

**Features**

- ➔ Operation Range: 1.6~5.5V
- ➔ 20µA Maximum Standby Supply Current
- ➔ Thermal and Short-Circuit Protection
- ➔ Less than 100mΩ High-side MOSFET
- ➔ Filter for key input
- ➔ 1.5A current driver
- ➔ Protection for over temperature
- ➔ Protection for over current
- ➔ Battery under-voltage indicate
- ➔ Battery over discharge protect
- ➔ Lock function
- ➔ Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- ➔ Halogen and Antimony Free. “Green” Device (Note 3)
- ➔ For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact_us) or your local Diodes representative.
- ➔ <https://www.diodes.com/quality/product-definitions/>
- ➔ Packaging (Pb-free & Green):
  - 8-pin SOIC (W)

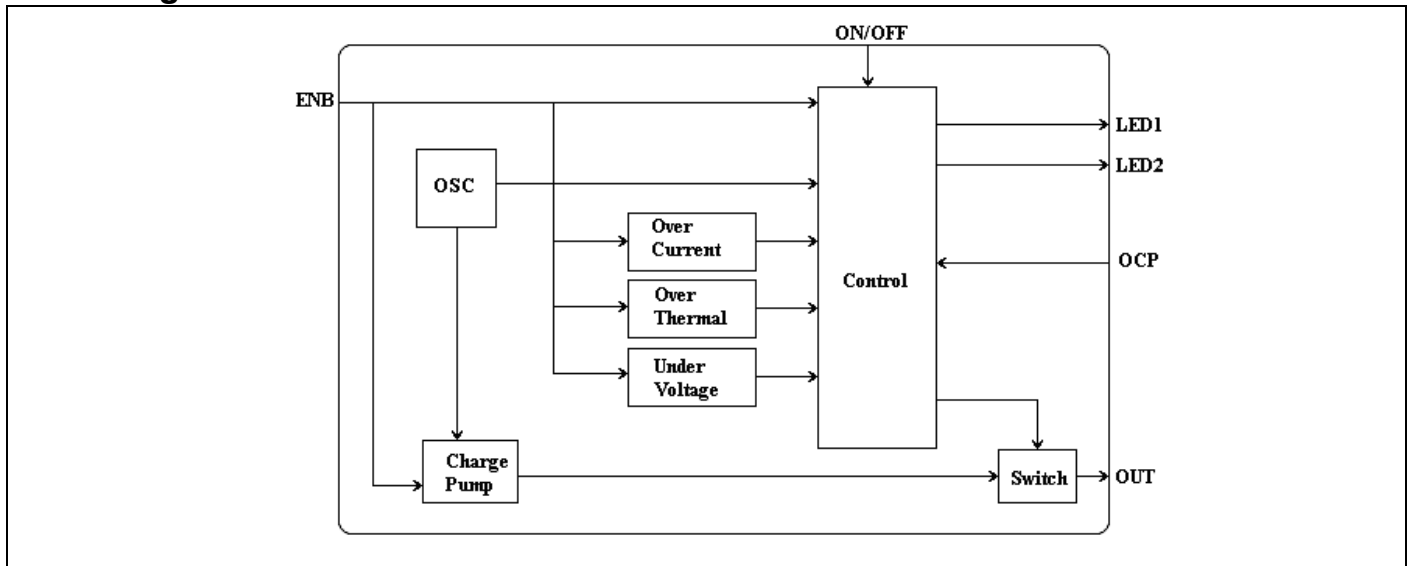
**Description**

The PT8A2767x is a mixed signal CMOS LSI chip designed as a simple power switch circuit for shaver, toothbrush and other electrical devices. It can drive motor directly and detect battery lacking. ON/OFF button control work status, and LED1, LED2 indicates work status. It has lock function.

**Application**

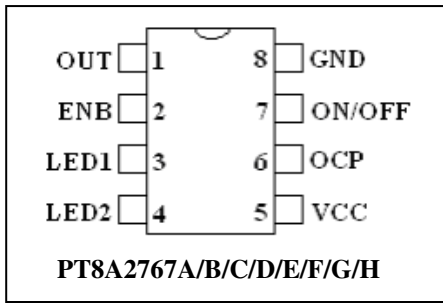
- ➔ Shaver
- ➔ Toothbrush

**Block Diagram**



Notes:  
 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.  
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated’s definitions of Halogen- and Antimony-free, “Green” and Lead-free.  
 3. Halogen- and Antimony-free “Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

