

# Voltage Reference ( $V_{ref}$ )

## 1.0

## Features

Unknown  $V_{ref}$  ☐

- Precision voltage references
- Multiple outputs
- Bandgap principle to achieve stability
- Temperature corrected
- Low bias current

## General Description

The voltage reference component provides multiple outputs that are temperature compensated. It uses the bandgap principle to achieve excellent stability.

### When to use a $V_{ref}$

Use the  $V_{ref}$  component for threshold detectors, reference inputs to analog-to-digital converters, comparators and programmable gain amplifiers.

## Input/Output Connections

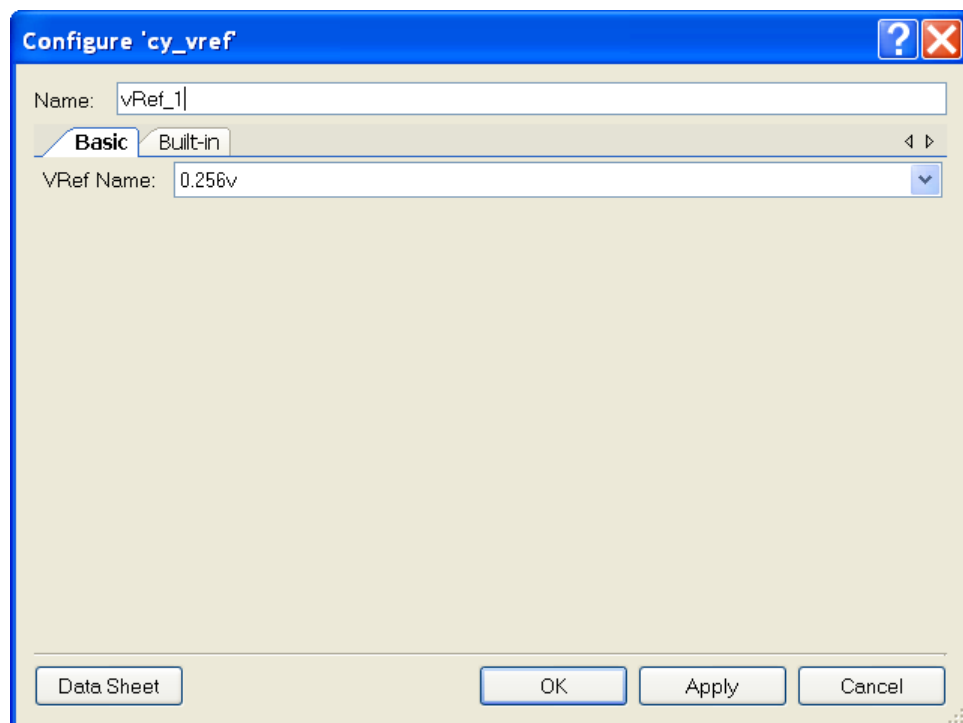
The  $V_{ref}$  component has a single output terminal which provides access to the selected voltage reference.

**PRELIMINARY**

## Component Parameters

Drag a  $V_{ref}$  onto your design; the Configure dialog will immediately open.

**Figure 1** Configure  $V_{ref}$  Dialog



The  $V_{ref}$  provides the following parameters.

### Basic Options

#### $V_{ref}$ Name

By default no value is selected. The values include:  $V_{ssa}$ , 0.256V, 1.024V,  $V_{dda}/2$  and  $V_{dda}$ .

### Placement

The Configure dialog will open immediately when the component is dropped allowing a reference to be selected at that time. When dropped, the list of available voltage references will be determined based on what is available at the current level (family/device).

**Note** If you drop a  $V_{ref}$  in a library project schematic at the generic level, you will not see any references available. This is because PSoC Creator needs to know what device/family is being targeted to determine what references should be available. Therefore, the system will check to see if the schematic is device or family specific and use that to provide a list of references. Design projects have a selected device; generic library projects do not.

**PRELIMINARY**



## Resources

Not applicable

## Functional Description

The  $V_{ref}$  component provides several precise references. Connection is via a single terminal. The  $V_{ref}$  component may connect to several components.

## DC and AC Electrical Characteristics

The following values are indicative of expected performance and based on initial characterization data.

### 5.0V/3.3V DC and AC Electrical Characteristics

Parameter	Typical	Min	Max	Units	Conditions and Notes
Input					
Input Voltage Range	---		Vss to Vdd	V	
Input Capacitance	---		---	pF	
Input Impedance	---		---	$\Omega$	
Maximum Clock Rate	---		67	MHz	

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