



SANYO Semiconductors

## DATA SHEET

# BFL4007 — N-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

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

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DS}$		600	V
Gate-to-Source Voltage	$V_{GS}$		$\pm 30$	V
Drain Current (DC)	$I_{DC}^{*1}$	Limited only by maximum temperature $T_{ch}=150^\circ\text{C}$	14	A
	$I_{Dpack}^{*2}$	$T_c=25^\circ\text{C}$ (SANYO's ideal heat dissipation condition)*3	8.7	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	49	A
Source-to-Drain Diode Forward Current (DC)	$I_S$		14	A
Source-to-Drain Diode Forward Current (Pulse)	$I_{SP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	49	A
Allowable Power Dissipation	$P_D$		2.0	W
		$T_c=25^\circ\text{C}$ (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.

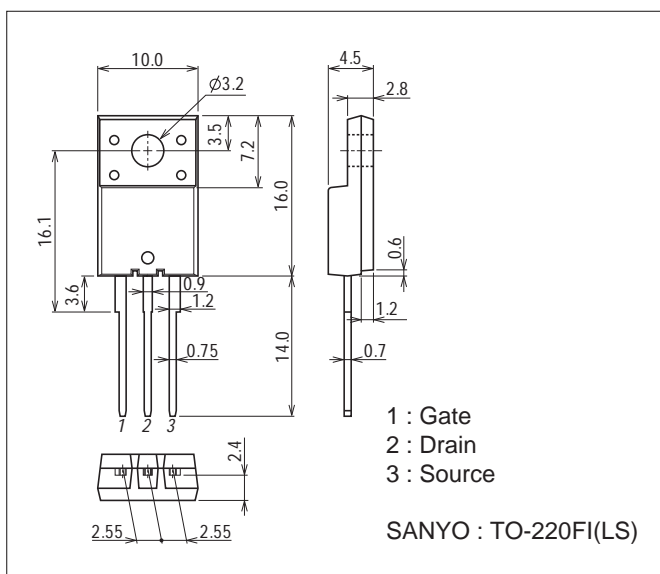
The method is applying silicone grease to the backside of the device and attaching the device to water-cooled radiator made of aluminium.

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### Package Dimensions

unit : mm (typ)

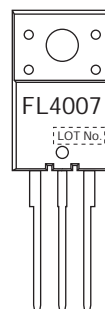
7509-002



### Product & Package Information

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

### Marking



# BFL4007

Continued from preceding page.

Parameter	Symbol	Conditions	Ratings	Unit
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C
Avalanche Energy (Single Pulse) *4	EAS		215	mJ
Avalanche Current *5	I <sub>AV</sub>		8.5	A

Note : \*4 V<sub>DD</sub>=99V, L=5mH, I<sub>AV</sub>=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 <sub>D</sub> =10mA, V <sub>GS</sub> =0V	600			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =480V, V <sub>GS</sub> =0V			100	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±30V, V <sub>DS</sub> =0V			±100	nA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	3		5	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =7A	4.3	8.5		S
Static Drain-to-Source On-State Resistance	R <sub>DSON</sub>	I <sub>D</sub> =7A, V <sub>GS</sub> =10V		0.52	0.68	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =30V, f=1MHz		1200		pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> =30V, f=1MHz		220		pF
Reverse Transfer Capacitance	C <sub>rss</sub>	V <sub>DS</sub> =30V, f=1MHz		43		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See Fig.2		27		ns
Rise Time	t <sub>r</sub>	See Fig.2		72		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See Fig.2		122		ns
Fall Time	t <sub>f</sub>	See Fig.2		48		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =200V, V <sub>GS</sub> =10V, I <sub>D</sub> =14A		46		nC
Gate-to-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =200V, V <sub>GS</sub> =10V, I <sub>D</sub> =14A		8.6		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>	V <sub>DS</sub> =200V, V <sub>GS</sub> =10V, I <sub>D</sub> =14A		26.4		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =14A, V <sub>GS</sub> =0V		1.1	1.5	V
Reverse Recovery Time	t <sub>rr</sub>	See Fig.3		95		ns
Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>S</sub> =14A, V <sub>GS</sub> =0V, di/dt=100A/μs		250		nC

