



BFL4007

N-Channel Power MOSFET 600V, 14A, 0.68Ω, TO-220F-3FS

ON Semiconductor®

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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}		± 30	V
Drain Current (DC)	I_{DC}^*1	Limited only by maximum temperature $T_{ch}=150^\circ\text{C}$	14	A
	I_{Dpack}^*2	$T_c=25^\circ\text{C}$ (Our 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
		$T_c=25^\circ\text{C}$ (Our ideal heat dissipation condition)*3	40	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}		196	mJ
Avalanche Current *5	I_{AV}		8.5	A

Note : *1 Shows chip capability

*2 Package limited

*3 Our 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 $V_{DD}=50\text{V}$, $L=5\text{mH}$, $I_{AV}=8.5\text{A}$ (Fig.1)

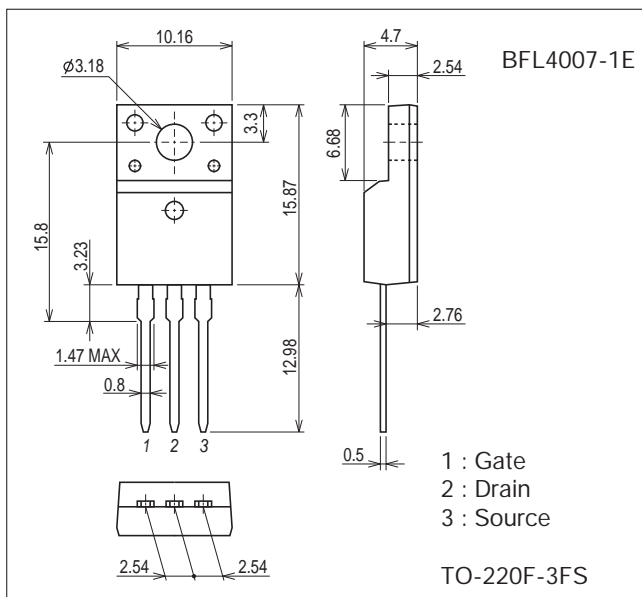
*5 $L \leq 5\text{mH}$, single pulse

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

unit : mm (typ)

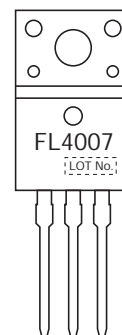
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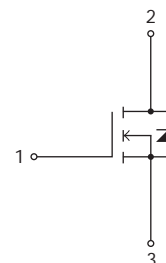
Ordering & Package Information

Device	Package	Shipping	memo
BFL4007-1E	TO-220F-3FS SC-67	50 pcs./tube	Pb-Free

Marking



Electrical Connection



Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit	
			min	typ	max		
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10mA, V_{GS}=0V$	600			V	
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=480V, V_{GS}=0V$			100	μA	
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$			± 100	nA	
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	3		5	V	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=7A$	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	C_{iss}	$V_{DS}=30V, f=1MHz$		1200		pF	
Output Capacitance	C_{oss}				220		pF
Reverse Transfer Capacitance	C_{rss}				43		pF
Turn-ON Delay Time	$t_{d(on)}$	See Fig.2		27		ns	
Rise Time	t_r			72		ns	
Turn-OFF Delay Time	$t_{d(off)}$			122		ns	
Fall Time	t_f			48		ns	
Total Gate Charge	Q_g	$V_{DS}=200V, V_{GS}=10V, I_D=14A$		46		nC	
Gate to Source Charge	Q_{gs}			8.6		nC	
Gate to Drain "Miller" Charge	Q_{gd}			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}	$I_S=14A, V_{GS}=0V, di/dt=100A/\mu s$		250		nC	

