



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

BXL4004 — N-Channel Silicon MOSFET — General-Purpose Switching Device Applications

Features

- ON-resistance $R_{DS(on)} = 3\text{m}\Omega$ (typ.)
- 4.5V drive
- Input capacitance $C_{iss} = 8200\text{pF}$ (typ.)

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}		40	V
Gate-to-Source Voltage	V_{GS}		± 20	V
Drain Current (DC)	I_D		100	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	400	A
Allowable Power Dissipation	P_D		1.75	W
		$T_c = 25^\circ\text{C}$	75	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	E_{AS}		420	mJ
Avalanche Current *2	I_{AV}		60	A

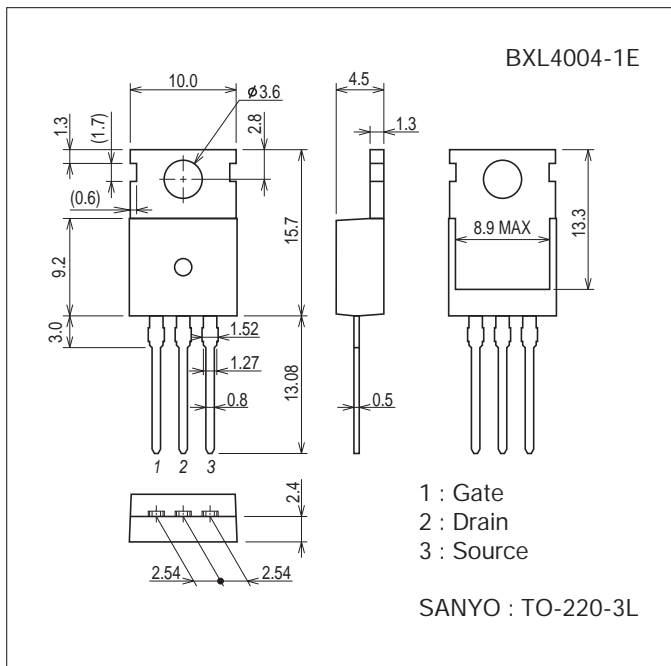
Note : *1 $V_{DD} = 24\text{V}$, $L = 100\mu\text{H}$, $I_{AV} = 60\text{A}$ (Fig.1)

*2 $L \leq 100\mu\text{H}$, Single pulse

Package Dimensions

unit : mm (typ)

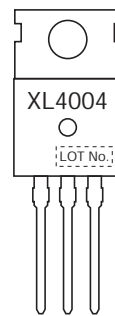
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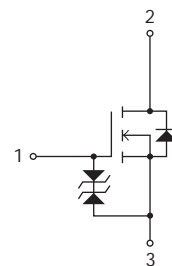
Product & Package Information

- Package : TO-220-3L
- JEITA, JEDEC : SC-46, TO-220AB
- Minimum Packing Quantity : 50 pcs./magazine

Marking



Electrical Connection



BXL4004

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	40			V
Zero-Gate Voltage Drain Current	IDSS	VDS=40V, VGS=0V			10	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	1.2		2.6	V
Forward Transfer Admittance	yfs	VDS=10V, ID=50A		120		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=50A, VGS=10V		3	3.9	mΩ
	RDS(on)2	ID=50A, VGS=4.5V		4.7	6.6	mΩ
Input Capacitance	Ciss	VDS=20V, f=1MHz		8200		pF
Output Capacitance	Coss			940		pF
Reverse Transfer Capacitance	Crss			700		pF
Turn-ON Delay Time	td(on)		See Fig.2		65	
Rise Time	tr			390		ns
Turn-OFF Delay Time	td(off)			510		ns
Fall Time	tf			360		ns
Total Gate Charge	Qg	VDS=24V, VGS=10V, ID=100A			140	
Gate-to-Source Charge	Qgs			43		nC
Gate-to-Drain "Miller" Charge	Qgd			25		nC
Diode Forward Voltage	VSD	IS=100A, VGS=0V		1.0	1.2	V
Reverse Recovery Time	trr	See Fig.3		90		ns
Reverse Recovery Charge	Qrr	IS=100A, VGS=0V, di/dt=100A/μs		230		nC

