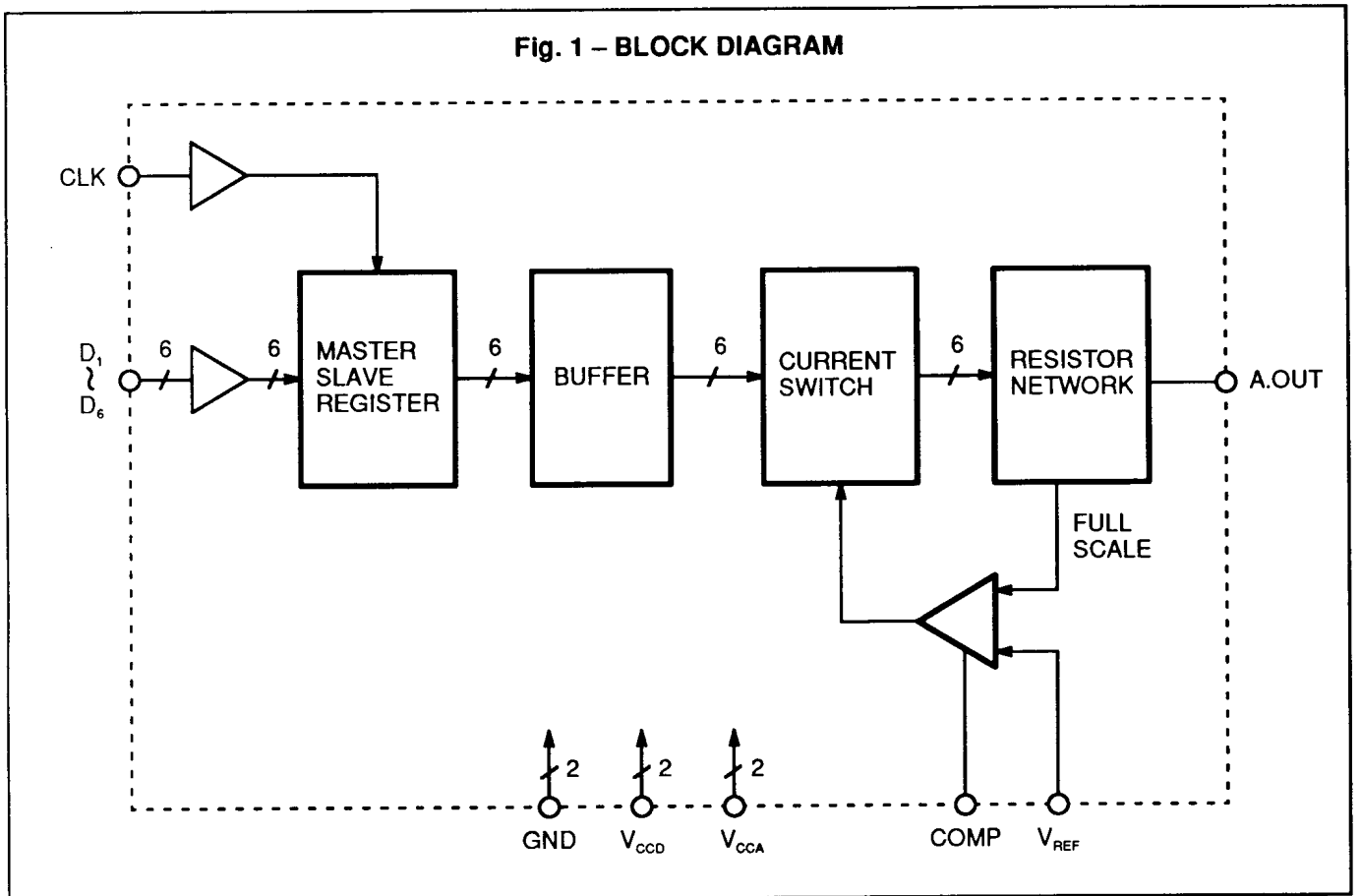


Fig. 1 – BLOCK DIAGRAM



RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Power Supply Voltage	V_{CCA} V_{CCD}	4.75	5.00	5.25	V
Analog Reference Voltage*1	V_{REF}	3.70	4.00	4.30	V
Clock Pulse Width at High level	MB40776H	8.3			ns
	MB40776	25			
Clock Pulse Width at Low level	MB40776H	8.3			ns
	MB40776	25			
Data Setup Time	MB40776H	10.0			ns
	MB40776	12.5			
Data Hold Time	MB40776H	4.0			ns
	MB40776	12.5			
Operating Temperature	T_A	0		70	°C
Phase Compensation Capacitance*2	C_{COMP}	1			μF

NOTE: *1 : $V_{CC} - V_{REF} \leq 1.2V$
*2 : The capacitance should be connected between COMP and GND.

