March 2011

FXLP34 Single Bit Uni-Directional Translator

Features

SEMICONDUCTOR

- 1.0V to 3.6V V_{CC} Supply Voltage
- Converts Any Voltage (1.0V to 3.6V) to (1.0V to 3.6V)
- 4.6V Tolerant Inputs and Outputs
- t_{PD}:
 - 4ns Typical for 3.0V to 3.6V V_{CC}
- Power-Off High Impedance Inputs and Outputs
- Static Drive (I_{OH}/I_{OL}):
 ±2.6mA at 3.00V V_{CC}
- Uses Proprietary Quiet Series™ Noise / EMI Reduction Circuitry
- Ultra-Small Micropak[™] Leadless Packages
- Ultra-Low Dynamic Power

Ordering Information

Description

The FXLP34 is a single translator with two separate supply voltages: V_{CC1} for input translation voltages and V_{CC} for output translation voltages. The FXLP34 is part of Fairchild's Ultra Low Power (ULP) series of products. This device operates with VCC values from 1.0V to 3.6V, and is intended for use in portable applications that require ultra low power consumption.

The internal circuit is composed of a minimum of buffer stages, to enable ultra low dynamic power.

The FXLP34 is uniquely designed for optimized power and speed, and is fabricated with an advanced CMOS technology to achieve high-speed operation while maintaining low CMOS power dissipation.

•			
Part Number	Top Mark	Package	Packing Method
FXLP34P5X	X34	5-Lead SC70, EIAJ SC-88a, 1.25mm Wide	3000 Units on Tape & Reel
FXLP34L6X	X3	6-Lead MicroPak™, 1.00mm Wide	5000 Units on Tape & Reel
FXLP34FHX	X3	6-Lead, MicroPak2, 1x1mm Body, .35mm Pitch	5000 Units on Tape & Reel

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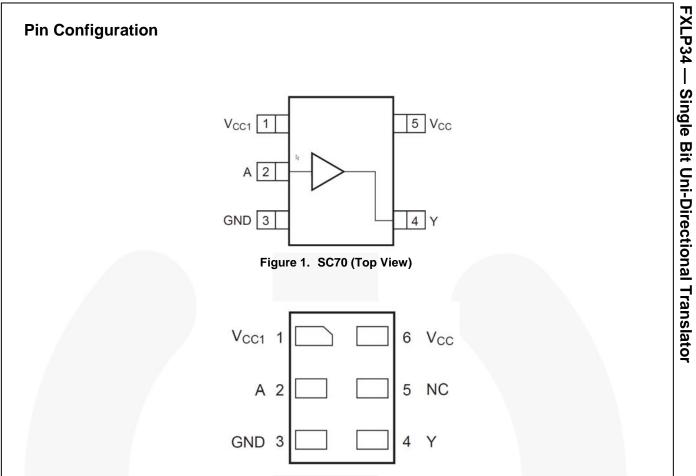


Figure 2. MicroPak[™] (Top Through View)

Pin Definitions

Pin # SC70	in # SC70 Pin # MicroPak™		Description
1	1	V _{CC1}	Input Translation Voltage
2	2	А	Input
3	3	GND	Ground
4	4 4 Y Output		Output
	5 NC No		No Connect
5	5 6		Output Translation Voltage

