



# BMS3003

## P-Channel Power MOSFET -60V, -78A, 6.5mΩ, TO-220F-3SG

ON Semiconductor®

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### 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	$V_{GSS}$		$\pm 20$	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)

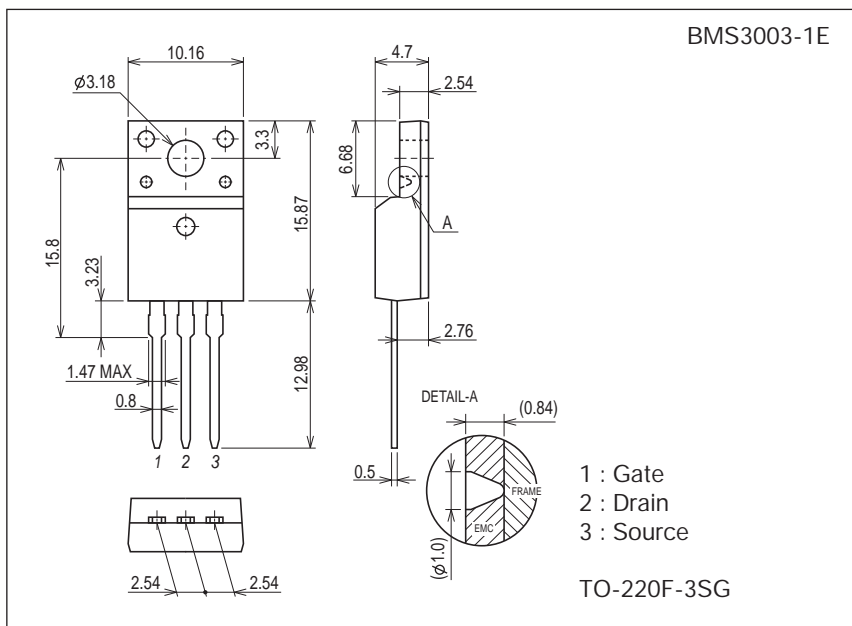
\*2  $L \leq 100\mu H$ , Single pulse

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### Package Dimensions

unit : mm (typ.)

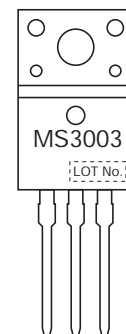
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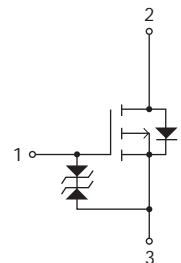
### Product & Package Information

- Package : TO-220F-3SG
- JEITA, JEDEC : SC-67
- Minimum Packing Quantity : 50 pcs./tube

### Marking



### Electrical Connection



### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

# BMS3003

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -1mA, V_{GS} = 0V$	-60			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -60V, V_{GS} = 0V$			-10	$\mu A$
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 16V, V_{DS} = 0V$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = -10V, I_D = -1mA$	-1.2		-2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -10V, I_D = -39A$		130		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D = -39A, V_{GS} = -10V$		5.0	6.5	$m\Omega$
	$R_{DS(on)2}$	$I_D = -39A, V_{GS} = -4V$		6.5	9.0	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = -20V, f = 1MHz$		13200		$\mu F$
Output Capacitance	$C_{oss}$			1300		$\mu F$
Reverse Transfer Capacitance	$C_{rss}$			950		$\mu F$
Turn-ON Delay Time	$t_{d(on)}$	See Fig.2		90		ns
Rise Time	$t_r$			360		ns
Turn-OFF Delay Time	$t_{d(off)}$			1200		ns
Fall Time	$t_f$			680		ns
Total Gate Charge	$Q_g$			285		nC
Gate to Source Charge	$Q_{gs}$	$V_{DS} = -36V, V_{GS} = -10V, I_D = -78A$		35		nC
Gate to Drain "Miller" Charge	$Q_{gd}$			70		nC
Diode Forward Voltage	$V_{SD}$		$I_S = -78A, V_{GS} = 0V$	-0.95	-1.5	V
Reverse Recovery Time	$t_{rr}$	See Fig.3		150		ns
Reverse Recovery Charge	$Q_{rr}$	$I_S = -78A, V_{GS} = 0V, di/dt = -100A/\mu s$		470		nC

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Fig.1 Unclamped Inductive Switching Test Circuit