Fig.1 Avalanche Resistance Test Circuit

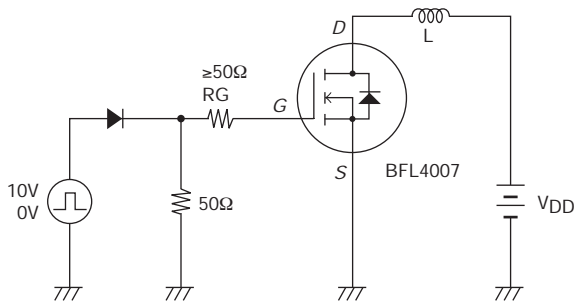


Fig.2 Switching Time Test Circuit

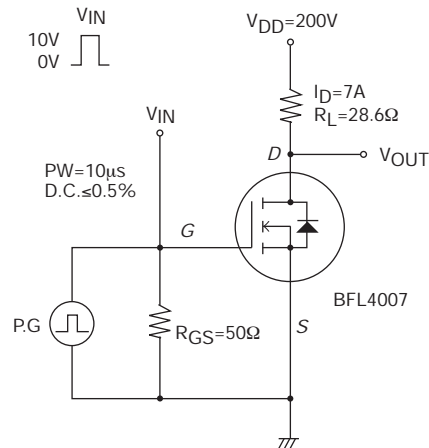
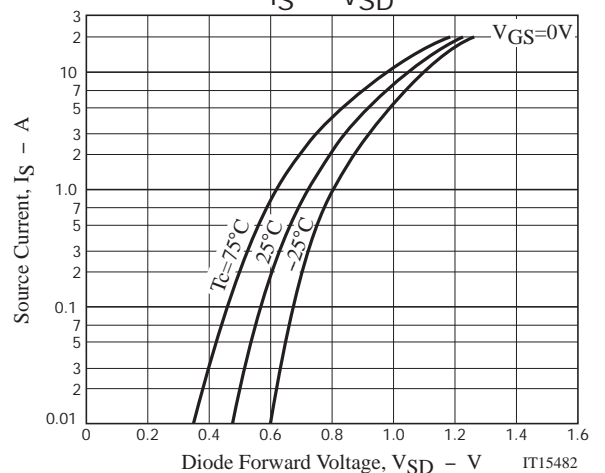
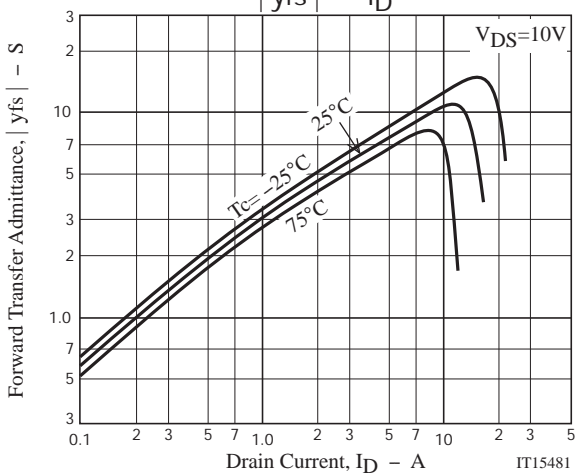
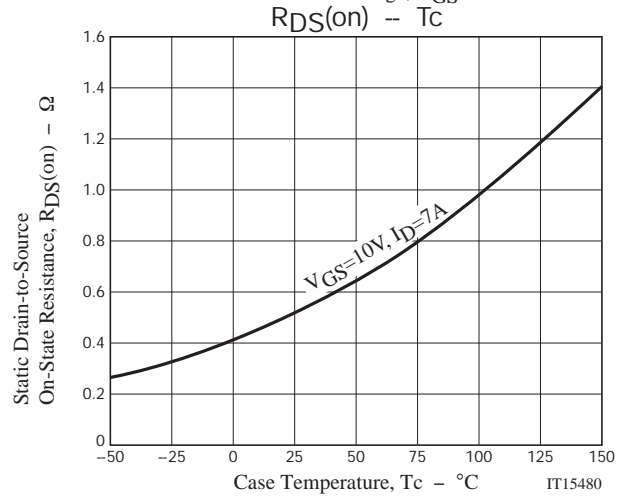
