



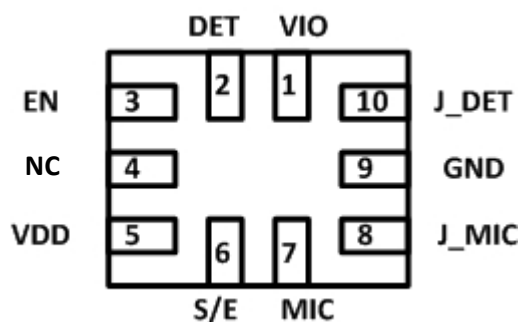
## Features

- Supply voltage ( $V_{DD}$ ) range from 2.5V to 4.5V
- Parallel I/O supply voltage ( $V_{IO}$ ) from 1.6V to  $V_{DD}$
- Low operating current : 0.5uA / 15uA (without / with accessory)
- Detection:
  - Accessory Plug-In
  - Send / End Key Press
  - Prevents False Detection
- THD (MIC) : 0.01% Typical
- **System Level ESD Protection Exceeds 8kV for direct contact and 15kV for air gap**
- QFN10L\_1.4mmx1.8mm pins package

## Applications

- Device with Audio Jack
- Cell phones, Smart phones
- Tablets and Notebooks

## Pin Configuration



QFN10L\_1.4mmx1.8mm (TOP VIEW)

## Description

The AZEW5169F is a detection switch for an audio jack. It uses a normally open detection pin to achieve the function. Also, it can achieve moisture sensing to prevent false detection of accessories for the audio jack. Moreover, the AZEW5169F is built-in MIC switch that can allow processor to configure attached accessories. It is integrated by simple logic circuits for that common third-party headphones can be used for listening to music from mobile handsets, personal media players, and portable peripheral devices.

## Pin Description

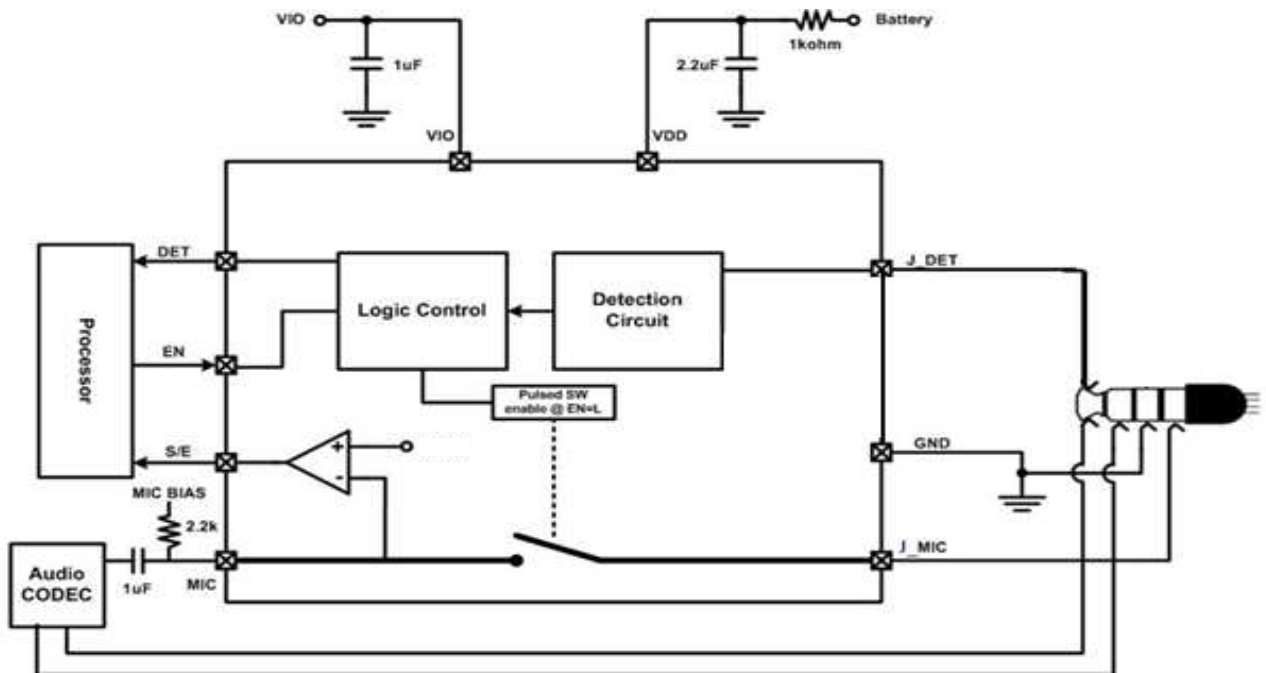
Pin Name	Symbol	Description
1	VIO	Parallel I/O supply voltage
2	DET	Indicates whether accessory is plugged in or not.
3	EN	MIC switch enable
4	NC	NC pin
5	VDD	Supply voltage
6	S/E	Indicates when an accessory key is pressed
7	MIC	Connect to the MIC pre-amp
8	J_MIC	Connect to the audio accessory
9	GND	Ground
10	J_DET	Connect to the audio accessory L_DET pin, when the accessory is plugged-in, this pin is shorted to Left audio signal.



