



# BFL4037

## N-Channel Power MOSFET 500V, 16A, 0.43Ω, TO-220F-3FS

ON Semiconductor®

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### Features

- ON-resistance  $R_{DS(on)}=0.33\Omega$  (typ.)
- 10V drive
- Input capacitance  $C_{iss}=1200\text{pF}$  (typ.)

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain to Source Voltage	$V_{DSS}$		500	V
Gate to Source Voltage	$V_{GSS}$		$\pm 30$	V
Drain Current (DC)	$I_{DC}^{*1}$	Limited only by maximum temperature $T_{ch}=150^\circ\text{C}$	16	A
	$I_{Dpack}^{*2}$	$T_c=25^\circ\text{C}$ (Our ideal heat dissipation condition)*3	11	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	60	A
Allowable Power Dissipation	PD		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	EAS		142	mJ
Avalanche Current *5	$I_{AV}$		16	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  $V_{DD}=50\text{V}$ ,  $L=1\text{mH}$ ,  $I_{AV}=16\text{A}$  (Fig.1)

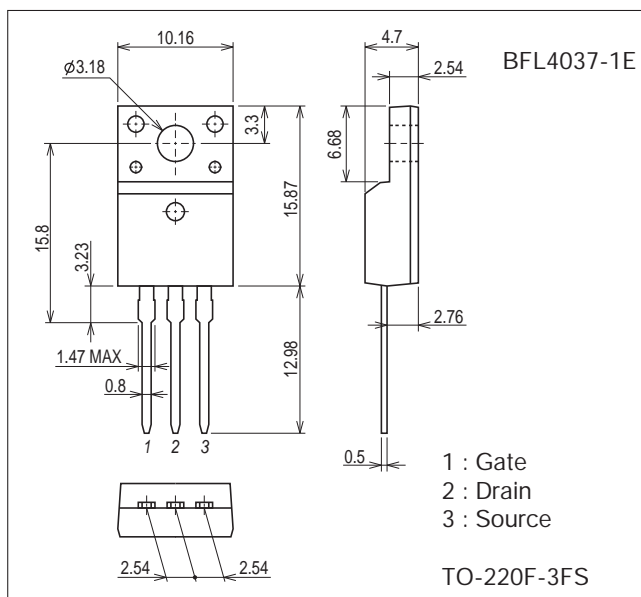
\*5  $L \leq 1\text{mH}$ , single pulse

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)

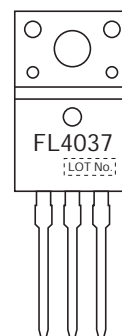
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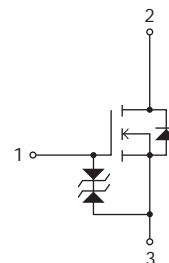
### Ordering & Package Information

Device	Package	Shipping	memo
BFL4037-1E	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	ID=10mA, VGS=0V	500			V	
Zero-Gate Voltage Drain Current	IDSS	VDS=400V, VGS=0V			100	μA	
Gate to Source Leakage Current	IGSS	VGS=±24V, VDS=0V			±10	μA	
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	3		5	V	
Forward Transfer Admittance	yfs	VDS=10V, ID=8A	4.5	9		S	
Static Drain to Source On-State Resistance	RDS(on)	ID=8A, VGS=10V		0.33	0.43	Ω	
Input Capacitance	Ciss	VDS=30V, f=1MHz		1200		pF	
Output Capacitance	Coss				250		pF
Reverse Transfer Capacitance	Crss				55		pF
Turn-ON Delay Time	td(on)	See Fig.2		26.5		ns	
Rise Time	tr				78		ns
Turn-OFF Delay Time	td(off)				146		ns
Fall Time	tf				57		ns
Total Gate Charge	Qg	VDS=200V, VGS=10V, ID=16A		48.6		nC	
Gate to Source Charge	Qgs				8.2		nC
Gate to Drain "Miller" Charge	Qgd				27.4		nC
Diode Forward Voltage	VSD	IS=16A, VGS=0V		0.95	1.3	V	
Reverse Recovery Time	trr	See Fig.3		600		ns	
Reverse Recovery Charge	Qrr	IS=16A, VGS=0V, di/dt=100A/μs		5000		nC	