Fig.1 Unclamped Inductive Switching Test Circuit

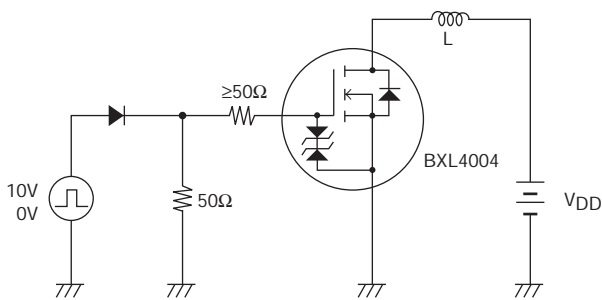


Fig.2 Switching Time Test Circuit

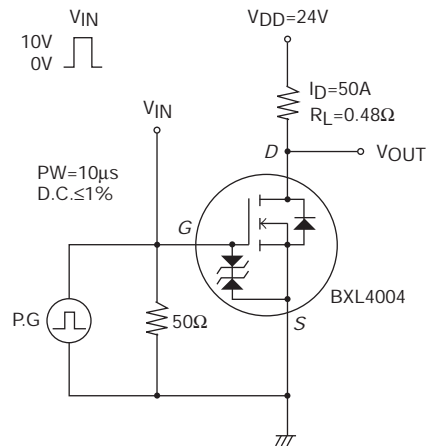
