



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

BFL4001 — General-Purpose Switching Device Applications

Features

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

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}		900	V
Gate-to-Source Voltage	V_{GS}		± 30	V
Drain Current (DC)	I_{DC}^{*1}	Limited only by maximum temperature $T_{ch}=150^\circ\text{C}$	6.5	A
	I_{Dpack}^{*2}	$T_c=25^\circ\text{C}$ (SANYO's ideal heat dissipation condition)*3	4.1	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	13	A
Allowable Power Dissipation	P_D		2.0	W
		$T_c=25^\circ\text{C}$ (SANYO's ideal heat dissipation condition)*3	37	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *4	E_{AS}		223	mJ
Avalanche Current *5	I_{AV}		6.5	A

Note : *1 Shows chip capability

*2 Package limited

*3 SANYO's condition is radiation from backside.

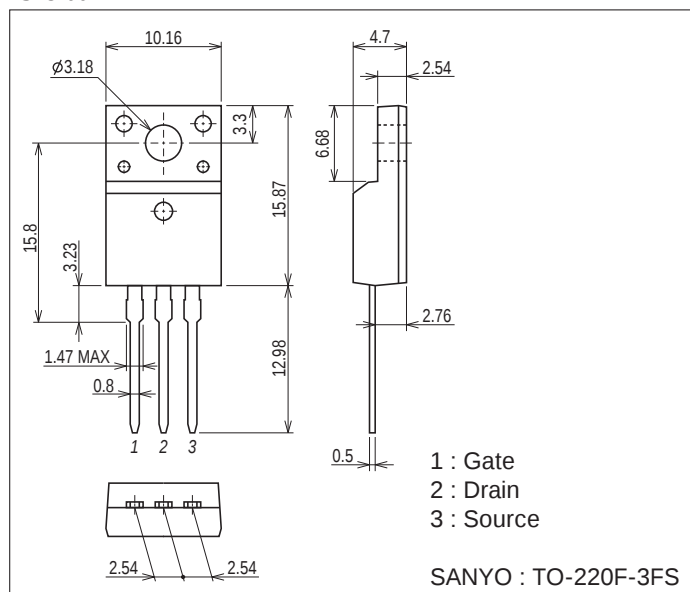
The method is applying silicone grease to the backside of the device and attaching the device to water-cooled radiator made of aluminium.

*4 $V_{DD}=50\text{V}$, $L=10\text{mH}$, $I_{AV}=6.5\text{A}$ *5 $L \leq 10\text{mH}$, single pulse

Package Dimensions

unit : mm (typ)

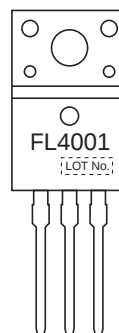
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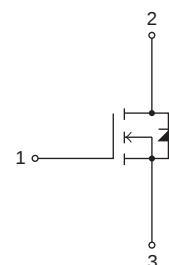
Product & Package Information

