



# BFL4001

## N-Channel Power MOSFET 900V, 6.5A, 2.7Ω, TO-220F-3FS

ON Semiconductor®

<http://onsemi.com>

### Features

- ON-resistance  $R_{DS(on)}=2.1\Omega$  (typ.)
- 10V drive
- Input capacitance  $C_{iss}=850\text{pF}$  (typ.)

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		900	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 30$	V
Drain Current (DC)	$I_{Dc}^{*1}$	Limited only by maximum temperature $T_{ch}=150^\circ\text{C}$	6.5	A
	$I_{Dpack}^{*2}$	$T_c=25^\circ\text{C}$ (Our ideal heat dissipation condition)*3	4.1	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	13	A
Allowable Power Dissipation	PD		2.0	W
		$T_c=25^\circ\text{C}$ (Our ideal heat dissipation condition)*3	37	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		223	mJ
Avalanche Current *5	$I_{AV}$		6.5	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.

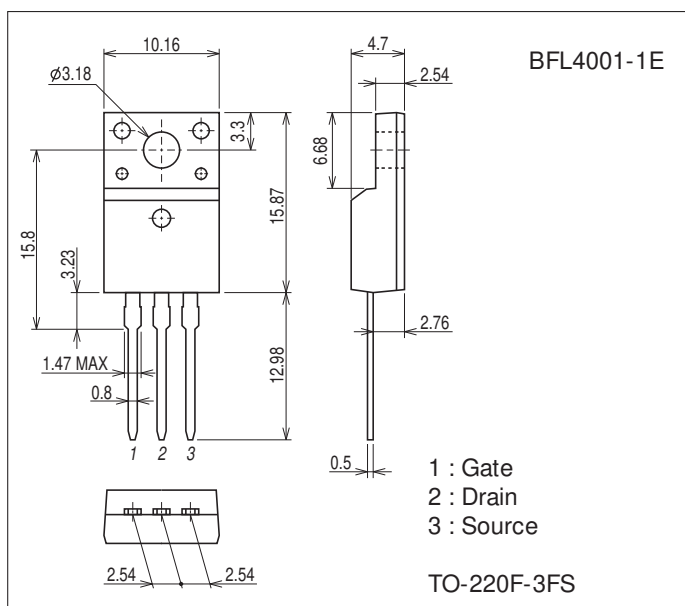
\*4  $V_{DD}=50\text{V}$ ,  $L=10\text{mH}$ ,  $I_{AV}=6.5\text{A}$ \*5  $L \leq 10\text{mH}$ , single pulse

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)

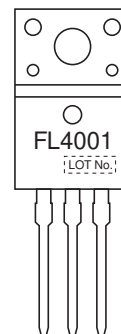
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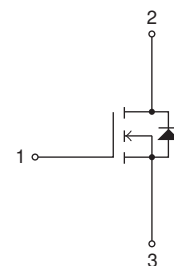
### Product & Package Information

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

### Marking



### Electrical Connection

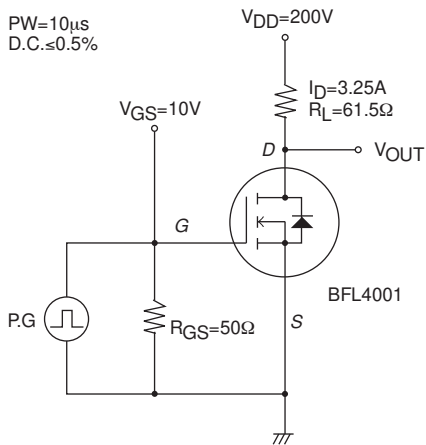


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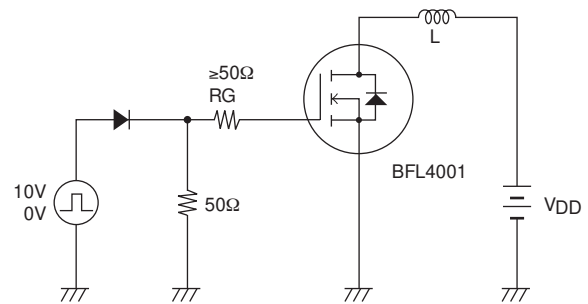
## Electrical Characteristics at Ta=25°C