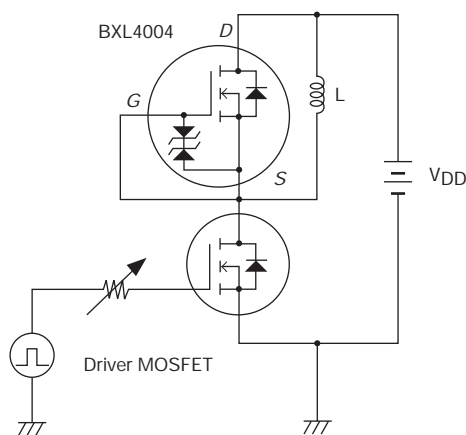
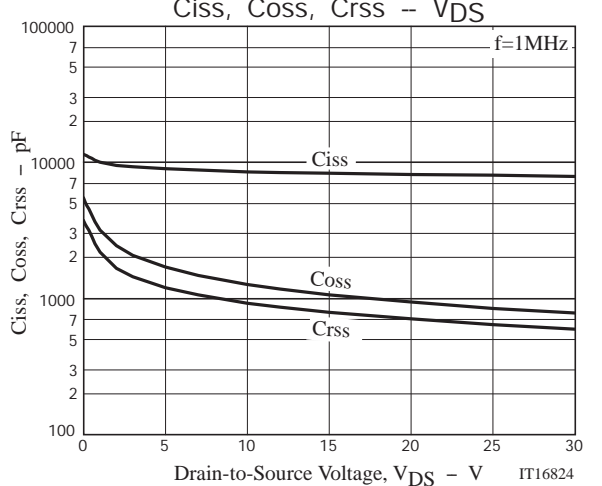
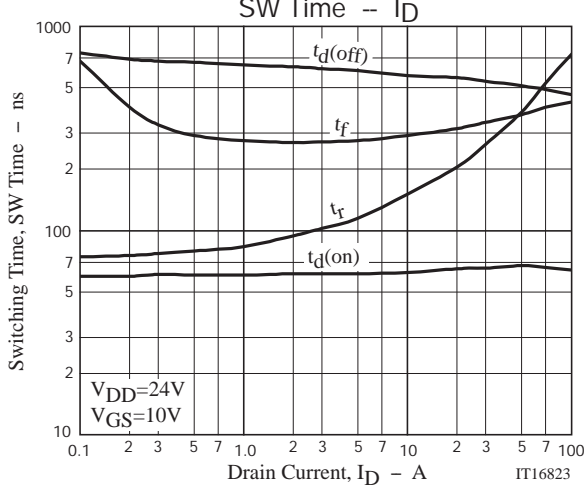
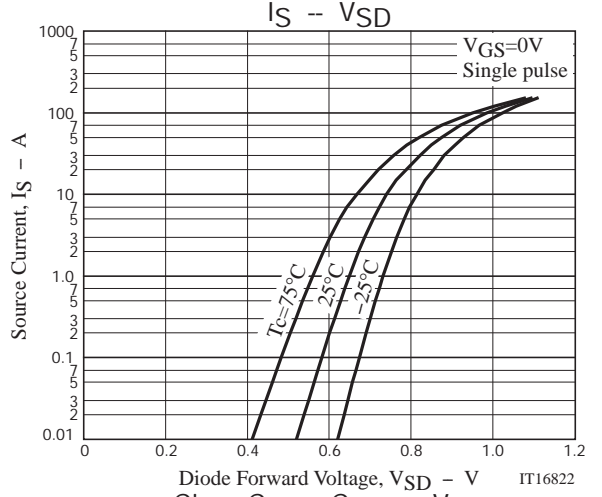
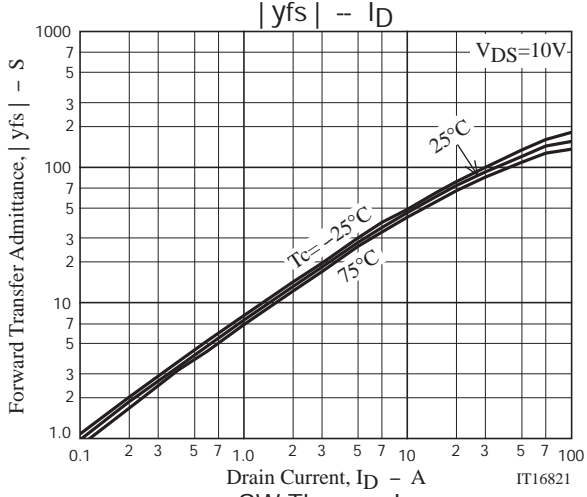