## Pin Configuration



## Pin Description

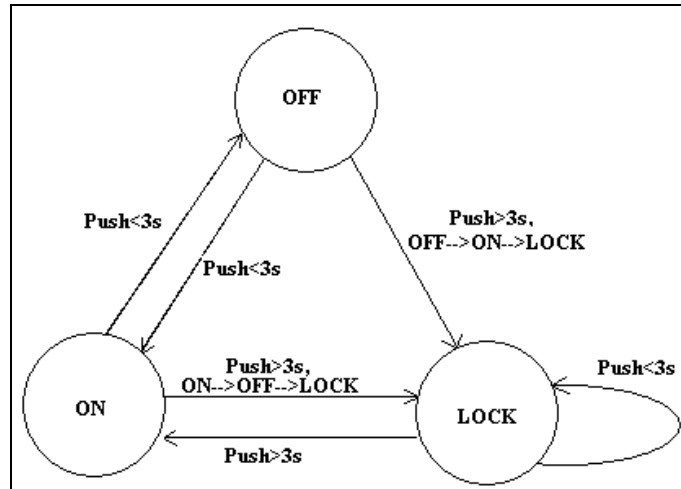
### PT8A2767A/B/C/D/E/F/G/H

Pin Name	Pin No.	Type	Descriptions
OUT	1	O	Output to drive motor
ENB	2	I	Enable input, active low.
LED1	3	O	LED1 indicator output.
LED2	4	O	LED2 indicator output.
VCC	5	Power	Power supply.
OCP	6	I	Over current protection input
ON/OFF	7	I	Key input, active low; this pin can also adjust the protection voltage of battery discharge.
GND	8	Power	Ground.

## Functional Description

- ON/OFF Button**

The button will be toggled ON or OFF state by pushing it less than 3 seconds, and toggling lock or unlock state by pushing it over 3 seconds. Description is as below:



- LED Indicator**

LED1, LED2 work status is as below:

Work Status		Mode1		Mode2	
		LED1	LED2	LED1	LED2
Off		Off	Off	Off	Off
On	Normal	On	Off	On	Off
	Under voltage	Off	On	Flash1 *	Off
Lock	Normal	Flash2*	Off	Off	Flash2*
	Under voltage	Off	Flash2*	Off	Flash2*

**Note:** 1. Flash1: LED flashes by 1.5Hz;  
2. Flash2: LED flashes by 1.5Hz, but only 5 times.

- Reset**

After power on, the chip will be reset by internal POR circuit. LED1 and LED2 pin will output low level and OUT pin will output high-impedance state.

- Over Current Protect**

When Output current from pin OUT is over spec, the IC will turn to OFF state.

- Over Temperature Protect**

When IC junction temperature is over spec, pin OUT will turn to high-impedance state and the system is still in ON State.

- Battery Over Discharge Protect**

During on state, the IC will auto off when the battery voltage is under spec (VT2). If the process repeats three times continuously, the IC will be always in off state and ON/OFF button will be locked unless reset pin ENB.

- Under Voltage Protection**

During on state, the IC will turn to under voltage mode when the battery voltage is under spec (VT1).

## Maximum Ratings

Storage Temperature .....	-40°C to +125°C
Supply Voltage to Ground Potential (Input & VCC Only) .....	-0.5V to +6.5V
Supply Voltage to Ground Potential (Outputs Only) .....	-0.5V to +6.5V
DC Input Voltage .....	-0.5V to +6.5V
DC Output Current .....	5A
Power Dissipation.....	1W
Junction Temperature .....	Max +125°C

**Note:**

Stresses greater than those listed under MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