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	$I_{GSS}$	$V_{GS}=\pm 30V, V_{DS}=0V$			$\pm 100$	nA	
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	2.0		4.0	V	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=20V, I_D=3.25A$	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	$\Omega$	
Input Capacitance	$C_{iss}$	$V_{DS}=30V, f=1MHz$		850		pF	
Output Capacitance	$C_{oss}$				130		pF
Reverse Transfer Capacitance	$C_{rss}$				43		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		19		ns	
Rise Time	$t_r$				49		ns
Turn-OFF Delay Time	$t_d(off)$				156		ns
Fall Time	$t_f$				52		ns
Total Gate Charge	$Q_g$	$V_{DS}=200V, V_{GS}=10V, I_D=6.5A$		44		nC	
Gate-to-Source Charge	$Q_{gs}$				7.0		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$				22		nC
Diode Forward Voltage	$V_{SD}$	$I_S=6.5A, V_{GS}=0V$		0.85	1.2	V	

### Switching Time Test Circuit

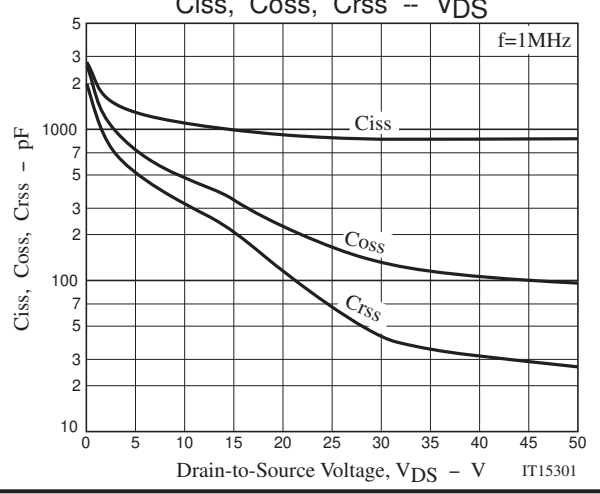
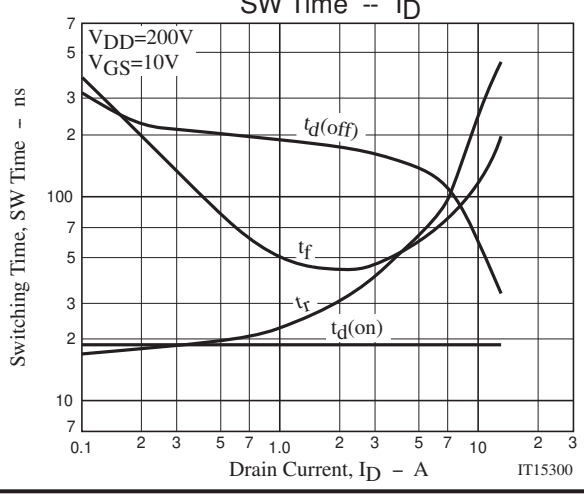
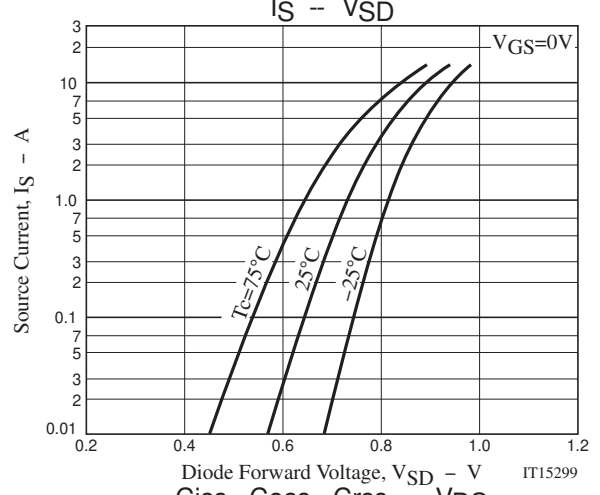
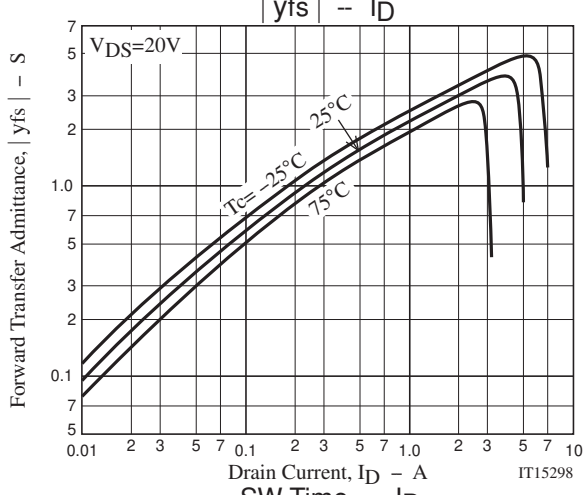
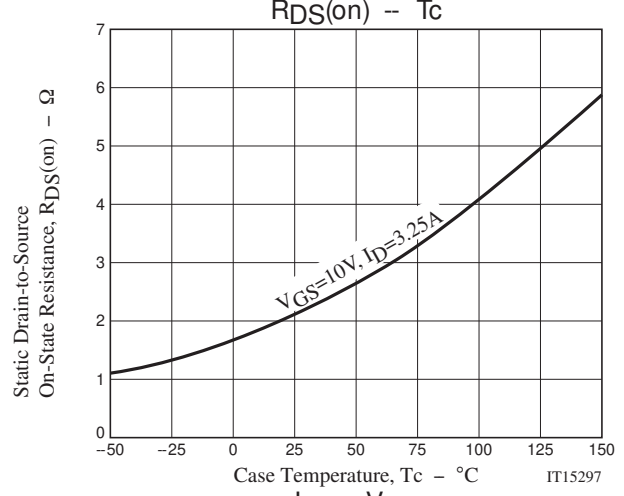
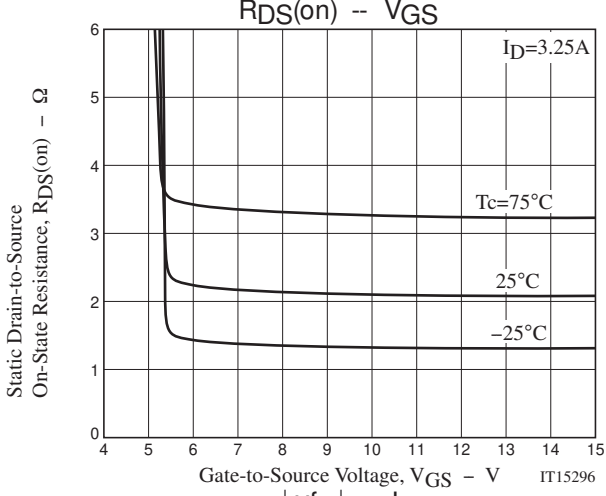
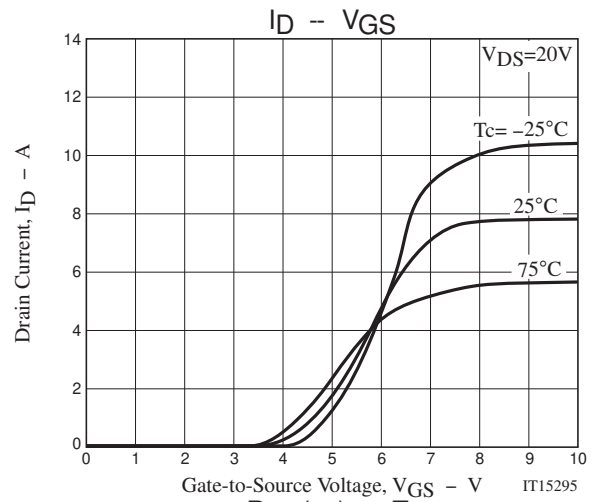
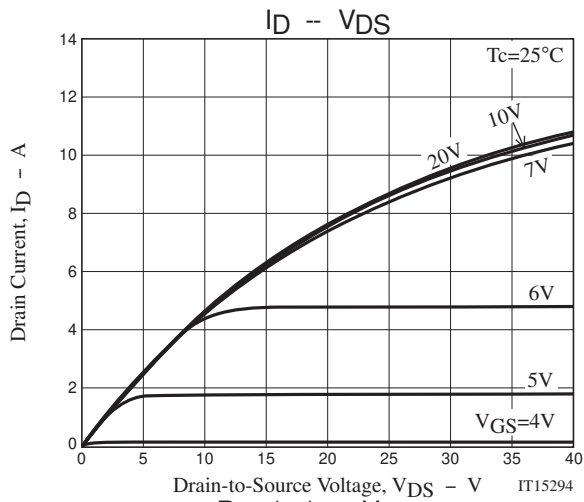


