FUJITSU SEMICONDUCTOR
DATA SHEET

DS04-28205-2E

ASSP

1 CHANNEL 8-BIT VIDEO A/D CONVERTER

MB40558

■ DESCRIPTION

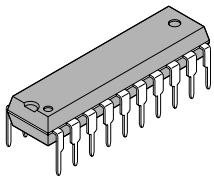
The Fujitsu MB40558 is a low power ultra-high speed video A/D converter fabricated with Fujitsu Advanced Bipolar Technology. The MB40558 also adopts the fully-parallel comparision technique (flash method) for high speed conversion and can concert wide bandanalog signal such as video signal to digital signal at sampling rate of DC through 40 Mega-samples/sec. Because of such high speed operation, the MB40558 is suitable for digital video applications such as the digital TV, video processing with computer, or ladder signal processing.

■ FEATURES

- Resolution: 8 bits
- Linearity Error: ±0.15%
- Maximum Conversion Rate: 40 MSPS (min.)
- Digital I/O Level: TTL Compatible
- Analog Input Voltage: 3.0V to 5.0V(2Vp–p)
- Single Power Supply: 5.0V
- Power dissipation: 350 mW (typ.)
- Further Function: On Chip Reference Voltage Generator
- Package: Standard 20-pin Plastic DIP Package: Suffix: –P
  Standard 20-pin Plastic Flat Package: Suffix: –PF

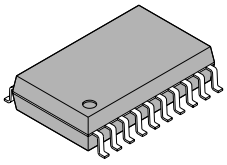
■ PACKAGES

Plastic DIP, 20 pin



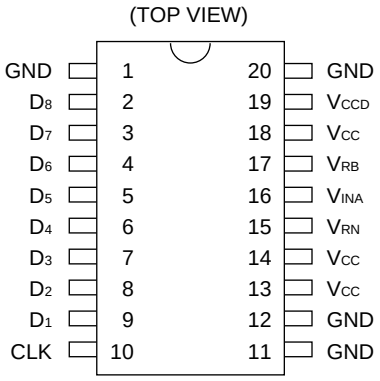
(DIP-20P-M01)

Plastic FPT, 20 pin

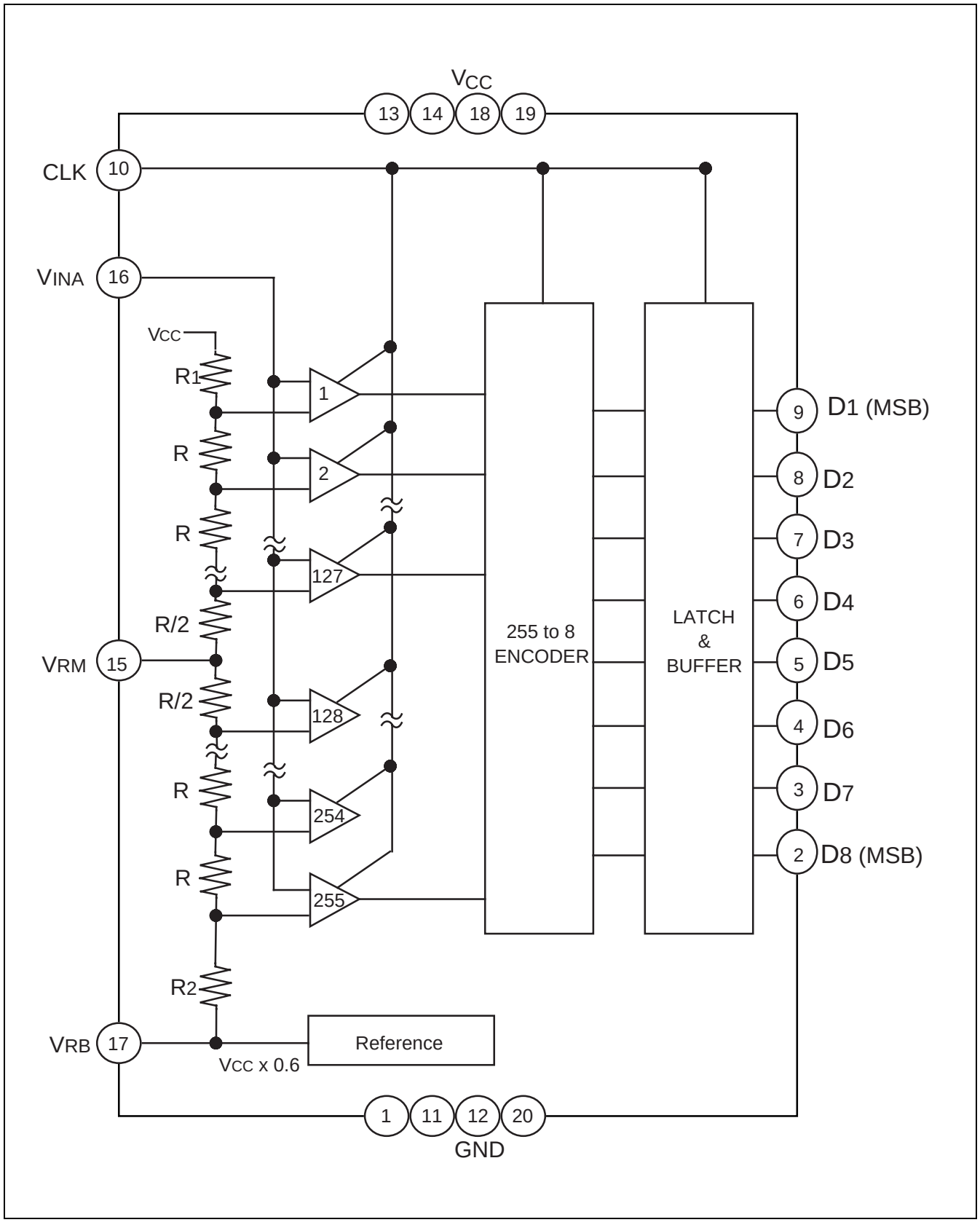


(FPT-20P-M02)

