



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## BFL4001 — N-Channel Silicon MOSFET General-Purpose Switching Device Applications

### Features

- Low ON-resistance
- High-speed switching
- Avalanche resistance guarantee
- 10V drive

### Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		900	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±30	V
Drain Current (DC)	I <sub>DC</sub> *1	Limited only by maximum temperature Tch=150°C	6.5	A
	I <sub>Dpack</sub> *2	Tc=25°C (SANYO's ideal heat dissipation condition)*3	4.1	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	13	A
Allowable Power Dissipation	PD		2.0	W
		Tc=25°C (SANYO's ideal heat dissipation condition)*3	37	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C
Avalanche Energy (Single Pulse) *4	E <sub>AS</sub>		223	mJ
Avalanche Current *5	I <sub>AV</sub>		6.5	A

Note : \*1 Shows chip capability

\*2 Package limited

\*3 SANYO's condition is radiation from backside.

The method is applying silicone grease to the backside of the device and attaching the device to water-cooled radiator made of aluminium.

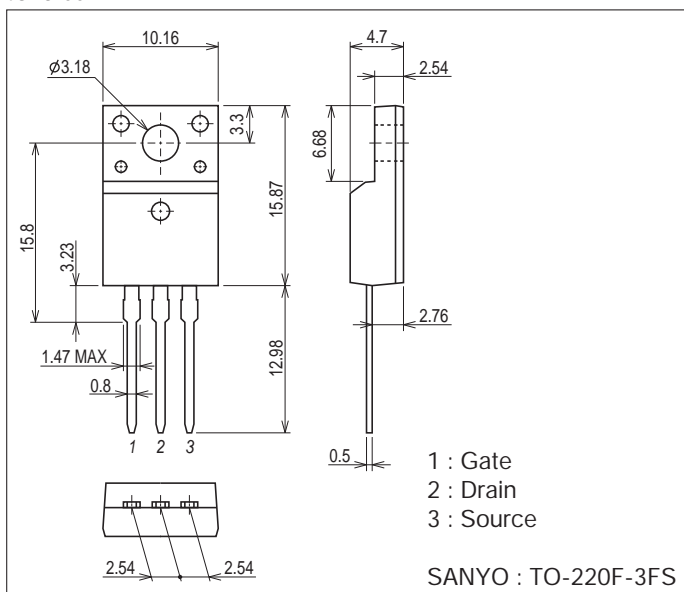
\*4 V<sub>DD</sub>=50V, L=10mH, I<sub>AV</sub>=6.5A

\*5 L≤10mH, single pulse

### Package Dimensions

unit : mm (typ)

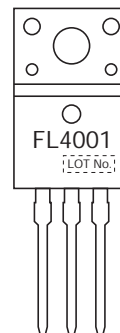
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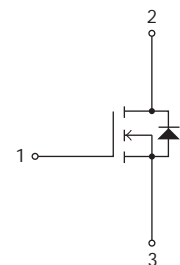
### Product & Package Information

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

### Marking



### Electrical Connection



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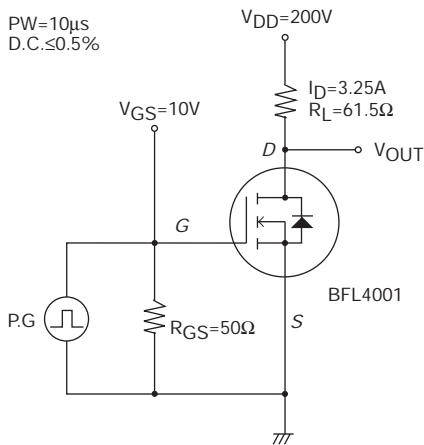
<http://semicon.sanyo.com/en/network>