### Output Logic Truth Table

Inputs		Outputs		Accessory
EN	J_DET	DET	MIC	
L	L	L	Pulsed ON	Plug-In
L	H	H	OFF	No Plug-In
H	L	L	ON	Plug-In
H	H	H	OFF	No Plug-IN

### Typical Application Circuit & Block Diagram





## Absolute Maximum Ratings

Storage Temperature.....	65°C to +150°C
Ambient Temperature with Power applied.....	-40°C to +85°C
Supply Voltage.....	-0.3V to +6.0V
I/O voltage for J_MIC and MIC.....	-0.3V to +6.0V
I/O Voltage for all I/O pins except for J_DET, J_MIC and MIC.....	-0.3V to V <sub>DD</sub> +0.5V
I/O Voltage for J_DET pin.....	-1.5V to V <sub>DD</sub> +0.5V

## Electrostatic Discharge

	Test Conditions	Level
System Level *(1)	Direct contact and Air Gap @J_DET and J_MIC Pins	1. +/- 8kV for direct contact 2. +/- 15kV for air gap
Component Level *(2)	HBM @ all pin	+/- 8kV
	MM @ all pin	+/- 800V
	CDM @ all pin	+/- 2KV

\*(1) Tested in accordance with IEC61000-4-2

\*(2) Tested in accordance with JEDEC Standard 22



**DC Electrical Characteristics (T<sub>A</sub>= 25°C, C<sub>IN\_VDD</sub>=1uF, C<sub>IN\_VIO</sub>=0.1uF)**

Parameters	Description	Test Conditions	Min.	Typ.	Max.	Units
R <sub>ON</sub>	MIC switch ON Resistance	V <sub>DD</sub> =3.8V, V <sub>MIC</sub> =2.2V, I <sub>OUT</sub> =30mA		0.3	1	ohm
I <sub>OFF</sub>	Power off leakage current on MIC pin	V <sub>MIC</sub> =4.3V			1	uA
V <sub>TH_SE</sub>	Key Detection threshold	V <sub>DD</sub> =2.5 ~ 4.5V	0.6			V
RL <sub>J_DET</sub>	Contact Resistance Threshold for Valid/Invalid Attached from J_DET to GND pin	V <sub>DD</sub> =2.5 ~ 4.5			10	kohm
V <sub>OH</sub>	Output High Voltage	V <sub>DD</sub> =2.5 ~ 4.5V	0.8*V <sub>IO</sub>			V
V <sub>OL</sub>	Output Low Voltage	V <sub>DD</sub> =2.5 ~ 4.5V			0.2*V <sub>IO</sub>	V
V <sub>IH</sub>	High level Input Voltage	V <sub>DD</sub> =2.5 ~ 4.5V	0.7*V <sub>IO</sub>			V
V <sub>IL</sub>	Low level Input Voltage	V <sub>DD</sub> =2.5 ~ 4.5V			0.3*V <sub>IO</sub>	V
I <sub>DD-SLNA</sub>	Battery Supply Sleep Mode Current with No Accessory Attached.	V <sub>DD</sub> =2.5 ~ 4.5V		0.5	2.3	uA
I <sub>DD-SLWA</sub>	Battery Supply Sleep Mode Current with Accessory Attached.	V <sub>DD</sub> =2.5 ~ 4.5V		15	22	uA

