



# PT3601A

## General purpose Hall-effect Latch

### Applications

- DC brushless motor
- Rotation detection
- Cover detector
- Speed Measurement
- Home appliances
- Home safety

### Features

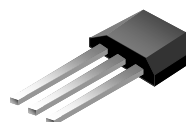
- 2.5V to 18V operation
- Built-in dynamic offset cancellation
- Small size
- High balance and low thermal drift magnetic sensing

### Ordering information

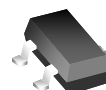
- PT3601A-PA  
Package(PA):UA or LH

P/N: PT3601A-XX

TO92-3L (UA)



SOT23-3L (LH)



### Specifications

#### Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Conditions	Rating	Units
Maximum supply voltage	$V_{DDmax}$		18	V
Allowable power dissipation	$P_D$	TO-92(UA)	550*	mW
		SOT-23(LH)	300*	mW
Operating temperature	Ta		-40~+125	°C
Storage temperature	Ts		-50~+150	°C
Max. output current	$I_{OMAX}$		25	mA

\*: On 50mm x 50mm x 1.6mm glass epoxy board

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**PROLIFIC TECHNOLOGY INC.**

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**Electrical Characteristics (T<sub>A</sub>=+25°C, V<sub>DD</sub>=12V)**

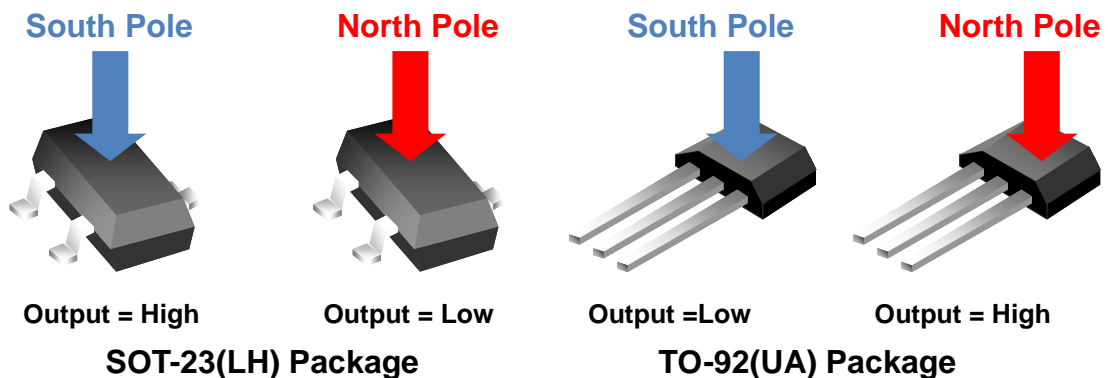
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Units
Supply Voltage	V <sub>DD</sub>		2.5		18	V
Output Sink Voltage	V <sub>DS(ON)</sub>	@ I <sub>OUT</sub> =15mA		0.3	0.5	V
Output Breakdown Voltage	V <sub>BV</sub>		18			V
Supply Current	I <sub>DD</sub>	Output open		6	8	mA

**Magnetic Characteristics (T<sub>A</sub>=+25°C, V<sub>DD</sub>=12V)**

Operate Point	B <sub>OP</sub>		-	15	35	G
Release Point	B <sub>RP</sub>		-35	-15	-	G
Hysteresis	B <sub>HYS</sub>		20	30	60	G

**Output Behavior versus Polarity (T<sub>A</sub>=-40°C~125°C, V<sub>DD</sub>=2.5V~18V)**

Parameters	Test Conditions(LH)	Output(LH)	Test Conditions(UA)	Output(UA)
South pole	B<Brp	High	B>Bop	Low
North pole	B>Bop	Low	B<Brp	High



**General Specifications**

The PT3601A is designed for magnetic actuating using a bipolar magnetic field. The built-in dynamic offset cancellation of pre-amplifier stage achieves optimal symmetrical magnetic sensing. This Hall effect IC is optimal for DC brushless fan application. The supply voltage range is from 2.5V to 18V and the maximum output current is 25mA.

This Hall effect sensor IC integrate the sensor, pre-amplifier with dynamic offset cancellation and the hysteresis comparator in single chip. The architecture block diagram is shown in Fig. 1.