ELECTRICAL CHARACTERISTICS

ANALOG DC CHARACTERISTICS

(V_{CC}=4.75 to 5.25V, T_A=0 to 70°C)

Parameter	Symbol	Condition	Value			Unit
			Min	Typ	Max	
Resolution					6	bits
Linearity Error	LE	DC			±0.8	%
Full-Scale Analog Output Voltage	V _{ofs}	V _{CC} =5.000V V _{REF} =3.976V	V _{CCA} -0.015	V _{CCA}	V _{CCA} +0.015	V
Zero-Scale Analog Output Voltage	V _{ozs}	V _{CC} =5.000V V _{REF} =3.976V	3.932	3.992	4.052	V
Reference Input Current	I _{REF}	V _{REF} =4.00V			10	μA
Output Impedance	Z _{OUT}	T _A =25°C	70	80	90	Ω

DIGITAL DC CHARACTERISTICS

(V_{CC}=4.75 to 5.25V, T_A=0 to 70°C)

Parameter	Symbol	Condition	Value			Unit
			Min	Typ	Max	
High-level Input Voltage	V _{IHD}		2.0			V
Low-level Input Voltage	V _{ILD}				0.8	V
Maximum Input Current	I _{ID}	V _{CC} =5.25V V _{ID} =7.00V		0	100	μA
High-level Input Current	I _{IHD}	V _{CC} =5.25V V _{IHD} =2.70V		0	20	μA
Low-level Input Current	I _{ILD}	V _{CC} =5.25V V _{ILD} =0.40V	-400	-40		μA
Power Supply Current	I _{CC}	V _{REF} =4.05V		43*	65	mA

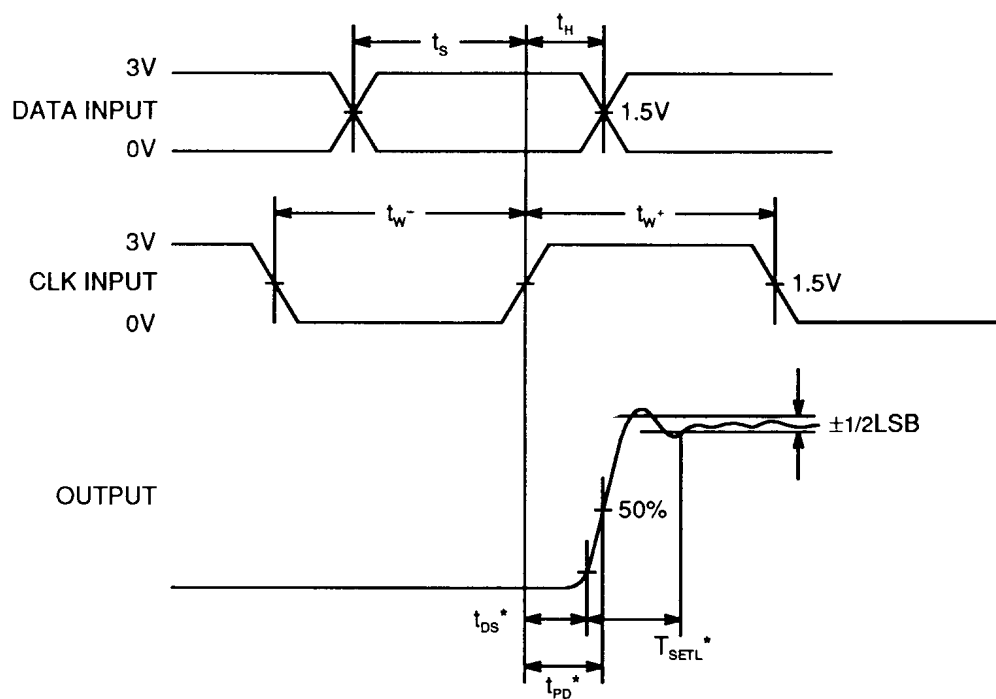
NOTE: *V_{CC}=5.00V, V_{REF}=4.00V

SWITCHING CHARACTERISTICS

($V_{CC}=4.75$ to $5.25V$, $T_A=0$ to $70^{\circ}C$)

