Ordering number : ENA1689

SANYO Semiconductors

DATA SHEET

N-Channel Silicon MOSFET

BFL4007 — General-Purpose Switching Device Applications

Features

- Reverse recovery time t_{rr}=95ns (typ)
- Input capacitance Ciss=1200pF (typ)
- ON-resistance $R_{DS}(on)$=0.52Ω (typ)
- 10V drive

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		600	V
Gate-to-Source Voltage	V_{GSS}		±30	V
Drain Current (DC)	I_{DC}*1	Limited only by maximum temperature Tch=150°C	14	A
	I_{Dpack}*2	Tc=25°C (SANYO's ideal heat dissipation condition)*3	8.7	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	49	A
Source-to-Drain Diode Forward Current (DC)	I_S		14	A
Source-to-Drain Diode Forward Current (Pulse)	I_{SP}	PW≤10μs, duty cycle≤1%	49	A
Allowable Power Dissipation	P_D		2.0	W
		Tc=25°C (SANYO's ideal heat dissipation condition*)3	40	W

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.

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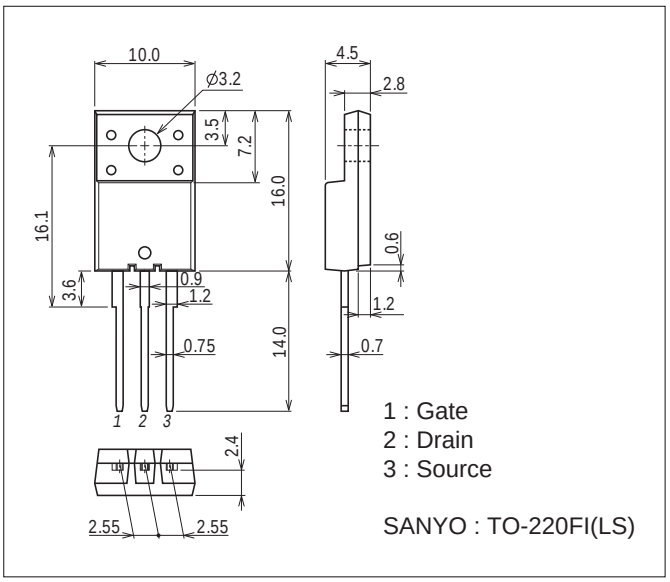
Package Dimensions

unit : mm (typ)

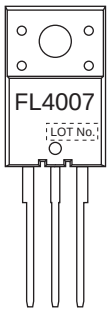
7509-002



Product & Package Information

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

Marking



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Parameter	Symbol	Conditions	Ratings	Unit
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C
Avalanche Energy (Single Pulse) *4	E_{AS}		215	mJ
Avalanche Current *5	I_{AV}		8.5	A

Note :*4 V_{DD}=99V, L=5mH, I_{AV}=8.5A (Fig.1)
*5 L≤5mH, single pulse

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	600			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=480V, V_{GS}=0V			100	μA
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	3		5	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=7A	4.3	8.5		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)	I_D=7A, V_{GS}=10V		0.52	0.68	Ω
Input Capacitance	Ciss	V_{DS}=30V, f=1MHz		1200		pF
Output Capacitance	Coss	V_{DS}=30V, f=1MHz		220		pF
Reverse Transfer Capacitance	Crss	V_{DS}=30V, f=1MHz		43		pF
Turn-ON Delay Time	t_d(on)	See Fig.2		27		ns
Rise Time	t_r	See Fig.2		72		ns
Turn-OFF Delay Time	t_d(off)	See Fig.2		122		ns
Fall Time	t_f	See Fig.2		48		ns
Total Gate Charge	Qg	V_{DS}=200V, V_{GS}=10V, I_D=14A		46		nC
Gate-to-Source Charge	Qgs	V_{DS}=200V, V_{GS}=10V, I_D=14A		8.6		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=200V, V_{GS}=10V, I_D=14A		26.4		nC
Diode Forward Voltage	V_{SD}	I_S=14A, V_{GS}=0V		1.1	1.5	V
Reverse Recovery Time	t_{rr}	See Fig.3		95		ns
Reverse Recovery Charge	Q_{rr}	I_S=14A, V_{GS}=0V, di/dt=100A/μs		250		nC