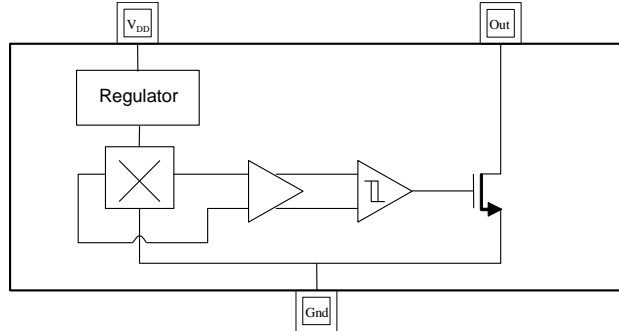
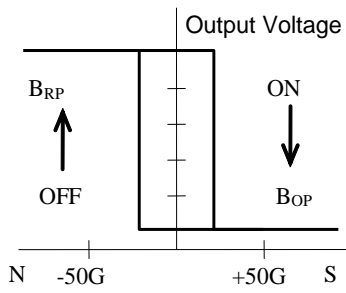
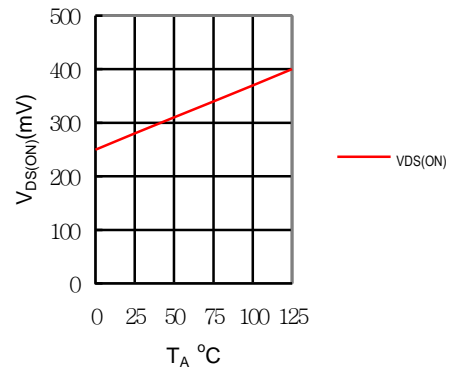


Fig. 1. Functional diagram

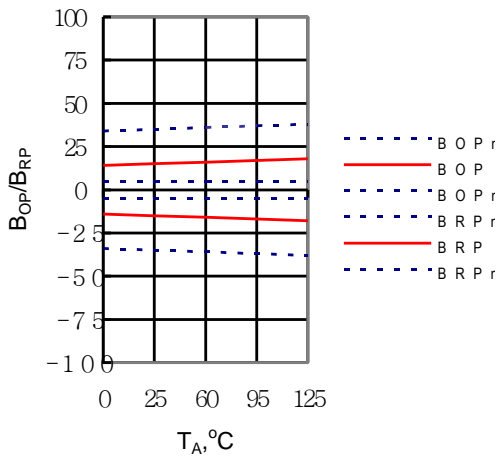
Magnetic Flux Density in



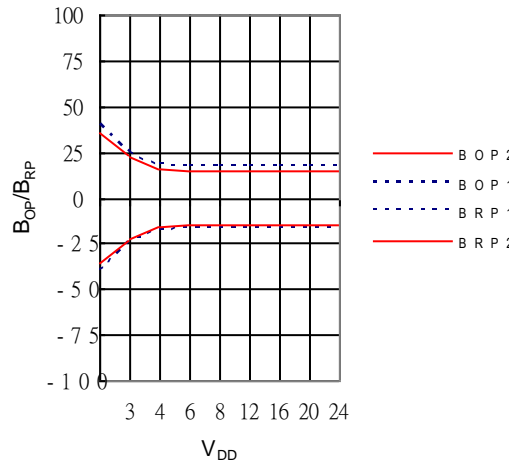
Output sink voltage versus temperature



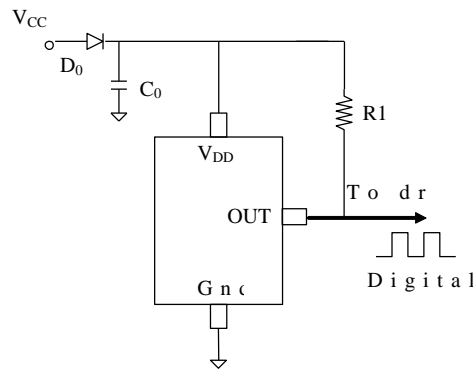
B<sub>OP</sub>, B<sub>RP</sub> versus temperature



B<sub>OP</sub>, B<sub>RP</sub> versus supply voltage



## 12V Application circuits



**NOTE :**

D0: general diode

C0: decoupling capacitor 1uF(recommended)

R1: 10Kohm (recommended)

### Power Dissipation Calculation:

The power dissipation is calculated as follows:

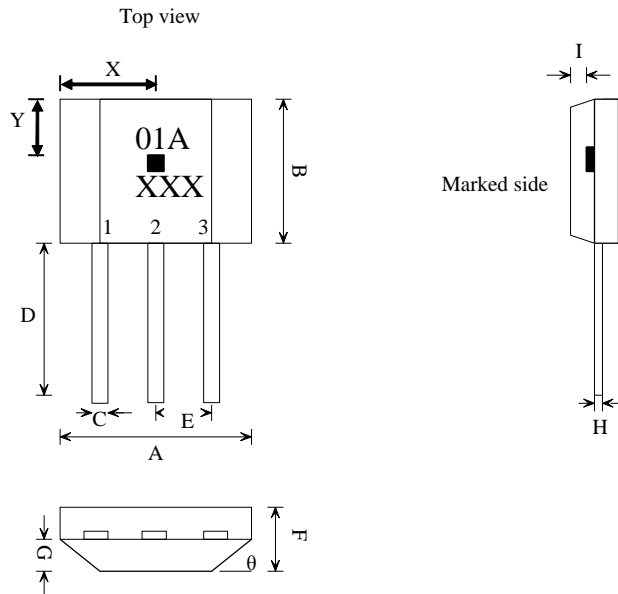
$$P_D = V_{DD} \times I_{DD}$$

For example:

When  $V_{DD}=12V$  ;  $I_{DD}=6mA$

$PD=12V \times 6mA = 72mW$

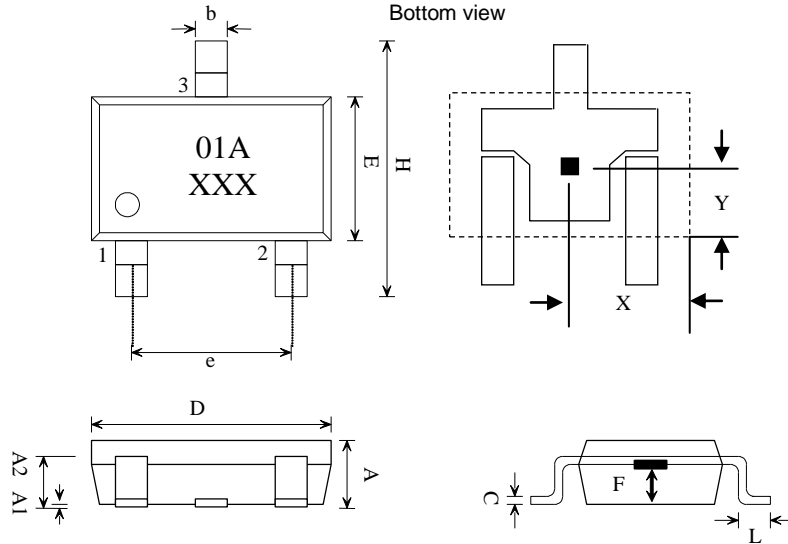
This is the approximate amount of power dissipated in the IC.

**Package Outline  
 TO-92(UA)**


Marking:  
 Part Number : 01A  
 Date Code : X(Year) XX(Week)

1. VDD/DC power supply
2. GND/DC ground
3. OUT/output pin

SYMBOLS	DIMENSIONS IN MILLIMETERS(mm)		
	MIN	NOM	MAX
A	3.80	4.00	4.20
B	2.90	3.10	3.30
C	0.38	0.45	0.52
D	14.40	14.60	14.80
E	1.24	1.27	1.30
F	1.45	1.50	1.55
G	0.68	0.73	0.78
H	0.36	0.43	0.50
I	0.41	0.43	0.45
$\theta$		45°	
Sensor Location			
X	1.90	2.00	2.10
Y	0.90	1.00	1.10

**Package Outline**  
**SOT-23(LH)**
**Sensor Location**


Marking:  
 Part Number : 01A  
 Date Code : X(Year) XX(Week)