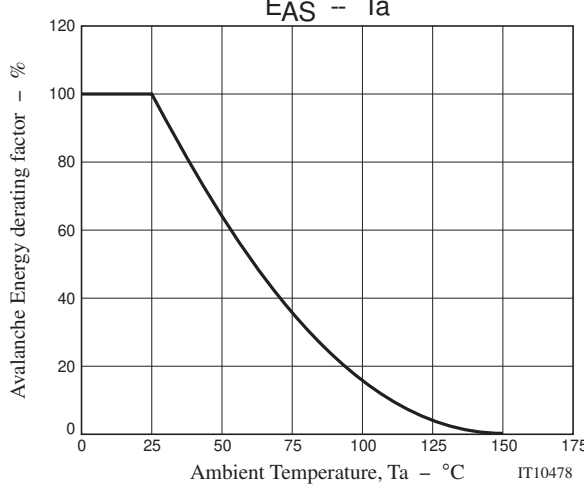
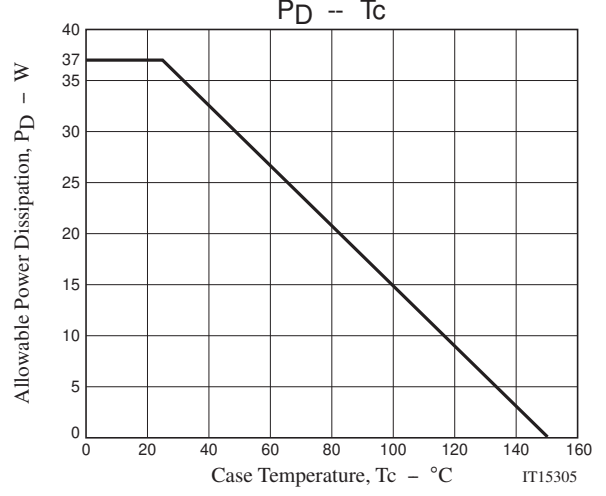
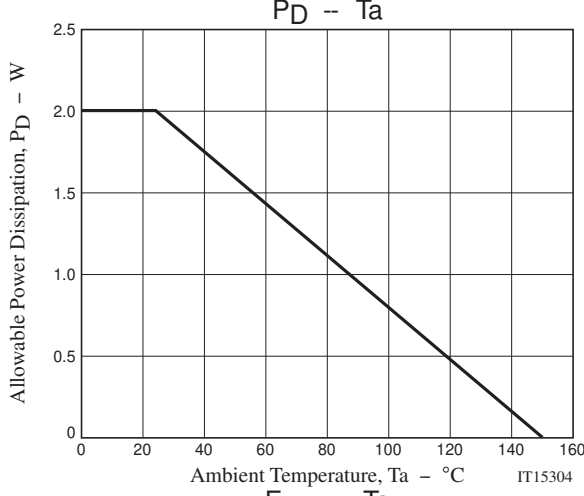
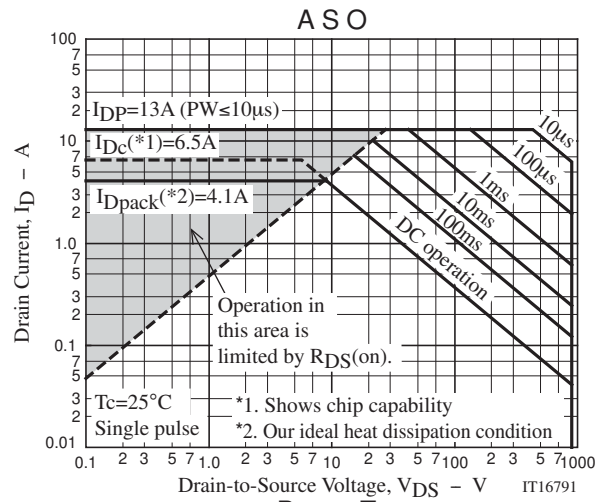
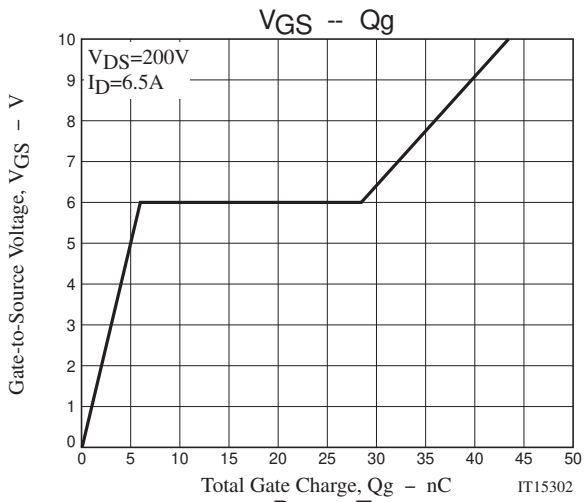
### Avalanche Resistance Test Circuit



