

**DYNAMIC PSR ACCELERATOR****AP4340****General Description**

The AP4340 is an output voltage detector for Primary Side Control System. It detects the output voltage and provides a periodical signal when the output voltage is lower than a certain threshold. The periodical signal can be coupled by the transformer to the primary side and provided as an awakening signal for the main primary side controller. By fast response to secondary side voltage, the AP4340 can effectively improve the transient performance of Primary Side Control System.

The AP4340 is available in TO-92 and SOT-23 packages.

**Features**

- Fast Detector of Supply Voltages
- 37kHz Output Pulse
- No External Components

**Applications**

- Adapters/Chargers for Cell/Cordless Phones, ADSL Modems, MP3 and Other Portable Apparatus
- Standby and Auxiliary Power Supplies

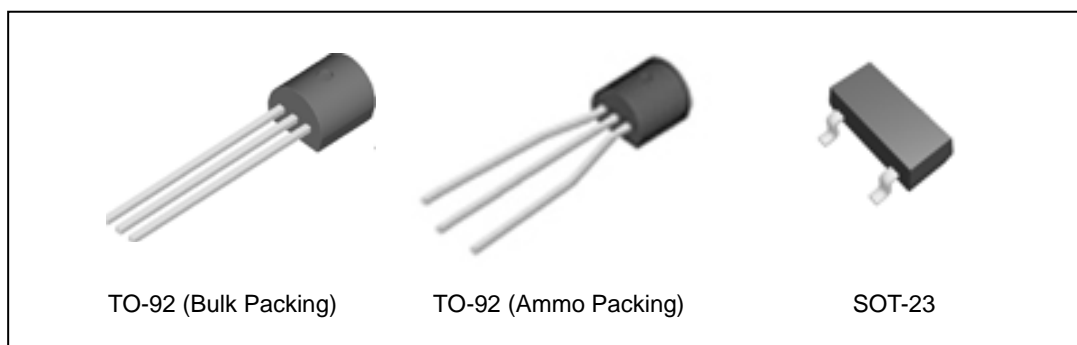


Figure 1. Package Types of AP4340

**DYNAMIC PSR ACCELERATOR**
**AP4340**
**Pin Configuration**

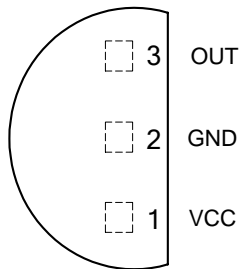
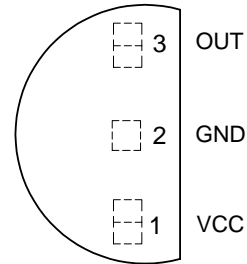
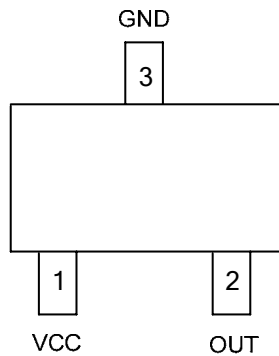
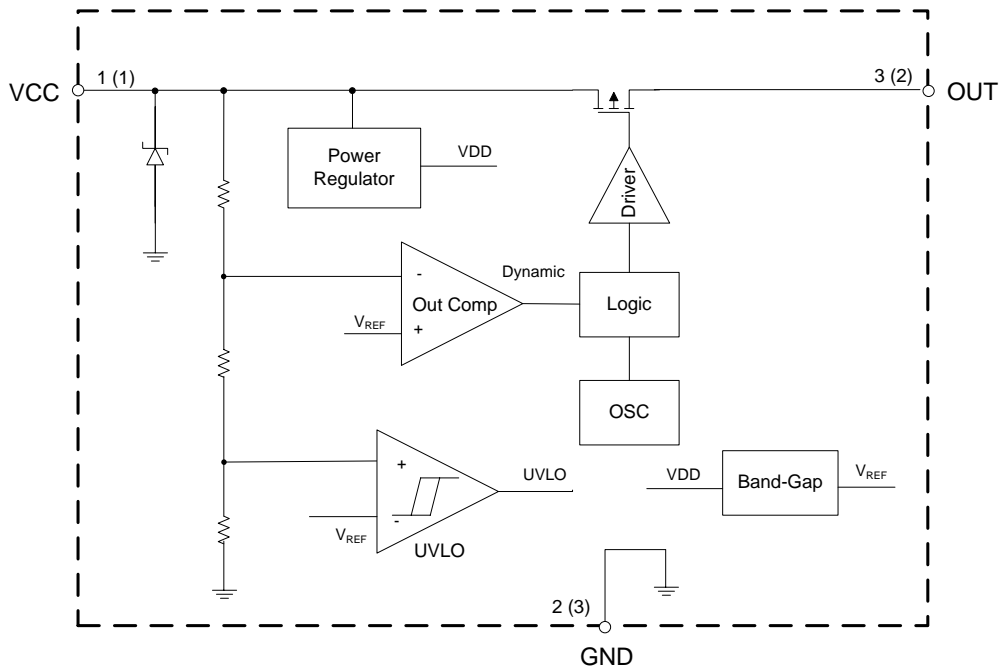
 Z Package  
(TO-92 Bulk Packing)