**AC Electrical Characteristics (T<sub>A</sub>= 25°C, C<sub>IN\_VDD</sub>=1uF, C<sub>IN\_VIO</sub>=0.1uF)**

Parameters	Description	Test Conditions	Min.	Typ.	Max.	Units
THD+N	Total Harmonic Distortion + Noise	V <sub>DD</sub> =3.8V		0.01		%
OIRR	Off Isolation	V <sub>DD</sub> =3.8V		-85		dB
PSRR	Power Supply Rejection Ratio	V <sub>DD</sub> =3.8V		-90		dB
t <sub>POLL</sub>	ON Time of MIC Switch for Sensing S/E Key Press	V <sub>DD</sub> =2.5 ~ 4.5V		1		ms
t <sub>WAIT</sub>	Period of MIC Switching for Sensing S/E Key Press.	V <sub>DD</sub> =2.5 ~ 4.5V		10		ms
t <sub>DET_IN</sub>	Debounce Time for Changing DET State from High to Low to Detect Jack Inserted.	V <sub>DD</sub> =2.5 ~ 4.5V		70		ms
t <sub>KBK</sub>	Debounce Time for Sensing S/E Key Press / Release.	V <sub>DD</sub> =2.5 ~ 4.5V		30		ms
t <sub>DET_REM</sub>	Debounce Time for Changing DET State from Low to High to Detect Jack Removal.	V <sub>DD</sub> =2.5 ~ 4.5V		30		us

## Marking Code

Part Number	Marking Code
<b>AZEW5169F</b>	E8 .XY

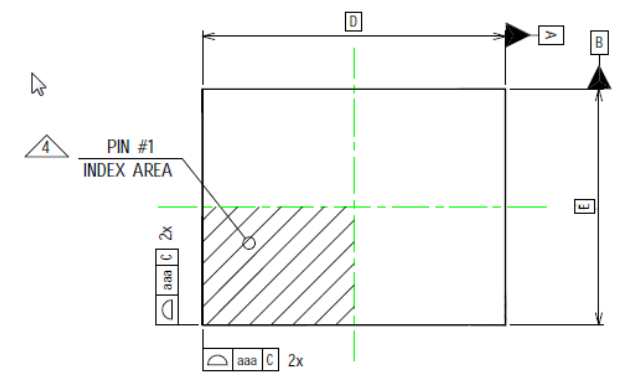
X=date code

Y=control code

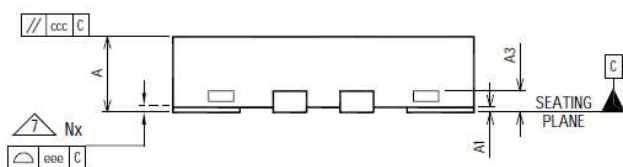
## Ordering Information

PN#	Material	Type	Reel size	MOQ	MOQ/internal box	MOQ/carton
AZEW5169F.R7G	Green	T/R	7 inch	3,000/reel	4 reel= 12,000/box	6 box =72,000/carton

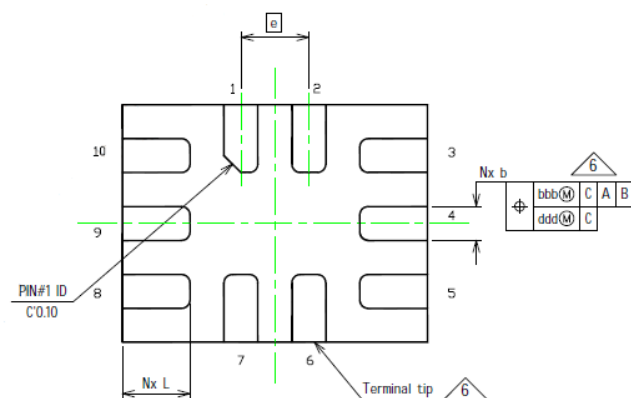
## Package Information



**TOP VIEW**



**SIDE VIEW**



**BOTTOMO VIEW**

Dimension Table			
Symbol	MIN.	NOM.	MAX.
A	0.41	0.45	0.50
A1	0.00	0.02	0.05
A3	-	0.127 Ref	-
b	0.15	0.20	0.25
D	1.80 BSC		
E	1.40 BSC		
e	0.40 BSC		
L	0.30	0.40	0.50
aaa	0.05		
bbb	0.07		
ccc	0.10		
ddd	0.05		
eee	0.08		
N*	10		
ND**	3		
NE**	2		

\* N is the total number of terminals.

\*\* ND refers to the maximum number of terminals on D side.



## Revision History

Revision	Modification Description
2014/08/01	Formal release.
2016/12/20	Marking Code and ordering information added