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

Marking



Electrical Connection



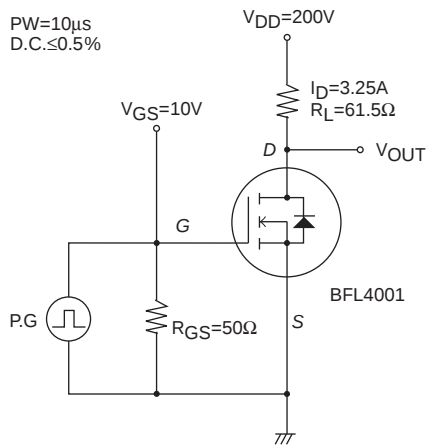
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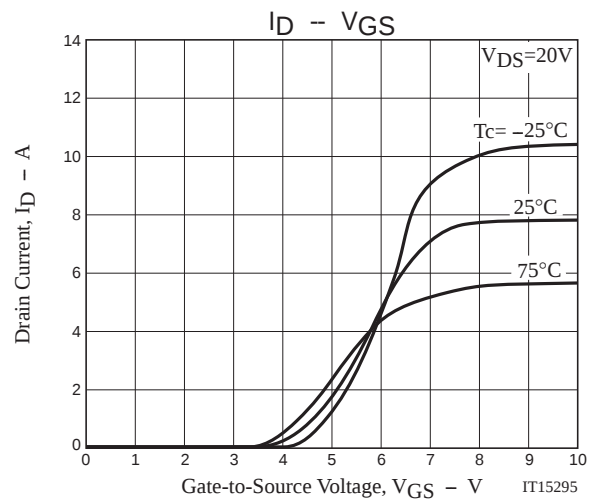
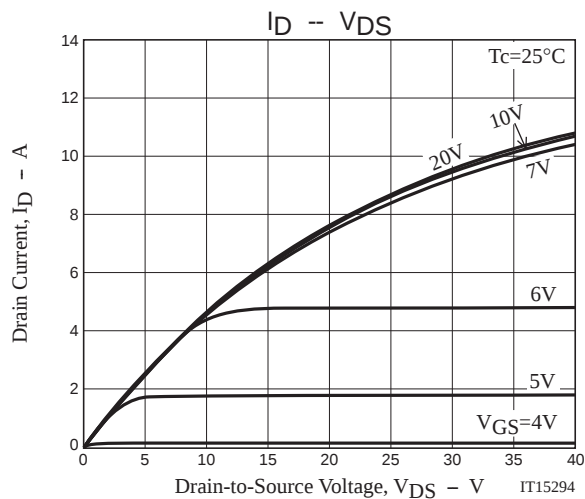
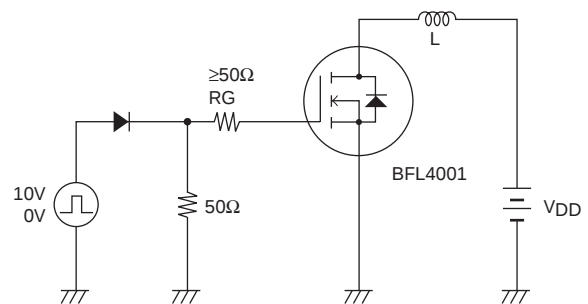
Electrical Characteristics at $T_a=25^\circ\text{C}$