Truth Table

Inputs	Outputs
А	Y
L	L
Н	Н

H = Logic Level HIGH

L = Logic Level Low

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Symbol	Parame	eter	Min.	Max.	Unit	
V _{CC} , V _{CC1}	Supply Voltage		-0.5	+4.6	V	
V _{IN}	DC Input Voltage		-0.5	+4.6	V	
N		HIGH or LOW State ⁽¹⁾	-0.5	V _{CC} +0.5V	V	
V _{OUT}	DC Output Voltage	V _{CC} =0V	-0.5	+4.6	V	
I _{IK}	DC Input Diode Current	V _{IN} < 0		-50	mA	
	DC Output Diada Current	V _{OUT} < 0V		-50	mA	
I _{OK}	DC Output Diode Current	$V_{OUT} > V_{CC}$		+50	IIIA	
I _{OH} /I _{OL}	DC Output Source/Sink Curre	ent		±50	mA	
I _{CC} or I _{GND}	DC V _{CC} or Ground Current pe	er Supply Pin		±100	mA	
T _{STG}	Storage Temperature Range		-65	150	°C	
		SC70-6		180		
PD	Power Dissipation at +85°C	MicroPak™-6		130	mW	
		MicroPak2 [™] -6		120		
ESD	Human Body Model, JEDEC:JESD22-A114			4000	V	
ESD	Charge Device Model, JEDE	C:JESD22-C101		2000	V	

Note:

1. I_o Absolute Maximum Rating must be observed.

Recommended Operating Conditions

The Recommended Operating Conditions table defines the conditions for actual device operation. Recommended operating conditions are specified to ensure optimal performance to the datasheet specifications. Fairchild does not recommend exceeding them or designing to Absolute Maximum Ratings.

Symbol	Parameter	Conditions	Min.	Max.	Unit	
V _{CC} , V _{CC1}	Supply Voltage		1.0	3.6	V	
V _{IN}	Input Voltage		0	3.6	V	
V		HIGH or LOW State	0	V _{cc}	V	
V _{OUT}	Output Voltage	V _{CC} =0V	0	3.6	v	
		V _{CC} =3.0 to 3.6V		±2.6		
		V _{CC} =2.3 to 2.7V		±2.1		
1 /1	Output Current in L /L	V _{CC} =1.65 to 1.95V		±1.5	mA	
I _{OH} /I _{OL}	Output Current in I _{OH} /I _{OL}	V _{CC} =1.40 to 1.60V		±1.0	\mathbb{P}^{1}	
		V _{CC} =1.10 to 1.30V		±0.5		
		V _{CC} =1.0V		±20	μΑ	
T _A	Operating Temperature, Free Air		-40	+85	°C	
		SC70-6		425		
θ_{JA}	Thermal Resistance	MicroPak™-6		500	°C/W	
		MicroPak2 [™] -6		560		

Note:

2. Unused inputs must be held HIGH or LOW. They may not float.

0	Description	O an all the se	V 00	V 00	T _A =+	-25°C	T _A =-40 t	o +85°C	11
Symbol	Parameter	Condition	V _{cc} (V)	V _{CC1} (V)	Min.	Max.	Min.	Max.	Uni
				1.0	$0.65 \text{ x } V_{\text{CCI}}$		$0.65 \text{ x V}_{\text{CCI}}$		
				1.10≤V _{CC1} ≤1.30	0.65 x V _{CCI}		$0.65 \text{ x V}_{\text{CCI}}$		1
	HIGH Level		10400	1.40≤V _{CC1} ≤1.60	0.65 x V _{CCI}		0.65 x V _{CCI}		
VIH	Input (V _{CC1})		1.0 to 3.6	$1.65 \le V_{CC1} \le 1.95$	0.65 x V _{CCI}		0.65 x V _{CCI}		V
				2.30≤V _{CC1} ≤2.70	1.6		1.6		
				3.00≤V _{CC1} ≤3.60	2.1		2.1		
				1.0		$0.35 \text{ x V}_{\text{CCI}}$		0.35 x V _{CCI}	
				1.10≤V _{CC1} ≤1.30		$0.35 \text{ x V}_{\text{CCI}}$		$0.35 \text{ x V}_{\text{CCI}}$	
	LOW Level		10400	1.40≤V _{CC1} ≤1.60		0.35 x V _{CCI}		0.35 x V _{CCI}	
VIL	^{IL} Input		1.0 to 3.6	1.65≤V _{CC1} ≤1.95		$0.35 \times V_{CCI}$		0.35 x V _{CCI}	V
				2.30≤V _{CC1} ≤2.70		0.7		0.7	
				3.00≤V _{CC1} ≤3.60		0.9		0.9	
			1.0		V _{cc} -0.1		V _{cc} -0.1		
		1	1.10≤V _{CC1} ≤1.30		V _{cc} -0.1		V _{cc} -0.1		
			1.40≤V _{CC1} ≤1.60		V _{cc} -0.1		V _{cc} -0.1		
		I _{он} =-20µА	1.65≤V _{CC1} ≤1.95	1.0 to 3.6	V _{cc} -0.1		V _{cc} -0.1		
V _{OH} HIGH Level			2.30≤V _{CC1} ≤2.70		V _{cc} -0.1		V _{cc} -0.1		
		3.00≤V _{CC1} ≤3.60		V _{cc} -0.1		V _{cc} -0.1		V	
	Output (V _{cc})	I _{OH} =-0.5mA	1.10≤V _{CC1} ≤1.30		$0.75 \times V_{CC}$		0.70 x V _{cc}		
	-	I _{OH} =-1.0mA	1.40≤V _{CC1} ≤1.60		1.07		0.99		
		I _{OH} =-1.5mA	1.65≤V _{CC1} ≤1.95	1.0 to 3.6	1.24		1.22		
		I _{он} =-2.1mA	2.30≤V _{CC1} ≤2.70		1.95		1.87		
		I _{он} =-2.6mА	3.00≤V _{CC1} ≤3.60		2.61		2.55		
			1.0			0.1		0.1	
			1.10≤V _{CC1} ≤1.30			0.1		0.1	
		Ι _{οι} =20μΑ	1.40≤V _{CC1} ≤1.60	1.0 to 3.6		0.1		0.1	
			1.65≤V _{CC1} ≤1.95			0.1		0.1	
	LOW Level		2.30≤V _{CC1} ≤2.70			0.1		0.1	l
V _{OL}	Output	I _{OL} =0.5mA	1.10≤V _{CC1} ≤1.30			0.30 x V _{cc}		0.30 x V _{cc}	V
		I _{OL} =1.0mA	1.40≤V _{CC1} ≤1.60			0.31		0.37	
		I _{OL} =1.5mA	$1.65 \le V_{CC1} \le 1.95$	1.0 to 3.6		0.31		0.35	
		I _{OL} =2.1mA	2.30≤V _{CC1} ≤2.70			0.31		0.33	
		I _{OL} =2.6mA	3.00≤V _{CC1} ≤3.60			0.31		0.33	
I _{IN}	Input Leakage Current	$\begin{array}{l} 0 \leq V_{\text{IN}} \\ \leq 3.60 \end{array}$		1.0 to 3.6		±0.1		±1.0	μA
I _{OFF}	Power Off Leakage Current	$\begin{array}{l} 0 \leq (V_{\text{IN}},V_{\text{O}}) \\ \leq 3.60 \end{array}$	0	0		1.0		5.0	μA
I _{cc}	Quiescent Supply Current	V _{IN} =V _{CC} or GND	1.0 to 3.6	1.0 to 3.6		0.9		5.0	μA

