

Absolute Maximum Ratings (Note 1)

Supply Voltage (V_{CC})	-0.5V to +7.0V
DC Input Diode Current (I_{IK})	
$V_{IN} < -0.5V$	-20 mA
$V_{IN} \geq V_{CC} + 0.5V$	+20 mA
DC Input Voltage (V_{IN})	-0.5V to $V_{CC} + 0.5V$
DC Output Diode Current (I_{OK})	
$V_{OUT} < -0.5V$	-20 mA
$V_{OUT} > V_{CC} + 0.5V$	+20 mA
Output Voltage (V_{OUT})	-0.5V to $V_{CC} + 0.5V$
DC Output Source or Sink Current (I_{OUT})	± 12.5 mA
DC V_{CC} or Ground Current per Supply Pin (I_{CC} or I_{GND})	± 25 mA
Storage Temperature (T_{STG})	-65°C to +150°C
Junction Temperature (T_J)	150°C
DC V_{CC} or Ground Current per (Soldering, 10 seconds)	260°C
Power Dissipation (P_D) @ +85°C	
SOT23-5	200 mW
SC70-5	150 mW

Recommended Operating Conditions (Note 2)

Supply Voltage	4.5V–5.5V
Input Voltage (V_{IN})	0V– V_{CC}
Output Voltage (V_{OUT})	0V– V_{CC}
Operating Temperature (T_A)	-40°C to +85°C
Input Rise and Fall Time (t_r, t_f)	
$V_{CC} = 5.0V$	0–500 ns
Thermal Resistance (θ_{JA})	
SOT23-5	300°C/W
SC70-5	425°C/W

Note 1: Absolute Maximum Ratings are those values beyond which damage to the device may occur. The databook specifications should be met, without exception, to ensure that the system design is reliable over its power supply, temperature, and output/input loading variables. Fairchild does not recommend operation of circuits outside the databook specifications.

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

DC Electrical Characteristics

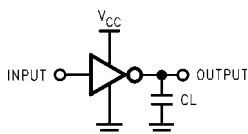
Symbol	Parameter	V_{CC} (V)	$T_A = +25^\circ\text{C}$			$T_A = -40^\circ\text{C to } +85^\circ\text{C}$		Units	Conditions
			Min	Typ	Max	Min	Max		
V_{IH}	HIGH Level Input Voltage	4.5–5.5	2.0			2.0		V	
V_{IL}	LOW Level Input Voltage	4.5–5.5			0.8		0.8	V	
V_{OH}	HIGH Level Output Voltage	4.5	4.4	4.5		4.4		V	$I_{OH} = -20 \mu\text{A}, V_{IN} = V_{IL}$
		4.5	4.18	4.35		4.13		V	$I_{OH} = -2 \text{ mA}$
V_{OL}	LOW Level Output Voltage	4.5		0	0.1		0.1	V	$I_{OL} = 20 \mu\text{A}, V_{IN} = V_{IH}$
		4.5		0.10	0.26		0.33	V	$I_{OL} = 2 \text{ mA}$
I_{IN}	Input Leakage Current	5.5			± 0.1		± 1.0	μA	$0 \leq V_{IN} \leq 5.5V$
I_{CC}	Quiescent Supply Current	5.5			1.0		10.0	μA	$V_{IN} = V_{CC}$ or GND
I_{CCT}	I_{CC} per Input	5.5			2.0		2.9	mA	Input $V_{IN} = 0.5V$ or 2.4V

AC Electrical Characteristics

Symbol	Parameter	V _{CC} (V)	T _A = +25°C			T _A = −40°C to +85°C		Units	Conditions	Fig. No.
			Min	Typ	Max	Min	Max			
t _{PLH} , t _{PHL}	Propagation Delay	5.0		3.5	12			ns	C _L = 15 pF	Figures 1, 3
				6.0	17					
		4.5		6.2	16		20	ns	C _L = 50 pF	
				11.4	27		31			
		5.5		4.3	14		18			
				11.1	26		30			
t _{TLH} , t _{THL}	Output Transition Time	5.0		4	10			ns	C _L = 15 pF	Figures 1, 3
		4.5		11	25		31	ns	C _L = 50 pF	
		5.5		10	21		26			
C _{IN}	Input Capacitance	Open		2	10			pF		
C _{PD}	Power Dissipation Capacitance	5.0		6				pF	(Note 3)	Figure 2

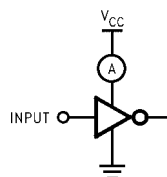
Note 3: C_{PD} is defined as the value of the internal equivalent capacitance which is derived from dynamic operating current consumption (I_{CCD}) at no output loading and operating at 50% duty cycle. (See Figure 2.) C_{PD} is related to I_{CCD} dynamic operating current by the expression:
 $I_{CCD} = (C_{PD})(V_{CC})(f_{IN}) + (I_{CCstatic})$.