# BFL4001

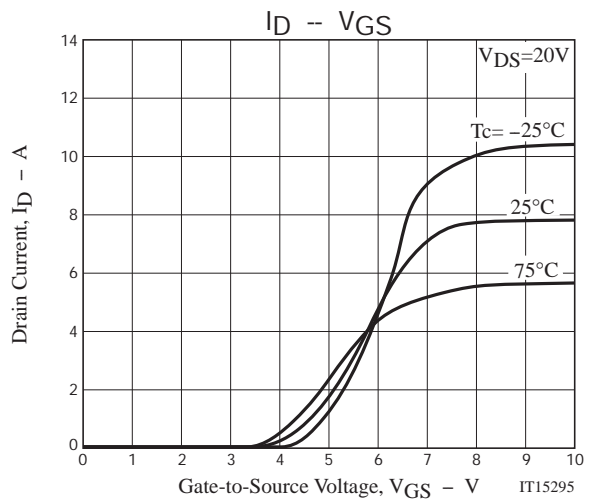
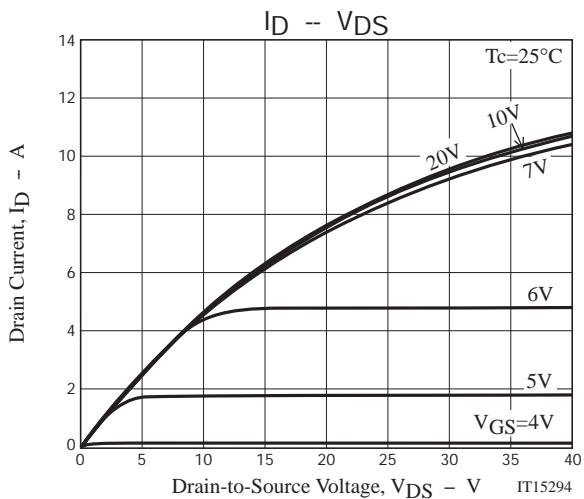
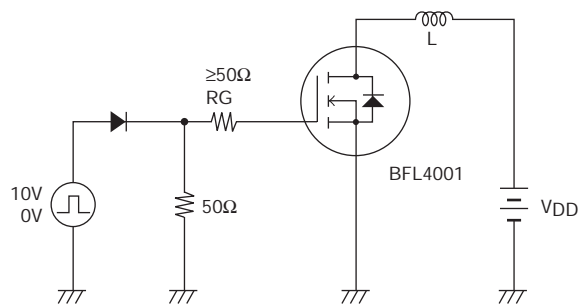
## Electrical Characteristics at $T_a=25^\circ\text{C}$