Fig.1 Unclamped Inductive Switching Test Circuit

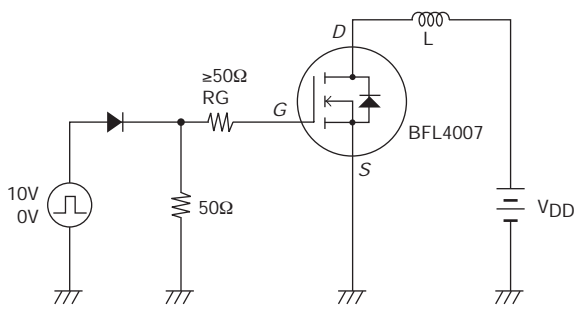


Fig.2 Switching Time Test Circuit

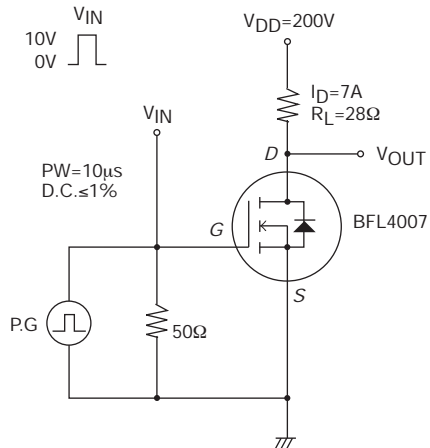
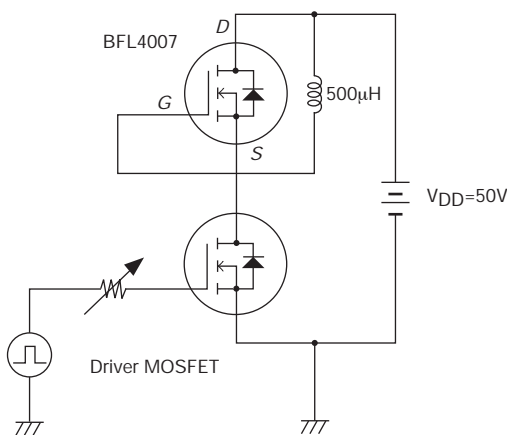
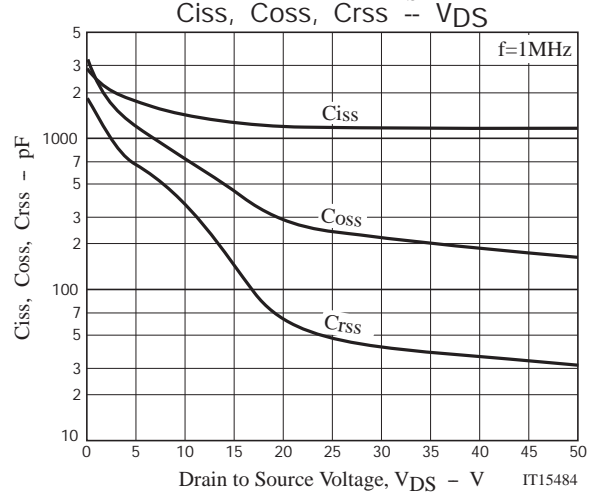