Fig.1 Avalanche Resistance Test Circuit

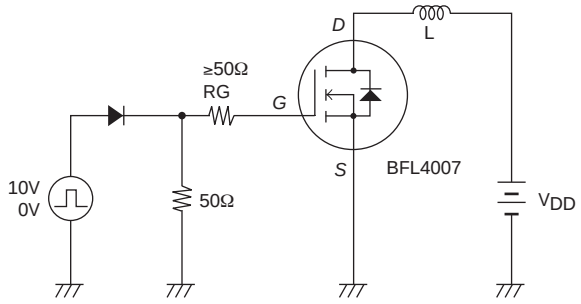


Fig.2 Switching Time Test Circuit

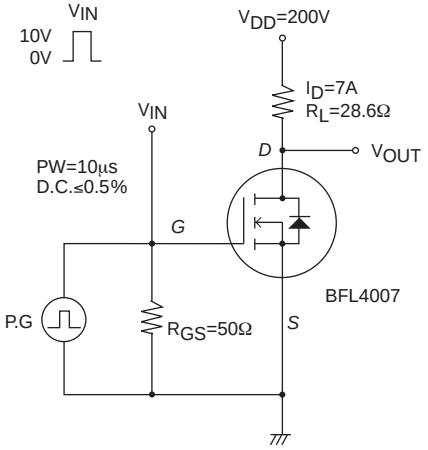
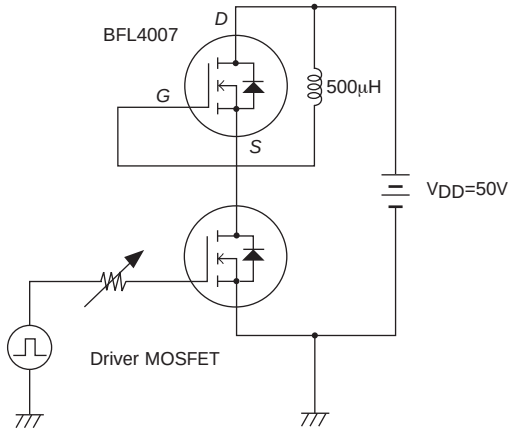
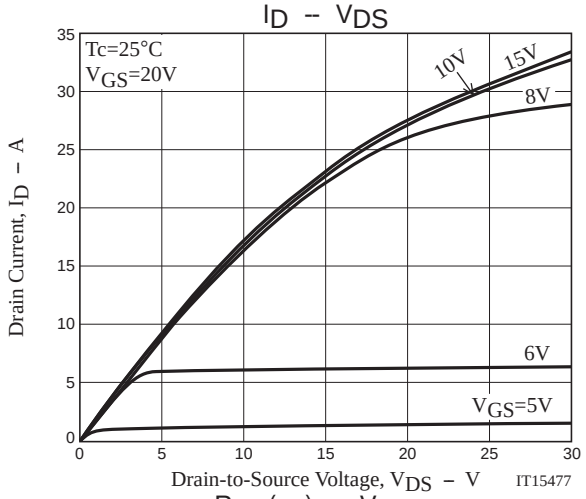
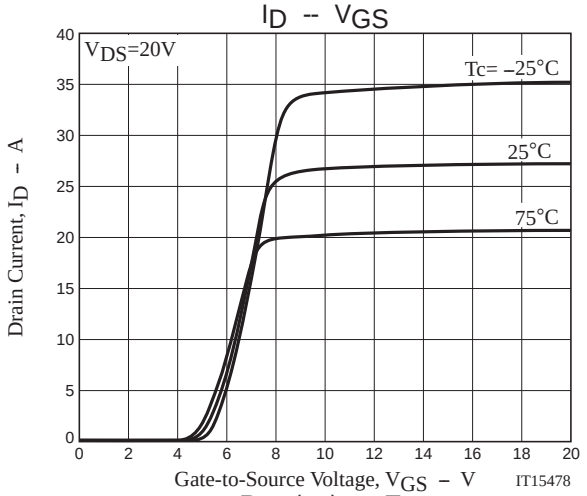
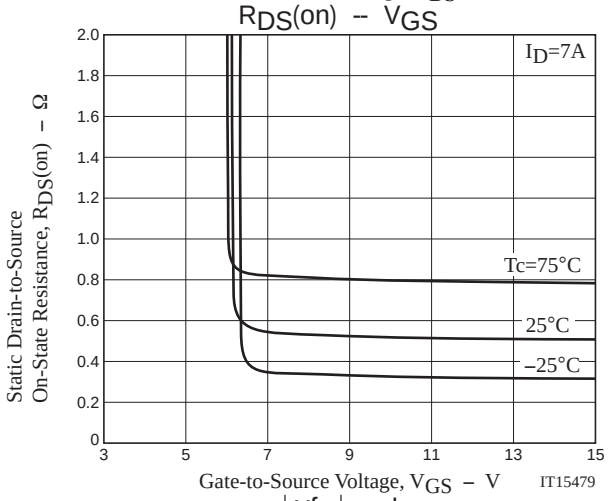