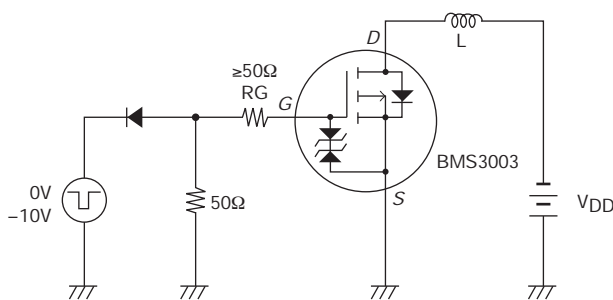


Fig.2 Switching Time Test Circuit

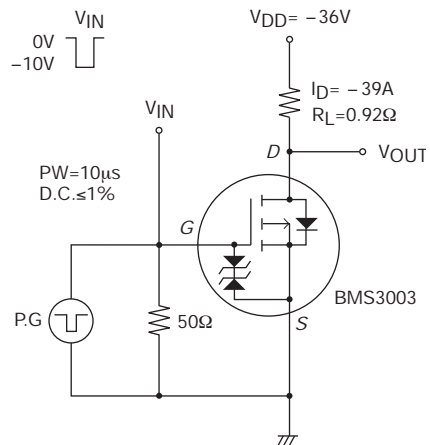
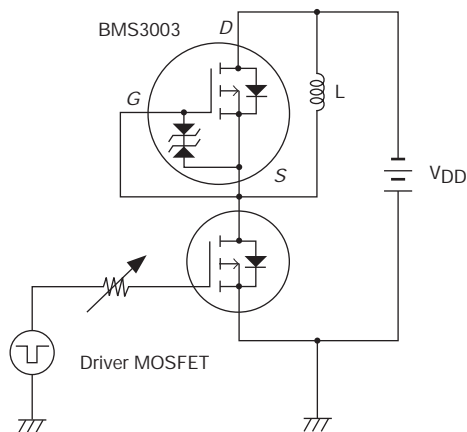
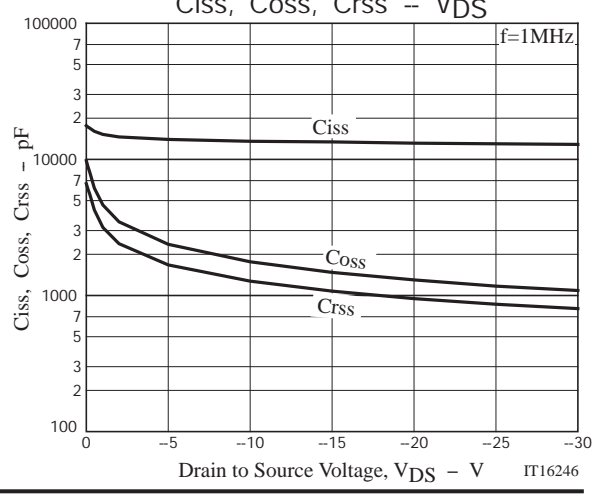
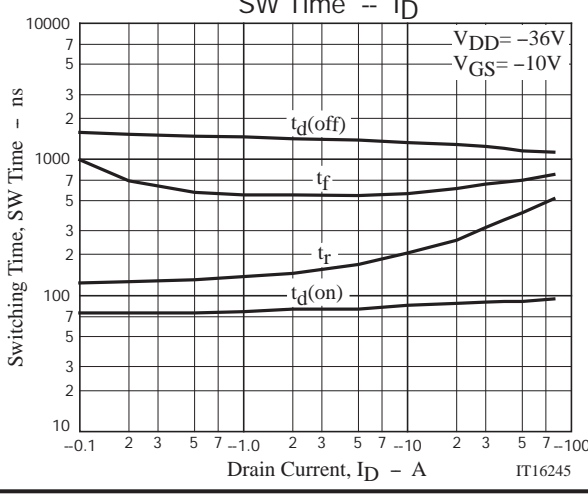
