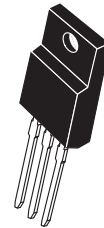




# BMS3004

## P-Channel Power MOSFET -75V, -68A, 8.5mΩ, TO-220F-3SG

ON Semiconductor®

<http://onsemi.com>

TO-220F-3SG

### Features

- ON-resistance  $R_{DS(on)1}=6.5\text{m}\Omega$  (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	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		-68	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	-272	A
Allowable Power Dissipation	$P_D$		2.0	W
		$T_c=25^\circ\text{C}$	40	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	$E_{AS}$		380	mJ
Avalanche Current *2	$I_{AV}$		-54	A

Note : \*1  $V_{DD}=-48\text{V}$ ,  $L=100\mu\text{H}$ ,  $I_{AV}=-54\text{A}$  (Fig.1)\*2  $L \leq 100\mu\text{H}$ , Single pulse

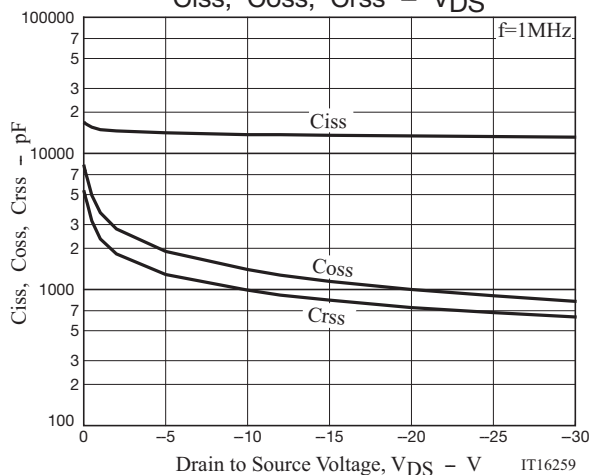
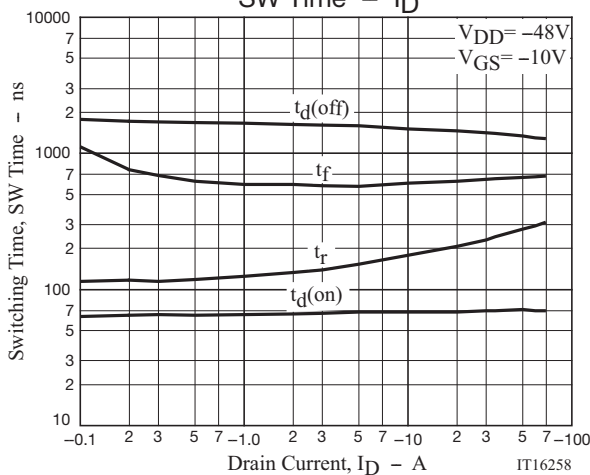
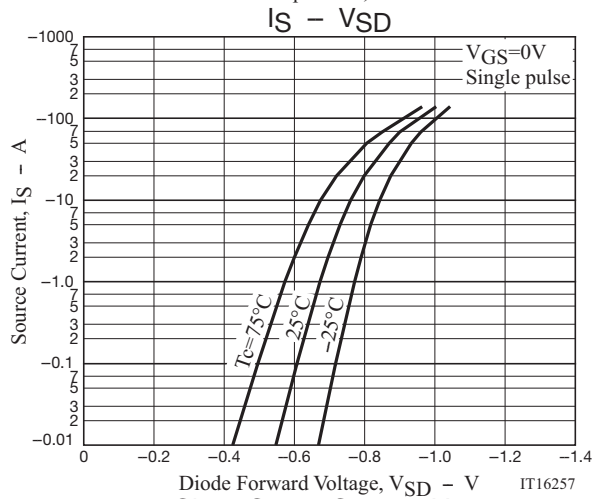
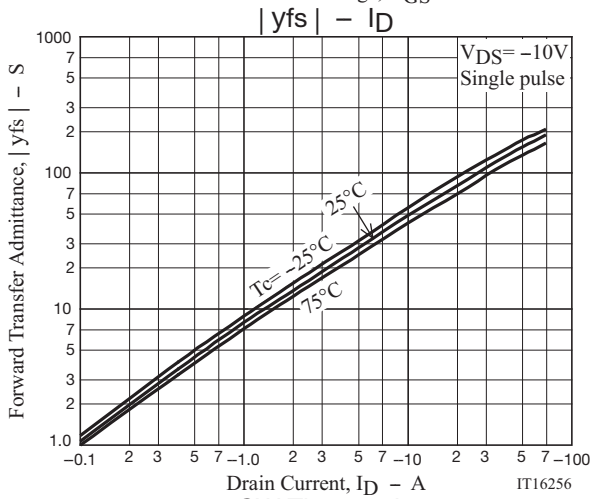
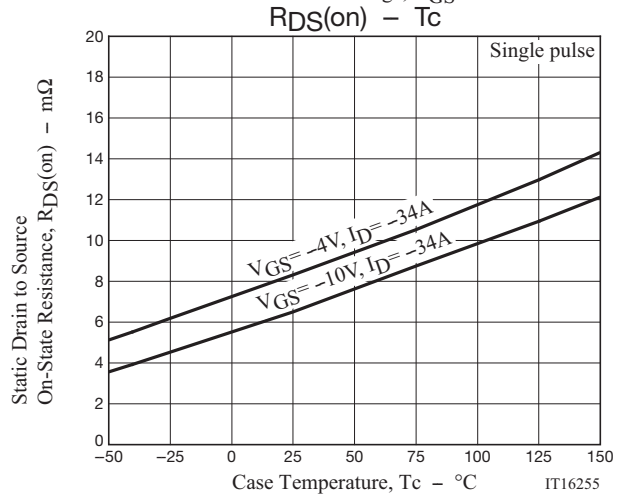
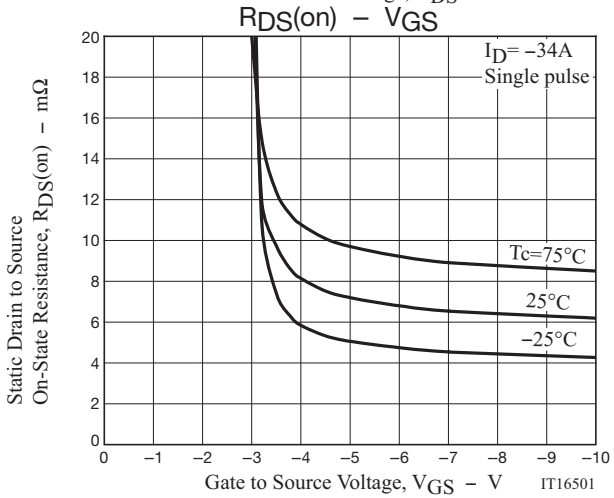
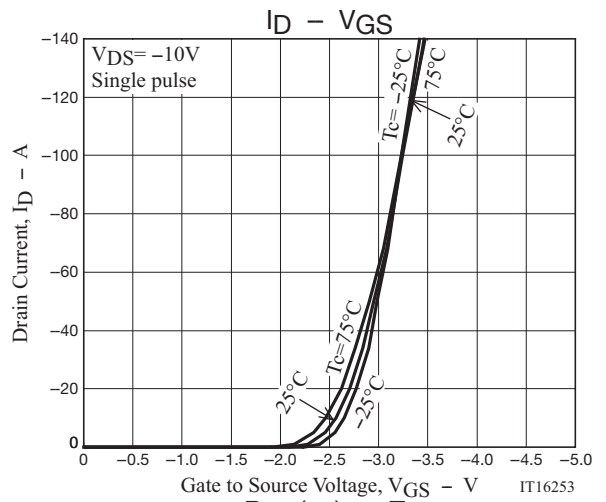
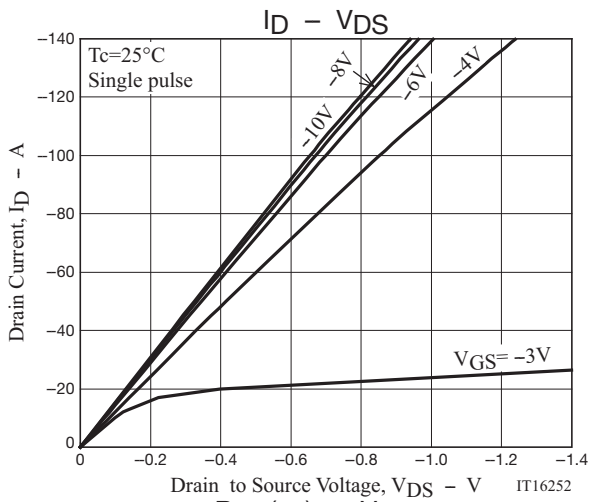
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