### Ordering Information

Device	Package	Shipping	memo
BFL4001-1E	TO-220F-3FS	50pcs./magazine	Pb Free





Magazine Specification

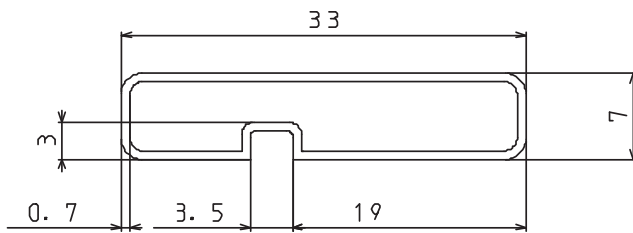
BFL4001-1E

1. Packing Format

Package Name	Magazine Name	Maximum Number of devices contained (pcs)			Packing format	
		Magazine	Inner box	Outer box	Inner BOX	Outer BOX
TO-220F-3FS	TO-220F	50	1,000	4,000	SPD-0V0001 20 magazines contained Dimensions:mm (external) 568×150×55	SPT-081029 4 inner boxes contained Dimensions:mm (external) 590×225×178

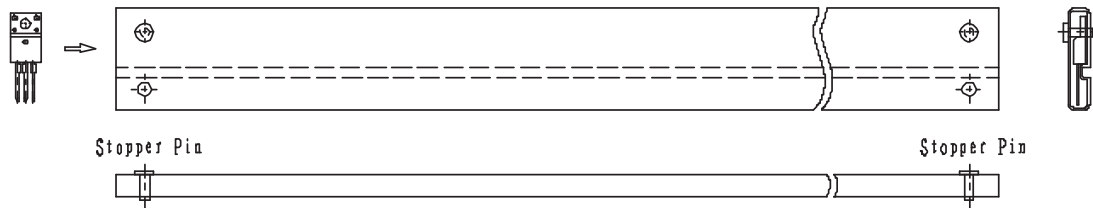
2. Magazine dimensions

(unit:mm)