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			V 00		T _A =+25°0	C	T _A =-40 t	o +85°C		
Symbol	Parameter	Condition	V _{CC1} (V)	Min.	Тур.	Max.	Min.	Max.	Unit	Figure
			1.0		26.0					
Descrition		1.10 to 1.30	15.0	25.0	38.1	12.0	43.3			
	Propagation Delay Output	C _L =10pF,	1.40 to 1.60	14.0	24.0	36.7	11.0	42.0		Figure 3, Figure 4
t _{PHL} , t _{PLH}	Translation	$R_L=1M\Omega$	1.65 to 1.95	13.0	23.0	36.0	10.0	41.4	ns	
	V _{CC} (V)=1.0		2.30 to 2.70	12.0	22.0	35.5	9.0	40.9		
			3.00 to 3.60	11.0	21.0	35.5	8.0	40.6		
			1.0		18.0					
	Descaration	$\begin{array}{c c} \text{gation} & - \\ \text{Output} & \text{C}_{L}=10\text{pF}, \\ \text{lation} & \text{R}_{L}=1M\Omega \end{array}$	1.10 to 1.30	8.0	15.0	23.2	6.0	41.0		
	Propagation Delay Output		1.40 to 1.60	7.5	14.0	21.7	5.5	39.1	ns	Figure 3, Figure 4
t _{PHL} , t _{PLH}	Translation		1.65 to 1.95	7.0	13.0	20.9	5.0	32.3		
	V _{CC} (V)=1.2		2.30 to 2.70	6.5	12.0	20.4	4.5	29.6		
			3.00 to 3.60	6.0	12.0	20.2	4.0	29.4		
		1.0		14.0						
	Propagation Delay Output		1.10 to 1.30	5.0	11.0	16.3	4.0	20.6		
		$C_L=10pF$,	1.40 to 1.60	4.8	10.0	14.8	3.5	19.3		Figure 3,
Translation	$R_L=1M\Omega$	1.65 to 1.95	4.5	9.0	14.1	3.0	18.7	ns	Figure 4	
	V _{CC} (V)=1.5		2.30 to 2.70	4.0	8.0	13.5	2.5	18.0		
			3.00 to 3.60	3.5	8.0	13.3	2.0	17.8		
			1.0		13.0				-	
	Description		1.10 to 1.30	4.0	9.0	13.5	3.0	17.5		
	Propagation Delay Output	C _L =10pF,	1.40 to 1.60	3.5	8.0	12.0	2.5	16.3		Figure 3
t _{PHL} , t _{PLH}	Translation	$R_L=1M\Omega$	1.65 to 1.95	3.0	7.0	11.3	2.0	15.6	ns	Figure 4
	V _{CC} (V)=1.8		2.30 to 2.70	2.5	6.0	10.7	1.5	15.0		
			3.00 to 3.60	2.5	6.0	10.5	1.0	14.7		
			1.0		12.0					
			1.10 to 1.30	3.0	7.0	10.9	2.5	14.3		
	Propagation Delay Output	C _L =10pF,	1.40 to 1.60	2.5	6.0	9.4	2.0	13.1		Figure 3
t _{PHL} , t _{PLH}	Translation	$R_L=1M\Omega$	1.65 to 1.95	2.0	5.0	8.6	1.5	11.4	ns	Figure 4
	V _{CC} (V)=2.5		2.30 to 2.70	1.5	4.0	8.0	1.0	10.8		
			3.00 to 3.60	1.5	4.0	7.8	1.0	10.5		
			1.0		11.0					
	Deserved		1.10 to 1.30	3.0	6.0	10.1	2.0	13.8		
	$ \begin{array}{c c} \mbox{Propagation} \\ \mbox{Delay Output} \\ \mbox{Translation} \\ V_{CC}(V)=3.3 \end{array} \begin{array}{c c} C_{L}=10 \mbox{F}, \\ R_{L}=1 \mbox{M} \Omega \end{array} \begin{array}{c c} 1.40 \mbox{ to } 1.60 & 2.5 & 5.0 & 8.2 & 1. \\ \hline 1.65 \mbox{ to } 1.95 & 2.0 & 4.0 & 7.4 & 1. \\ \hline 2.30 \mbox{ to } 2.70 & 1.0 & 3.0 & 6.8 & 1. \\ \hline \end{array} $	1.5	10.5		Figure 3,					
t _{PHL} , t _{PLH}		Translation $R_L=1M\Omega$	1.65 to 1.95	2.0	4.0	7.4	1.0	9.9	ns	Figure 3, Figure 4
				2.30 to 2.70	1.0	3.0	6.8	1.0	9.2	
			3.00 to 3.60	1.0	3.0	6.6	1.0	9.0	-	

