Ordering number : ENA1638A

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

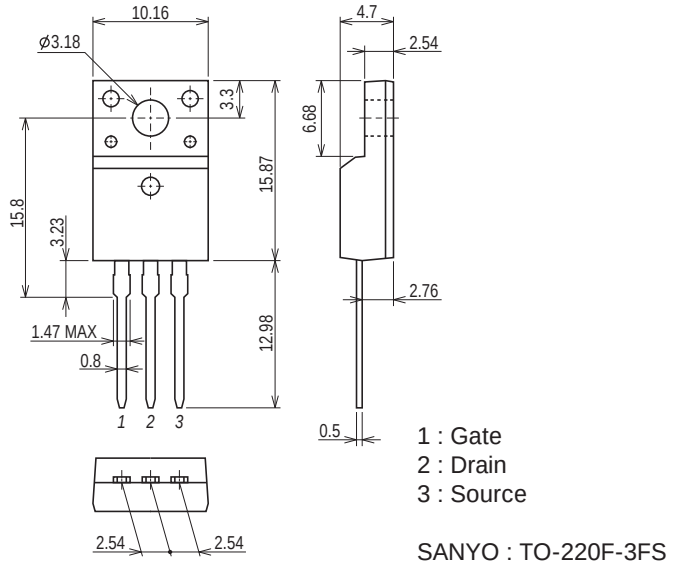
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		900	V
Gate-to-Source Voltage	V_{GSS}		±30	V
Drain Current (DC)	I_{Dc}*1	Limited only by maximum temperature Tch=150°C	6.5	A
	I_{Dpack}*2	Tc=25°C (SANYO's ideal heat dissipation condition)*3	4.1	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	13	A
Allowable Power Dissipation	P_D		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_{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}=50V, L=10mH, I_{AV}=6.5A
*5 L≤10mH, single pulse