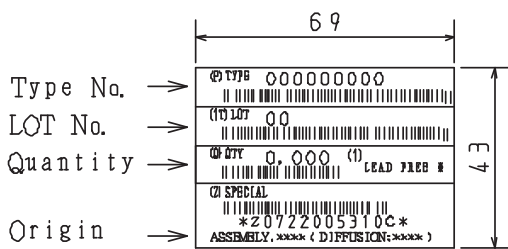


Tolerance=±0.3mm  
 Thickness=0.7±0.2mm  
 Length =532.5±2mm  
 Material =PVC (Antistatic treatment)

3. Storage method to magazine

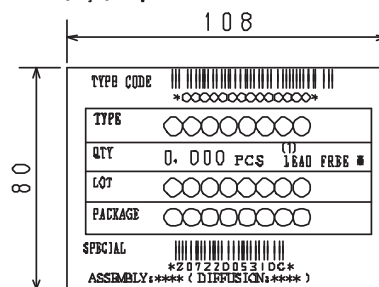


4. Inner box label (unit:mm)



5. Outer box label (unit:mm)

It is a label at the time of factory shipments.  
 The form of a label may change in physical  
 distribution process.



NOTE (1)

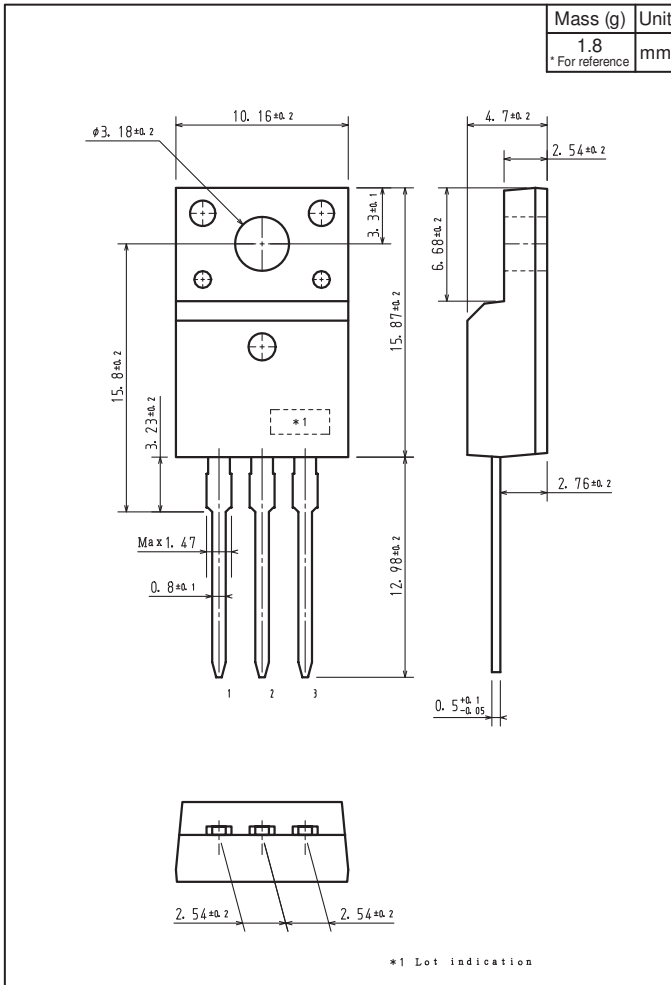
The LEAD FREE \* description shows that the  
 surface treatment of the terminal is lead free.

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

# BFL4001

## Outline Drawing

BFL4001-1E



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

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