Fig.1 Unclamped Inductive Switching Test Circuit

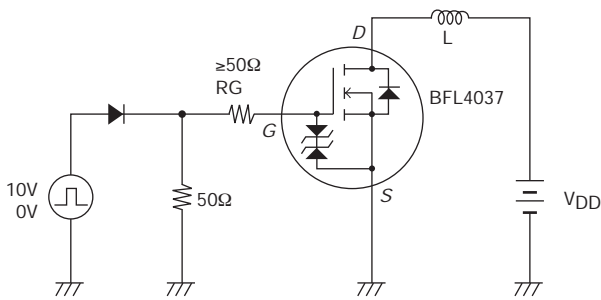


Fig.2 Switching Time Test Circuit

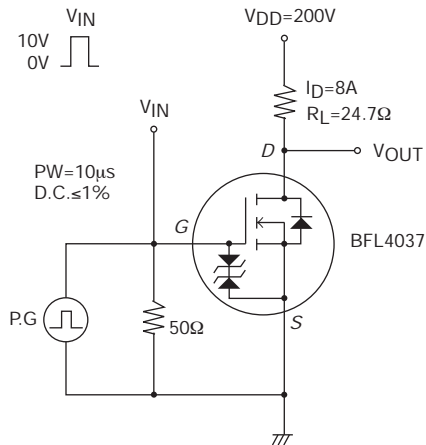
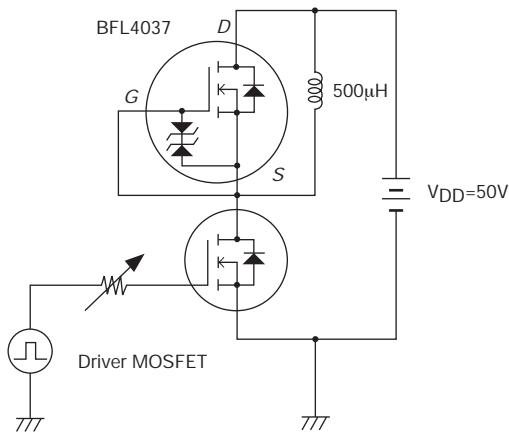
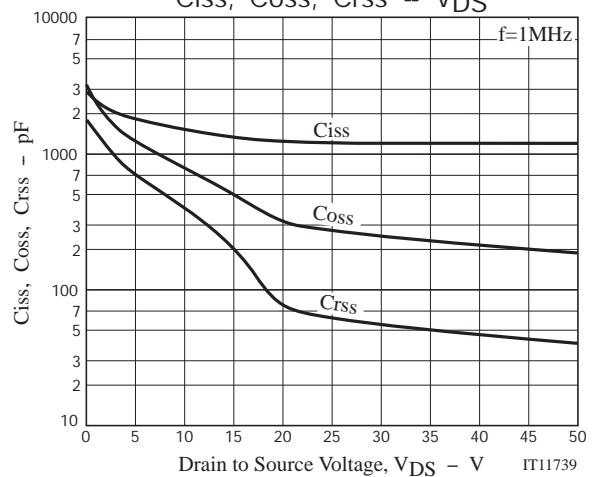