Package Dimensions

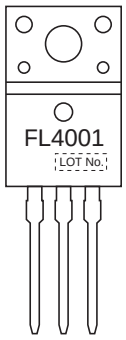
unit : mm (typ)
7528-001



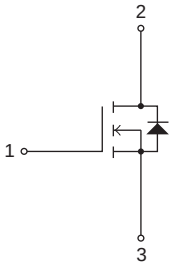
Product & Package Information

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

Marking



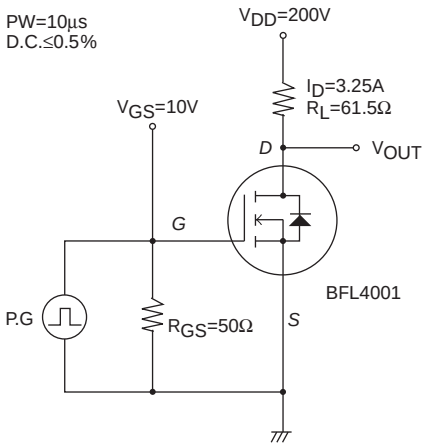
Electrical Connection



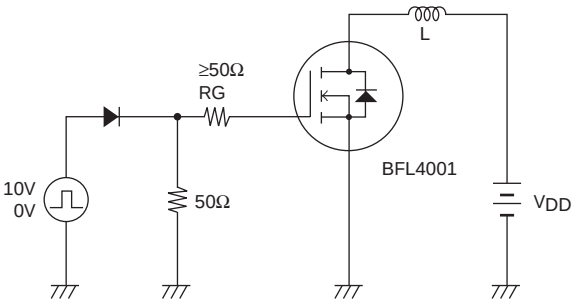
Electrical Characteristics at Ta=25°C

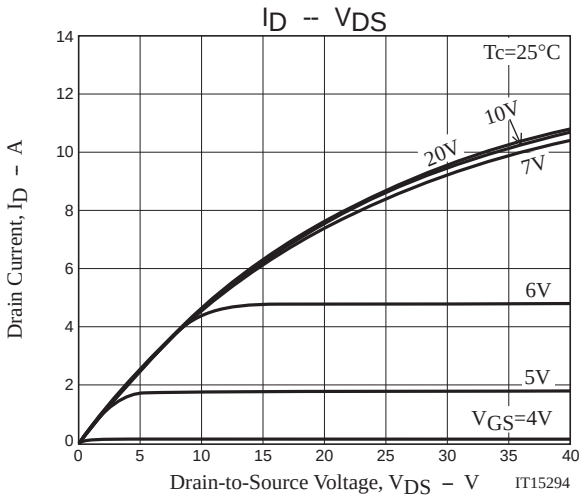
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=10mA, V_{GS}=0V	900			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=720V, V_{GS}=0V			1.0	mA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±30V, V_{DS}=0V			±100	nA
Cutoff Voltage	V_{GS}(off)	V_{DS}=10V, I_D=1mA	2.0		4.0	V
Forward Transfer Admittance	| yfs |	V_{DS}=20V, I_D=3.25A	1.8	3.6		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)	I_D=3.25A, V_{GS}=10V		2.1	2.7	Ω
Input Capacitance	Ciss	V_{DS}=30V, f=1MHz		850		pF
Output Capacitance	Coss	V_{DS}=30V, f=1MHz		130		pF
Reverse Transfer Capacitance	Crss	V_{DS}=30V, f=1MHz		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	Qg	V_{DS}=200V, V_{GS}=10V, I_D=6.5A		44		nC
Gate-to-Source Charge	Qgs	V_{DS}=200V, V_{GS}=10V, I_D=6.5A		7.0		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=200V, V_{GS}=10V, I_D=6.5A		22		nC
Diode Forward Voltage	V_{SD}	I_S=6.5A, V_{GS}=0V		0.85	1.2	V