Parameter	Symbol	Condition	Value			Unit
			Min	Typ	Max	
Maximum Conversion Rate	MB40776H	FS	60			MSPS
	MB40776		20	30		

Fig. 2 – TIMING DIAGRAM



NOTE: *These values are not specified because they depend on application circuit.

Fig. 3 – DIGITAL INPUT EQUIVALENT CIRCUIT

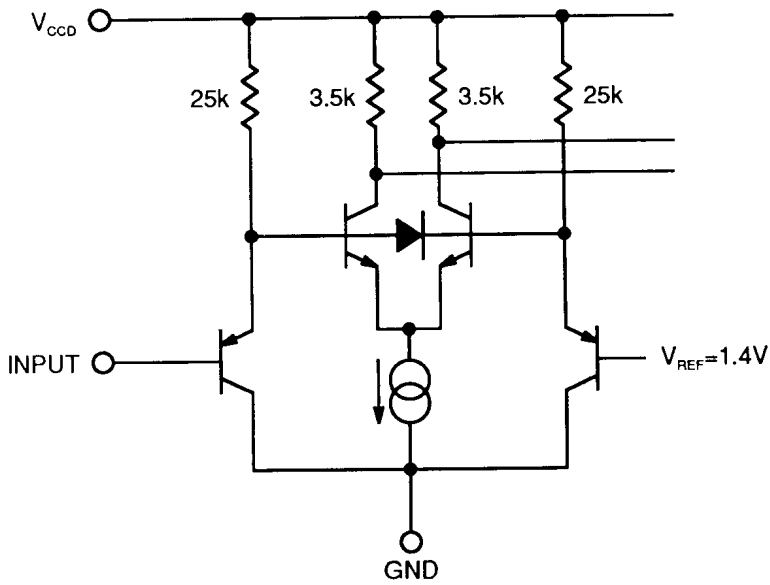
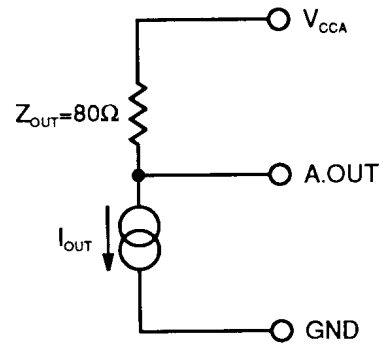


Fig. 4 – OUTPUT EQUIVALENT CIRCUIT



OUTPUT VOLTAGE

($V_{CCA}=5.000V$, $V_{REF}=3.976V$)

Step	Input Code	OUTPUT VOLTAGE (V)
0	000000	3.992
1	000001	4.008
	⋮	⋮
31	011111	4.488
32	100000	4.504
33	100001	4.520
	⋮	⋮
62	111110	4.984
63	111111	5.000