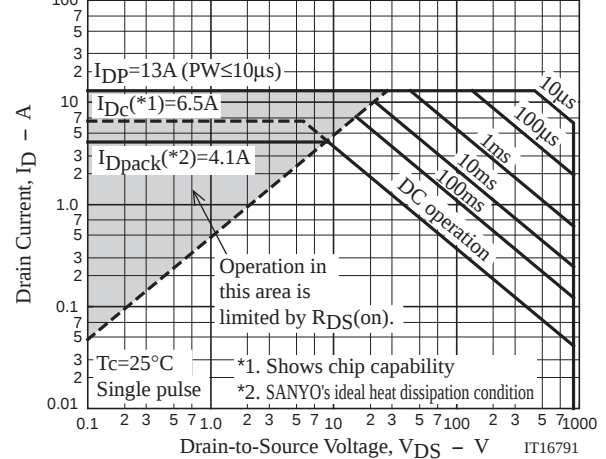
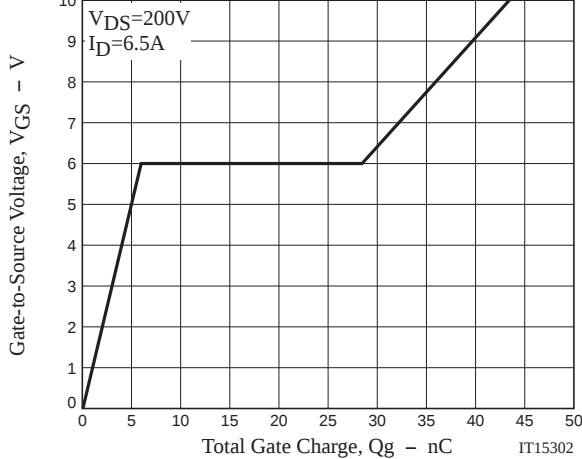
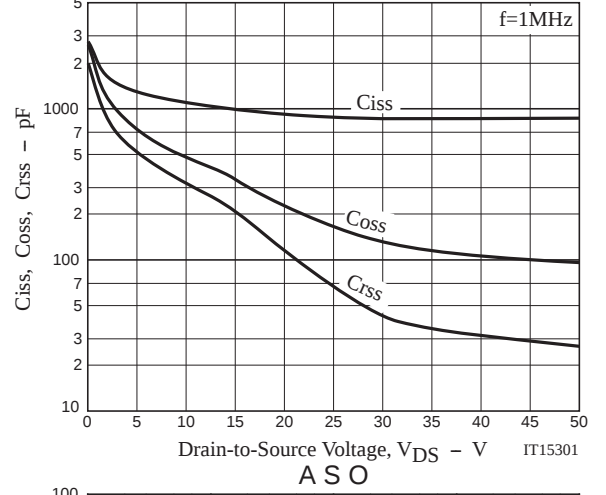
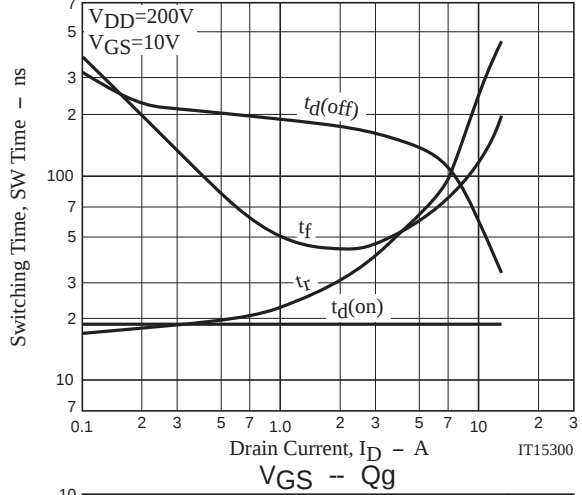
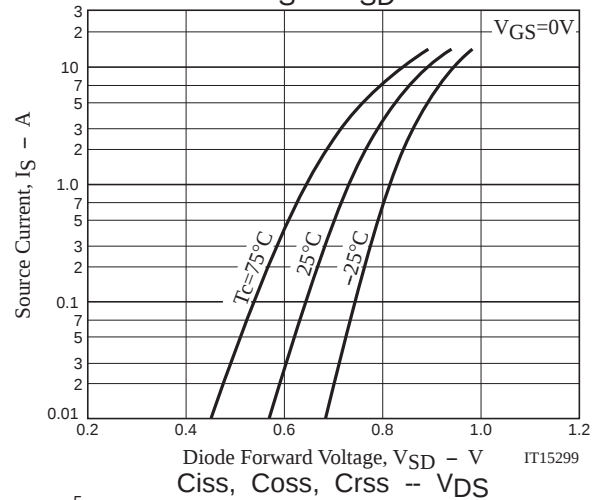
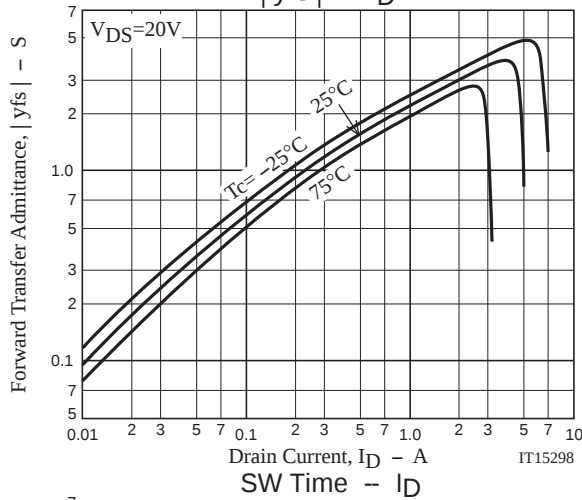
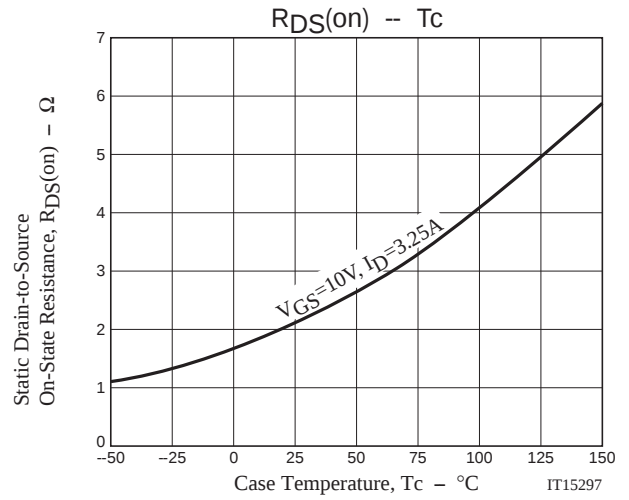
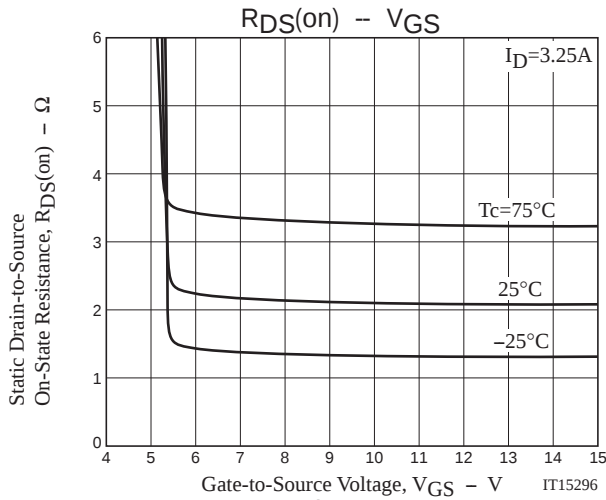
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10\text{mA}$, $V_{GS}=0\text{V}$	900			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=720\text{V}$, $V_{GS}=0\text{V}$			1.0	mA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30\text{V}$, $V_{DS}=0\text{V}$			± 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	Ω
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

