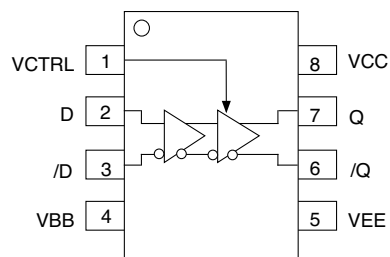


PACKAGE/ORDERING INFORMATION



8-Pin EPAD-MSOP

Ordering Information⁽¹⁾

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY100EP16VSKC	K8-2	Commercial	P16S	Sn-Pb
SY100EP16VSKCTR ⁽²⁾	K8-2	Commercial	P16S	Sn-Pb
SY100EP16VSKI	K8-2	Industrial	P16S	Sn-Pb
SY100EP16VSKITR ⁽²⁾	K8-2	Industrial	P16S	Sn-Pb
SY100EP16VSKY ⁽³⁾	K8-2	Industrial	P16S with Pb-Free bar-line indicator	Pb-Free Matte-Sn
SY100EP16VSKYTR ^(2, 3)	K8-2	Industrial	P16S with Pb-Free bar-line indicator	Pb-Free Matte-Sn

Notes:

1. Contact factory for die availability. Dice are guaranteed at $T_A = 25^\circ\text{C}$, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

Symbol	Rating	Value	Unit
V _{EE}	Power Supply Voltage (V _{CC} = 0)	–6.0 to 0	V
V _{CC}	Power Supply Voltage (V _{EE} = 0)	+6.0 to 0	V
V _{IN}	Input Voltage (V _{CC} = 0V, V _{IN} not more negative than V _{EE}) Input Voltage (V _{EE} = 0V, V _{IN} not more negative than V _{CC})	–6.0 to 0 +6.0 to 0	V V
I _{OUT}	Output Current –Continuous –Surge	50 100	mA
I _{BB}	V _{BB} Sink/Source Current ⁽²⁾	±0.5	mA
T _A	Operating Temperature Range	–40 to +85	°C
T _{store}	Storage Temperature Range	–65 to +150	°C
T _{LEAD}	Lead Temperature (soldering, 20sec.)	260	°C
θ _{JA}	Package Thermal Resistance (Junction-to-Ambient) –Still-Air	38	°C/W

Note 1. Permanent device damage may occur if absolute maximum ratings are exceeded. This is a stress rating only and functional operation is not implied at conditions other than those detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

DC ELECTRICAL CHARACTERISTICS⁽¹⁾

V_{CC} = +5V ±10% or +3.3V ±10%; R_{LOAD} = 50Ω to V_{CC} –2V⁽²⁾

Symbol	Parameter	T _A = –40°C		T _A = +25°C			T _A = +85°C		Unit
		Min.	Max.	Min.	Typ.	Max.	Min.	Max.	
I _{EE}	Power Supply Current	—	51	—	—	51	—	51	mA
V _{BB}	Output Reference Voltage	V _{CC} –1.38	V _{CC} –1.26	V _{CC} –1.38	—	V _{CC} –1.26	V _{CC} –1.38	V _{CC} –1.26	V
V _{OH}	Output HIGH Voltage ⁽³⁾	V _{CC} –1085	V _{CC} –880	V _{CC} –1025	V _{CC} –0955	V _{CC} –880	V _{CC} –1025	V _{CC} –880	mV
V _{OL}	Output LOW Voltage ⁽³⁾ V _{CTRL} = V _{BB} V _{CTRL} = V _{CC}	V _{CC} –1900	V _{CC} –1650	V _{CC} –1900	—	V _{CC} –1650	V _{CC} –1900	V _{CC} –1650	mV
		V _{CC} –1125	V _{CC} –975	V _{CC} –1125	—	V _{CC} –975	V _{CC} –1125	V _{CC} –975	mV
V _{IH}	Input HIGH Voltage	V _{CC} –1165	V _{CC} –880	V _{CC} –1165	—	V _{CC} –880	V _{CC} –1165	V _{CC} –880	mV
V _{IL}	Input LOW Voltage	V _{CC} –1810	V _{CC} –1475	V _{CC} –1810	—	V _{CC} –1475	V _{CC} –1810	V _{CC} –1475	mV
I _{IH}	Input HIGH Current D, /D V _{CTRL} ⁽⁴⁾	—	150	—	—	150	—	150	μA
		—	80	—	—	80	—	80	μA
I _{IL}	Input LOW Current	0.5	—	0.5	—	—	0.5	—	μA

Note 1. 100EP circuits are designed to meet the DC specifications shown in the above table after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and traverse airflow greater than 500lfpm is maintained.

Note 2. Input and output parameters vary 1:1 with V_{CC}.

Note 3. All loading with 50Ω to V_{CC} – 2.0V.

Note 4. V_{CTRL} = V_{CC} –0.88V.