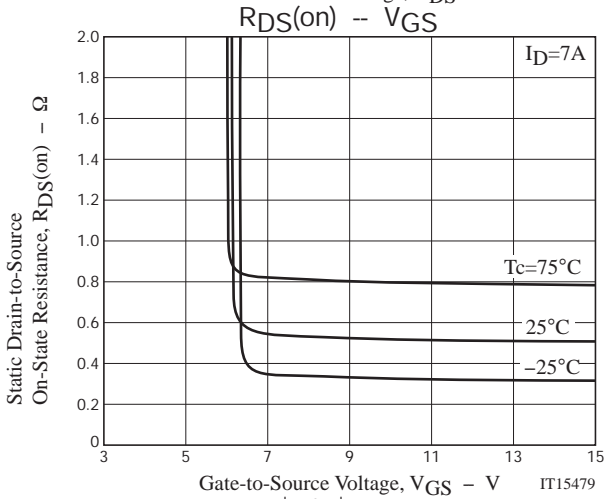
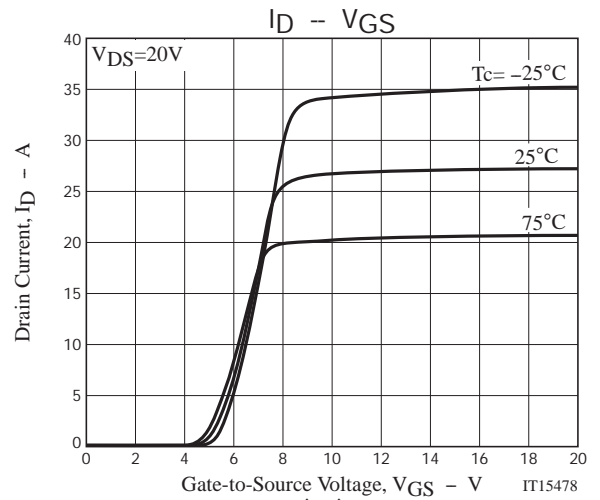
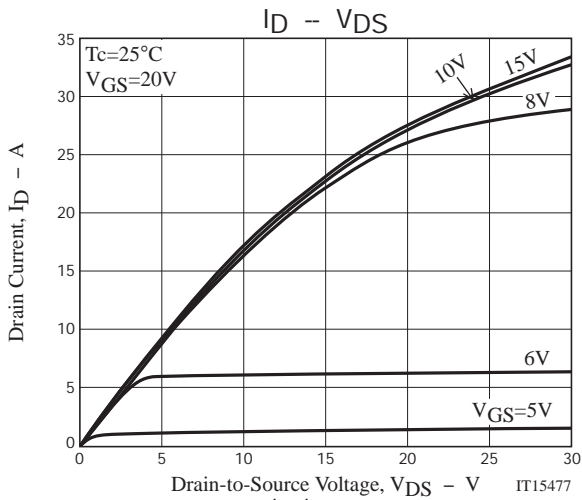
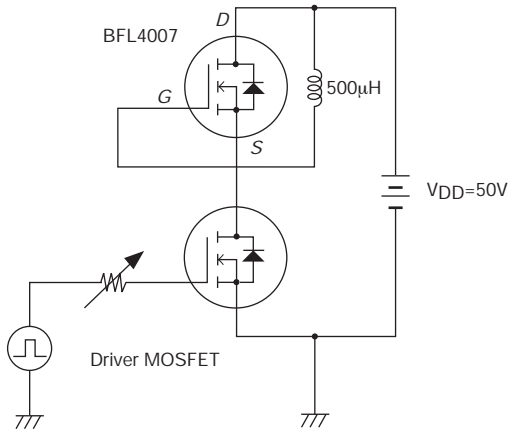
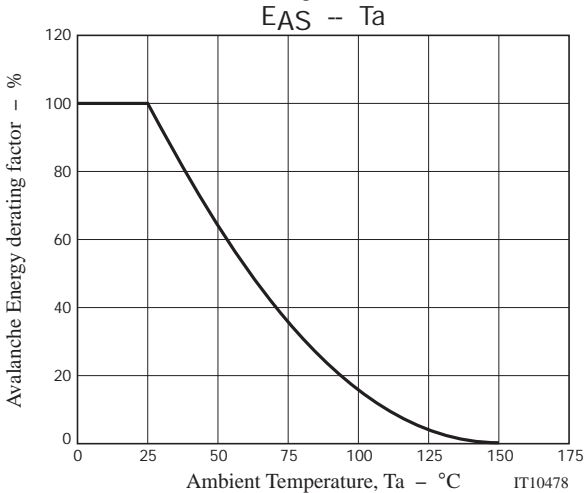
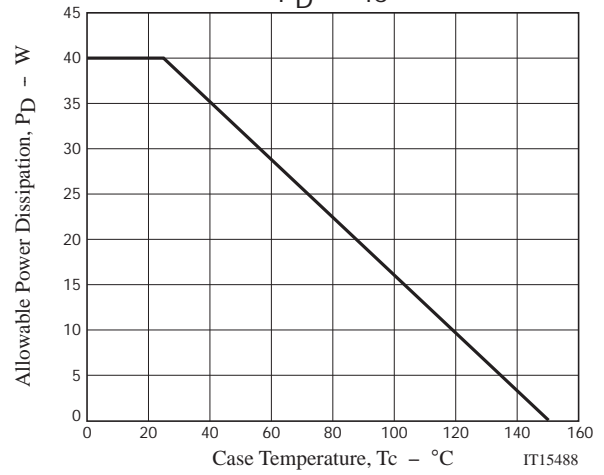
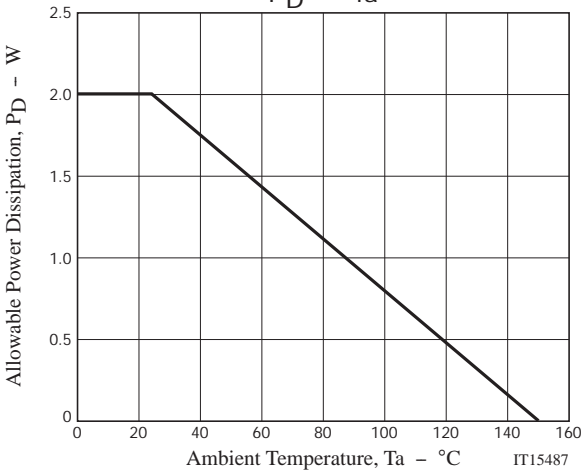
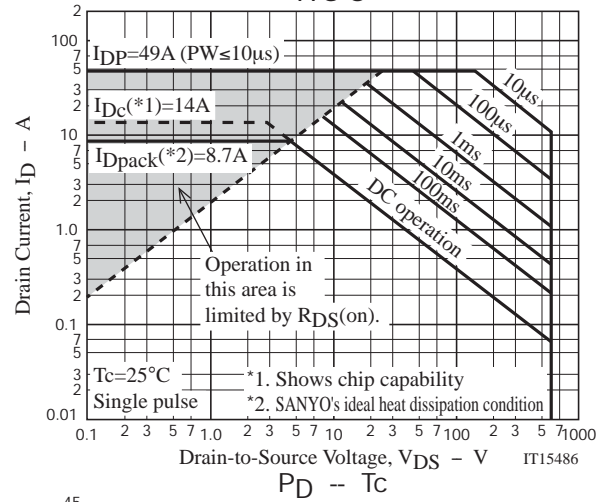
