



WPH4003 — N-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

- ON-resistance $R_{DS(on)} = 8.2\Omega$ (typ.)
- Input Capacitance $C_{iss} = 850pF$ (typ.)
- 10V drive

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		1700	V
Gate-to-Source Voltage	V_{GSS}		± 30	V
Drain Current (DC)	I_{Dc}^{*1}	Limited only maximum temperature $T_{ch} = 150^\circ C$	3	A
	I_{Dpack}^{*2}	$T_c = 25^\circ C$ (SANYO's ideal heat dissipation condition) *3	2.5	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycle $\leq 1\%$	6	A
Allowable Power Dissipation	P_D		3.0	W
		$T_c = 25^\circ C$	55	W
Channel Temperature	T_{ch}		150	$^\circ C$
Storage Temperature	T_{stg}		-55 to +150	$^\circ C$
Avalanche Energy (Single Pulse) *4	E_{AS}		49	mJ
Avalanche Current *5	I_{AV}		3	A

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.

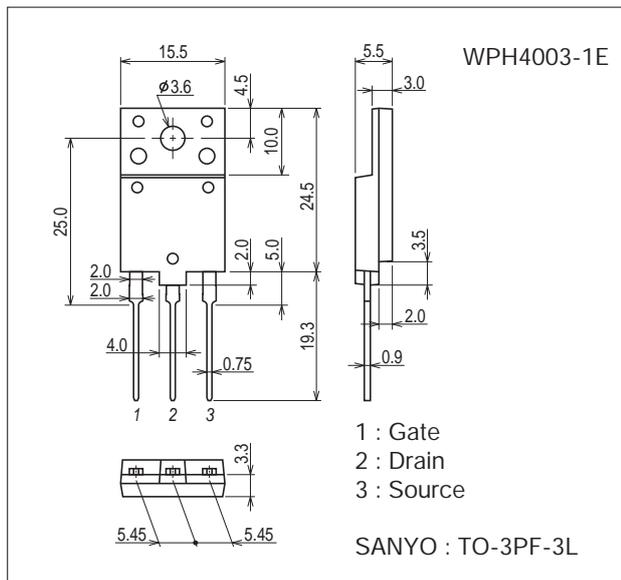
*4 $V_{DD} = 50V$, $L = 10mH$, $I_{AV} = 3A$ (Fig.1)

*5 $L \leq 10mH$, single pulse

Package Dimensions

unit : mm (typ)

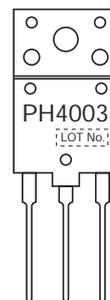
7538A-002



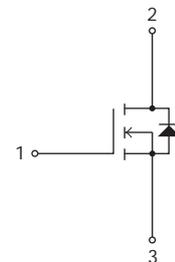
Product & Package Information

- Package : TO-3PF-3L
- JEITA, JEDEC : SC-96
- Minimum Packing Quantity : 30 pcs./magazine

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	1700			V
Zero-Gate Voltage Drain Current	IDSS	VDS=1360V, VGS=0V			1	mA
Gate-to-Source Leakage Current	IGSS	VGS=±30V, VDS=0V			±100	nA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	2		4	V
Forward Transfer Admittance	yfs	VDS=20V, ID=1.5A	1.2	2.4		S
Static Drain-to-Source On-State Resistance	RDS(on)	ID=1.5A, VGS=10V		8.2	10.5	Ω
Input Capacitance	Ciss	VDS=30V, f=1MHz		850		pF
Output Capacitance	Coss			90		pF
Reverse Transfer Capacitance	Crss			27		pF
Turn-ON Delay Time	td(on)	See Fig.2		19		ns
Rise Time	tr			21		ns
Turn-OFF Delay Time	td(off)			200		ns
Fall Time	tf			55		ns
Total Gate Charge	Qg	VDS=200V, VGS=10V, ID=3A		48		nC
Gate-to-Source Charge	Qgs			6		nC
Gate-to-Drain "Miller" Charge	Qgd			22		nC
Diode Forward Voltage	VSD	IS=3A, VGS=0V		0.8	1.5	V
Reverse Recovery Time	trr	See Fig.3		410		ns
Reverse Recovery Charge	Qrr	IS=3A, VGS=0V, di/dt=100A/μs		3000		nC