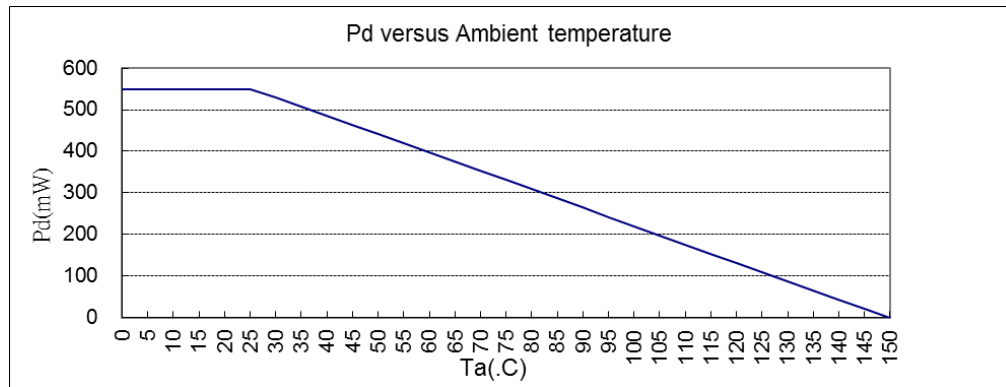
1. VDD/DC power supply  
 2. OUT/output pin  
 3. GND/DC ground

SYMBOLS	DIMENSIONS IN MILLIMETERS(mm)		
	MIN	NOM	MAX
A	1.00	1.10	1.30
A1	0.00	-	0.10
A2	0.70	0.80	0.90
b	0.35	0.40	0.50
C	0.10	0.15	0.25
D	2.70	2.90	3.10
E	1.40	1.80	2.00
H	2.60	2.8	3.00
e	1.7	1.9	2.1
L	0.20	-	-
Sensor Location			
X	1.35	1.45	1.55
Y	0.85	0.95	1.05
F	0.35	0.50	0.65

**Thermal Resistance**
**TO92-3L**

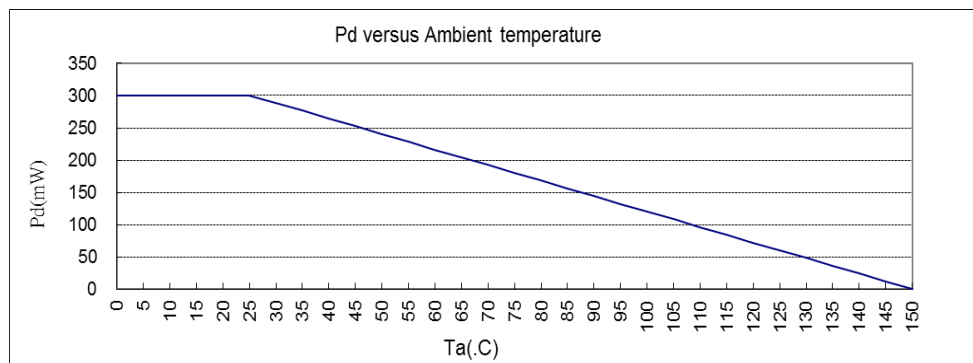
Parameter	Symbol	Conditions	Rating	Units
Allowable power dissipation	$P_d$		550 <sup>*1</sup>	mW
Junction to ambient thermal resistance	$\theta_{JA}$		227	$^{\circ}\text{C}/\text{W}$
Junction to case thermal resistance	$\theta_{JC}$		90	$^{\circ}\text{C}/\text{W}$
Maximum junction temperature	$T_J$		150	$^{\circ}\text{C}$

