



BMS3004 — P-Channel Silicon MOSFET

General-Purpose Switching Device

Applications

Features

- ON-resistance $R_{DS(on)1}=6.5m\Omega$ (typ.)
- Input capacitance $C_{iss}=13400pF$ (typ.)
- 4V drive

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		-75	V
Gate-to-Source Voltage	V_{GSS}		± 20	V
Drain Current (DC)	I_D		-68	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu s, \text{duty cycle} \leq 1\%$	-272	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}		380	mJ
Avalanche Current *2	I_{AV}		-54	A

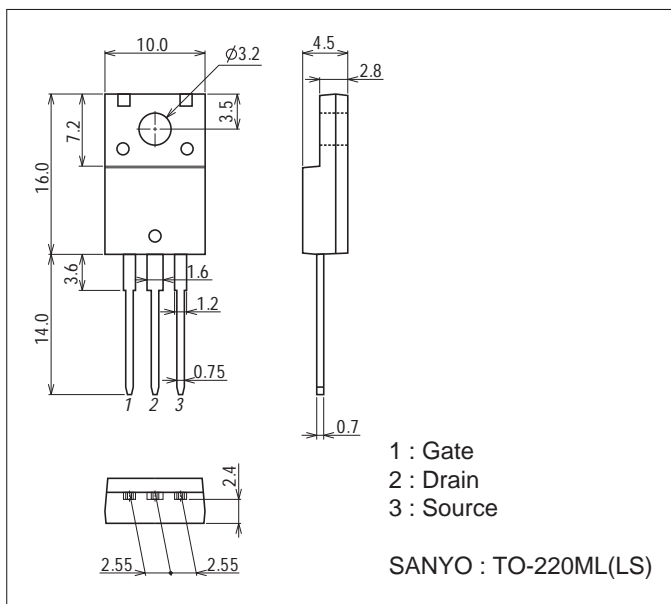
Note : *1 $V_{DD}=-48V, L=100\mu H, I_{AV}=-54A$ (Fig.1)

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

Package Dimensions

unit : mm (typ)

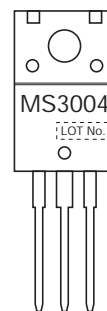
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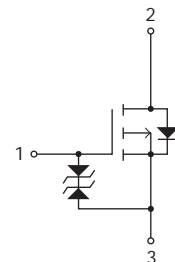
Product & Package Information

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

Marking



Electrical Connection



BMS3004

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	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} $	$V_{DS}=-10\text{V}, I_D=-34\text{A}$		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