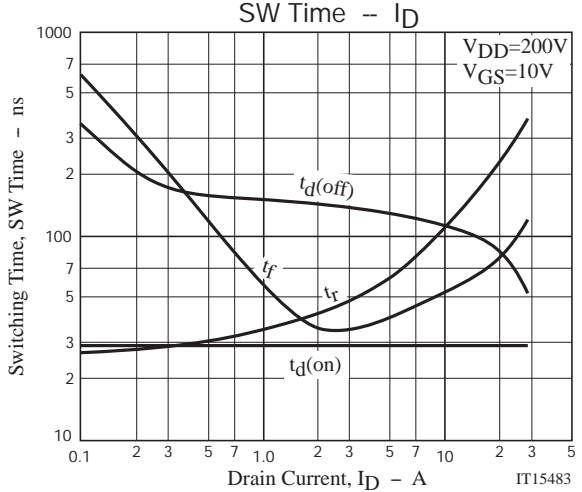
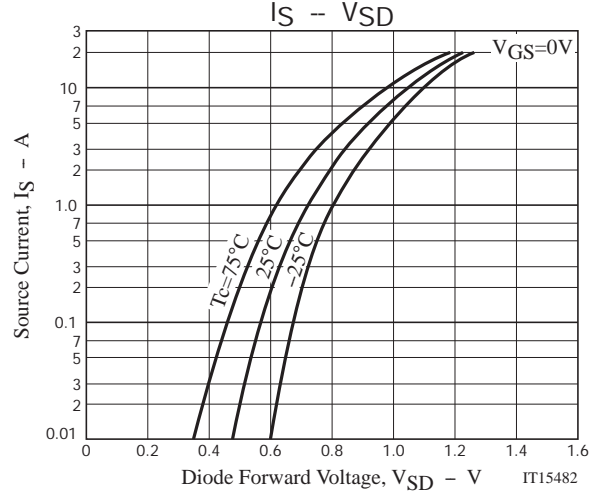
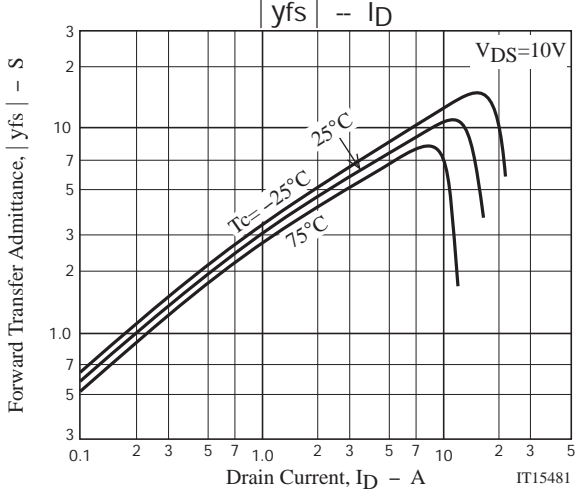
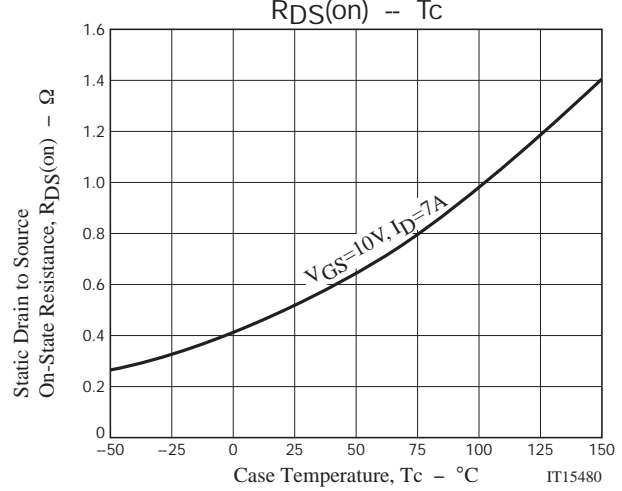
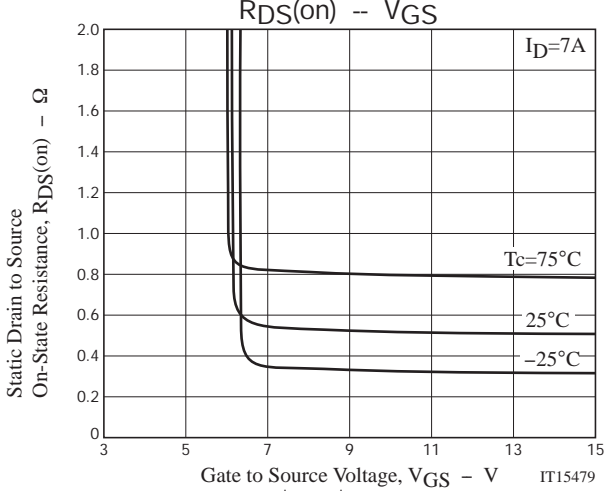
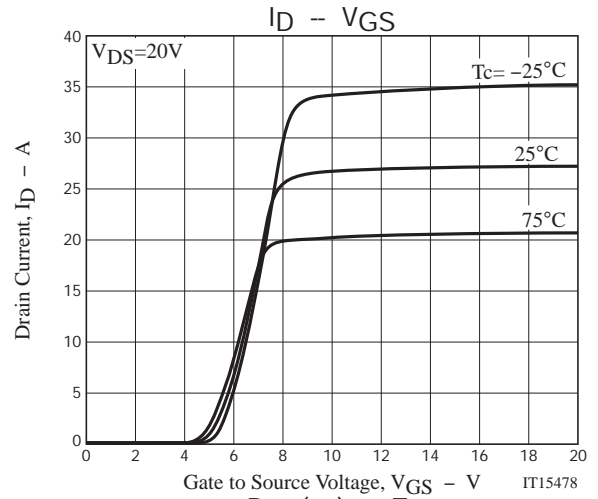