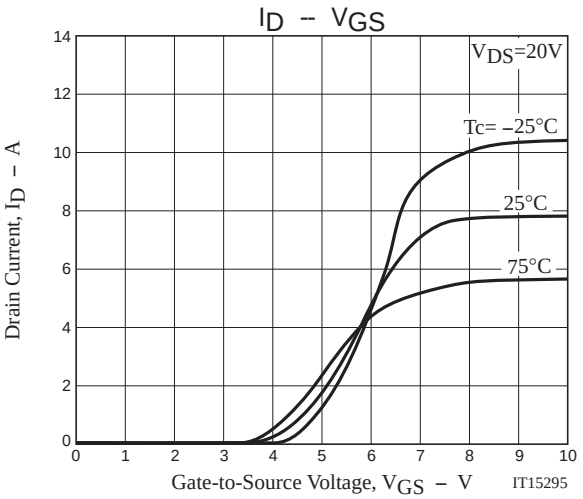
Switching Time Test Circuit



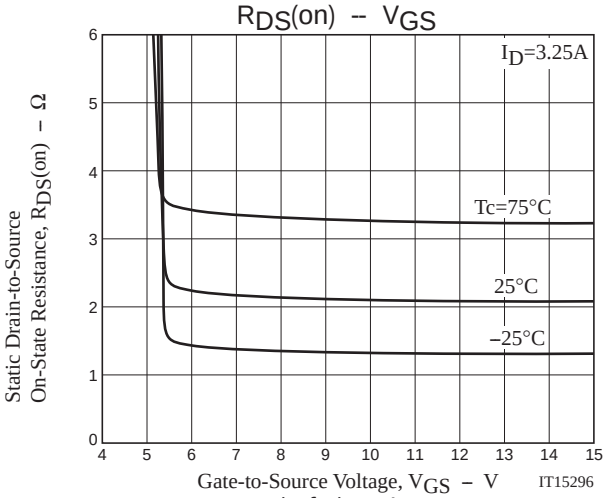
Avalanche Resistance Test Circuit



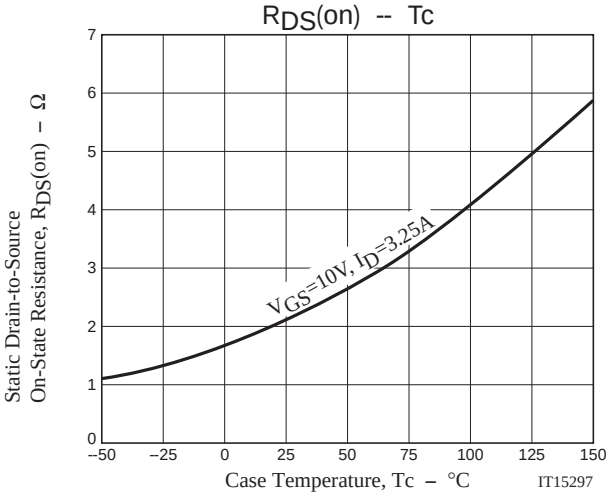




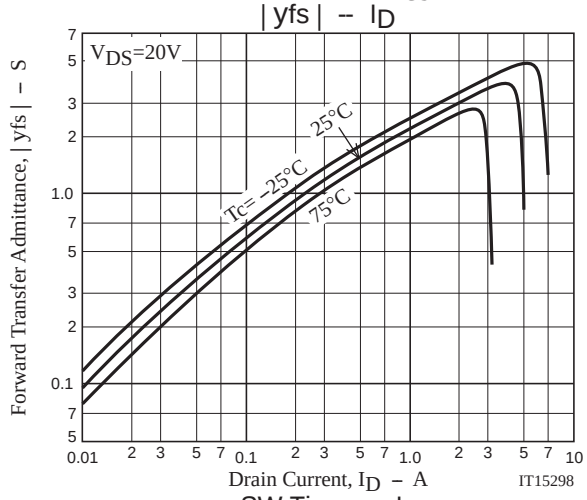
$R_{DS}(on)$ -- V_{GS}



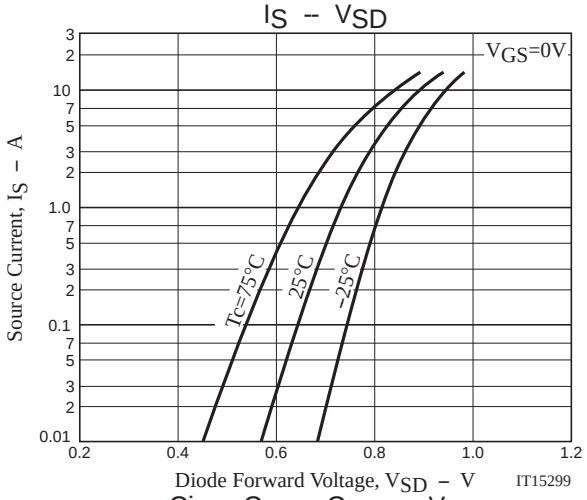
$R_{DS}(on)$ -- Tc



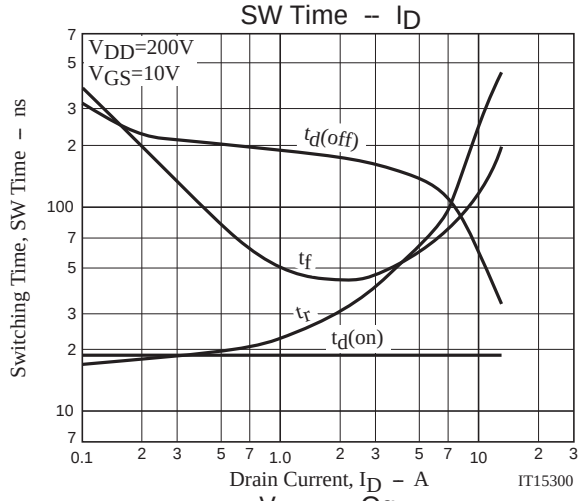
| yfs | -- I_D



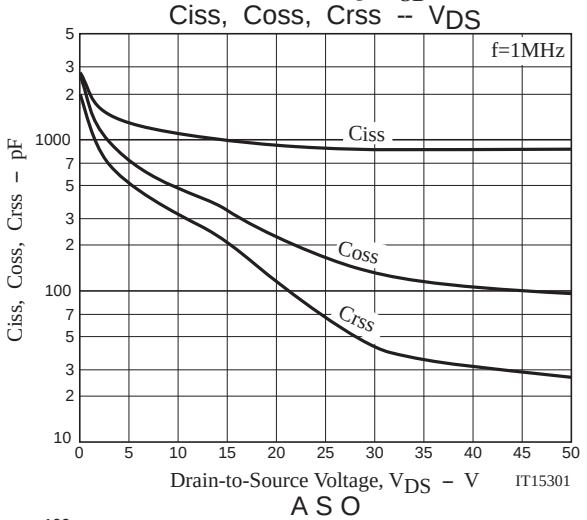
I_S -- V_{SD}



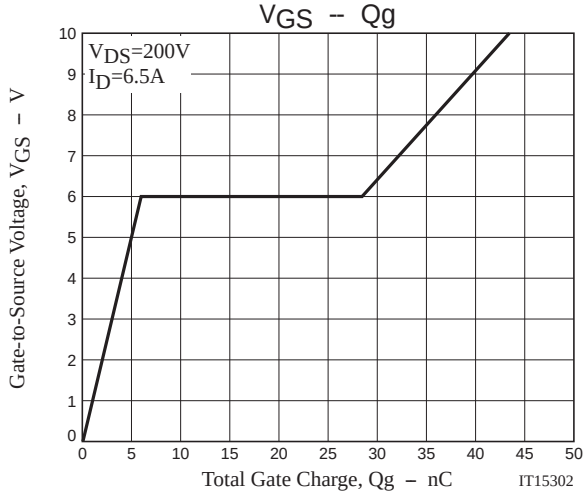
SW Time -- I_D



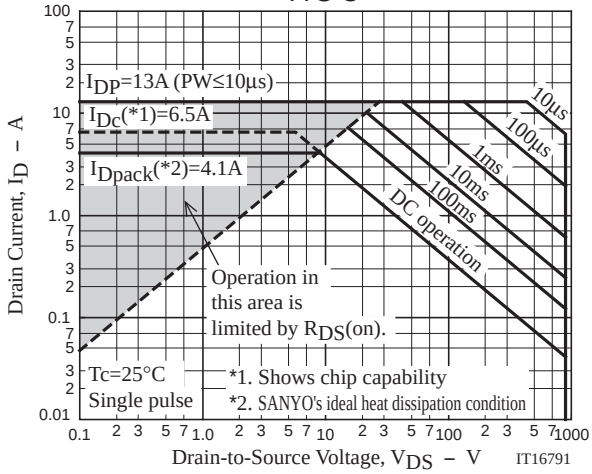
Ciss, Coss, Crss -- V_{DS}

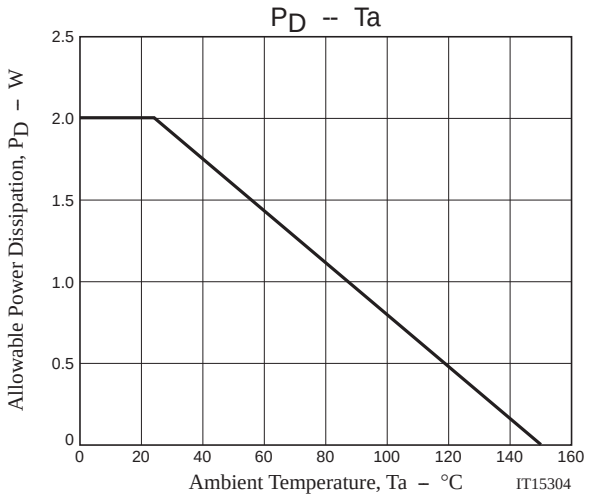


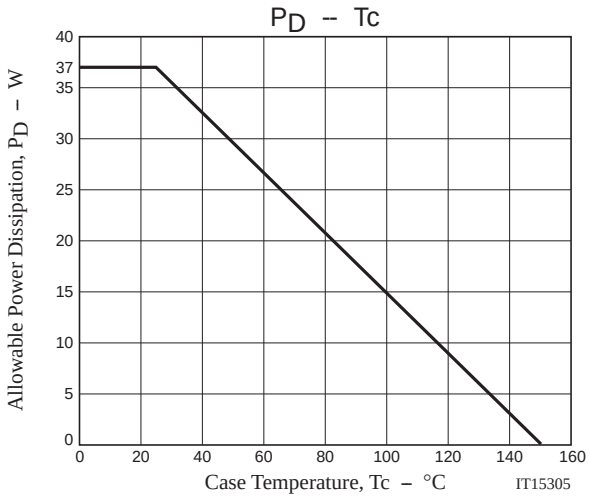