Fig.1 Avalanche Resistance Test Circuit

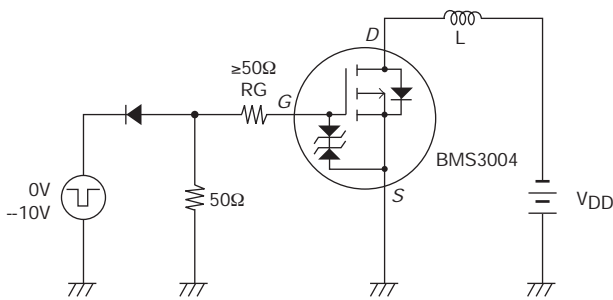


Fig.2 Switching Time Test Circuit

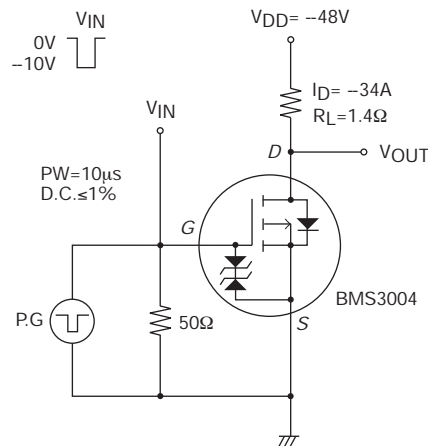
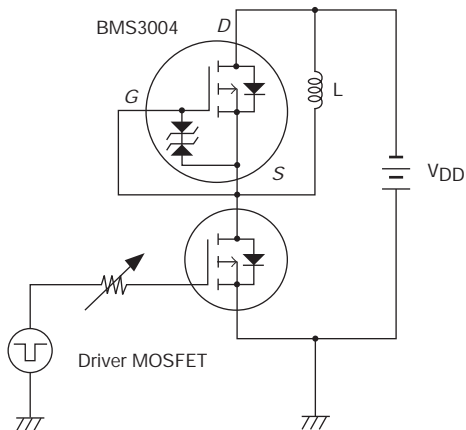
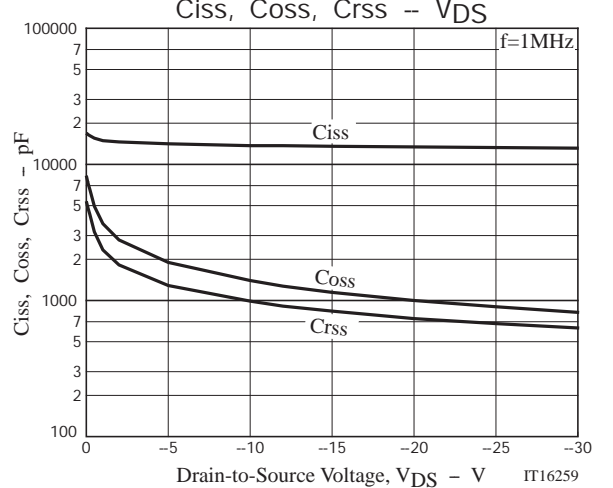
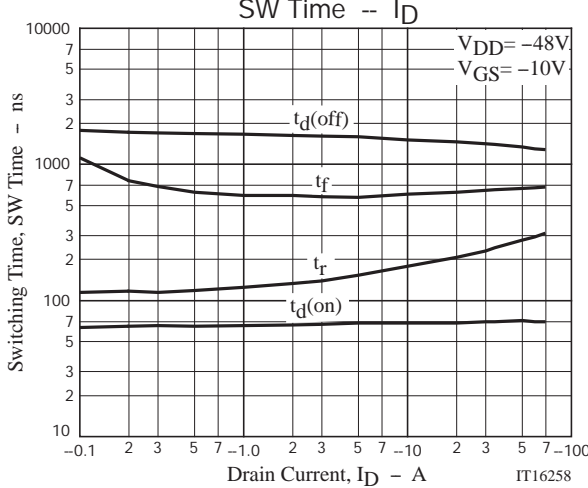