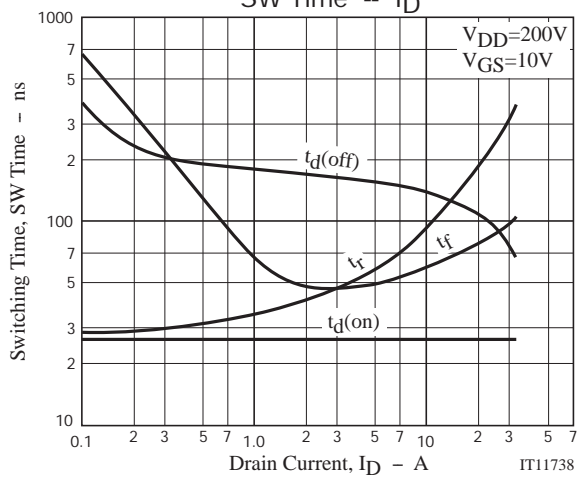
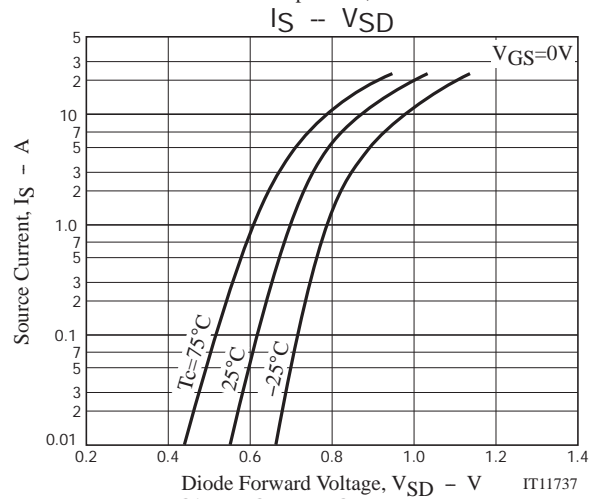
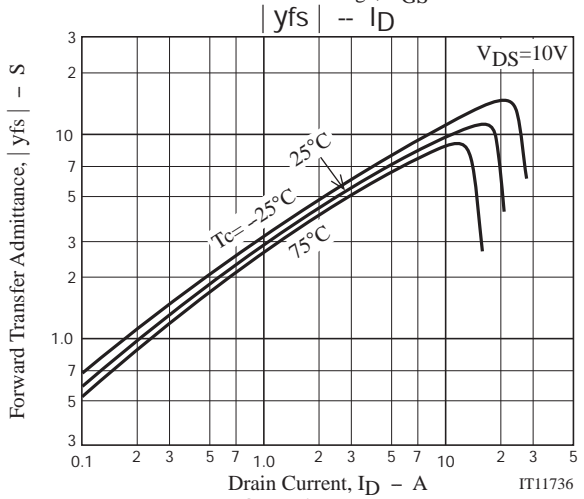
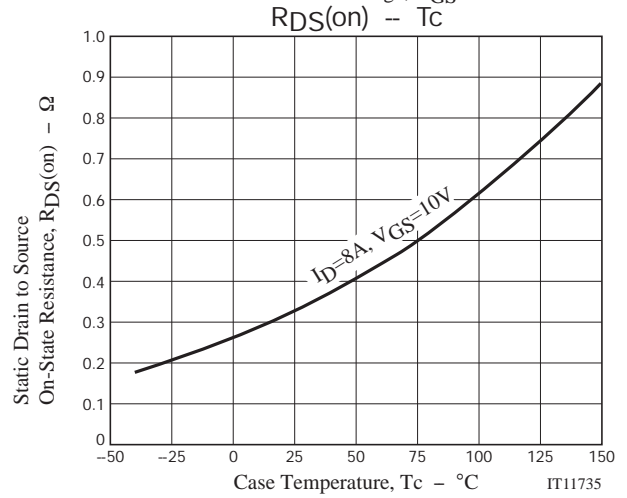
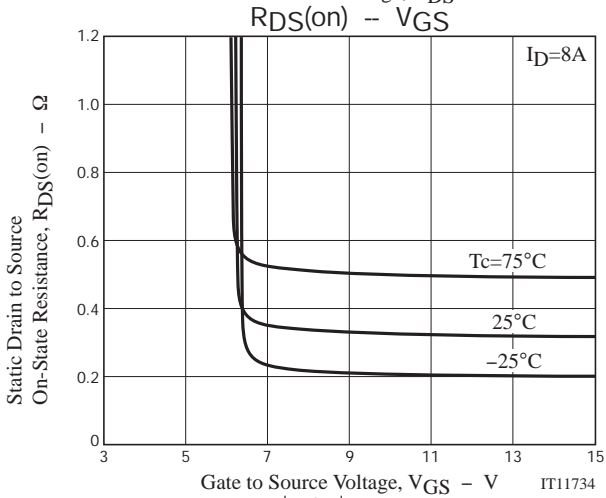
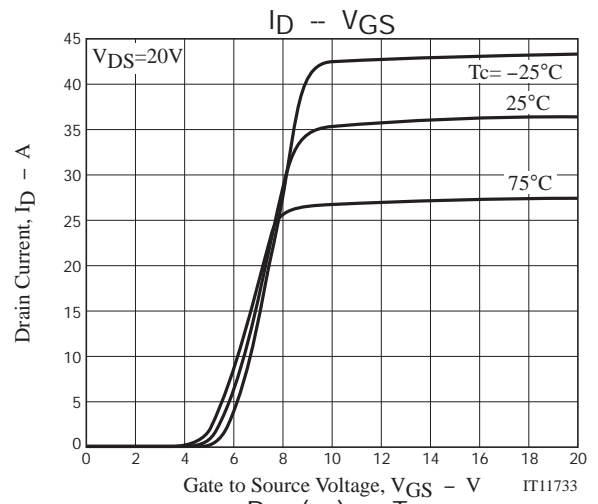