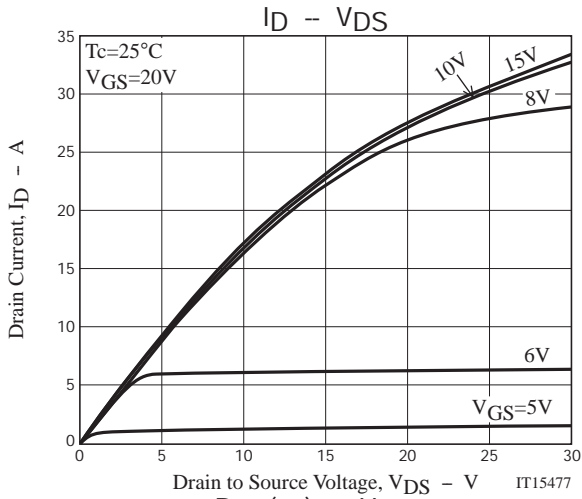
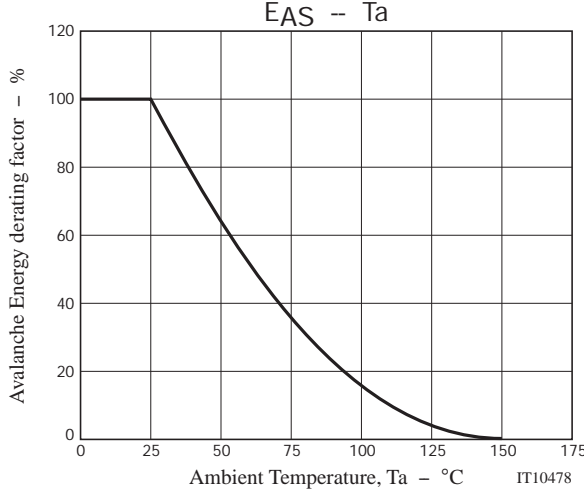
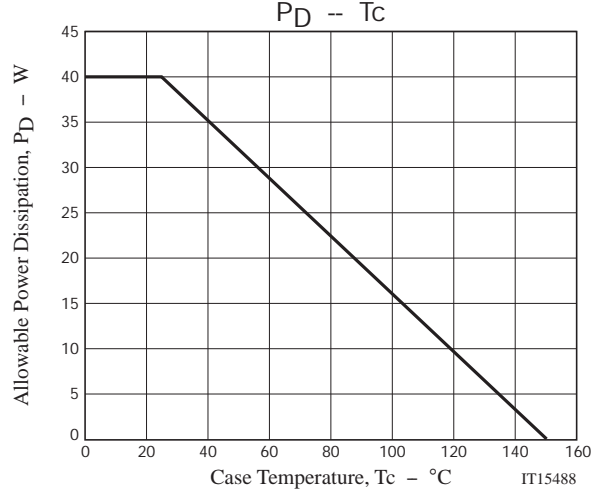
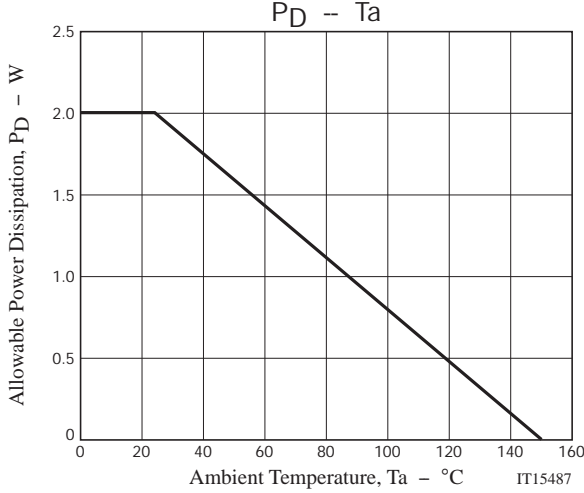
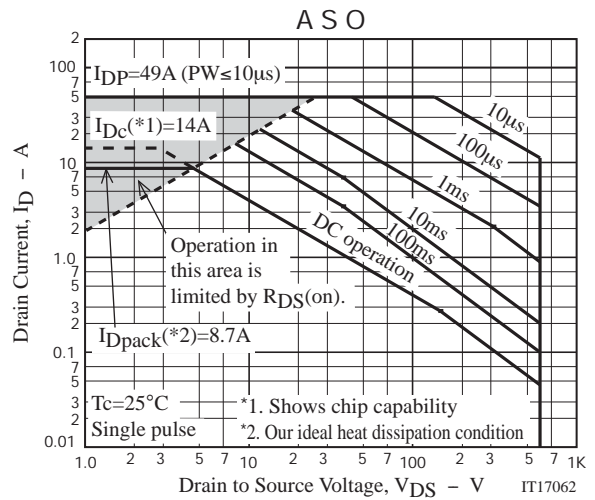
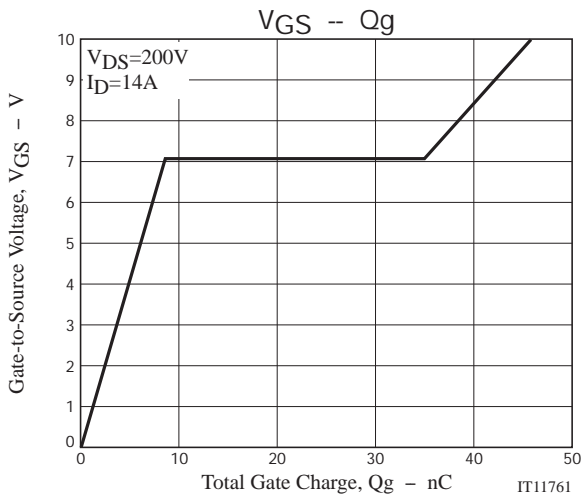