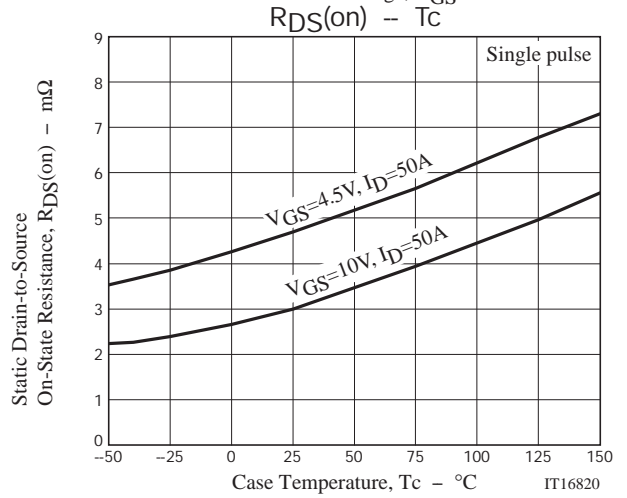
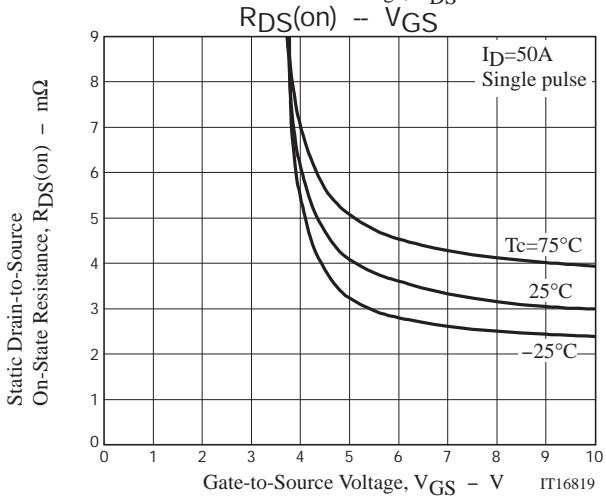
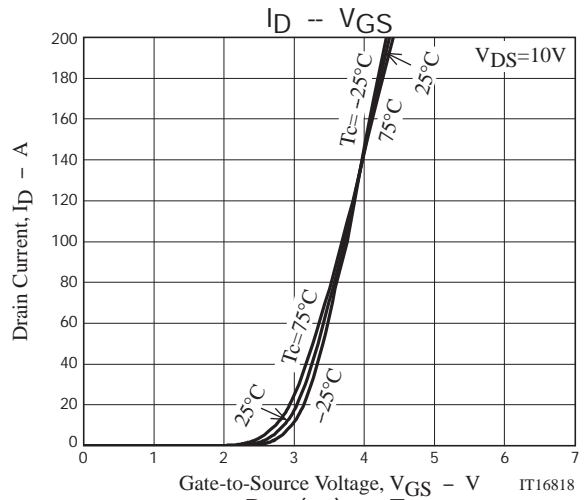
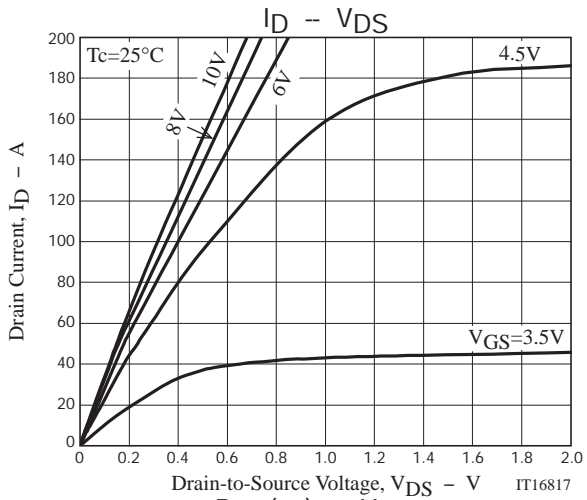