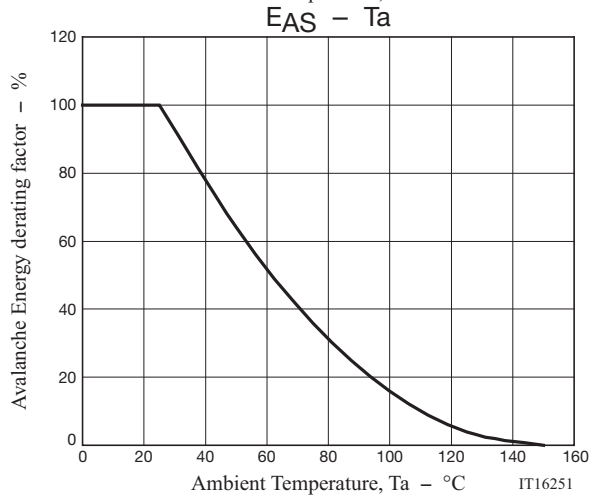
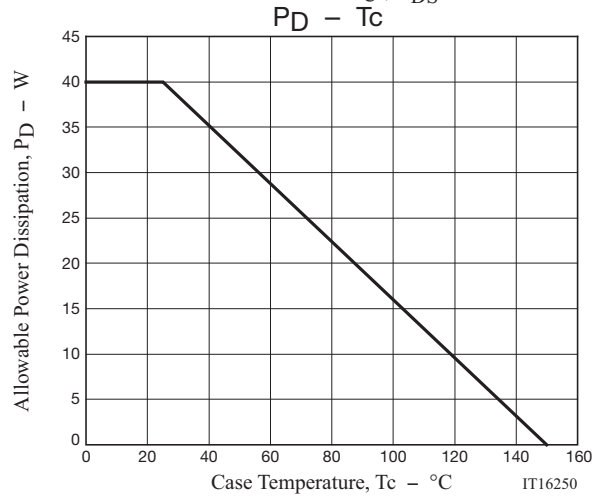
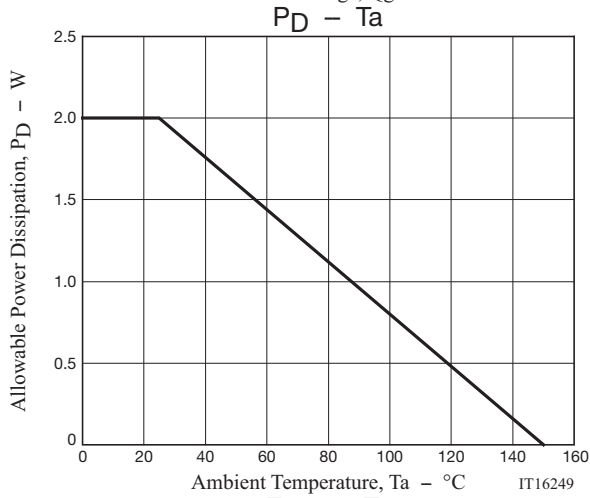
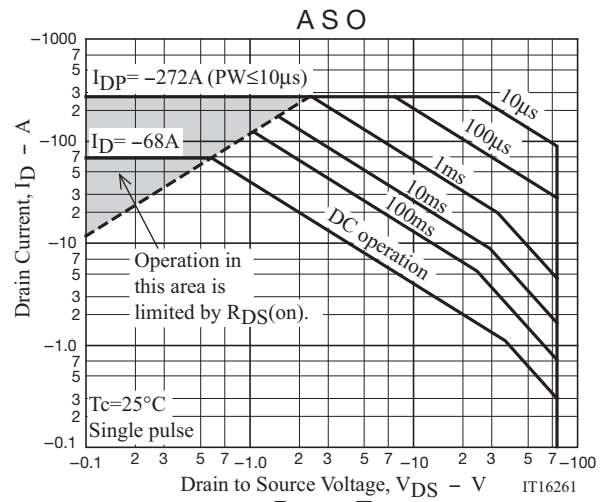
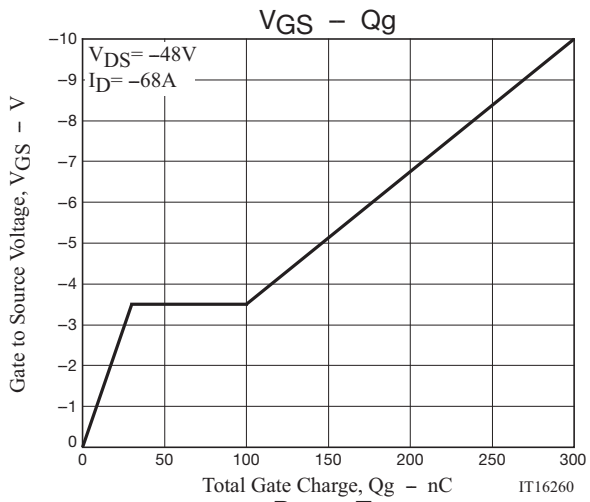
#### Electrical Characteristics at $T_a=25^\circ\text{C}$