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Cumber al	Devenueter	Condition	V 00		T _A =+25°	0	T _A =-40 t	o +85°C	11	F igure
Symbol	Parameter	Condition	V _{CC1} (V)	Min.	Тур.	Max.	Min.	Max.	Unit	Figure
			1.0		28.0					
	Dranagation		1.10 to 1.30	16.0	27.0	43.0	12.0	44.8		
	Propagation Delay Output	C _L =15pF,	1.40 to 1.60	15.0	26.0	41.6	11.0	43.6		Figure 3,
t _{PHL} , t _{PLH}	Translation	$R_L=1M\Omega$	1.65 to 1.95	14.0	25.0	40.9	10.0	47.9	ns	Figure 4
	V _{CC} (V)=1.0	.0	2.30 to 2.70	13.0	24.0	40.5	9.0	47.5		
			3.00 to 3.60	12.0	23.0	40.4	8.0	41.4		
			1.0		19.0					
	Dranagation		1.10 to 1.30	9.0	16.0	24.6	8.0	43.1		
	Propagation Delay Output	C _∟ =15pF,	1.40 to 1.60	8.5	15.0	23.1	7.5	42.2		Figure 3
t _{PHL} , t _{PLH}	Translation $R_L=1M\Omega$	$R_L=1M\Omega$	1.65 to 1.95	8.0	14.0	22.4	7.0	31.4	ns	Figure 4
	V _{CC} (V)=1.2		2.30 to 2.70	7.5	13.0	21.8	6.5	30.7		
			3.00 to 3.60	7.0	13.0	21.6	6.0	30.5		
	Propagation		1.0		15.0					Figure 3,
			1.10 to 1.30	6.0	12.0	17.2	5.5	21.5		
		C _∟ =15pF,	1.40 to 1.60	5.8	11.0	15.7	5.0	20.3		
t_{PHL}, t_{PLH} Translation $V_{CC}(V)=1.5$	$R_L=1M\Omega$	1.65 to 1.95	5.5	10.0	14.9	4.5	19.6	ns	Figure 4	
		2.30 to 2.70	5.0	9.0	14.3	4.0	18.9	_		
			3.00 to 3.60	4.5	.0	14.2	3.5	18.7		
	/		1.0		14.0				-	
	-		1.10 to 1.30	5.0	8.0	14.2	5.5	18.2		
	Propagation Delay Output	C∟=15pF,	1.40 to 1.60	4.5	7.0	12.7	4.0	17.0		Figure 3
t _{PHL} , t _{PLH}	Translation	$R_L=1M\Omega$	1.65 to 1.95	4.0	6.0	11.9	3.5	16.3	ns	Figure 4
	V _{CC} (V)=1.8		2.30 to 2.70	3.5	5.0	11.3	3.0	15.7		
			3.00 to 3.60	3.5	5.0	11.2	2.5	14.4		
			1.0		12.0					
	_		1.10 to 1.30	4.0	7.0	11.3	3.5	14.9		
	Propagation Delay Output	C∟=15pF,	1.40 to 1.60	3.5	6.0	9.8	3.0	13.6		Figure 3
t _{PHL} , t _{PLH}	Translation	$R_L=1M\Omega$	1.65 to 1.95	3.0	5.0	9.1	2.5	12.0	ns	Figure 4
	V _{cc} (V)=2.5		2.30 to 2.70	2.5	4.0	8.5	2.0	11.3		
			3.00 to 3.60	2.5	4.0	8.3	2.0	11.1		
			1.0		11.0					1
			1.10 to 1.30	3.0	6.0	10.5	2.0	14.2		
	Propagation Delay Output	C∟=15pF,	1.40 to 1.60	2.5	5.0	8.6	1.5	11.0		Figure 3, Figure 4
t _{PHL} , t _{PLH}	Translation	$R_{L}=1M\Omega$	1.65 to 1.95	2.0	4.0	7.8	1.0	10.3	ns	
V _{CC} (V)=3.3		2.30 to 2.70	1.5	3.0	7.2	1.0	9.7	- /	Ē	
			3.00 to 3.60	1.5	3.0	7.0	1.0	9.4		