NOTE: 1LSB=16mV

Fig. 5 – IDEAL OUTPUT OPERATION

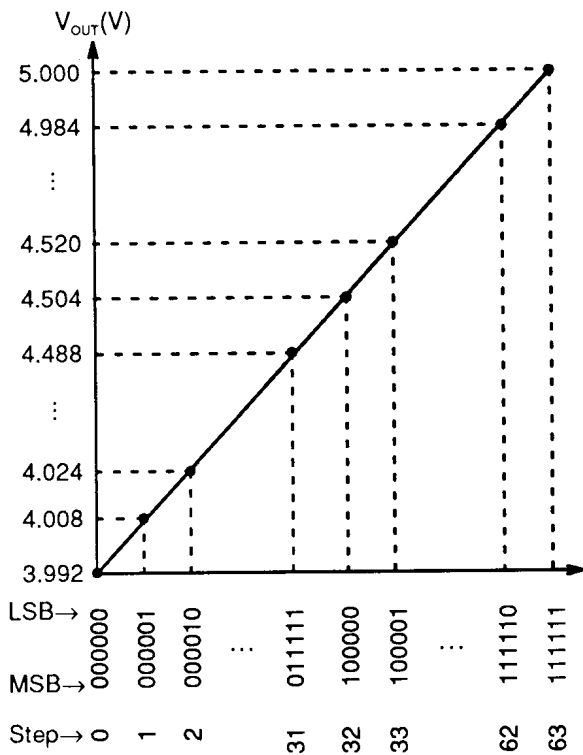
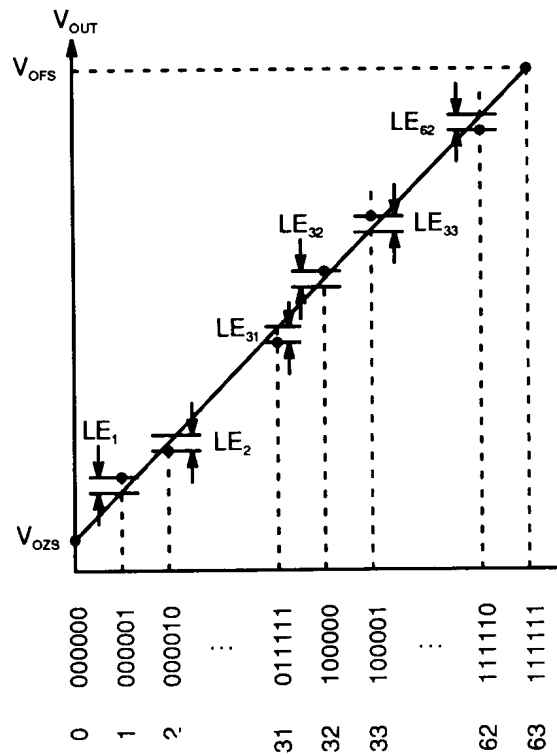