 Z Package  
(TO-92 Ammo Packing)

 N Package  
(SOT-23)


Figure 2. Pin Configuration of AP4340 (Top View)

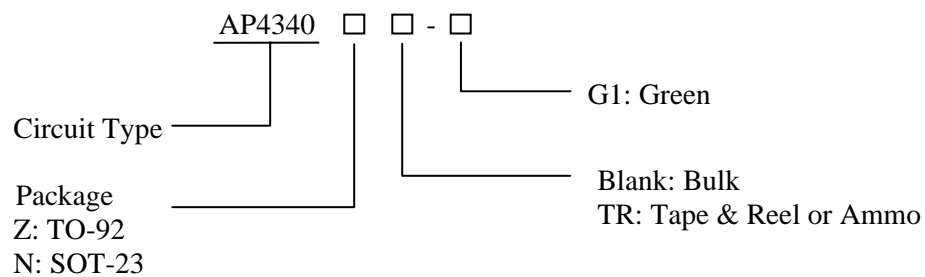
**Pin Description**

Pin Number		Pin Name	Function
TO-92	SOT-23		
1	1	VCC	This pin is the positive supply voltage input. VCC signal is also used to detect the secondary output voltage
3	2	OUT	This pin supplies the pulse output current when V <sub>CC</sub> is lower than the internal trigger voltage
2	3	GND	This pin is the control ground

**DYNAMIC PSR ACCELERATOR**
**AP4340**
**Functional Block Diagram**


A (B)  
 A for TO-92  
 B for SOT-23

Figure 3. Functional Block Diagram of AP4340

**Ordering Information**


Package	Temperature Range	Part Number	Marking ID	Packing Type
TO-92	-40 to 85°C	AP4340Z-G1	4340Z-G1	Bulk
		AP4340ZTR-G1	4340Z-G1	Ammo
SOT-23		AP4340NTR-G1	GT2	Tape & Reel

BCD Semiconductor's Pb-free products, as designated with "G1" suffix in the part number, are RoHS compliant and green.

**DYNAMIC PSR ACCELERATOR****AP4340****Absolute Maximum Ratings (Note 1)**

Parameter	Value		Unit
Supply Voltage $V_{CC}$	-0.3 to 9		V
Voltage at OUT	-47 to 9		V
$V_{CC}$ to $V_{OUT}$	-0.6 to 47		V
Output Current at OUT	Internally limited		A
Power Dissipation at $T_A=25^\circ\text{C}$	SOT-23	0.2	W
	TO-92	0.5	
Operating Junction Temperature	150		$^\circ\text{C}$
Storage Temperature	-65 to 150		$^\circ\text{C}$
Lead Temperature (Soldering, 10 sec)	300		$^\circ\text{C}$
Thermal Resistance Junction-to-Case	SOT-23	137	$^\circ\text{C}/\text{W}$
	TO-92	83	

Note 1: Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “Recommended Operating Conditions” is not implied. Exposure to “Absolute Maximum Ratings” for extended periods may affect device reliability.