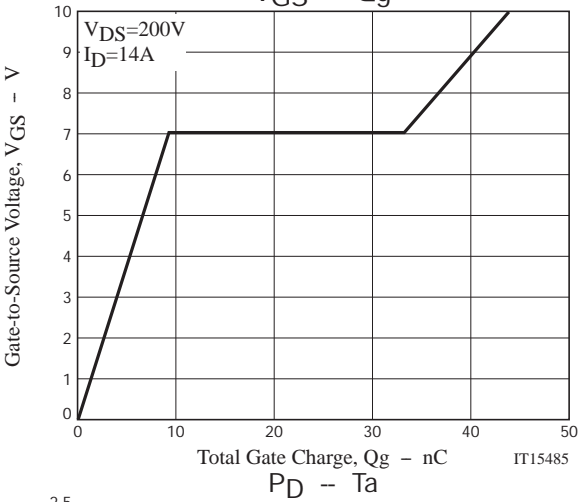
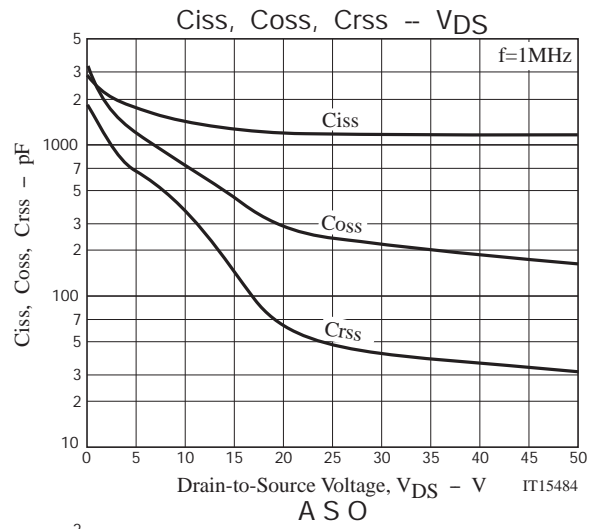
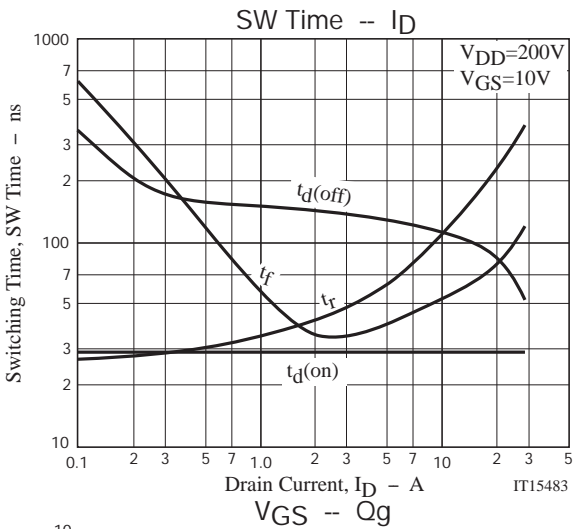


Fig.3 trr Reverse Recovery Resistance Test Circuit





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

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