Fig.1 Unclamped Inductive Switching Test Circuit

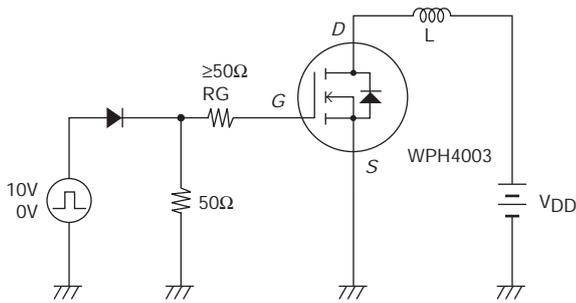


Fig.2 Switching Time Test Circuit

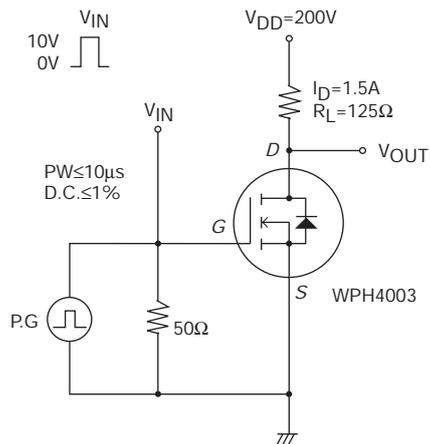