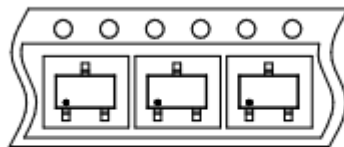
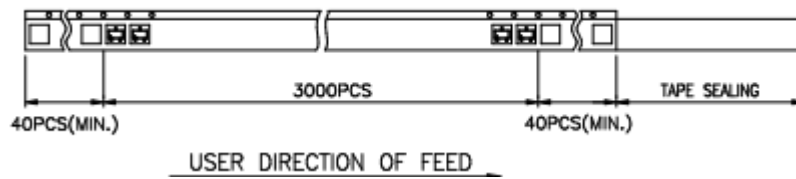
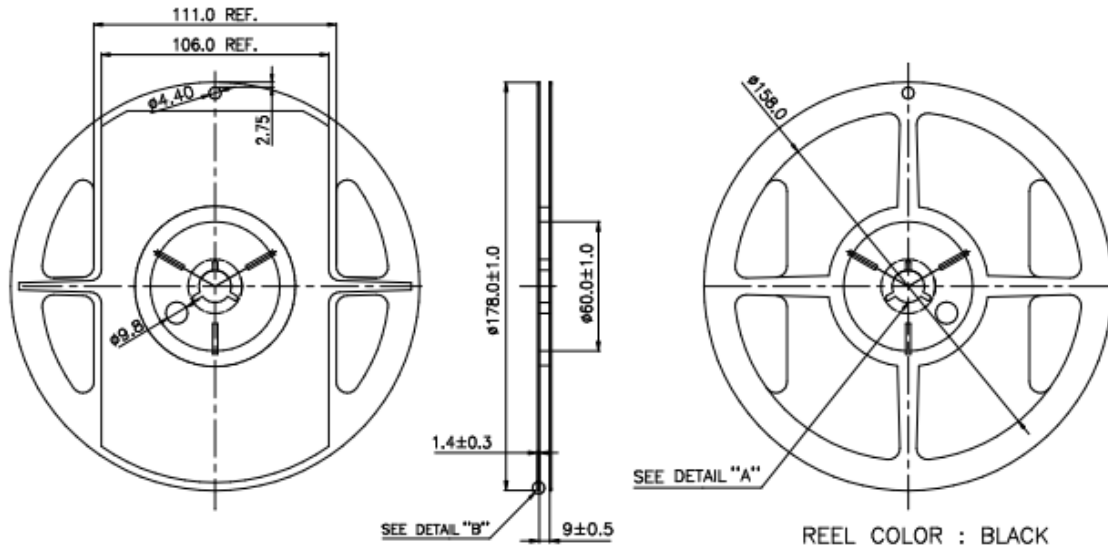
\*1: Reduced by 4.4mW for each increase in  $T_a$  of  $1^{\circ}\text{C}$  over  $25^{\circ}\text{C}$  When mounted on 50mm x 50mm x 1.6mm glass epoxy board


**SOT-23**

Parameter	Symbol	Conditions	Rating	Units
Allowable power dissipation	$P_d$		300 <sup>*1</sup>	mW
Junction to ambient thermal resistance	$\theta_{JA}$		280	$^{\circ}\text{C}/\text{W}$
Junction to case thermal resistance	$\theta_{JC}$		110	$^{\circ}\text{C}/\text{W}$
Maximum junction temperature	$T_J$		150	$^{\circ}\text{C}$

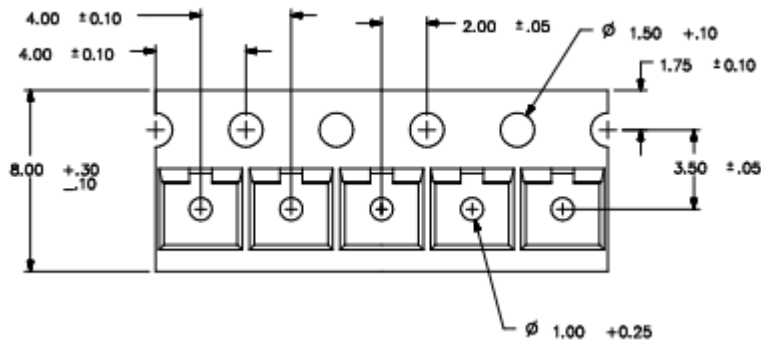
\*1: Reduced by 3.6mW for each increase in  $T_a$  of  $1^{\circ}\text{C}$  over  $25^{\circ}\text{C}$  When mounted on 50mm x 50mm x 1.6mm glass epoxy board