## Recommended Operation Conditions

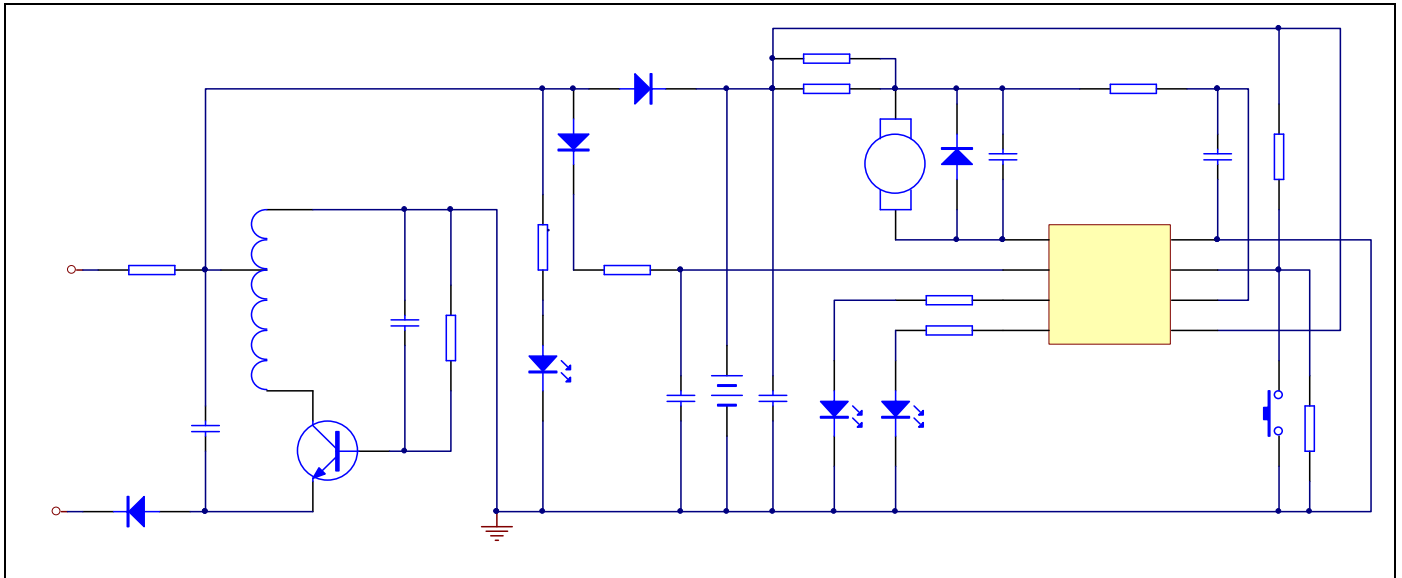
Symbol	Parameter	Min	Typ	Max	Unit
V <sub>CC</sub>	Operating Voltage	1.6	2.4	5.5	V
V <sub>IH</sub>	“H” Input Voltage	0.7V <sub>CC</sub>	-	-	V
V <sub>IL</sub>	“L” Input Voltage	-	-	0.3 V <sub>CC</sub>	V
T <sub>A</sub>	Operating temperature	0	25	85	°C

## Electrical Characteristics

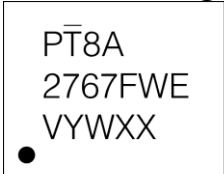
(T<sub>A</sub> = 0 ~ 85°C, unless otherwise noted)

Symbol	Parameter	Test Conditions		Min	Typ	Max	Unit
		V <sub>CC</sub>	Conditions				
I <sub>CCQ</sub>	Standby current	2.4V	Floating	-	-	20.	μA
I <sub>OUT</sub>	OUT output current	2.4V	T <sub>aul</sub> =50mS	-5.0	-	-	A
		2.4V	V <sub>OUT</sub> =0.15V	-1.5	-	-	A
VT1	Battery lacking	-	No pull low resistor in Pin: ON/OFF	2.1	2.2	2.3	V
VT2	Battery over discharge	-	No pull low resistor in Pin: ON/OFF. Auto off	1.8	1.9	2.0	V
VT3	Over Current Protect	2.4V	Pin: OCP	2.22	2.25	2.28	V
VT4	ON/OFF Trigger Voltage		Pin: ON/OFF	0.3	0.8	1.1	V
T1	Short click button	-	Pin: ON/OFF	40	70	90	mS
T2	Long click button	-	Pin: ON/OFF	2.8	3.4	4.1	S
T3	Over current protection	-	V <sub>OCP</sub> <VT3	2.0	3.0	4.0	S
T4	Over temperature protection	-	-	130	-	-	°C
R <sub>th(j-a)</sub>	Junction to ambient (DC)		SOIC-8 package	-	42	-	°C/W
			SOT23-5 package	-	86	-	

**Application Circuit**  
PT8A2767A/B/C/D/E/F/G/H



**Part Marking**



V: Die Rev

Y: Year

W: Workweek

1st X: Assembly Site Code

2nd X: Fab Site Code

Bar above "T" means Fab3 of MGN

**Packaging Mechanical**  
**W (SOIC-8)**

SYMBOLS	MIN.	NOM.	MAX.
A	—	—	1.75
A1	0.10	—	0.25
A2	1.25	—	—
b	0.31	—	0.51
c	0.10	—	0.25
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27 BSC		
L	0.40	—	1.27
h	0.25	—	0.50
$\theta^\circ$	0	—	8

**NOTE:**  
 1. ALL DIMENSIONS ARE IN mm. ANGLES IN DEGREES  
 2. DIMENSIONS EXCLUDE BURRS, MOLD FLASH OR PROTRUSIONS  
 3. REFER JEDEC MS-012  
 4. RECOMMENDED LAND PATTERN IS FOR REFERENCE ONLY.