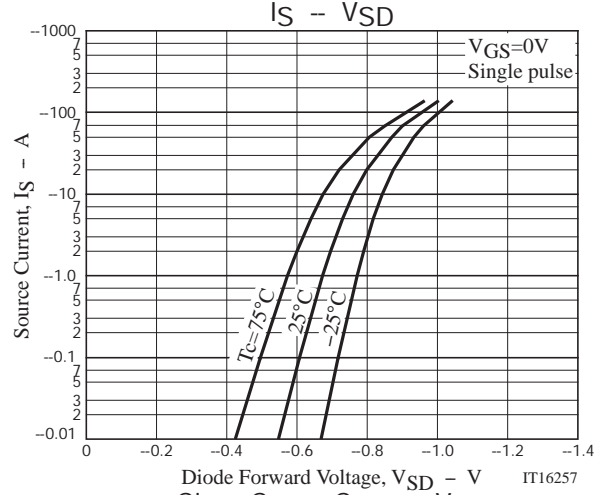
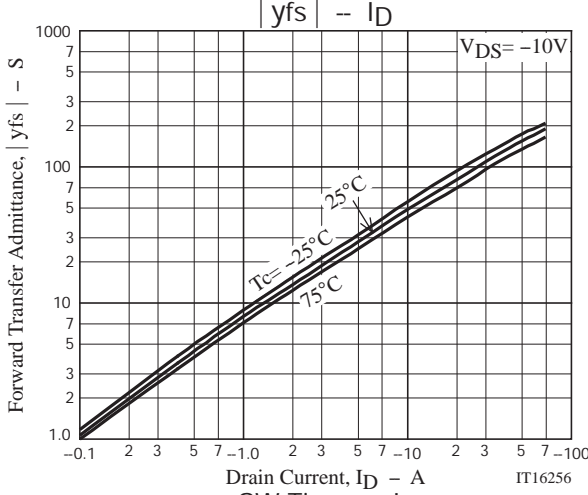
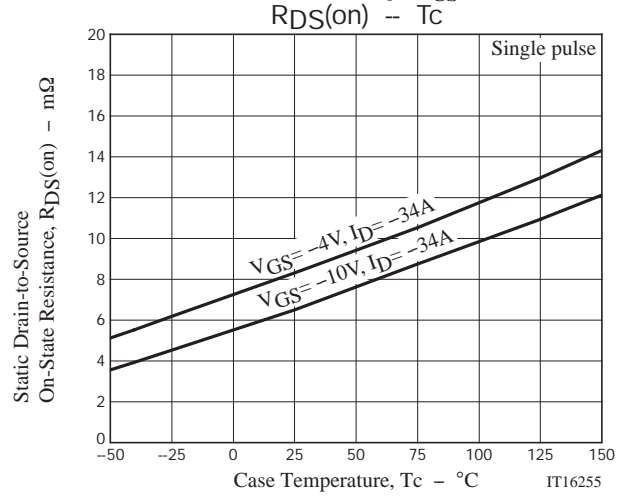
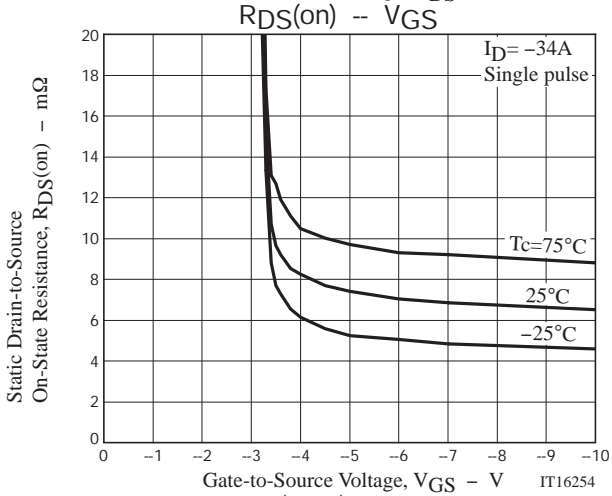
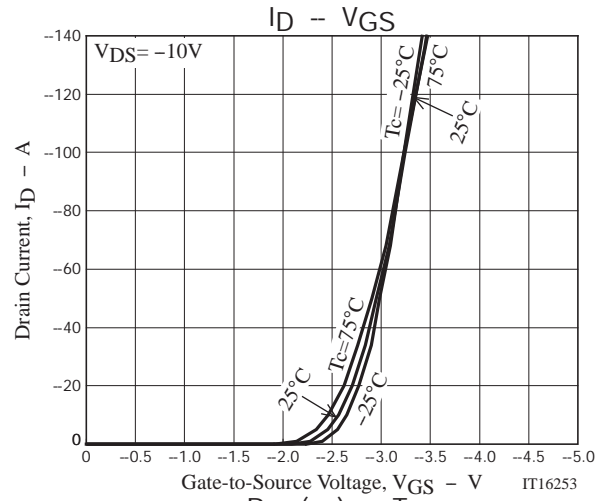
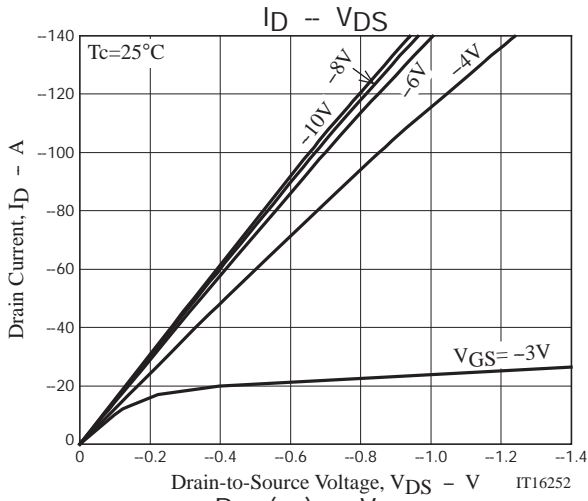
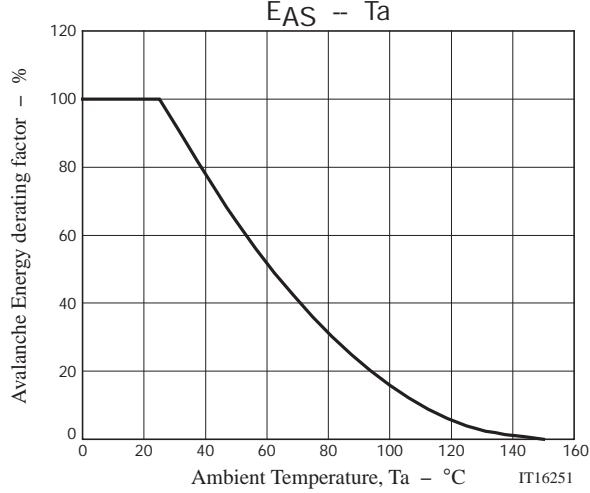
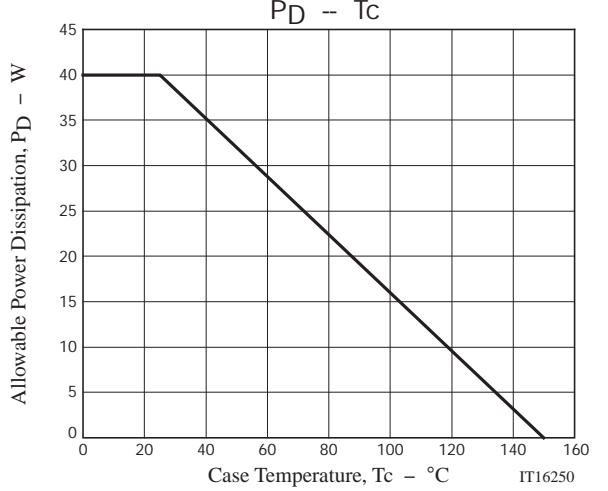