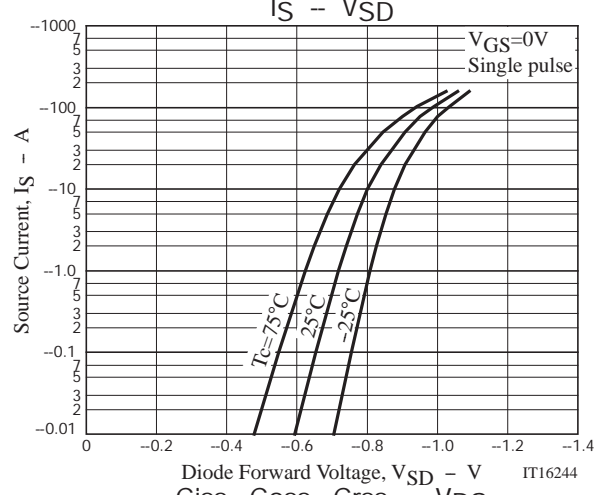
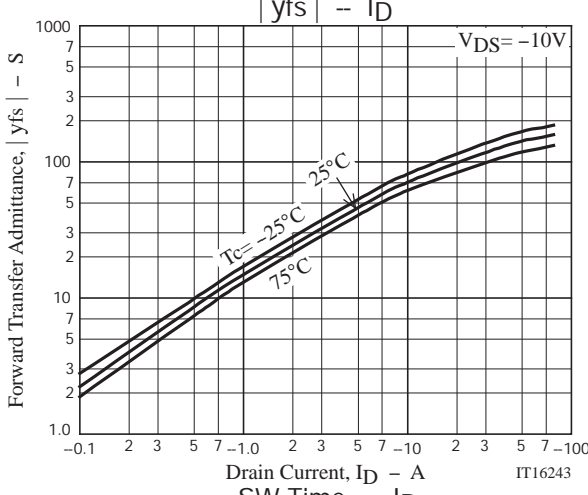
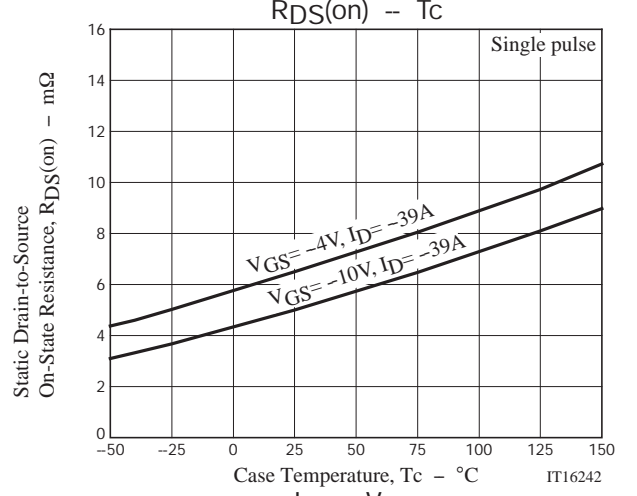
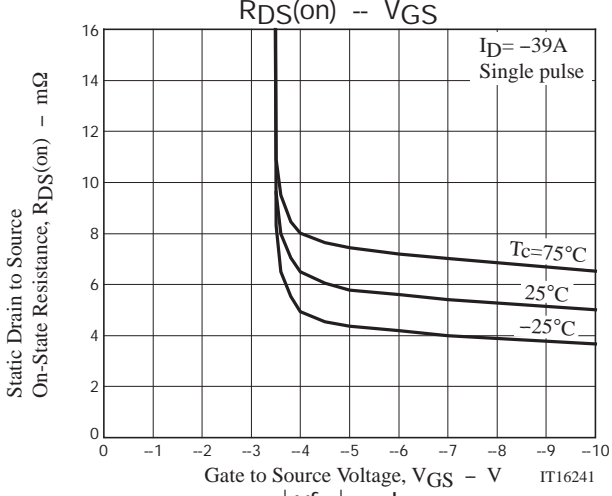
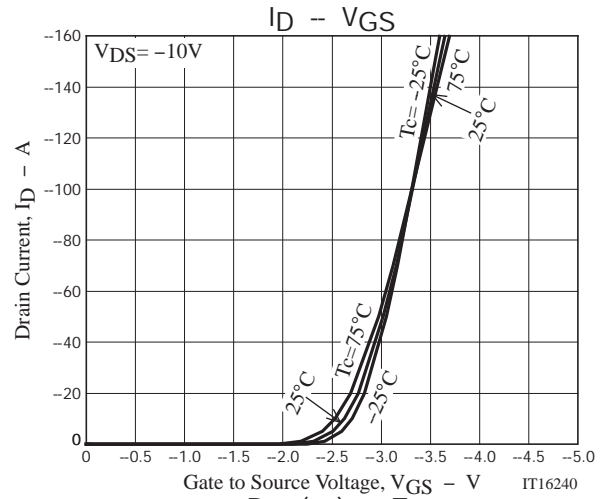
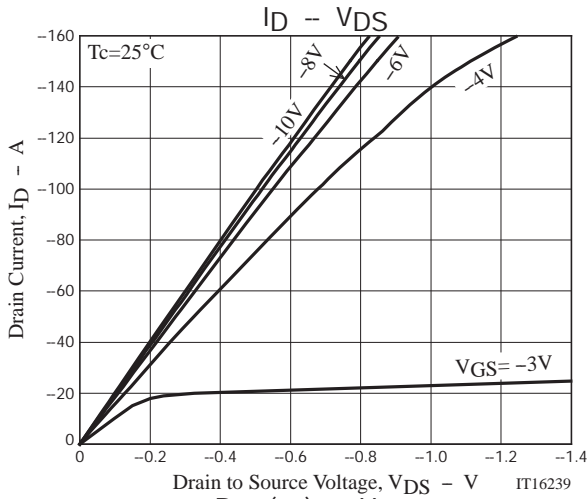