FXLP34 — Single Bit Uni-Directional Translator

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	Devenueter	Condition	V 00		T _A =+25°	C	T _A =-40 t	to +85°C	11	Figure
Symbol	Parameter	ameter Condition	V _{CC1} (V)	Min.	Тур.	Max.	Min.	Max.	Unit	rigule
			1.0		34.0					
	Propagation		1.10 to 1.30	19.0	32.0	48.6	15.0	55.5		
	Delay Output	C _L =30pF,	1.40 to 1.60	18.0	31.0	47.1	14.0	52.3		Figure 3
t _{PHL} , t _{PLH}	Translation	$R_L=1M\Omega$	1.65 to 1.95	17.0	30.0	46.4	13.0	50.6	ns	Figure 4
	V _{CC} (V)=1.0		2.30 to 2.70	16.0	29.0	45.9	12.0	49.2		
			3.00 to 3.60	15.0	28.0	45.8	10.0	49.1		
			1.0		22.0					
	Dranagation		1.10 to 1.30	11.0	19.0	29.0	10.0	46.5		
	Propagation Delay Output	C _L =30pF,	1.40 to 1.60	10.0	18.0	27.5	9.0	42.6		Figure 3
t _{PHL} , t _{PLH}	Translation	$R_L=1M\Omega$	1.65 to 1.95	9.0	17.0	26.7	8.0	36.7	ns	ns Figure 4
	V _{CC} (V)=1.2		2.30 to 2.70	8.5	16.0	26.1	7.0	36.0		
			3.00 to 3.60	8.0	16.0	26.0	6.0	35.9		
			1.0		16.0					
			1.10 to 1.30	6.0	13.0	19.8	5.5	25.3		
t _{PHL} , t _{PLH} Propagation Delay Output Translation	C _L =30pF,	1.40 to 1.60	5.8	12.0	18.3	5.0	23.0		Figure 3	
	$R_L=1M\Omega$	1.65 to 1.95	5.5	11.0	17.6	4.5	22.4	ns	Figure 4	
	V _{CC} (V)=1.5		2.30 to 2.70	5.0	10.0	17.0	4.0	21.7		
			3.00 to 3.60	4.5	9.0	16.8	3.5	21.5		
			1.0		15.0				ns	
	Dresser		1.10 to 1.30	5.0	11.0	16.2	5.5	20.4		
	Propagation Delay Output	C _L =30pF,	1.40 to 1.60	4.5	10.0	14.7	4.0	19.2		Figure 3
t _{PHL} , t _{PLH}	Translation	$R_L=1M\Omega$	1.65 to 1.95	4.0	9.0	13.9	3.5	18.5		Figure 4
	V _{CC} (V)=1.8		2.30 to 2.70	3.5	8.0	13.3	3.0	17.9		
			3.00 to 3.60	3.5	8.0	13.1	2.5	17.6		
			1.0		13.0					
	Dressertier		1.10 to 1.30	4.0	8.0	12.7	3.5	15.9		
	Propagation Delay Output	C _L =30pF,	1.40 to 1.60	3.5	7.0	11.2	3.0	14.3		Figure 3
t _{PHL} , t _{PLH}	Translation	$R_L=1M\Omega$	1.65 to 1.95	3.0	6.0	10.5	2.5	13.6	ns	Figure 4
	V _{CC} (V)=2.5		2.30 to 2.70	2.5	5.0	9.9	2.0	12.8		
		3.00 to 3.60	2.5	5.0	9.7	2.0	12.5			
			1.0		12.0					T
	Deserve		1.10 to 1.30	3.0	8.0	11.7	2.0	15.0		
	Propagation Delay Output	C _L =30pF,	1.40 to 1.60	2.5	7.0	9.8	1.5	12.2		Figure 3, Figure 4
t _{PHL} , t _{PLH}	Translation	$R_L=1M\Omega$	1.65 to 1.95	2.0	6.0	8.9	1.0	11.5	ns	
	V _{cc} (V)=3.3		2.30 to 2.70	1.5	5.0	8.3	1.0	10.7		
			3.00 to 3.60	1.5	5.0	8.1	1.0	10.4		