Fig.3 Reverse Recovery Time Test Circuit

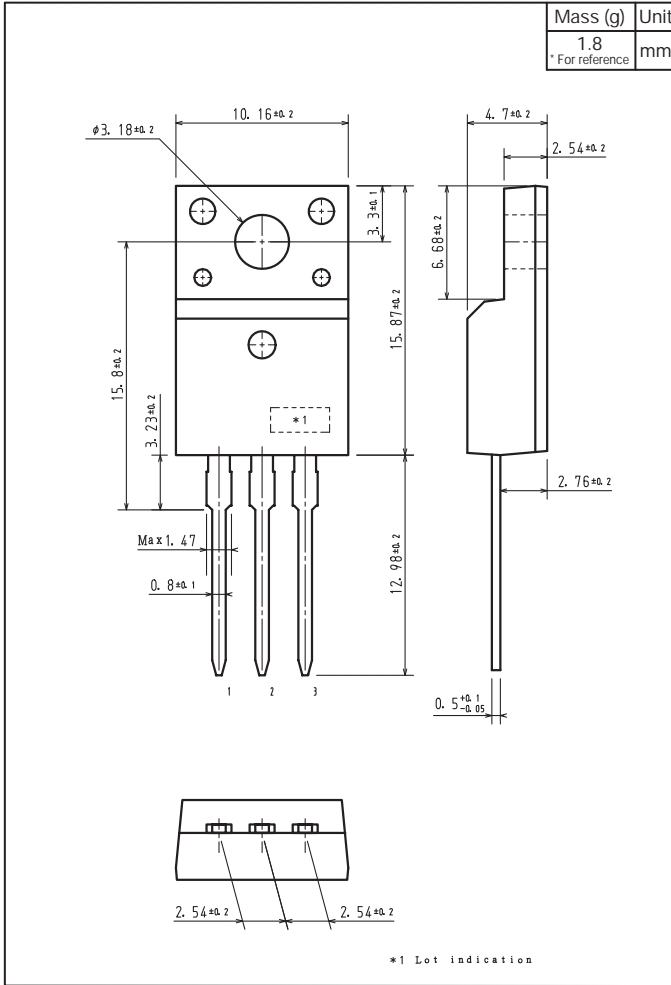






Outline Drawing

BFL4007-1E



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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