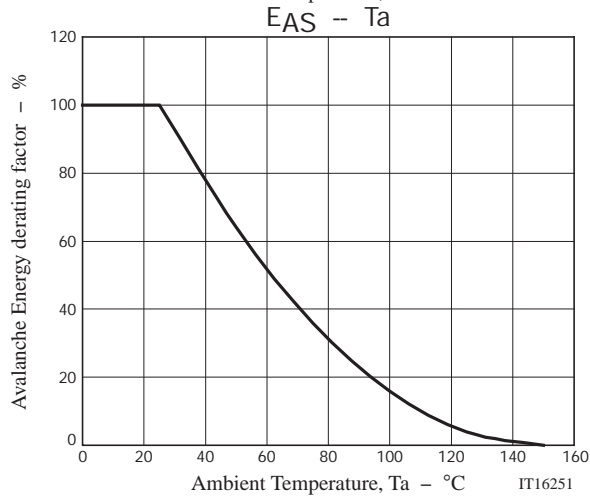
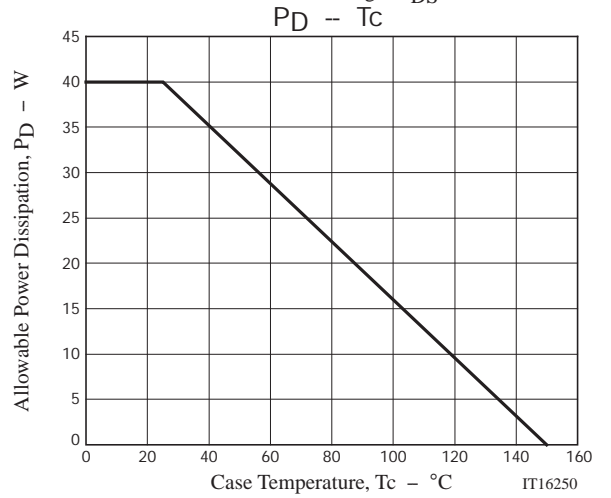
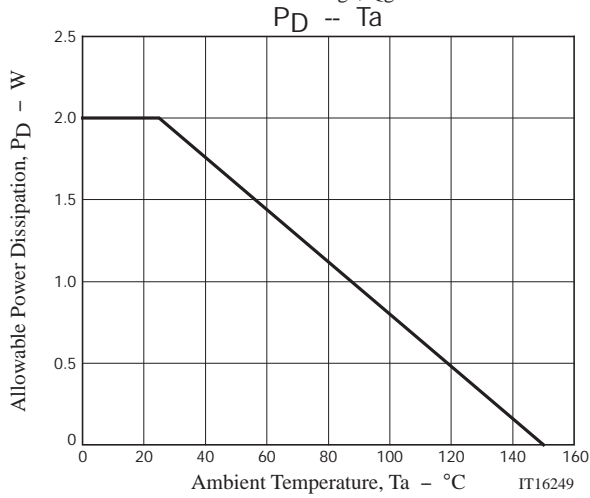
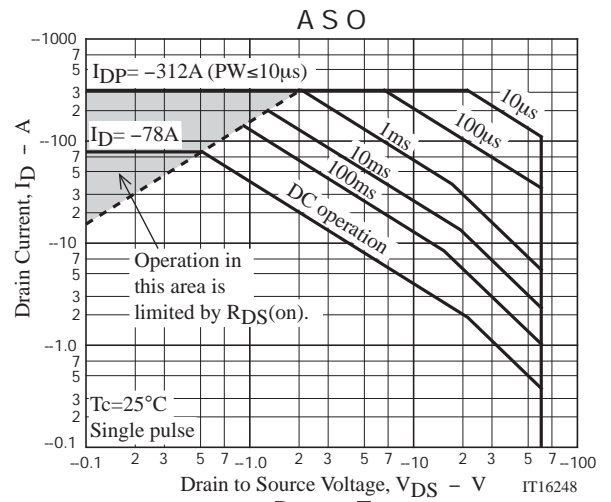
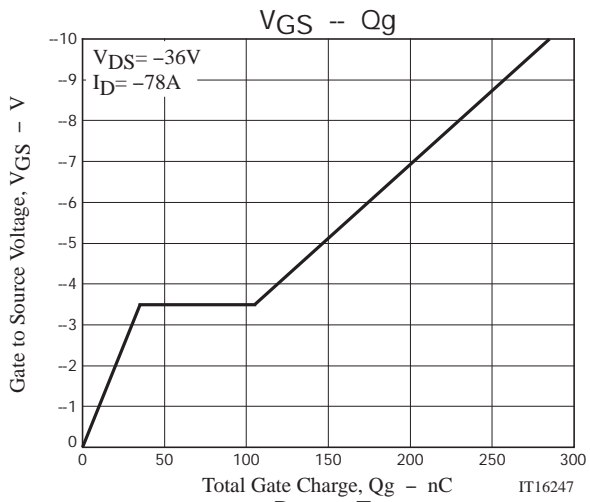
Fig.3 Reverse Recovery Time Test Circuit