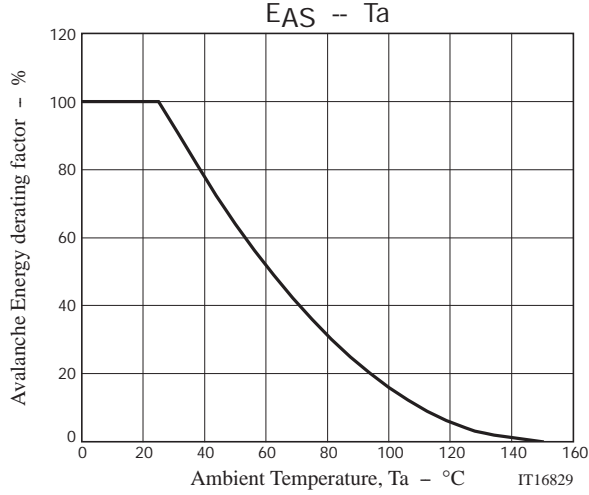
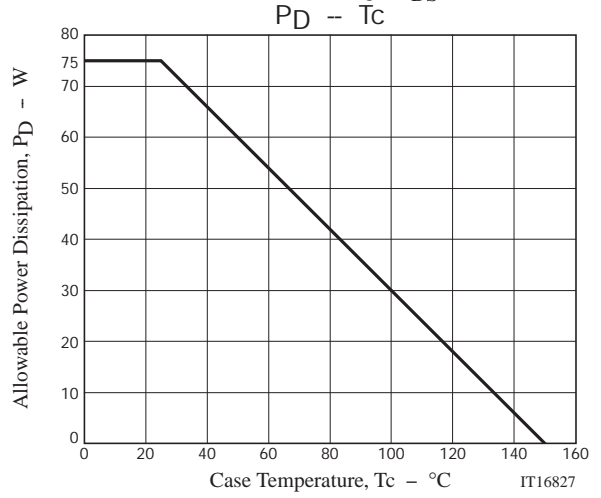
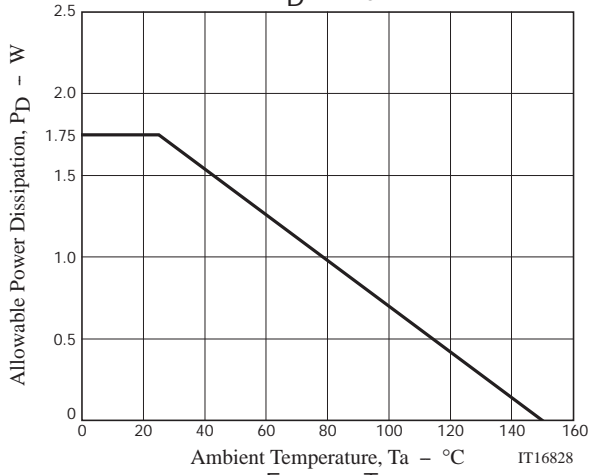
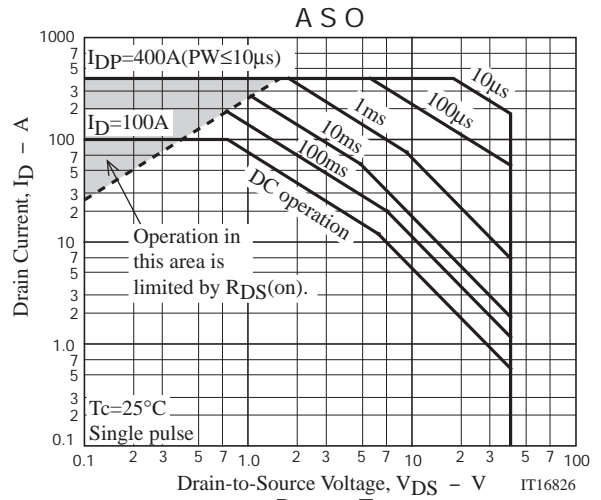
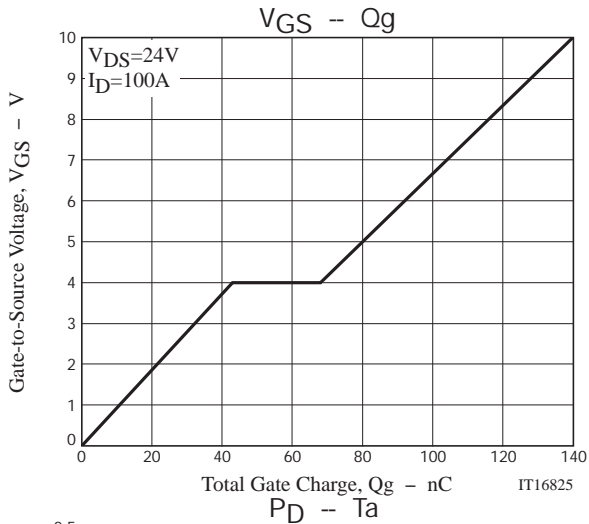
Fig.3 Reverse Recovery Time Test Circuit