Fig. 6 – PRACTICAL OUTPUT OPERATION



$$\text{Linearity Error} = \frac{|LE_n|_{\max}}{|FS|}$$

TYPICAL CHARACTERISTICS CURVES

Fig. 7 – POWER SUPPLY CURRENT vs. TEMPERATURE

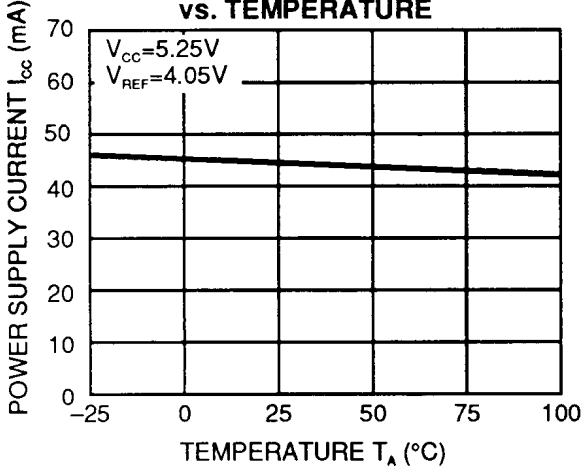


Fig. 8 – LINEARITY ERROR vs. TEMPERATURE

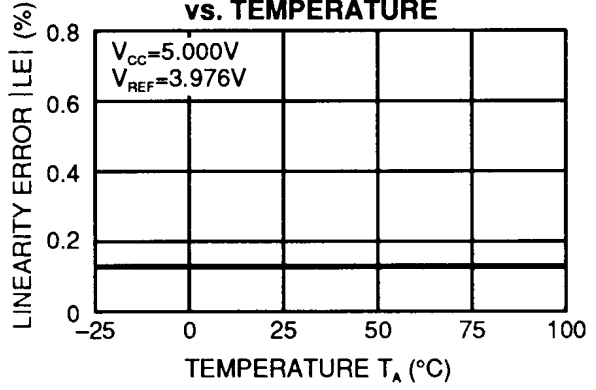


Fig. 9 – OUTPUT IMPEDANCE vs. TEMPERATURE

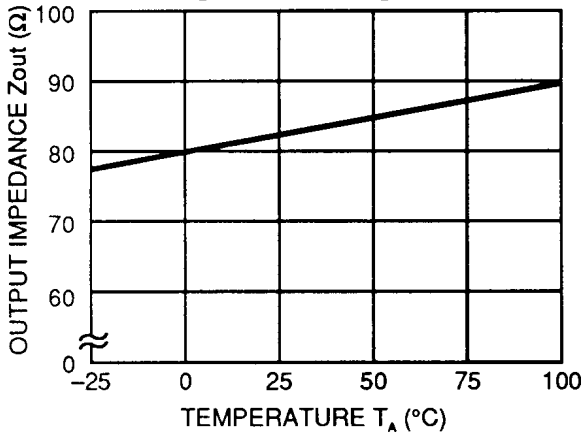


Fig. 10 – ZERO-SCALE ANALOG OUTPUT VOLTAGE vs. TEMPERATURE

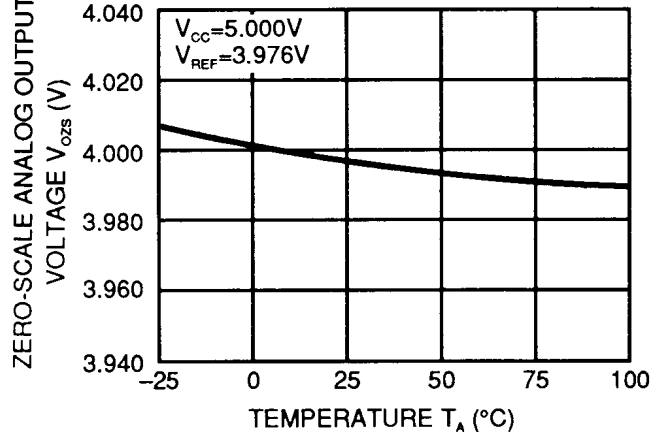