AC ELECTRICAL CHARACTERISTICS
 $V_{CC} = +5V \pm 10\%$ or $+3.3V \pm 10\%$; $R_{LOAD} = 50\Omega$ to $V_{CC} - 2V$

Symbol	Parameter	$T_A = -40^\circ C$			$T_A = +25^\circ C$			$T_A = +85^\circ C$			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
t_{PLH} t_{PHL}	Propagation Delay to Output D (Diff) D (SE)	100 100	— 250	250 350	100 100	— 250	250 350	120 120	— 280	300 400	ps
V_{PP}	Minimum Input Swing ⁽¹⁾	150	—	—	150	—	—	150	—	—	mV
V_{CMR}	Common Mode Range ⁽²⁾	$V_{CC} - 1.3$	—	$V_{CC} - 0.4$	$V_{CC} - 1.3$	—	$V_{CC} - 0.4$	$V_{CC} - 1.3$	—	$V_{CC} - 0.4$	V
t_r, t_f	Output Rise/Fall Times ⁽³⁾ (20% to 80%)	—	—	160	—	95	160	—	—	160	ps

Note 1. Minimum input swing for which AC parameters are guaranteed. The device has a DC gain of ≈ 40 when output has a full swing.

Note 2. The CMR range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between V_{PP} (min.) and 1V. The lower end of the CMR range varies 1:1 with V_{EE} . The numbers in the spec table assume a nominal $V_{EE} = -3.3V$ and $V_{CC} = 0V$. Note for PECL operation, the V_{CMR} (min.) will be fixed at $3.3V - IV_{CMR}$ (min.).

Note 3. Output at full swing.

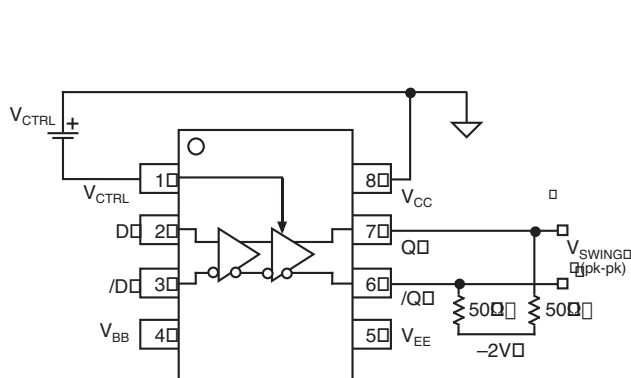
APPLICATION IMPLEMENTATION

Figure 1. Voltage Source Implementation

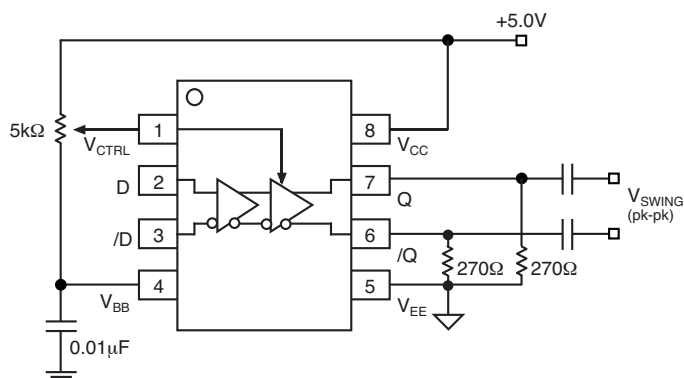
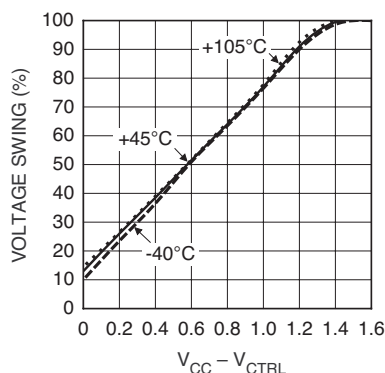


Figure 2. Alternative Implementation

TYPICAL VOLTAGE OUTPUT SWINGFigure 3. Typical Voltage Output Swing
 $V_{CC} = 3.3V$ or $5V$

TOP VIEW

8 5

4.90 [0.193] BSC

1 4

3.00 $\begin{matrix} +0.10\Box \\ -0.10 \\ \text{[0.004]} \end{matrix}$ $\begin{matrix} +0.10\Box \\ -0.10 \\ \text{[0.118-0.004]} \end{matrix}$

END VIEW

1.02 $\begin{matrix} +0.08\Box \\ -0.08 \\ \text{[0.040-0.003]} \end{matrix}$

0.10 $\begin{matrix} +0.05\Box \\ -0.05 \\ \text{[0.004-0.002]} \end{matrix}$

3.00 $\begin{matrix} +0.10\Box \\ -0.10 \\ \text{[0.118-0.004]} \end{matrix}$

SEE DETAIL 'A'

0.15 $\begin{matrix} +0.07\Box \\ -0.02 \\ \text{[0.006-0.001]} \end{matrix}$

0.33 $\begin{matrix} +0.12\Box \\ -0.12 \\ \text{[0.013-0.005]} \end{matrix}$

0.65 BSC [0.026]

BOTTOM VIEW

1.70 [0.067] REF

1.73 [0.068] REF

Expose Paddle

DETAIL A

4 \times 2

0.55 $\begin{matrix} +0.15\Box \\ -0.15 \\ \text{[0.022-0.006]} \end{matrix}$

NOTES:

1. DIMENSIONS ARE IN MM [INCHES].
2. CONTROLLING DIMENSION: MM
3. DIMENSION DOES NOT INCLUDE MOLD FLASH OR PROTRUSIONS, EITHER OF WHICH SHALL NOT EXCEED 0.20 [0.008] PER SIDE.

Rev. 0

Rev. 01

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