Capacitance

Symbol	Parameter	Conditions	V _{cc} / V _{cc1} (V)	T _A =+25°C Typical	Units
C _{IN}	Input Capacitance			2	pF
CI/O	Input/Output Capacitance			4	pF
C _{PD}	Power Dissipation Capacitance	$V_{\text{I}}\text{=}0V$ or $V_{\text{CC1}}\text{, f}\text{=}10MHz\text{, }V_{\text{CC}}\text{ / }V_{\text{CC1}}\text{=}3.6V$	1.0 to 3.60	8	pF

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Translator Power-up Sequence Recommendations

To ensure that the system does not experience unnecessary I_{CC} current draw, bus contention, or oscillations during power-up; adhere to the following guidelines. This device is designed with the output pin(s) supplied by V_{CC} and the input pin(s) supplied by V_{CC1} . The first recommendation is to begin by powering up the input side of the device with V_{CC1} . The Input pin(s) should be ramped with or ahead of V_{CC1} or held LOW. This guards against bus contentions and oscillations as

all inputs and the input V_{CC1} are powered at the same time. The output V_{CC} can then be powered to the target voltage level to which the device will translate. The output pin(s) then translate to logic levels dictated by the output V_{CC} levels.

Upon completion of these steps, the device can be configured for the desired operation. Following these steps helps prevent possible damage to the translator device as well as other system components.

AC Loadings and Waveforms

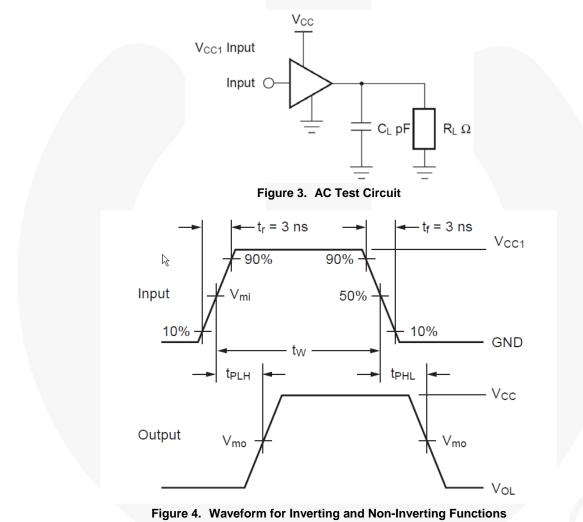
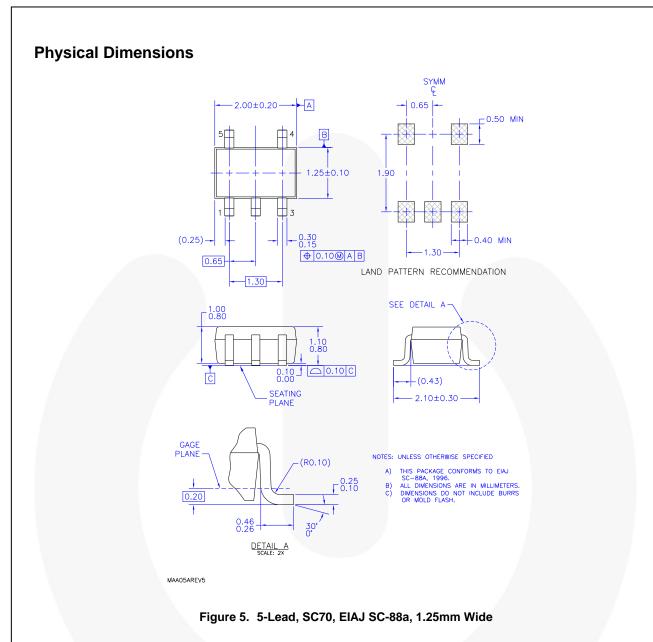