Fig. 11 – FULL-SCALE ANALOG OUTPUT VOLTAGE vs. TEMPERATURE

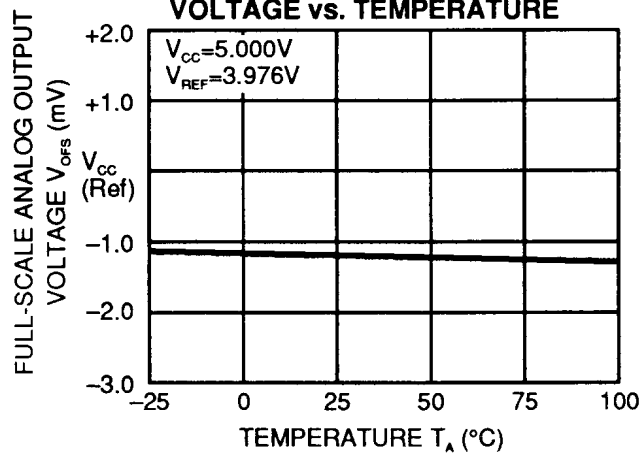


Fig. 12 – DELAY TIME vs. TEMPERATURE

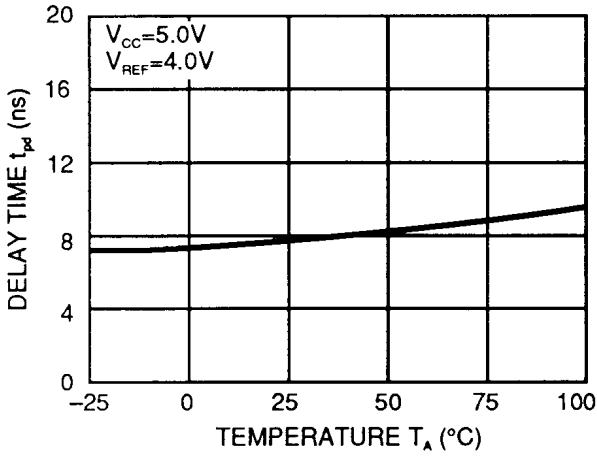


Fig. 13 – DELAY TIME vs. POWER SUPPLY VOLTAGE

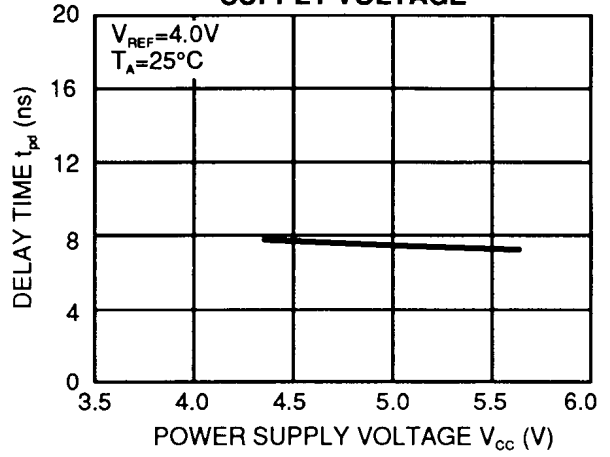


Fig. 14 – CLOCK PULSE WIDTH vs. TEMPERATURE

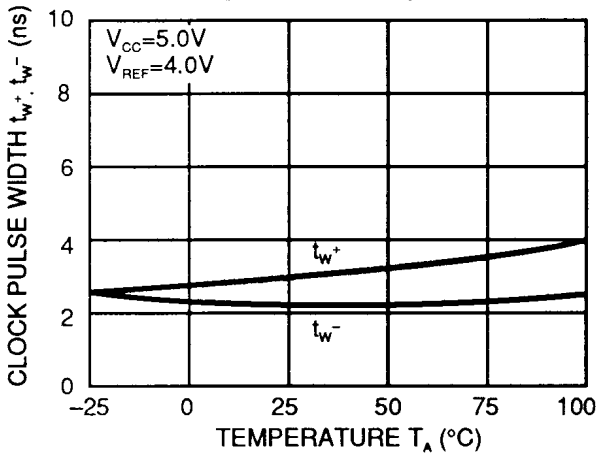


Fig. 15 – CLOCK PULSE WIDTH vs. POWER SUPPLY VOLTAGE

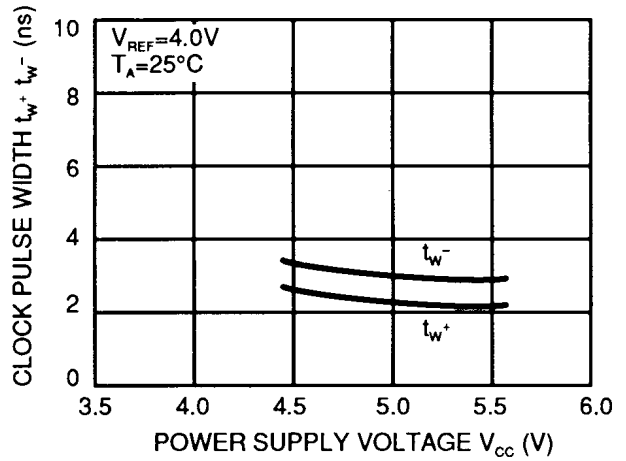
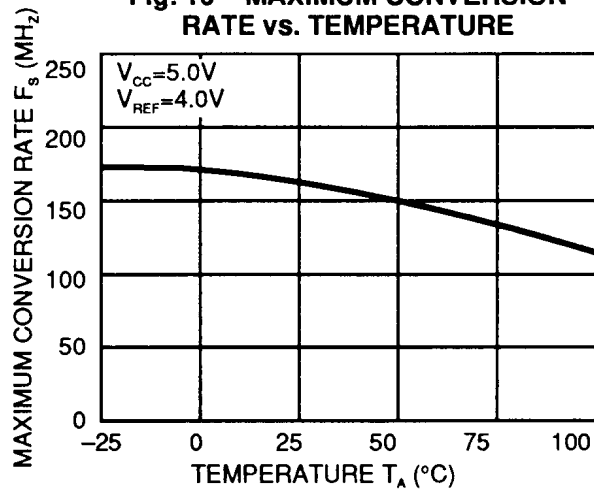
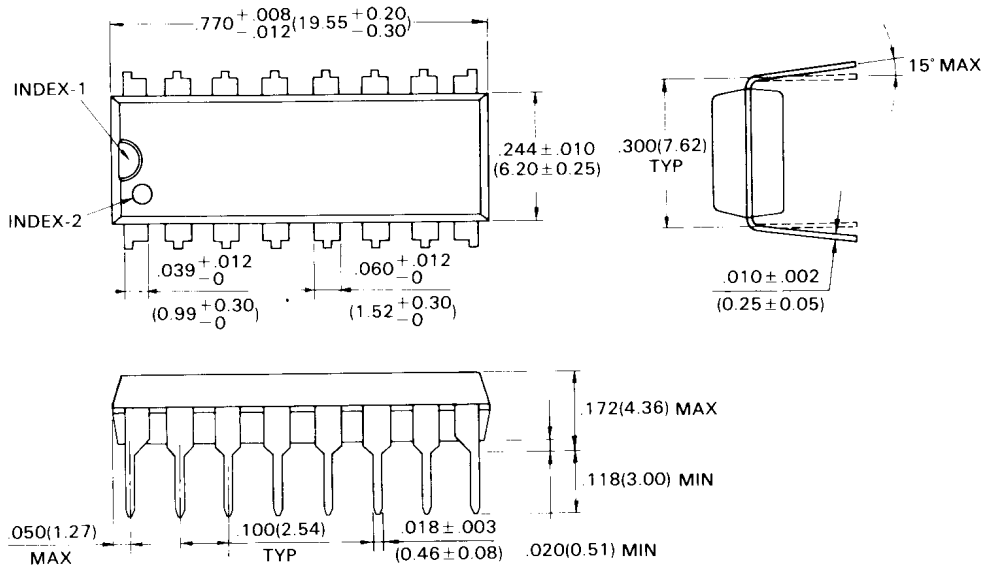