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	$\mu\text{A}$
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
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} $	$V_{DS}=-10\text{V}$ , $I_D=-34\text{A}$		120		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D=-34\text{A}$ , $V_{GS}=-10\text{V}$		6.5	8.5	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=-34\text{A}$ , $V_{GS}=-4\text{V}$		8.3	11.4	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=-20\text{V}$ , $f=1\text{MHz}$		13400		pF
Output Capacitance	$C_{oss}$			1000		pF
Reverse Transfer Capacitance	$C_{rss}$			740		pF
Turn-ON Delay Time	$t_{d(on)}$			70		ns
Rise Time	$t_r$	See Fig.2		245		ns
Turn-OFF Delay Time	$t_{d(off)}$			1400		ns
Fall Time	$t_f$			650		ns
Total Gate Charge	$Q_g$	$V_{DS}=-48\text{V}$ , $V_{GS}=-10\text{V}$ , $I_D=-68\text{A}$		300		nC
Gate to Source Charge	$Q_{gs}$			30		nC
Gate to Drain "Miller" Charge	$Q_{gd}$			70		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-68\text{A}$ , $V_{GS}=0\text{V}$		-0.9	-1.5	V
Reverse Recovery Time	$t_{rr}$	See Fig.3		146		ns
Reverse Recovery Charge	$Q_{rr}$	$I_S=-68\text{A}$ , $V_{GS}=0\text{V}$ , $di/dt=-100\text{A}/\mu\text{s}$		470		nC

### ORDERING INFORMATION

See detailed ordering and shipping information on page 4 of this data sheet.