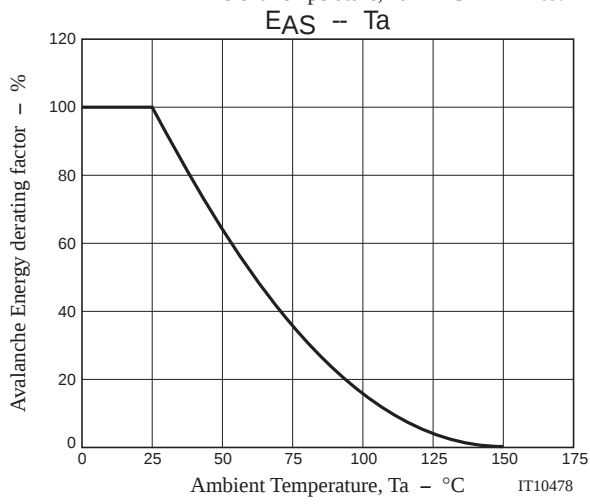
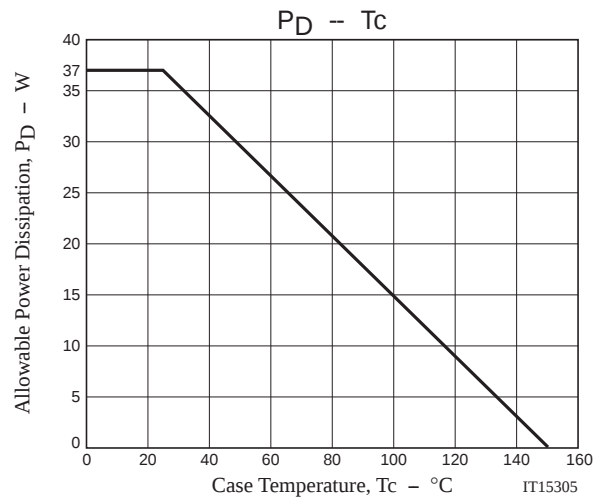
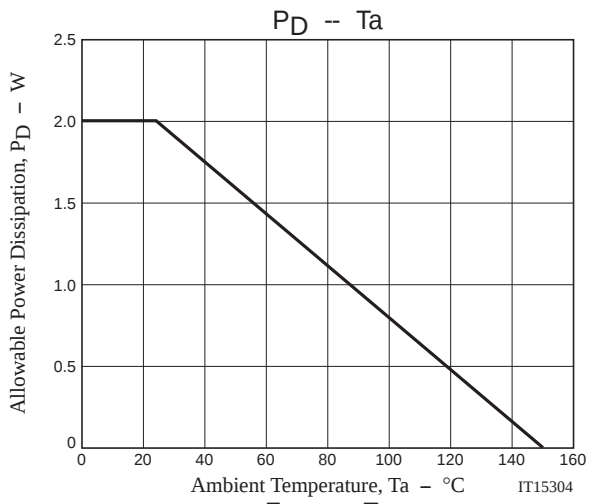
Switching Time Test Circuit



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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