Table 1. AC Load Table

Symbol	V _{cc}							
Symbol	3.3V ±0.3V	2.5V ±0.2V	1.8V ±0.15V	1.5V ±0.10V	1.2V ±0.10V	1.0V		
V _{mi}	1.5V	V _{CC1} /2						
V _{mo}	1.5V	V _{CC} /2	V _{CC} /2	V _{CC} /2	V _C C/2	V _{CC} /2		

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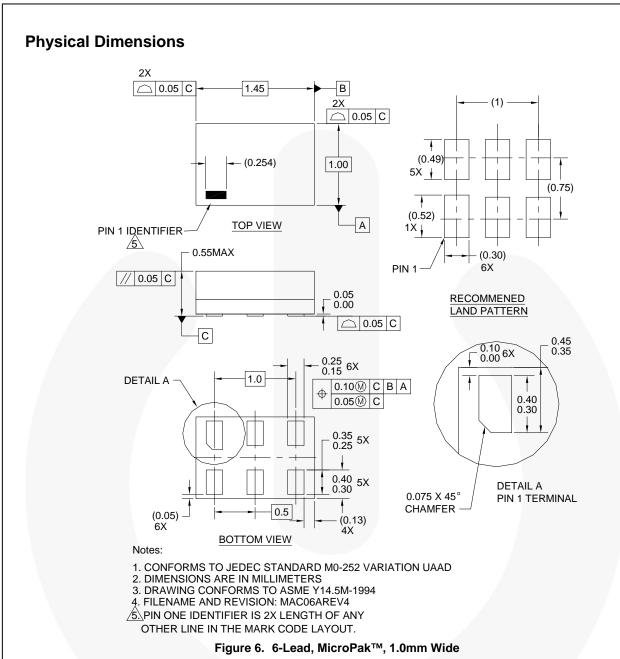
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Package Designator	Tape Section	Cavity Number	Cavity Status	Cover Type Status	
	Leader (Start End)	125 (Typical)	Empty	Sealed	
P5X	Carrier	3000	Filled	Sealed	
	Trailer (Hub End)	75 (Typical)	Empty	Sealed	



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	Trailer (Hub End)	75 (Typical)	Empty	Sealed



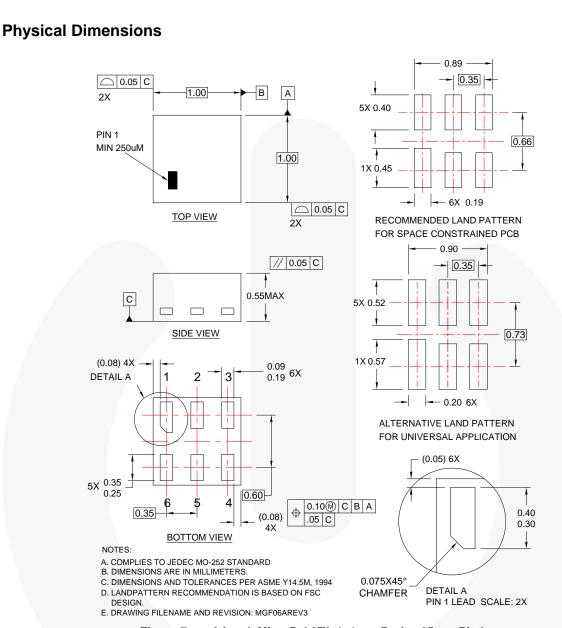


Figure 7. 6-Lead, MicroPak2™, 1x1mm Body, .35mm Pitch

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Package Designator	Tape Section	Cavity Number	Cavity Status	Cover Type Status
FHX	Leader (Start End)	125 (Typical)	Empty	Sealed
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	Trailer (Hub End)	75 (Typical)	Empty	Sealed



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