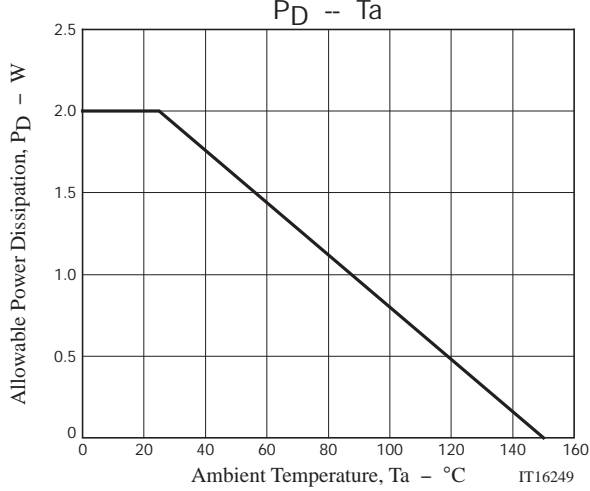
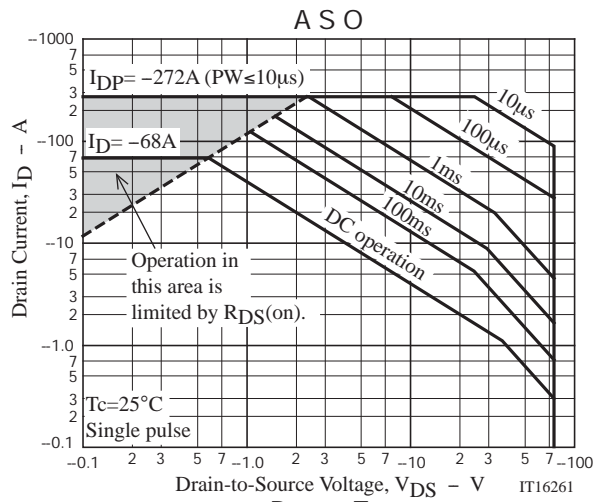
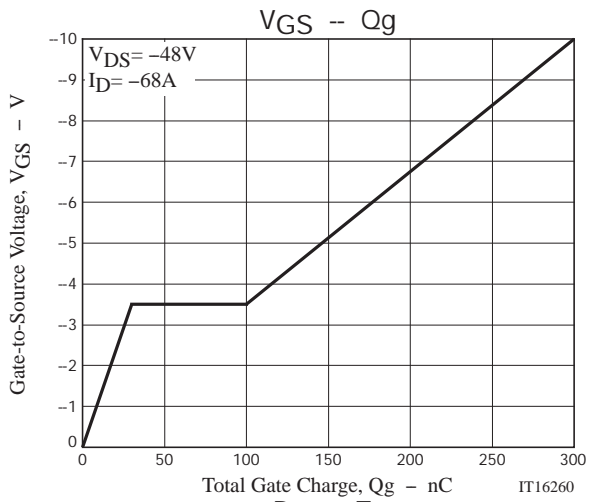


Fig.3 Reverse Recovery Time Test Circuit







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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