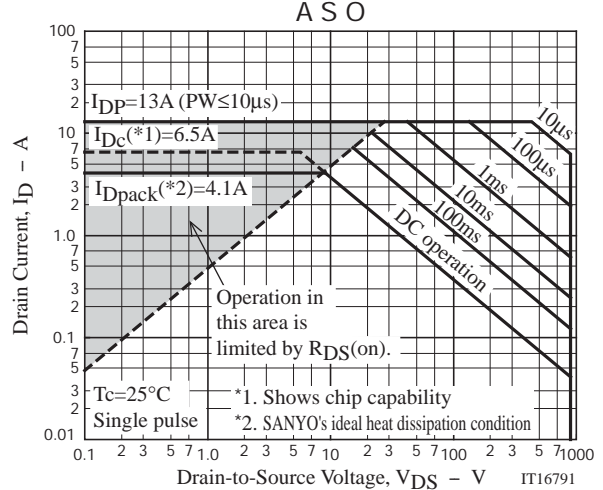
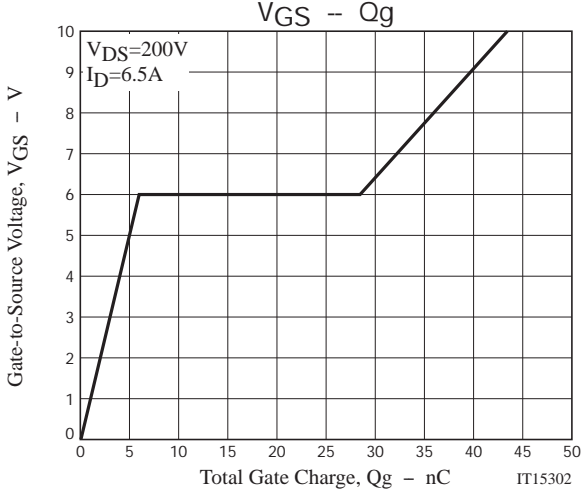
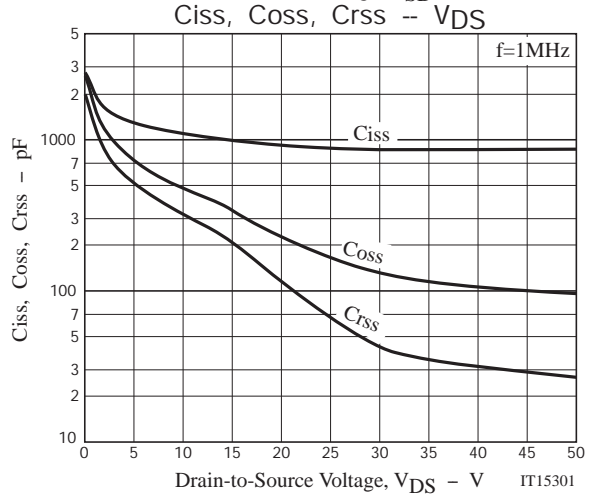
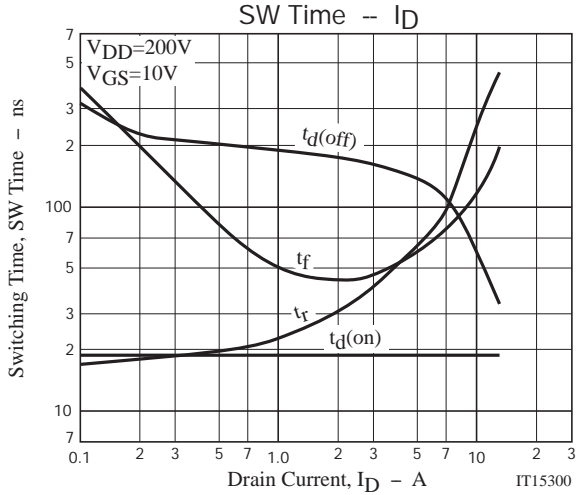
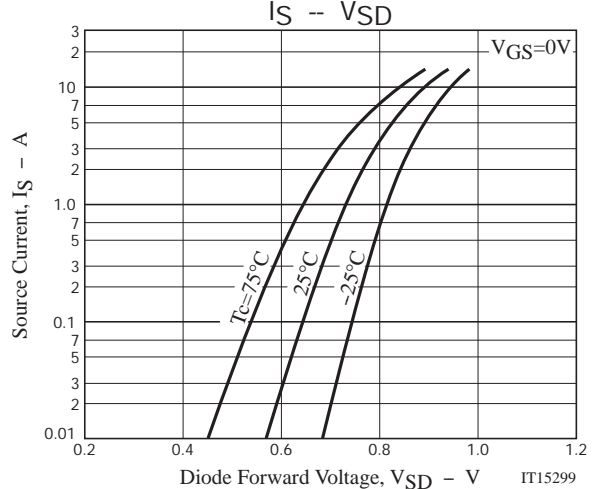
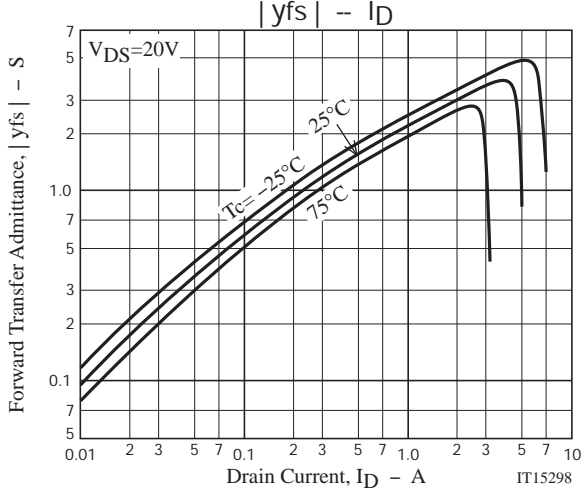
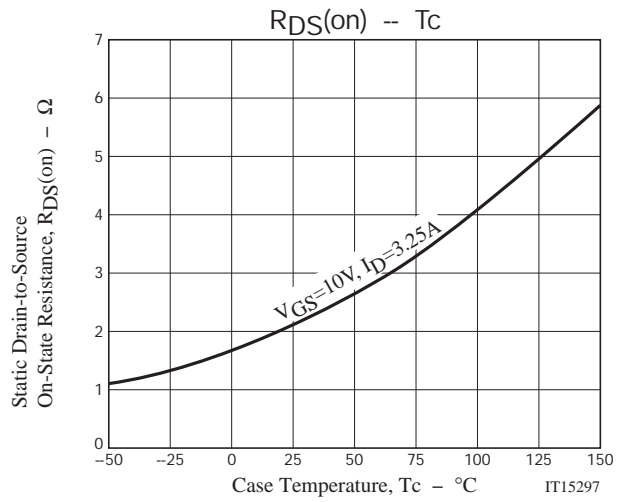
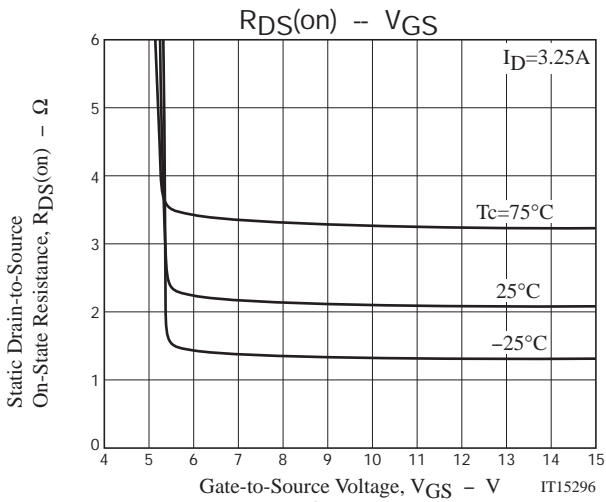
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10\text{mA}, V_{GS}=0\text{V}$	900			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=720\text{V}, V_{GS}=0\text{V}$			1.0	mA
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 30\text{V}, V_{DS}=0\text{V}$			$\pm 100$	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}, I_D=1\text{mA}$	2.0		4.0	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=20\text{V}, I_D=3.25\text{A}$	1.8	3.6		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=3.25\text{A}, V_{GS}=10\text{V}$		2.1	2.7	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=30\text{V}, f=1\text{MHz}$		850		pF
Output Capacitance	$C_{oss}$	$V_{DS}=30\text{V}, f=1\text{MHz}$		130		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=30\text{V}, f=1\text{MHz}$		43		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		19		ns
Rise Time	$t_r$	See specified Test Circuit.		49		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		156		ns
Fall Time	$t_f$	See specified Test Circuit.		52		ns
Total Gate Charge	$Q_g$	$V_{DS}=200\text{V}, V_{GS}=10\text{V}, I_D=6.5\text{A}$		44		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=200\text{V}, V_{GS}=10\text{V}, I_D=6.5\text{A}$		7.0		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=200\text{V}, V_{GS}=10\text{V}, I_D=6.5\text{A}$		22		nC
Diode Forward Voltage	$V_{SD}$	$I_S=6.5\text{A}, V_{GS}=0\text{V}$		0.85	1.2	V