AC Loading and Waveforms



C_L includes load and stray capacitance
 Input PRR = 1.0 MHz, t_w = 500 ns

FIGURE 1. AC Test Circuit



Input = AC Waveform; PRR = Variable; Duty Cycle = 50%

FIGURE 2. I_{CCD} Test Circuit

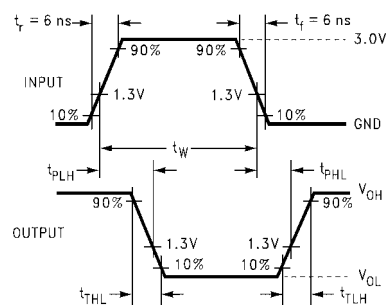
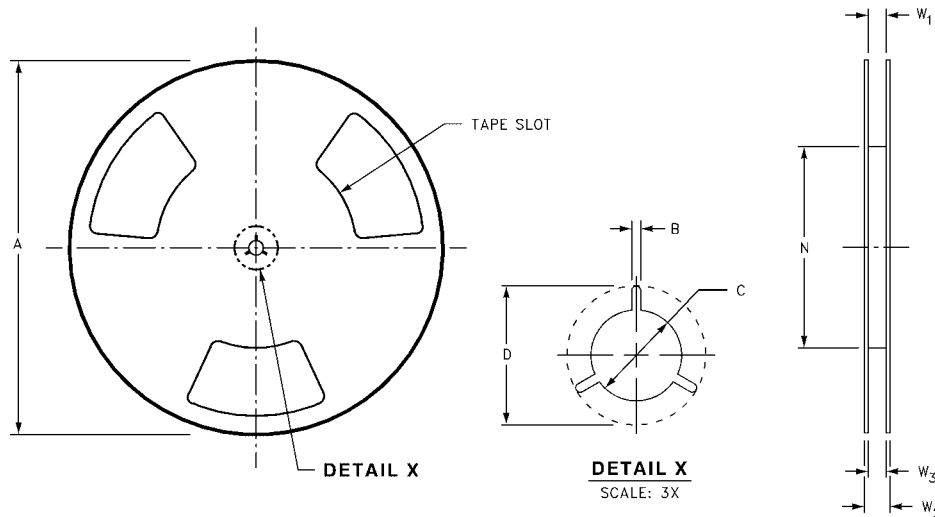


FIGURE 3. AC Waveforms

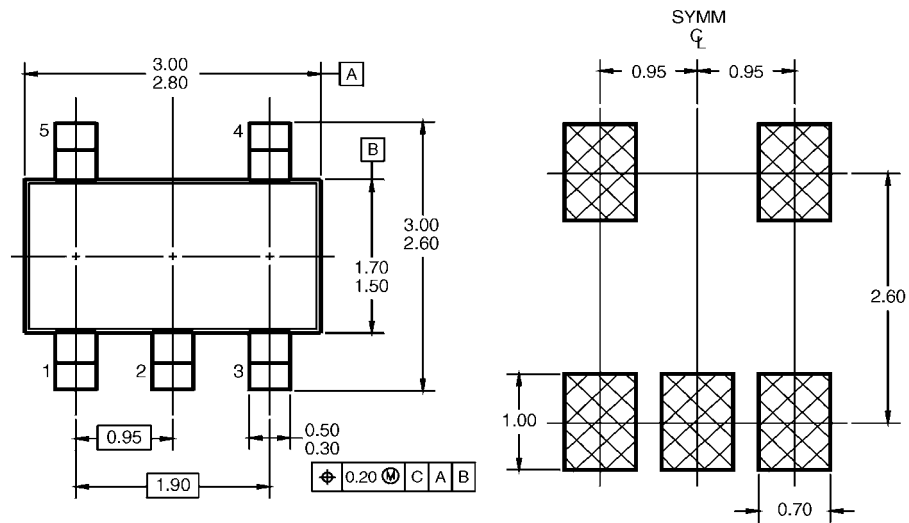
Tape and Reel Specification (Continued)

REEL DIMENSIONS inches (millimeters)

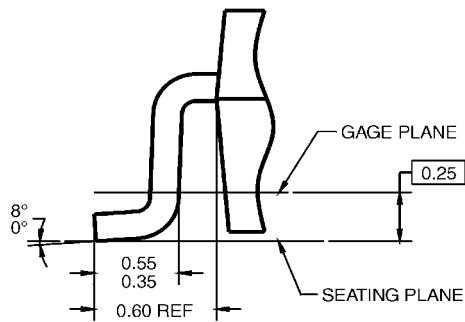
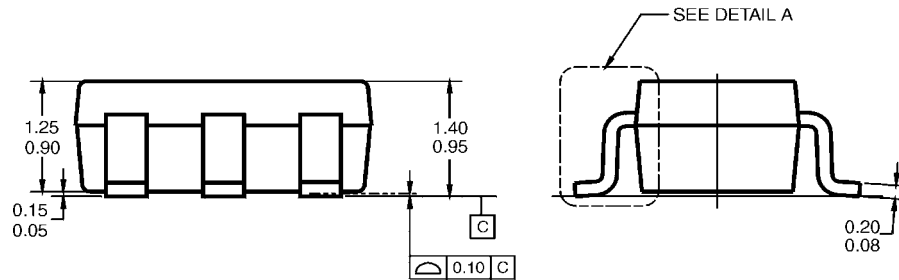