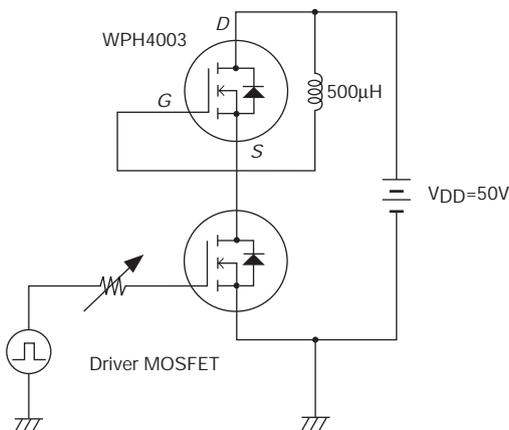
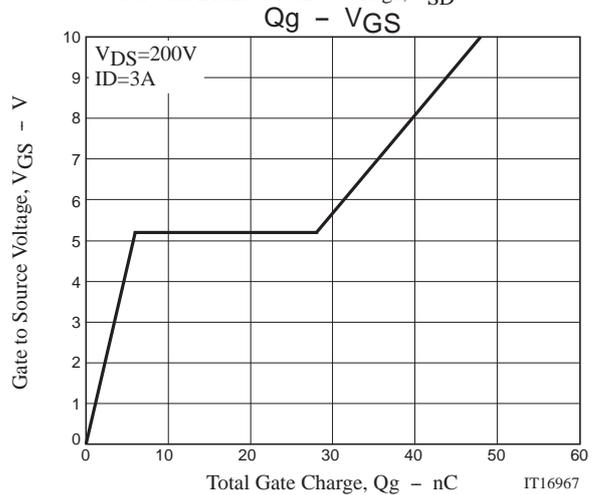
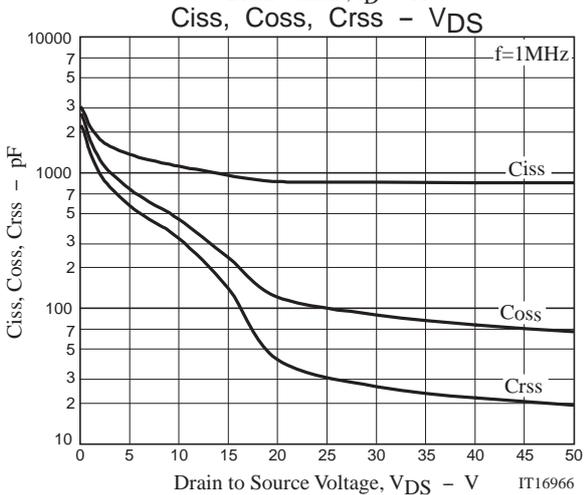
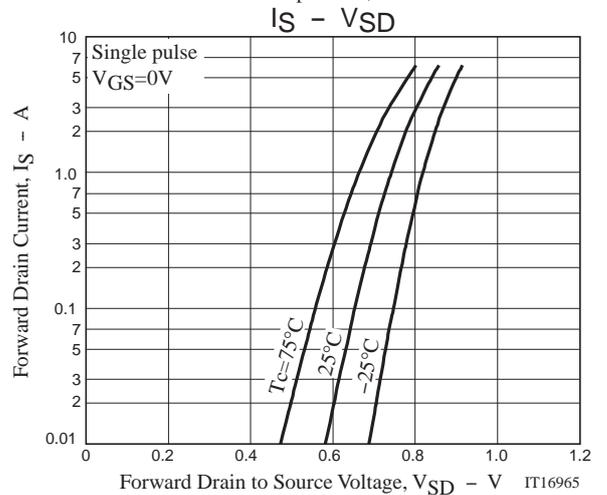
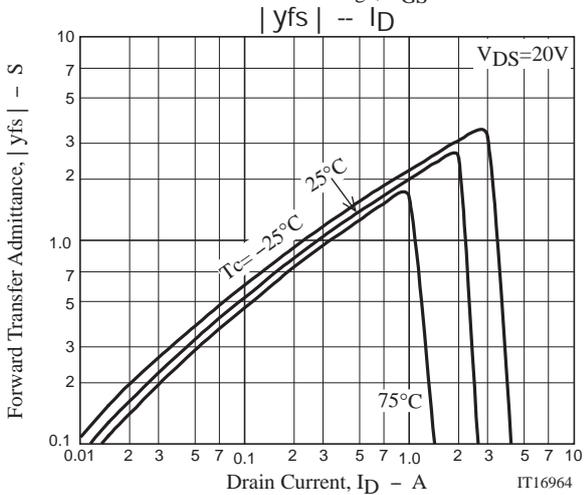