**Recommended Operating Conditions**

Parameter	Symbol	Min	Max	Unit
Supply Voltage	$V_{CC}$	0	6	V
Ambient Temperature	$T_A$	-40	85	$^\circ\text{C}$

**DYNAMIC PSR ACCELERATOR****AP4340****Electrical Characteristics** $V_{CC}=5V$ ,  $T_A=25^{\circ}C$ , unless otherwise specified.

Parameter	Conditions	Min	Typ	Max	Unit
<b>Supply Voltage ( VCC Pin )</b>					
Power-on Voltage ( $V_{ON}$ )		4.1	4.4	4.8	V
Startup Current	$V_{CC}=V_{ON}-0.2V$	50	200	245	$\mu A$
Operating Current	OUT pin floating $V_{CC}=5V$	50	240	285	$\mu A$
Power-off Voltage		3.45	3.8	4.15	V
Internal Trigger Voltage		4.83	4.9	5	V
<b>Output Section/ Oscillator Section</b>					
Duty Cycle	$V_{CC}=4.5V$	1.5	5	6.5	%
Normal Frequency	$V_{CC}=4.5V$	25	38	50	kHz
Output Maximum Current	OUT pin connect $100\Omega$ to GND	15	23	30	mA

Note 2: The system output voltage is 5V.