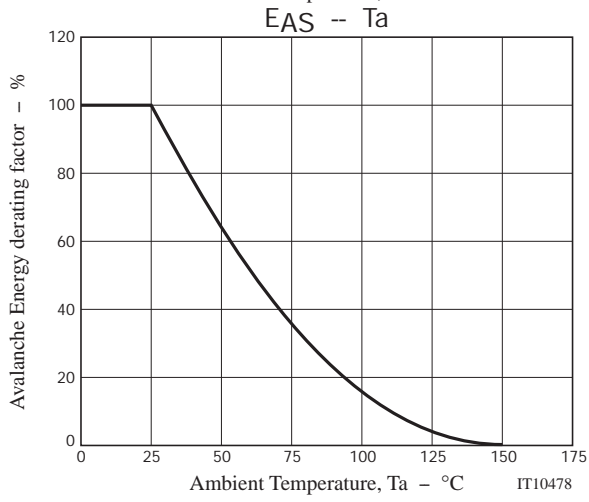
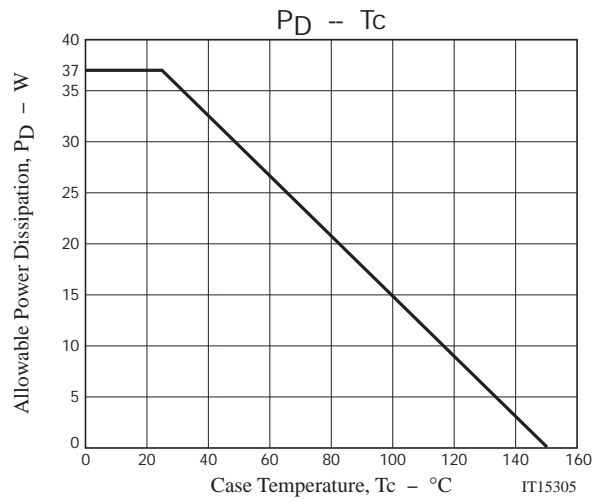
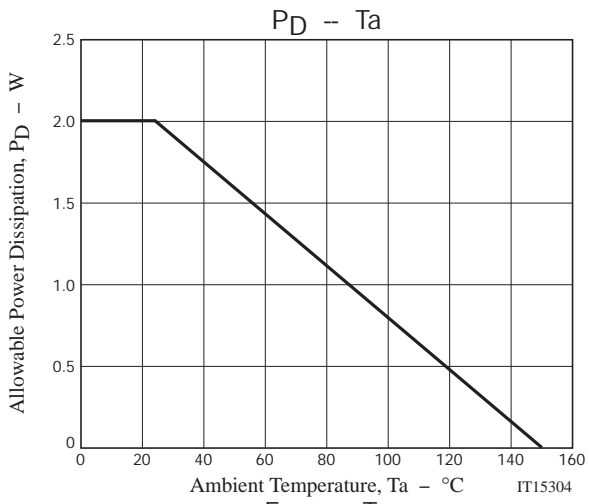
### Switching Time Test Circuit



### Avalanche Resistance Test Circuit







Note on usage : Since the BFL4001 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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