Tape Size	A	B	C	D	N	W1	W2	W3
8 mm	7.0 (177.8)	0.059 (1.50)	0.512 (13.00)	0.795 (20.20)	2.165 (55.00)	0.331 + 0.059/-0.000 (8.40 + 1.50/-0.00)	0.567 (14.40)	W1 + 0.078/-0.039 (W1 + 2.00/-1.00)

Physical Dimensions inches (millimeters) unless otherwise noted



LAND PATTERN RECOMMENDATION



NOTES: UNLESS OTHERWISE SPECIFIED

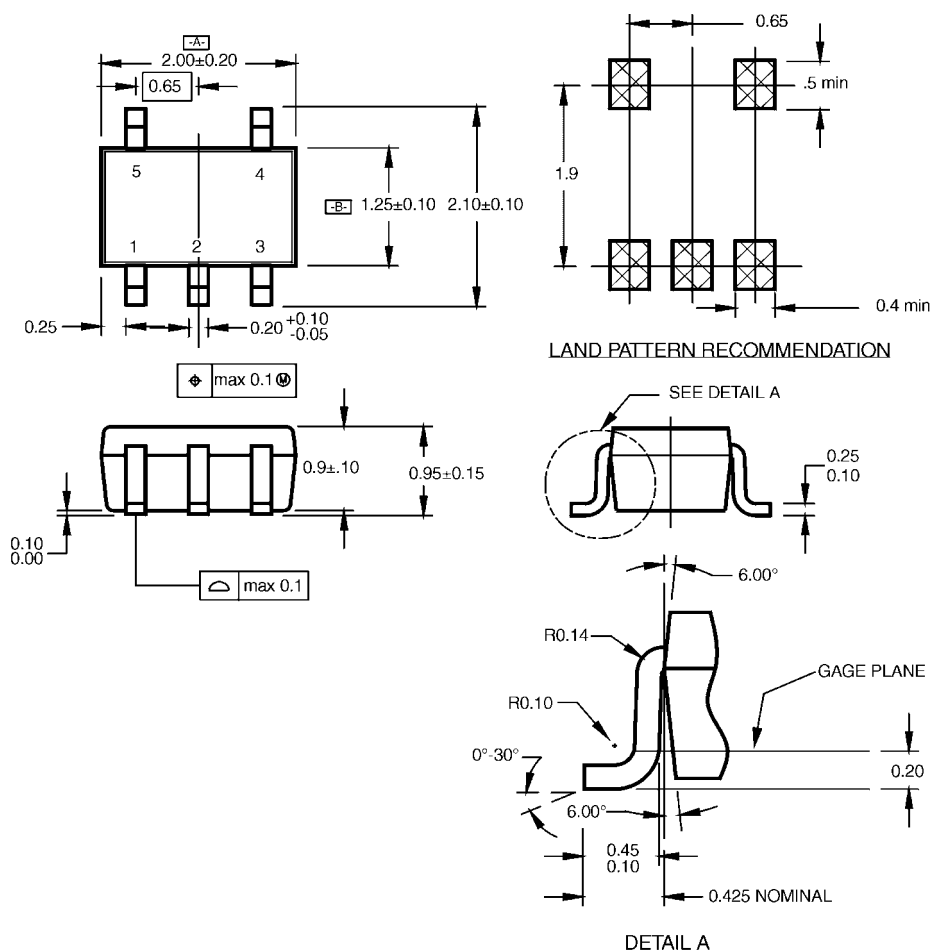
- A) THIS PACKAGE CONFORMS TO JEDEC MO-178, ISSUE B, VARIATION AA, DATED JANUARY 1999.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.

MA05BRevC

DETAIL A

5-Lead SOT23, JEDEC MO-178, 1.6mm
Package Number MA05B

Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



NOTES:

- A. CONFORMS TO EIAJ REGISTERED OUTLINE DRAWING SC88A.
- B. DIMENSIONS DO NOT INCLUDE BURRS OR MOLD FLASH.
- C. DIMENSIONS ARE IN MILLIMETERS.

MAA05ARevC

5-Lead SC70, EIAJ SC-88a, 1.25mm Wide Package Number MAA05A

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