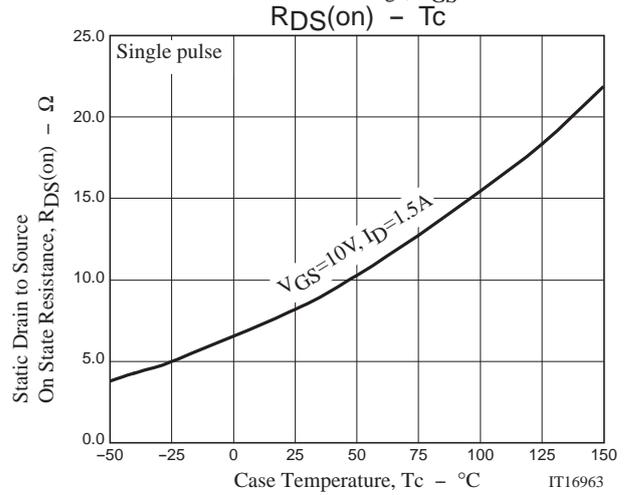
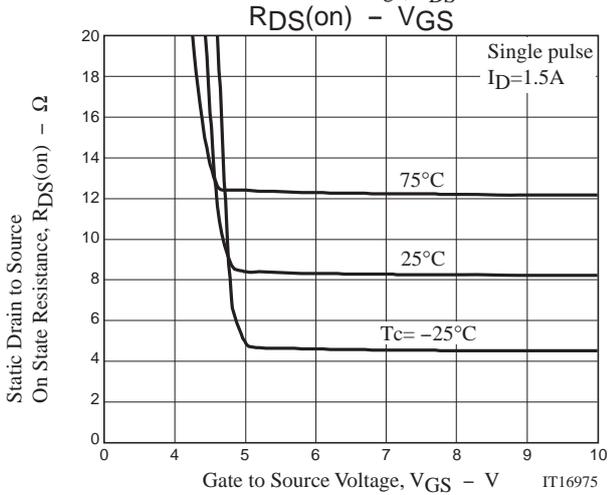
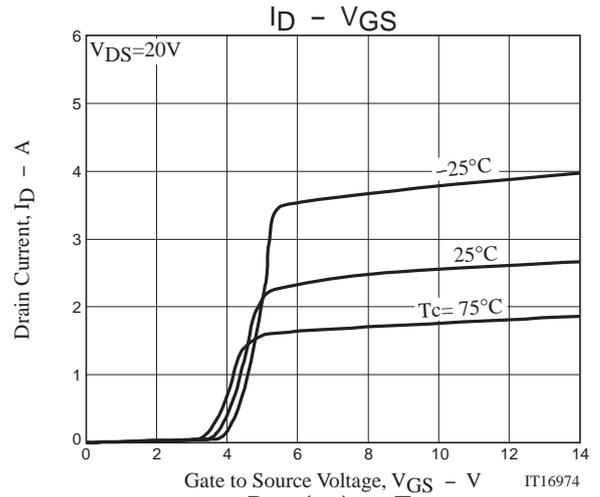
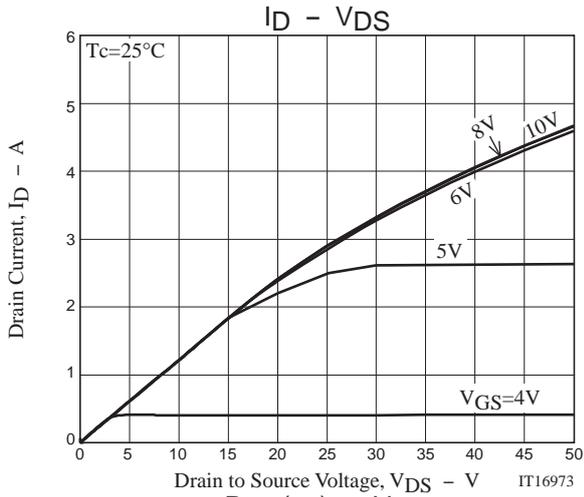


