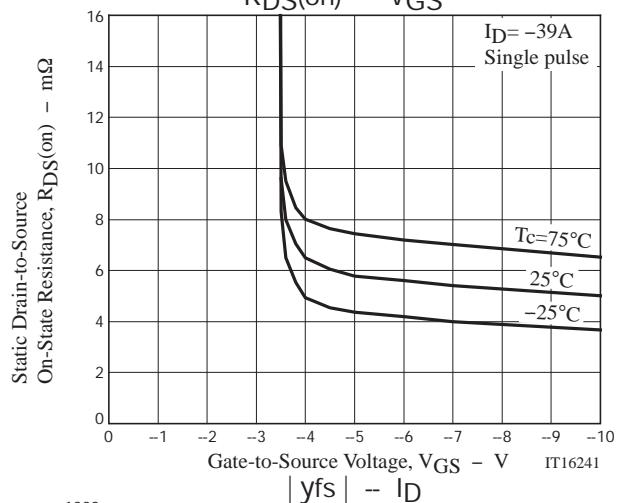
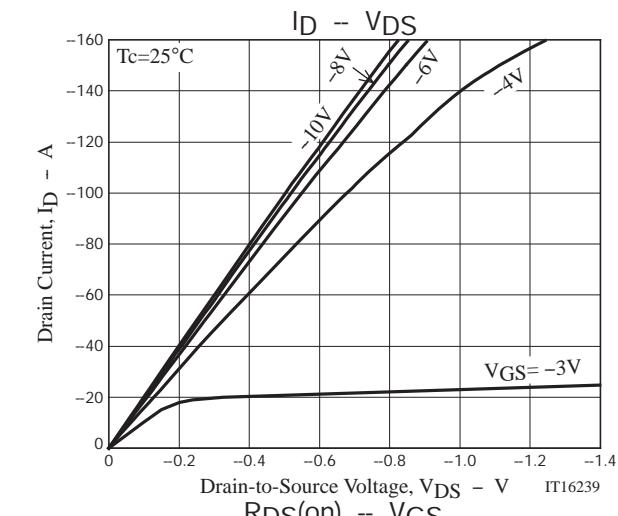
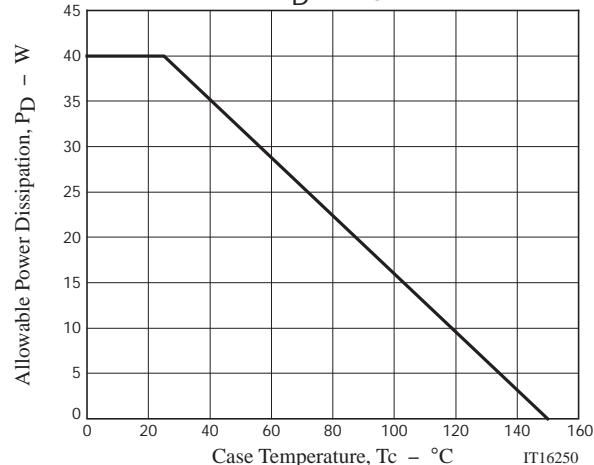
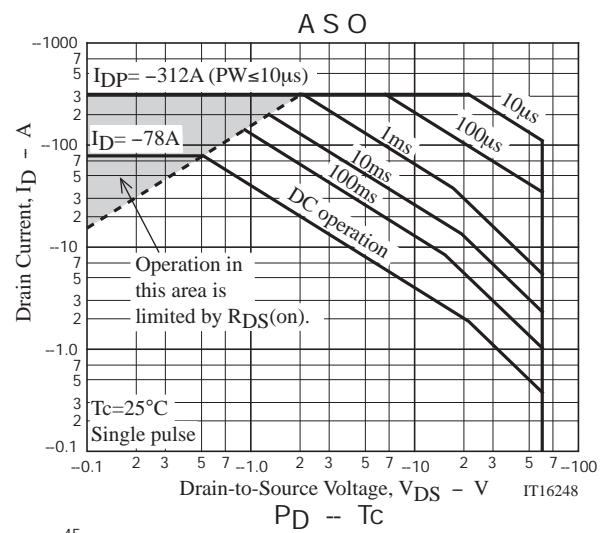
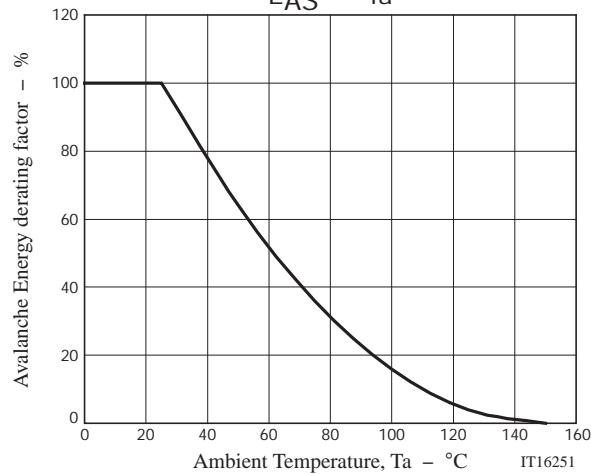
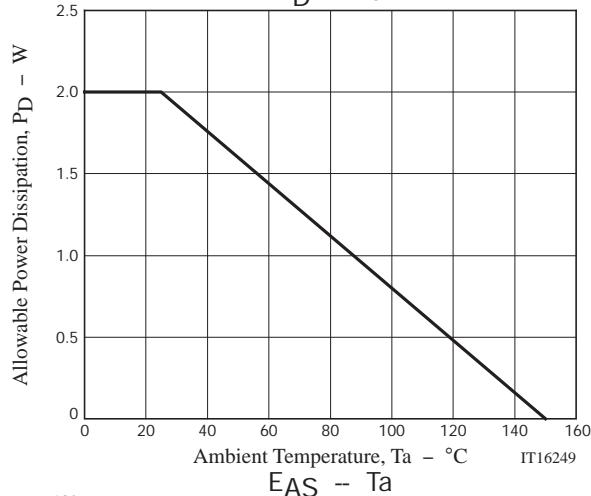
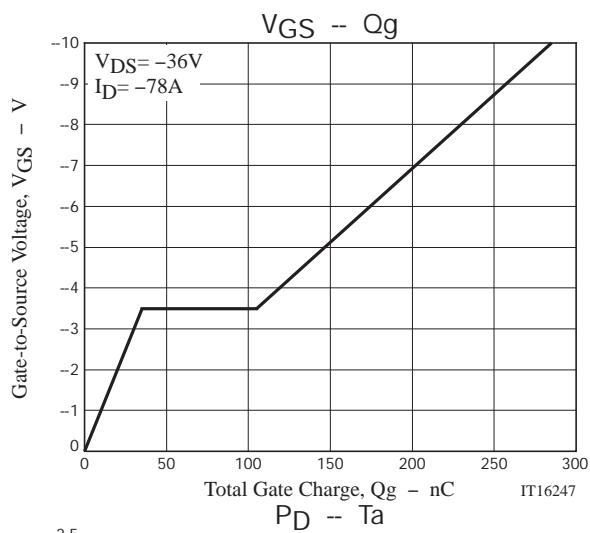


Fig.3 Reverse Recovery Time Test Circuit







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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