**Typical Performance Characteristics**

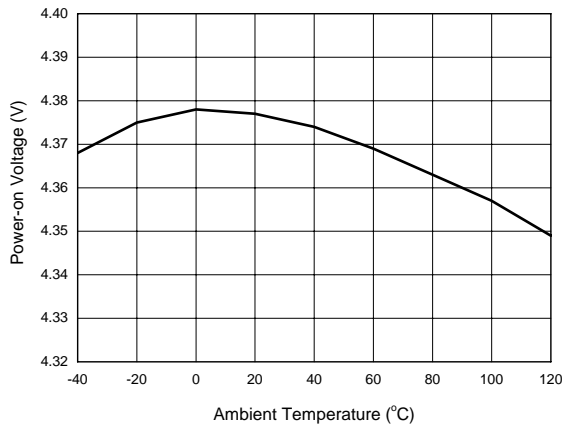


Figure 4. Power-on Voltage vs. Ambient Temperature

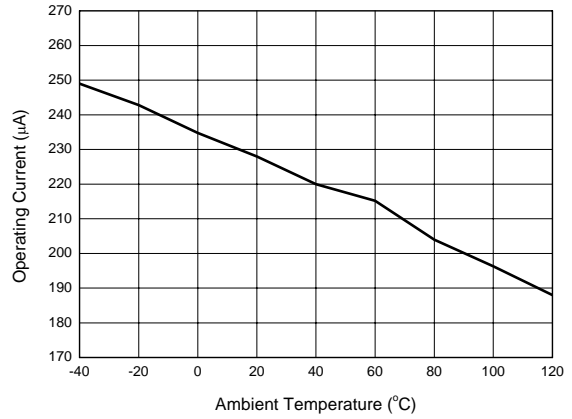


Figure 5. Operating Current vs. Ambient Temperature

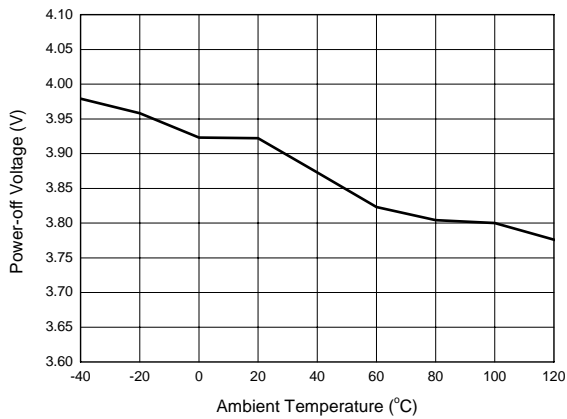


Figure 6. Power-off Voltage vs. Ambient Temperature

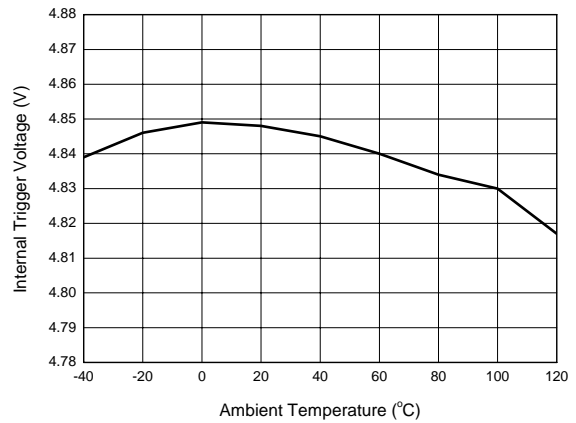


Figure 7. Internal Trigger Voltage vs. Ambient Temperature



**DYNAMIC PSR ACCELERATOR**

**AP4340**

**Typical Performance Characteristics (Continued)**

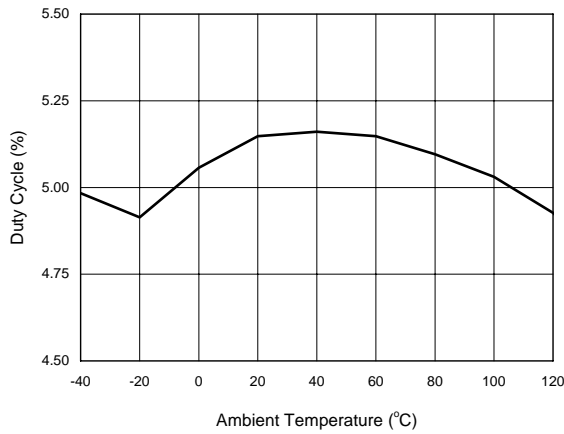


Figure 8. Duty Cycle vs. Ambient Temperature