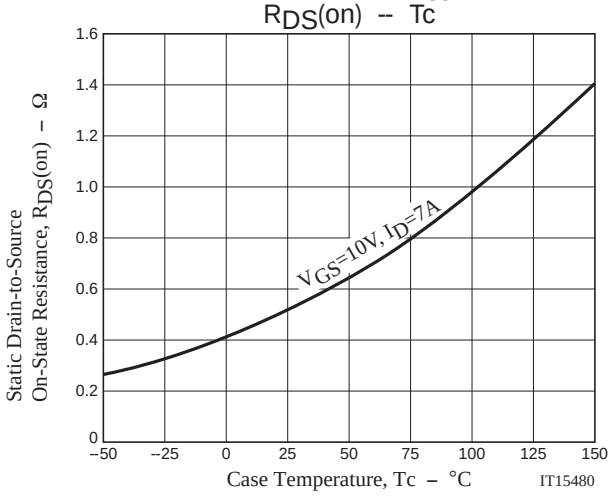
Fig.3 t_{rr} Reverse Recovery Resistance Test Circuit

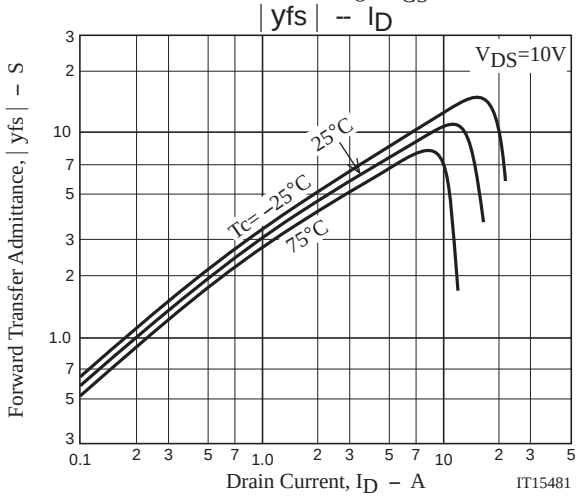


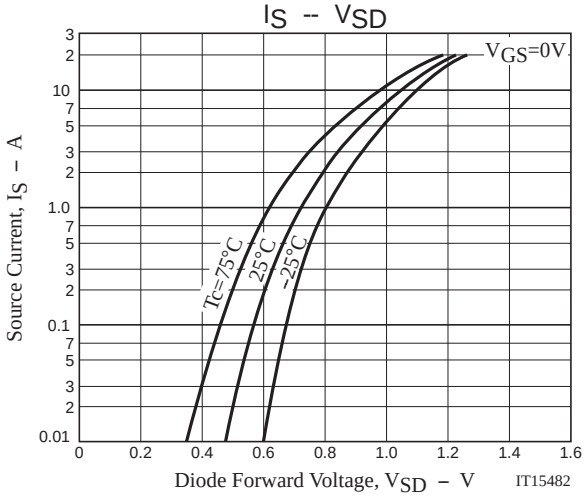




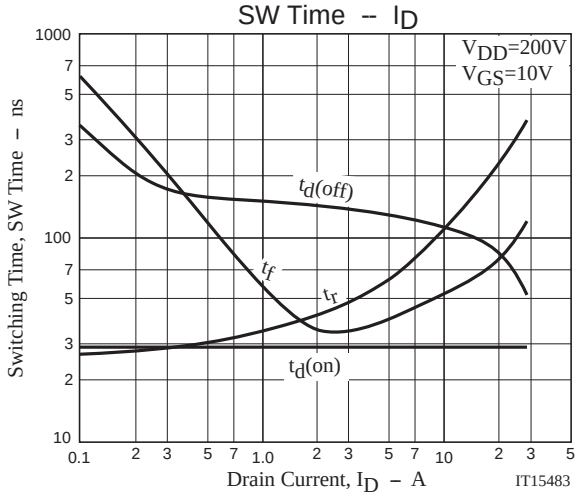




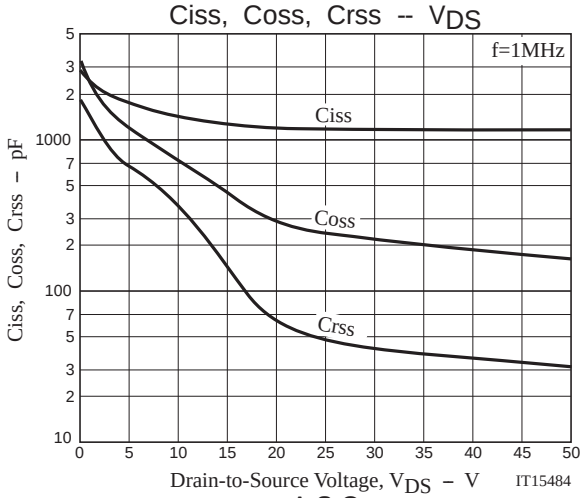