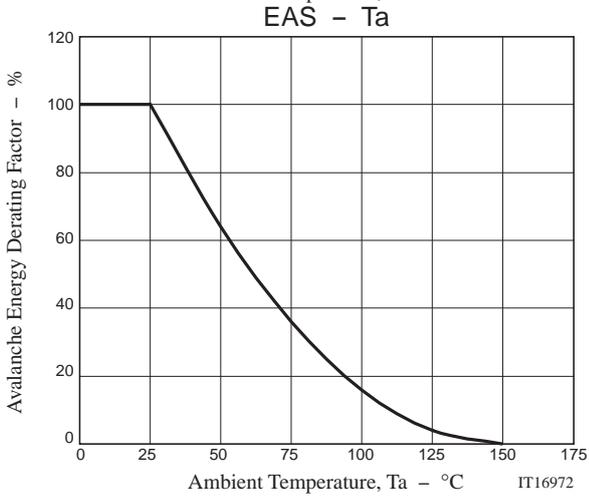
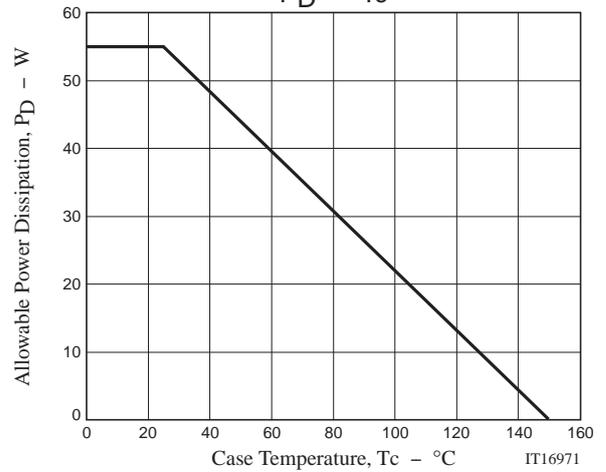
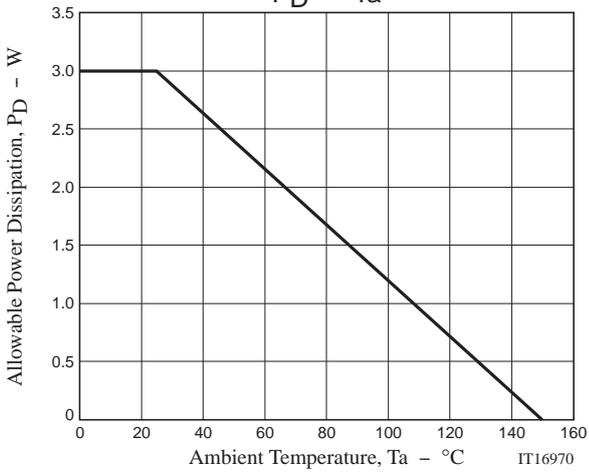
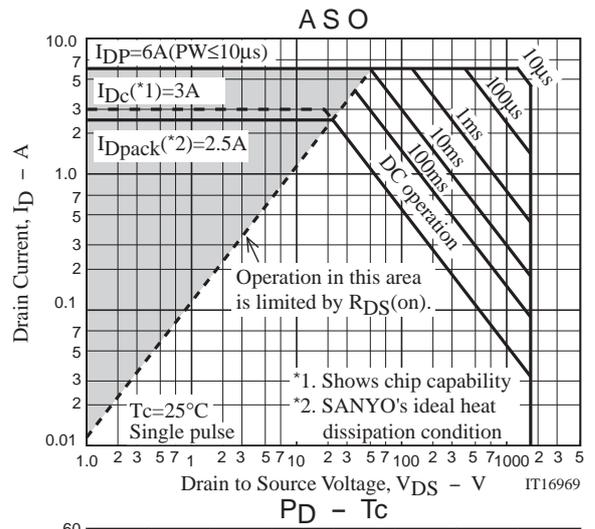
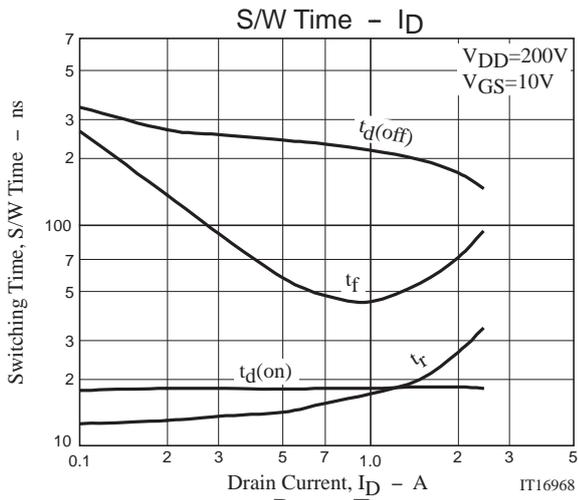
Fig.3 Reverse Recovery Time Test Circuit