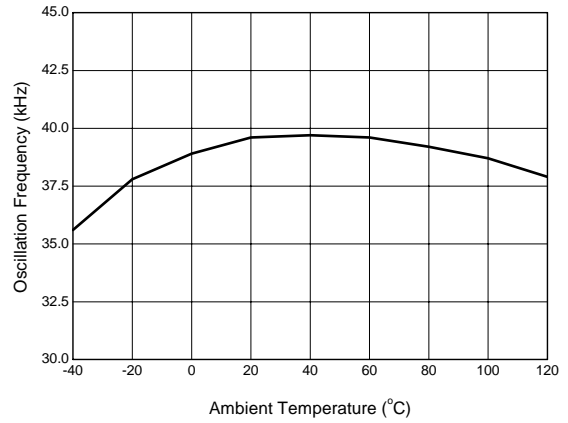


Figure 9. Oscillation Frequency vs. Ambient Temperature

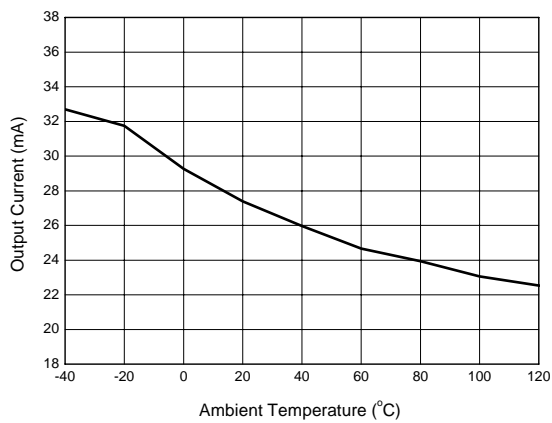


Figure 10. Output Current vs. Ambient Temperature

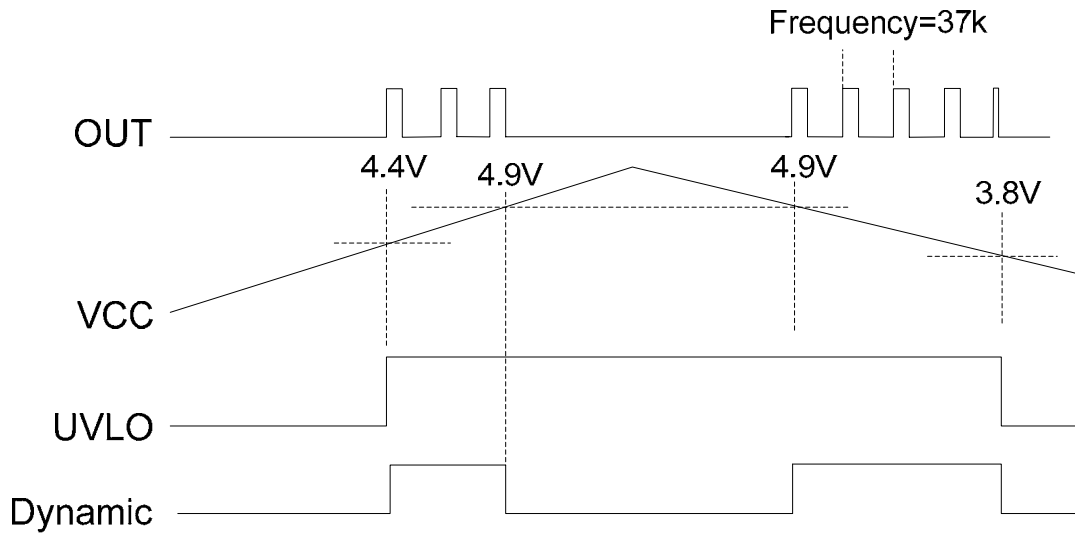
**Operation Description**


Figure 11. Typical Waveforms of AP4340

When VCC voltage is beyond 4.4V, the AP4340 starts up. When the VCC voltage falls below the internal trigger voltage (4.9V), the OUT pin asserts a periodical pulse with frequency of 37kHz. The pulse signal will stop when VCC voltage increases up to the trigger voltage. When the VCC voltage is below 3.8V, the AP4340 will be shut down.