Ordering Information

Device	Package	Shipping	memo
BXL4004-1E	TO-220-3L	50pcs./magazine	Pb Free and Halogen Free





Magazine Specification

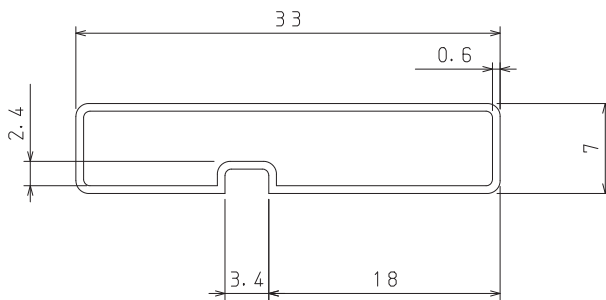
BXL4004-1E

1. Packing Format

Package Name	Maximum Number of devices contained (pcs)			Packing format	
	Magazine	Inner box	Outer box	Inner BOX	Outer BOX
TO-220-3L	50	1,000	4000	SPD-0V0001 20 magazines contained Dimensions:mm (external) 568×150×55	SPD-LV0010 4 inner boxes contained Dimensions:mm (external) 590×225×178

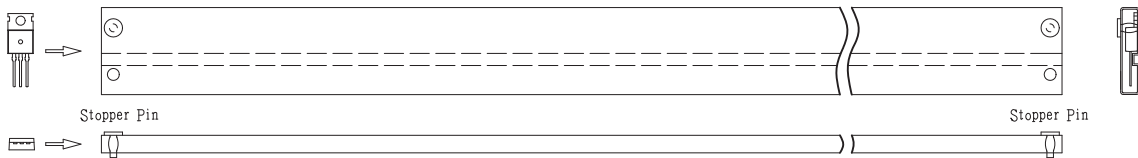
2. Magazine dimensions

(unit:mm)

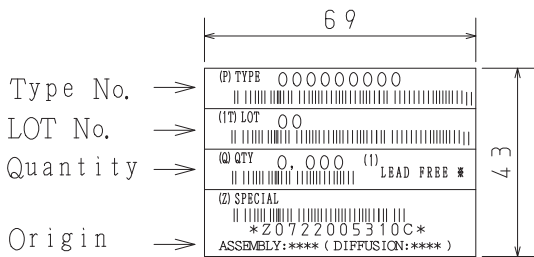


Tolerance=±0.2mm
 Thickness=0.6+0.2/-0mm
 Length =512.6±1mm
 Material =PVC (Antistatic treatment)

3. Storage method to magazine

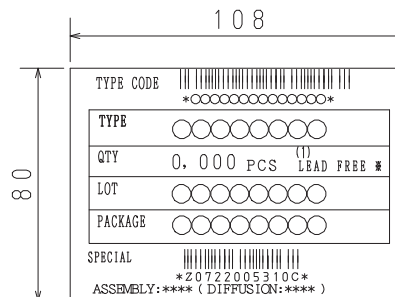


4. Inner box label (unit:mm)



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)

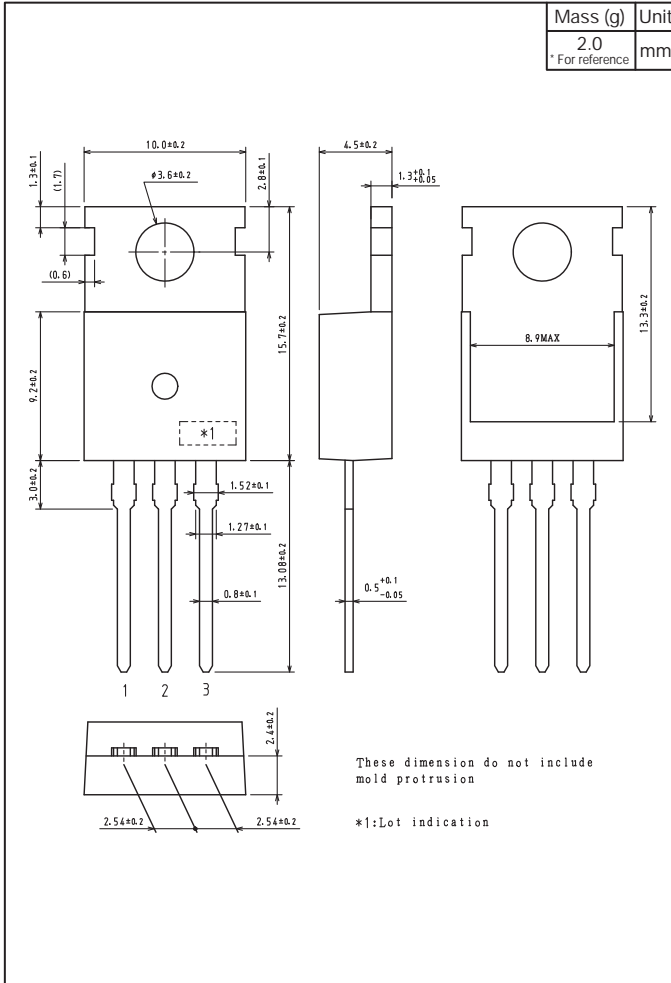
The LEAD FREE * description shows that the surface treatment of the terminal is lead free,

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

BXL4004

Outline Drawing

BXL4004-1E



Note on usage : Since the BXL4004 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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