V_{GS} -- Qg

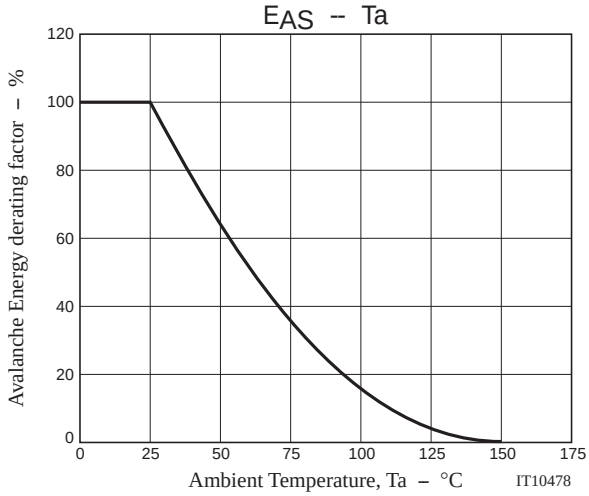


A S O




PD -- Ta
Allowable Power Dissipation, PD – W
2.5
2.0
1.5
1.0
0.5
0
0 20 40 60 80 100 120 140 160
Ambient Temperature, Ta – °C
IT15304


PD -- Tc
Allowable Power Dissipation, PD – W
40
37
35
30
25
20
15
10
5
0
0 20 40 60 80 100 120 140 160
Case Temperature, Tc – °C
IT15305


EAS -- Ta
Avalanche Energy derating factor – %
120
100
80
60
40
20
0
0 25 50 75 100 125 150 175
Ambient Temperature, Ta – °C
IT10478

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

This catalog provides information as of February, 2012. Specifications and information herein are subject to change without notice.