**DYNAMIC PSR ACCELERATOR**

**AP4340**

**Typical Application**

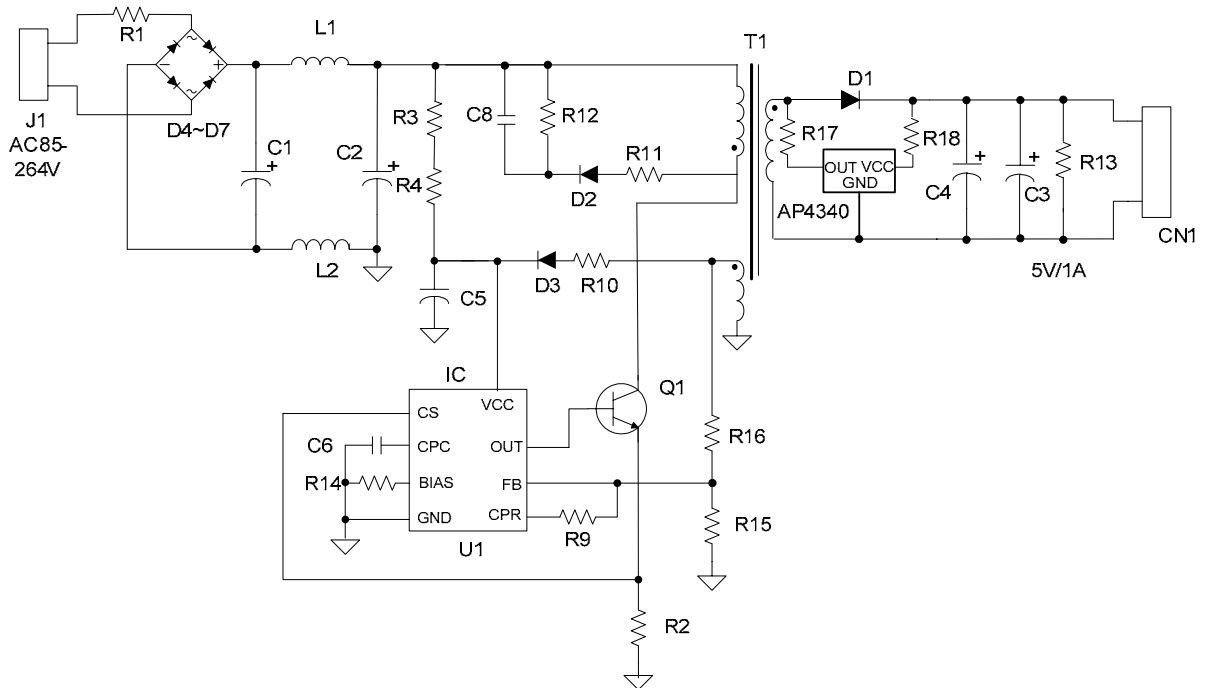


Figure 12. Typical Application of AP4340

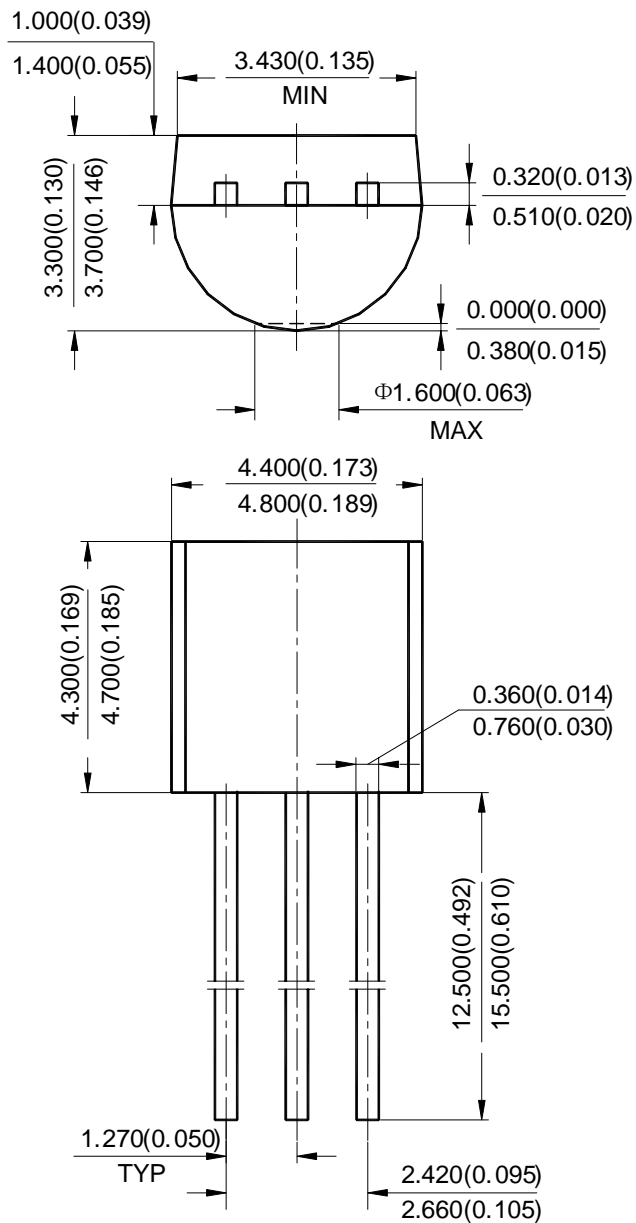
**DYNAMIC PSR ACCELERATOR**

**AP4340**

**Mechanical Dimensions**

**TO-92(Bulk Packing)**

**Unit: mm(inch)**



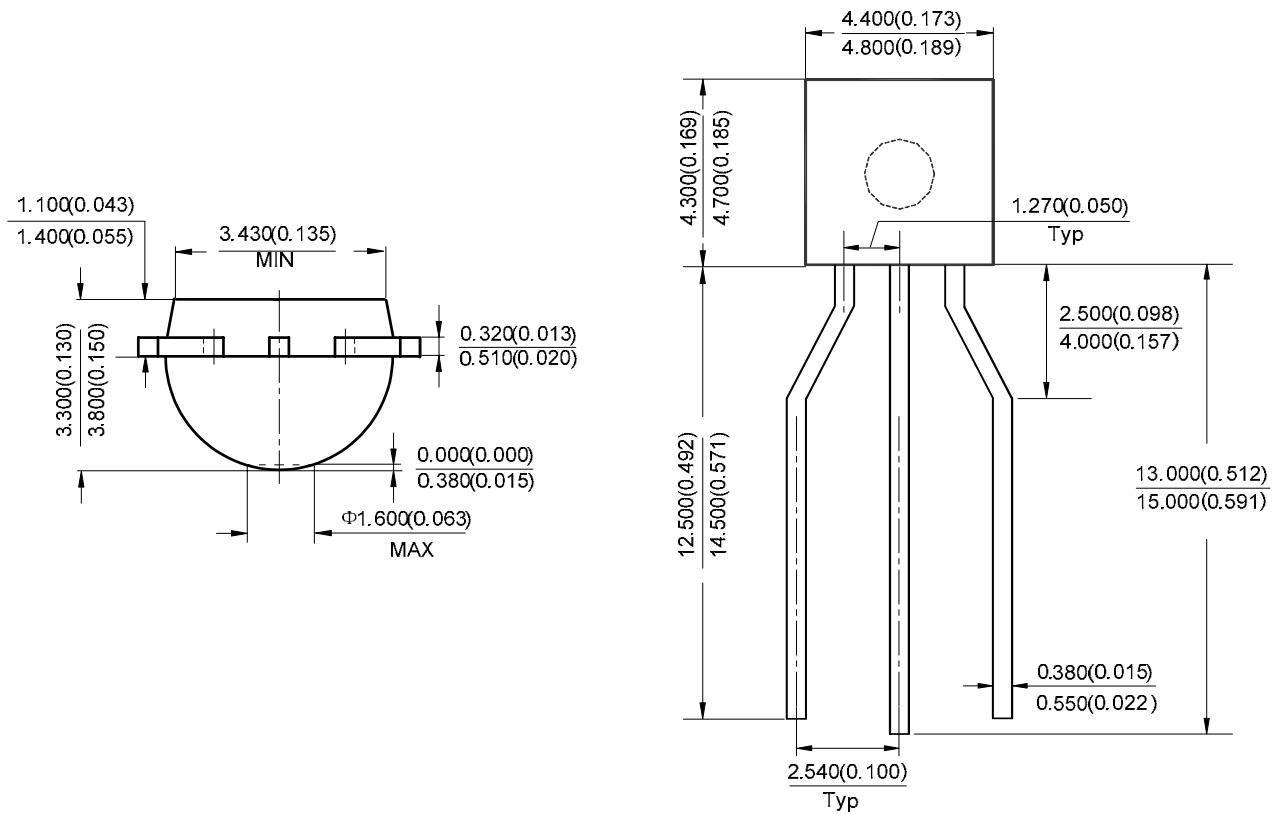
**DYNAMIC PSR ACCELERATOR**

**AP4340**

**Mechanical Dimensions (Continued)**

**TO-92 (Ammo Packing)**

**Unit: mm(inch)**



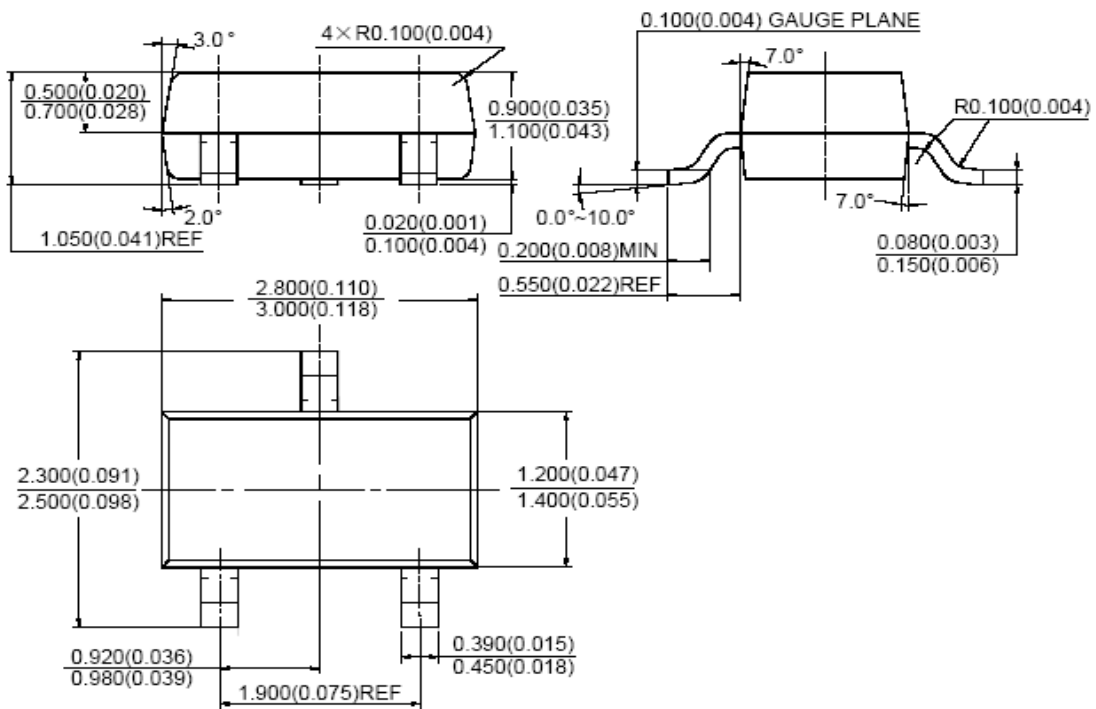
**DYNAMIC PSR ACCELERATOR**

**AP4340**

**Mechanical Dimensions (Continued)**

**SOT-23**

**Unit: mm(inch)**





## **BCD Semiconductor Manufacturing Limited**

<http://www.bcdsemi.com>