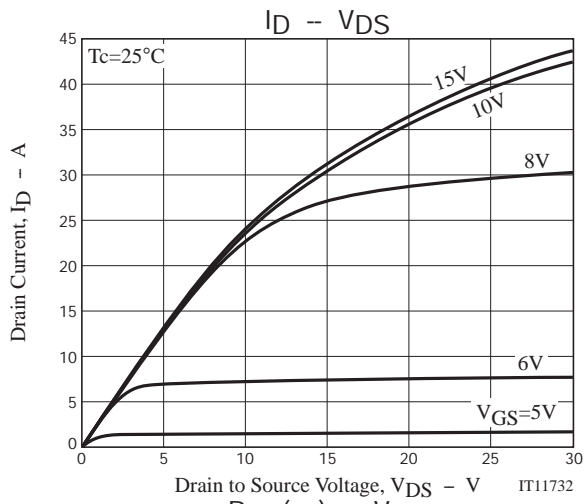
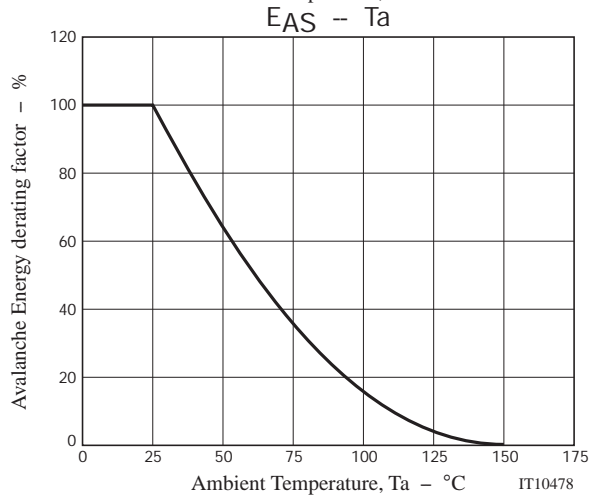
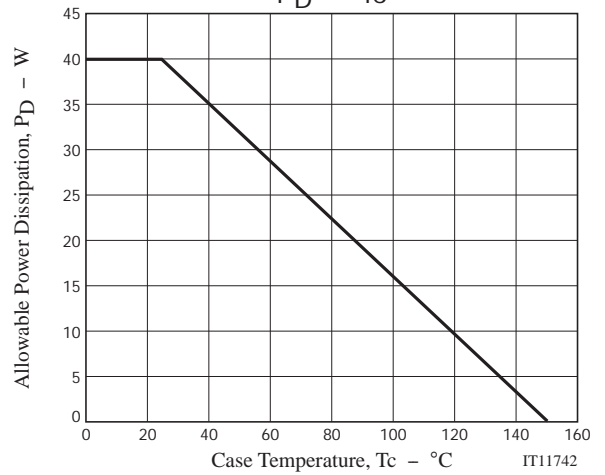
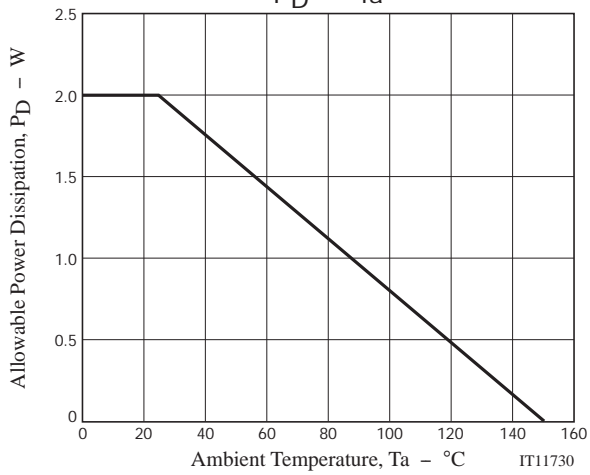
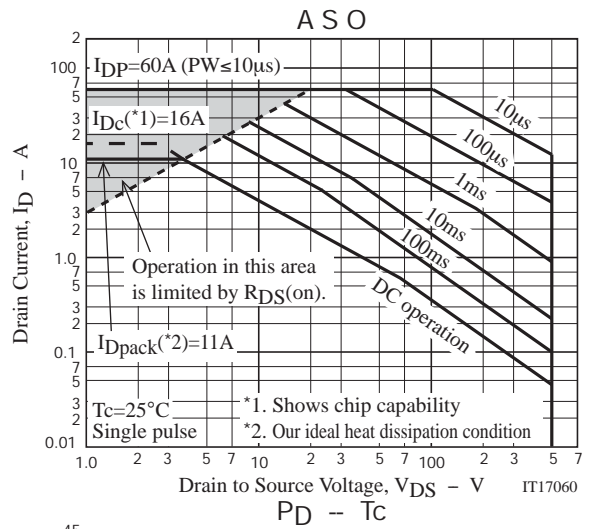
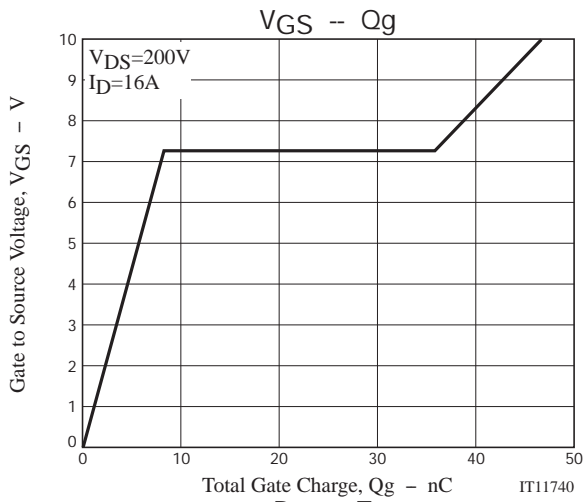