**Packing dimension**  
**SOT-23**


SOT-23

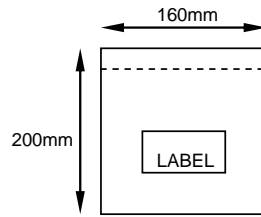
3000 EA/PER REEL 4 REEL/BOX



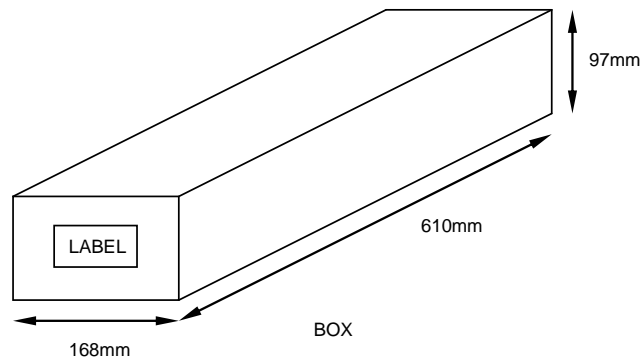


## TO-92(UA) packing specification

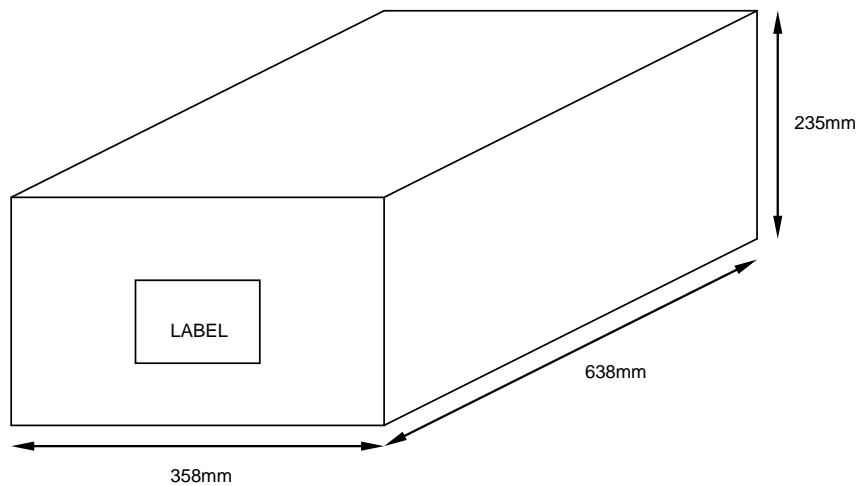
### 1. Dimension:



BAG



BOX



CARTON

### 2. Quantity:

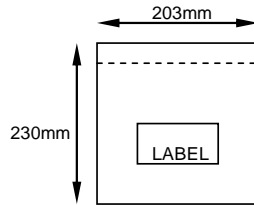
1BAG=1000EA

1BOX=20BAGS

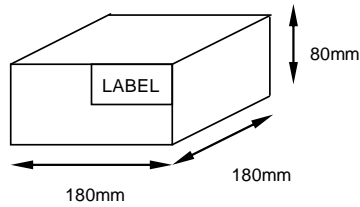
1CARTON=4BOXES

**SOT-23(LH) packing specification**

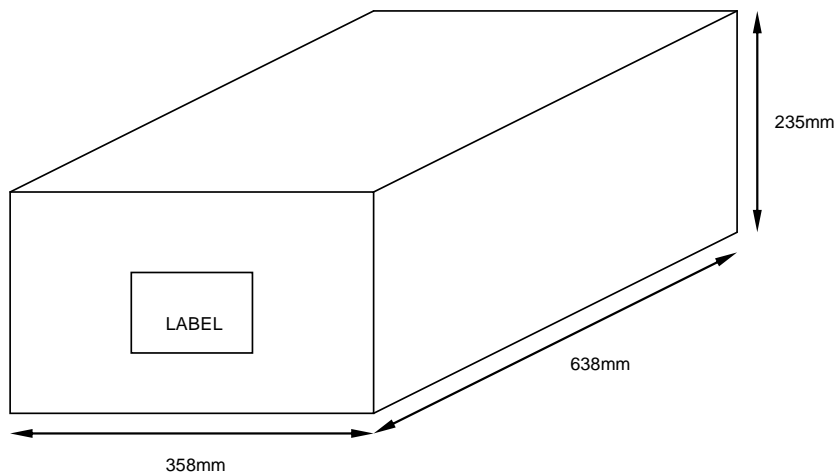
1. Dimension:



BAG



BOX



CARTON

2. Quantity:

1REEL=3000EA

1BOX=5 REELS

1CARTON=14BOXES

**Order information**

Part Number	Temperature Range	Package Type	Package Qty	Quantity Per Box	Prolific Type Code
PT3601A-UA	-40°C~+125°C	TO92-3L	1000pcs/Bulk	20000/Box	PT3601J1OAG7P1
PT3601A-LH	-40°C~+125°C	SOT23-3L	3000pcs/reel	15000/Box	PT3601J1SAG8P1

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