### **IMPORTANT NOTICE**

BCD Semiconductor Manufacturing Limited reserves the right to make changes without further notice to any products or specifications herein. BCD Semiconductor Manufacturing Limited does not assume any responsibility for use of any its products for any particular purpose, nor does BCD Semiconductor Manufacturing Limited assume any liability arising out of the application or use of any its products or circuits. BCD Semiconductor Manufacturing Limited does not convey any license under its patent rights or other rights nor the rights of others.

---

#### **MAIN SITE**

##### **- Headquarters**

##### **BCD Semiconductor Manufacturing Limited**

No. 1600, Zi Xing Road, Shanghai Zizhu Science-based Industrial Park, 200241, China  
Tel: +86-21-24162266, Fax: +86-21-24162277

##### **- Wafer Fab**

##### **Shanghai SIM-BCD Semiconductor Manufacturing Co., Ltd.**

800 Yi Shan Road, Shanghai 200233, China  
Tel: +86-21-6485 1491, Fax: +86-21-5450 0008

#### **REGIONAL SALES OFFICE**

##### **Shenzhen Office**

##### **Shanghai SIM-BCD Semiconductor Manufacturing Co., Ltd., Shenzhen Office**

Unit A Room 1203, Skyworth Bldg., Gaoxin Ave. 1.S., Nanshan District, Shenzhen, China  
Tel: +86-755-8826 7951  
Fax: +86-755-8826 7865

##### **Taiwan Office**

##### **BCD Semiconductor (Taiwan) Company Limited**

4F, 298-1, Rui Guang Road, Nei-Hu District, Taipei, Taiwan  
Tel: +886-2-2656 2808  
Fax: +886-2-2656 2806

##### **USA Office**

##### **BCD Semiconductor Corp.**

30920 Huntwood Ave. Hayward, CA 94544, USA  
Tel : +1-510-324-2988  
Fax: +1-510-324-2788