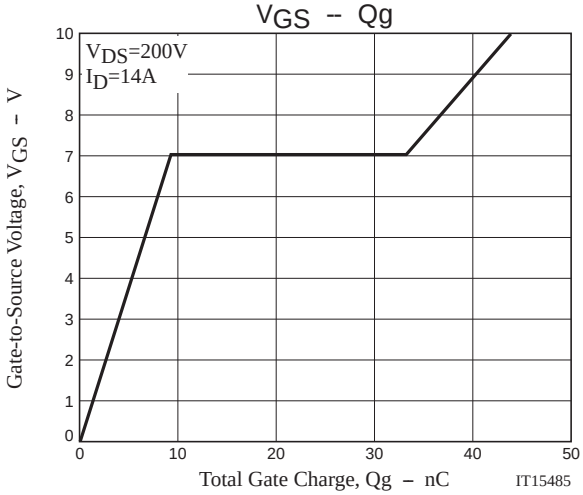
SW Time -- I_D



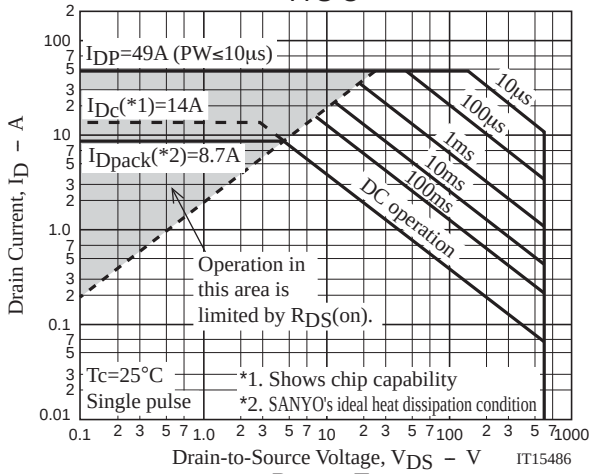
Ciss, Coss, Crss -- V_{DS}



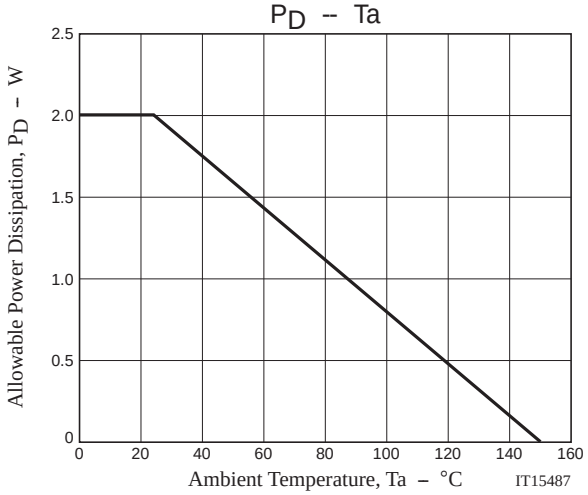
V_{GS} -- Qg



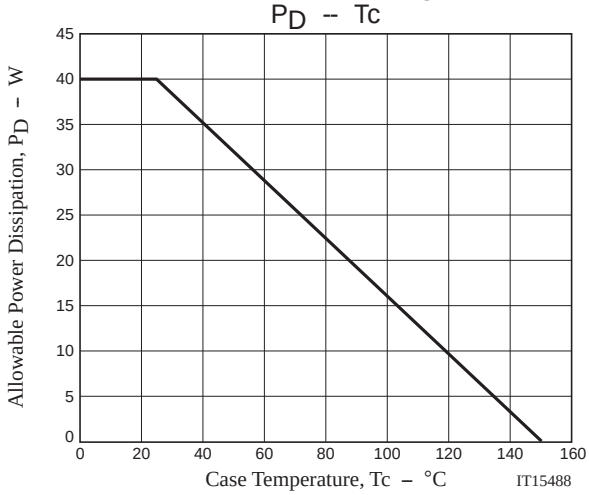
A S O



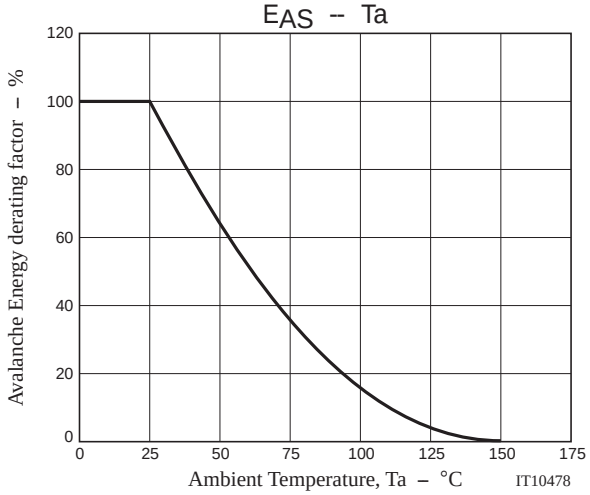
P_D -- Ta



P_D -- Tc



E_{AS} -- Ta



Note on usage : Since the BFL4007 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of June, 2010. Specifications and information herein are subject to change without notice.