20-1273

		DATE: 06/02/20
DESCRIPTION: 8-Pin, 150mil-Wide, SOIC		
PACKAGE CODE: W (W8)		
DOCUMENT CONTROL #: PD-1001	REVISION: H	

For latest package info.

please check: <http://www.diodes.com/design/support/packaging/pericom-packaging/packaging-mechanicals-and-thermal-characteristics/>

**Ordering Information**

Part Number	Package Code	Package Description
PT8A2767xWEX	W	8-Pin, 150mil-Wide (SOIC)

**Notes:**

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
- See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- E = Pb-free and Green
- X suffix = Tape/Reel
- "x" shows A~H with different function. See *Function Comparison Table*.

### Function Comparison Table

Part No	Disable when charging	Key lock	LED flash for battery low	LED Mode	Package
PT8A2767A	Y	N	N	1	SOIC-8
PT8A2767B	Y	N	Y	2	SOIC-8
PT8A2767C	Y	Y	N	1	SOIC-8
PT8A2767D	Y	Y	Y	2	SOIC-8
PT8A2767E	N	N	N	1	SOIC-8
PT8A2767F	N	N	Y	2	SOIC-8
PT8A2767G	N	Y	N	1	SOIC-8
PT8A2767H	N	Y	Y	2	SOIC-8
PT8A2767I	Y	N	N	1	SOT23-5
PT8A2767J	N	N	N	1	SOT23-5

**IMPORTANT NOTICE**

1. DIODES INCORPORATED AND ITS SUBSIDIARIES (“DIODES”) MAKE NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO ANY INFORMATION CONTAINED IN THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).
2. The Information contained herein is for informational purpose only and is provided only to illustrate the operation of Diodes products described herein and application examples. Diodes does not assume any liability arising out of the application or use of this document or any product described herein. This document is intended for skilled and technically trained engineering customers and users who design with Diodes products. Diodes products may be used to facilitate safety-related applications; however, in all instances customers and users are responsible for (a) selecting the appropriate Diodes products for their applications, (b) evaluating the suitability of the Diodes products for their intended applications, (c) ensuring their applications, which incorporate Diodes products, comply the applicable legal and regulatory requirements as well as safety and functional-safety related standards, and (d) ensuring they design with appropriate safeguards (including testing, validation, quality control techniques, redundancy, malfunction prevention, and appropriate treatment for aging degradation) to minimize the risks associated with their applications.
3. Diodes assumes no liability for any application-related information, support, assistance or feedback that may be provided by Diodes from time to time. Any customer or user of this document or products described herein will assume all risks and liabilities associated with such use, and will hold Diodes and all companies whose products are represented herein or on Diodes’ websites, harmless against all damages and liabilities.
4. Products described herein may be covered by one or more United States, international or foreign patents and pending patent applications. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks and trademark applications. Diodes does not convey any license under any of its intellectual property rights or the rights of any third parties (including third parties whose products and services may be described in this document or on Diodes’ website) under this document.
5. Diodes products are provided subject to Diodes’ Standard Terms and Conditions of Sale (<https://www.diodes.com/about/company/terms-and-conditions/terms-and-conditions-of-sales/>) or other applicable terms. This document does not alter or expand the applicable warranties provided by Diodes. Diodes does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel.
6. Diodes products and technology may not be used for or incorporated into any products or systems whose manufacture, use or sale is prohibited under any applicable laws and regulations. Should customers or users use Diodes products in contravention of any applicable laws or regulations, or for any unintended or unauthorized application, customers and users will (a) be solely responsible for any damages, losses or penalties arising in connection therewith or as a result thereof, and (b) indemnify and hold Diodes and its representatives and agents harmless against any and all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim relating to any noncompliance with the applicable laws and regulations, as well as any unintended or unauthorized application.
7. While efforts have been made to ensure the information contained in this document is accurate, complete and current, it may contain technical inaccuracies, omissions and typographical errors. Diodes does not warrant that information contained in this document is error-free and Diodes is under no obligation to update or otherwise correct this information. Notwithstanding the foregoing, Diodes reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes.
8. Any unauthorized copying, modification, distribution, transmission, display or other use of this document (or any portion hereof) is prohibited. Diodes assumes no responsibility for any losses incurred by the customers or users or any third parties arising from any such unauthorized use.

Copyright © 2020 Diodes Incorporated

[www.diodes.com](http://www.diodes.com)