## Ordering Information

Device	Package	Shipping	memo
BMS3003-1E	TO-220F-3SG	50pcs./tube	Pb Free

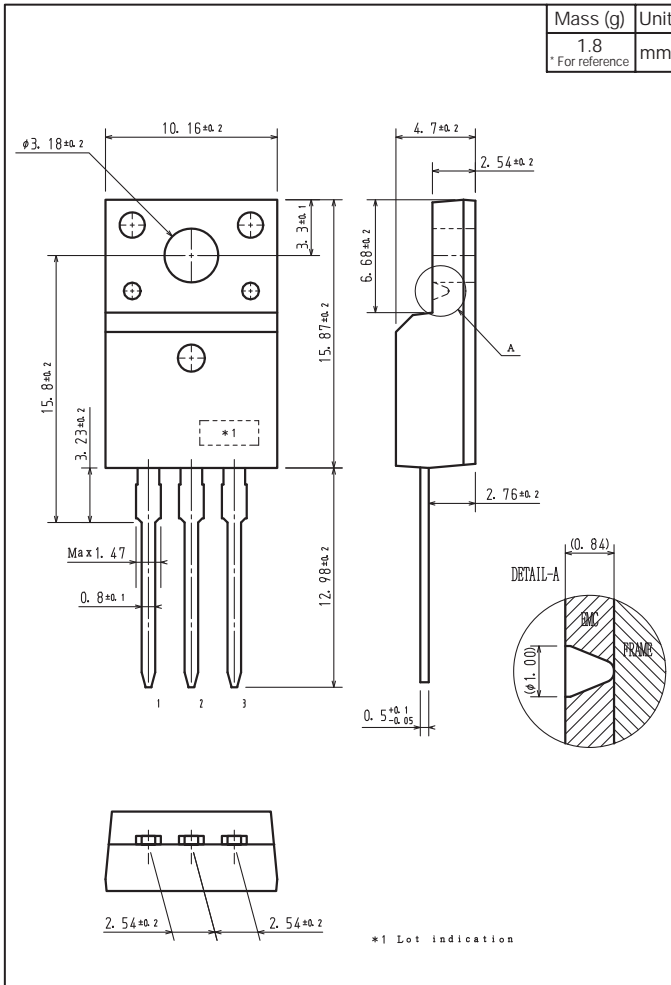




# BMS3003

## Outline Drawing

BMS3003-1E



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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