Fig.3 Reverse Recovery Time Test Circuit

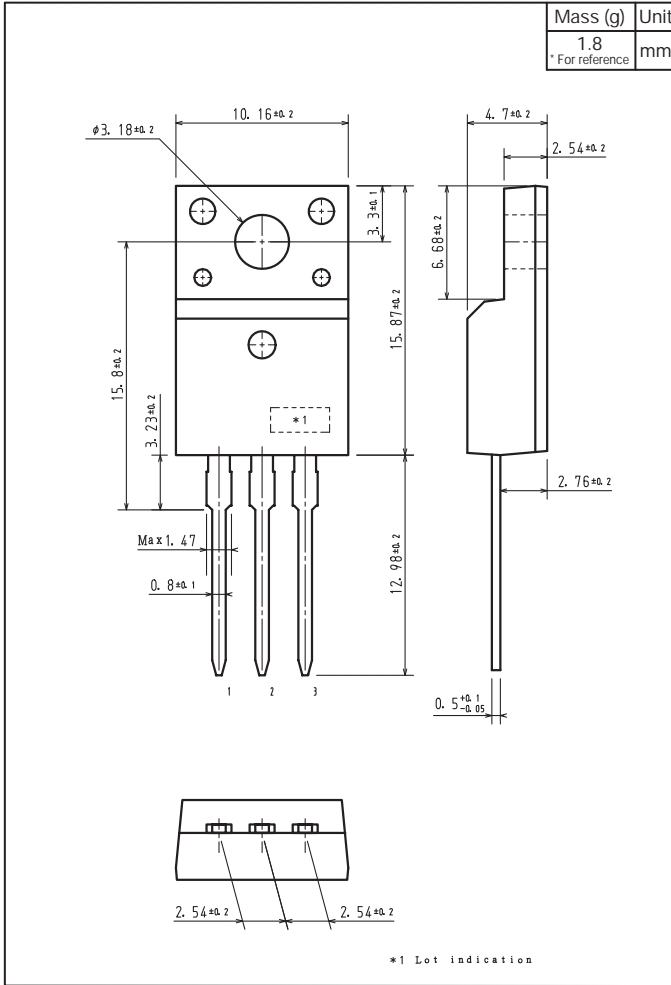






Outline Drawing

BFL4037-1E



Note on usage : Since the BFL4037 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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