Ordering Information

Device	Package	Shipping	memo
WPH4003-1E	TO-3PF-3L	30pcs./magazine	Pb Free





Magazine Specification

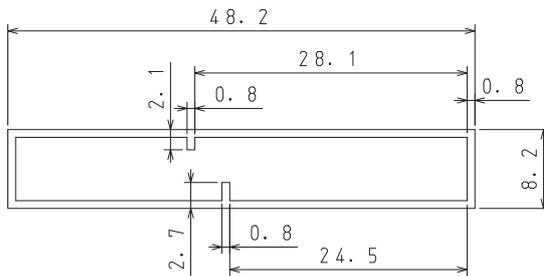
WPH4003-1E

1. Packing Format

Package Name	Maximum Number of devices contained (pcs)			Packing format	
	Magazine	Inner box	Outer box	Inner BOX	Outer BOX
TO-3PF-3L	30	360	1440	SPD-0V0001 12 magazines contained Dimensions:mm (external) 568×150×55	SPD-LV0010 4 inner boxes contained Dimensions:mm (external) 590×225×178

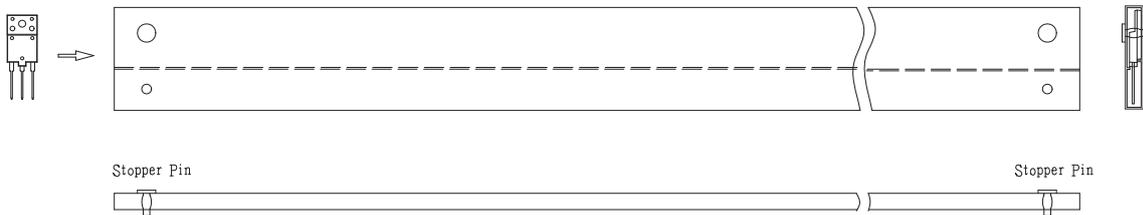
2. Magazine dimensions

(unit:mm)



Tolerance=±0.2mm
 Thickness=0.8±0.2mm
 Length =508.0±1mm
 Material =PVC or PET
 (Antistatic treatment)

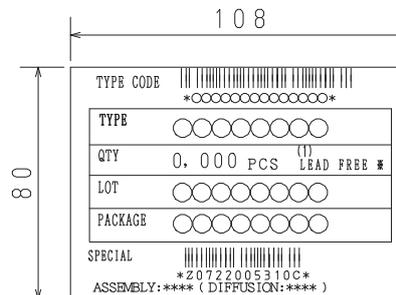
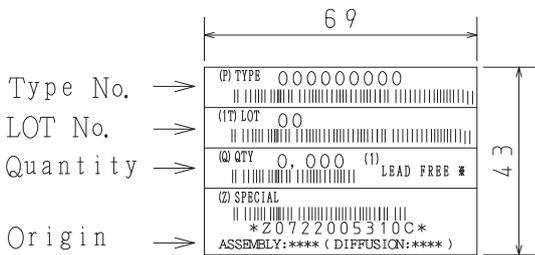
3. Storage method to magazine



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)

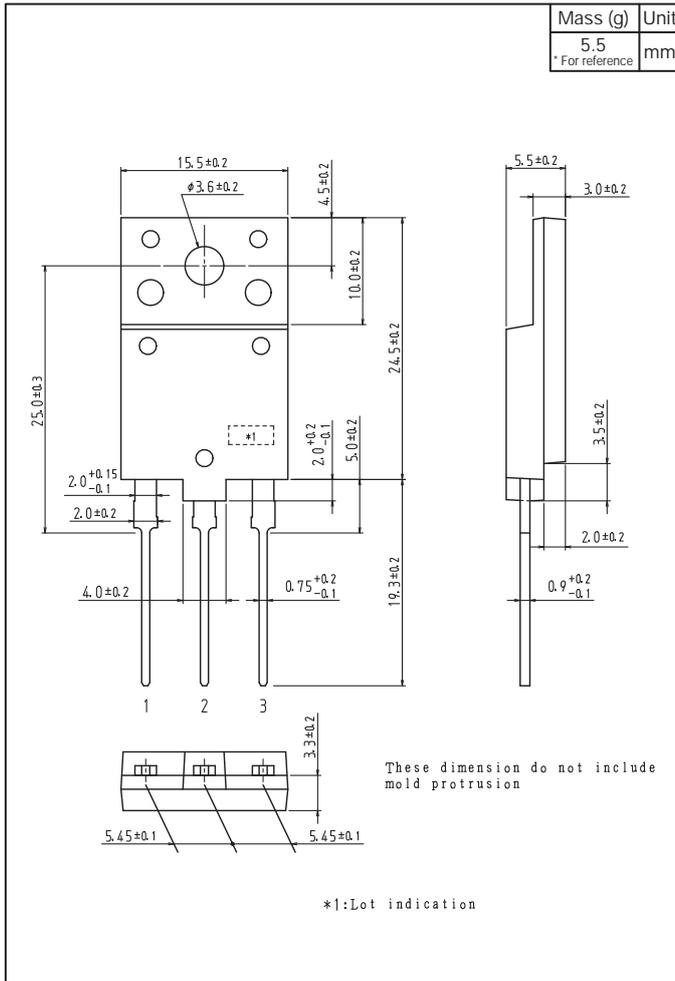
The LEAD FREE * description shows that the surface treatment of the terminal is lead free,

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

WPH4003

Outline Drawing

WPH4003-1E



Note on usage : Since the WPH4003 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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