# BMS3004

## Package Dimensions

BMS3004-1E

TO-220F-3SG

CASE

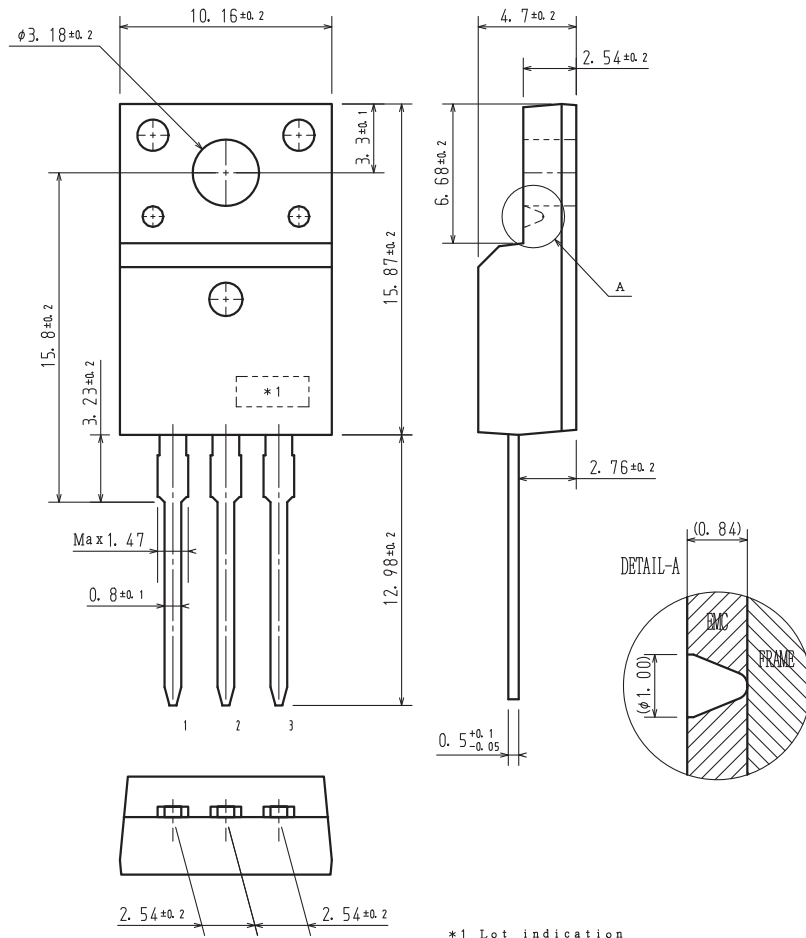
ISSUE 0

Unit : mm

1: Gate

2: Drain

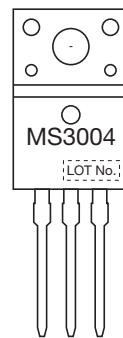
3: Source



## Ordering & Package Information

Device	Package	Shipping	memo
BMS3004-1E	TO-220F-3SG SC-67	50 pcs./tube	Pb-Free

## Marking



## Electrical Connection

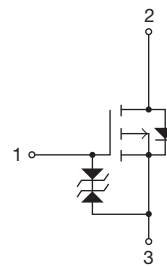


Fig.1 Unclamped Inductive Switching Test Circuit

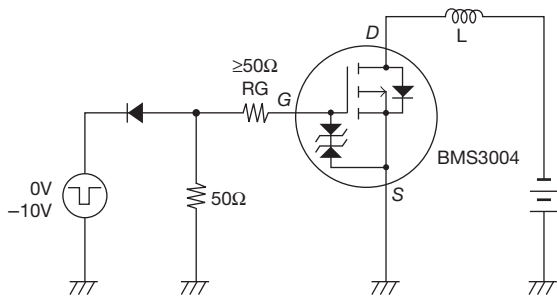


Fig.2 Switching Time Test Circuit

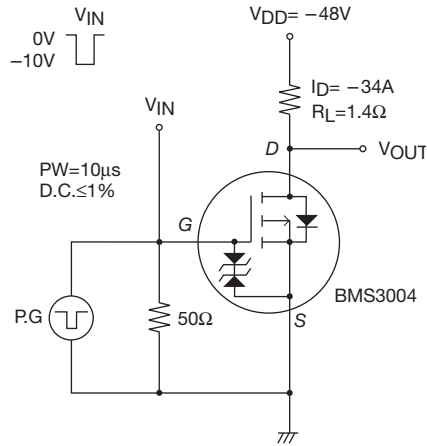
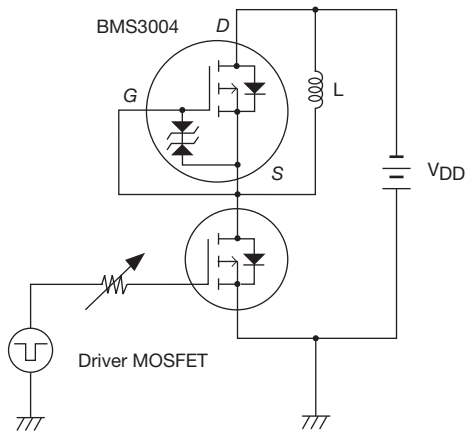


Fig.3 Reverse Recovery Time Test Circuit



Note on usage : Since the BMS3004 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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