Fig. 16 – MAXIMUM CONVERSION RATE vs. TEMPERATURE



PACKAGE DIMENSIONS

16-LEAD PLASTIC DUAL IN-LINE PACKAGE
(CASE No.: DIP-16P-M04)

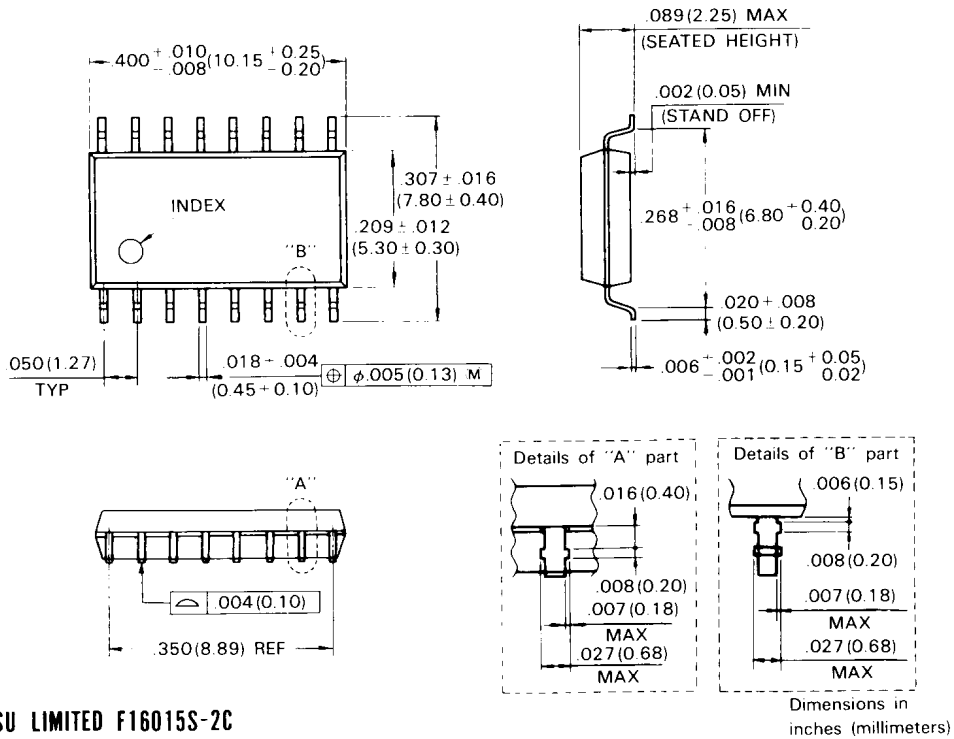


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Dimensions in
inches (millimeters)

PACKAGE DIMENSIONS

16-LEAD PLASTIC FLAT PACKAGE (CASE No.: FPT-16P-M06)



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