■ PIN ASSIGNMENT



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Power supply voltage	V_{CC}	–0.5 to +7.0	V
Digital input voltage	V_{IND}	–0.5 to +7.0	V
Analog input voltage	V_{INA}	–0.5 to V_{CC} +0.5	V
Storage temperature	Tstg	–55 to +150	°C

Note: Permanent device damage may occur if the above **Absolute Maximum Ratings** are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

■ RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
Power supply voltage	V_{CC}	4.75	5.00	5.25	V
Analog input voltage	V_{INA}	V_{RB}	—	V_{CC}	V
Digital high-level output current	I_{OH}	–400	—	—	µA
Digital low-level output current	I_{OL}	—	—	1.6	mA
Clock pulse width at high-level	t_{W}+	11.5	—	—	ns
Clock pulse width at low-level	t_{W}–	11.5	—	—	ns
Operating temperature	Ta	–20	—	70	°C

■ ELECTRICAL CHARACTERISTICS

ANALOG DC CHARACTERISTICS

(V_{CC} = 5V ±5%, GND = 0V, Ta = –20 to +70°C)

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
Resolution	—	—	8	—	bits
Linearrity error	LE	—	±0.15	±0.3	%
Differential linearrity error	DLE	—	±0.12	—	%
Equivalent resistance for analog input	R_{INA}	0.18	2.8	—	MΩ
Analog input capacitance	C_{INA}	—	40	—	pF
Analog high-level input current	I_{IHA}	—	—	195	µA
Analog low-level input current	I_{ILA}	—	—	185	µA
Reference voltage	V_{RB}	0.6 × V_{CC} –0.1	0.6 × V_{CC}	0.6 × V_{CC} +0.1	V
Power supply current	I_{CC}	—	70*	130	mA

* : V_{CC} = 5.0V, Ta = +25°C

DIGITAL DC CHARACTERISTICS

(V_{CC} = 5 V ±5%, GND = 0V, Ta = –20 to +70°C)

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
High-level output voltage	V_{OHD}	2.7	—	—	V
Low-level output voltage	V_{OLD}	—	—	0.4	V
High-level input voltage	V_{IHD}	2.0	—	—	V
Low-level input voltage	V_{ILD}	—	—	0.8	V
High-level input current	I_{IHD}	—	—	20	µA
Low-level input current	I_{ILD}	–100	—	—	µA

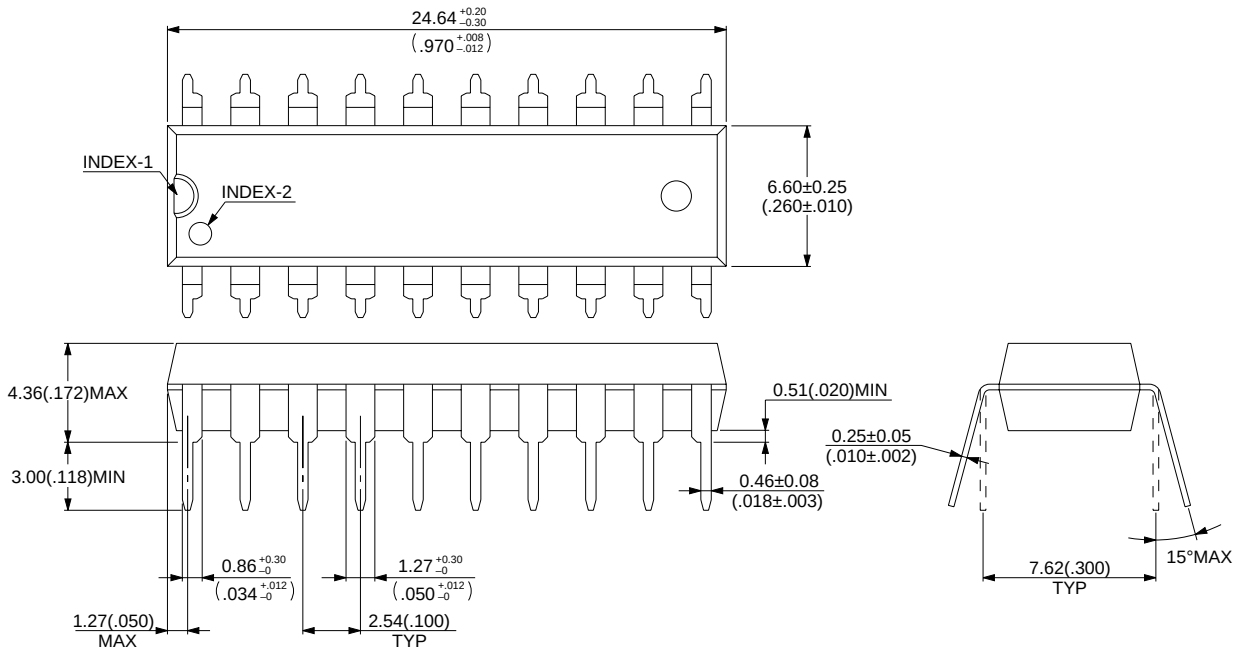
SWITCHING CHARACTERISTICS

(V_{CC} = 5 V ±5%, GND = 0V, Ta = –20 to +70°C)

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
Maximum conversion rate	f_S	40	—	—	MSPS
Digital output delay time	tpd	6	11	21	ns

■ PACKAGE DIMENSIONS

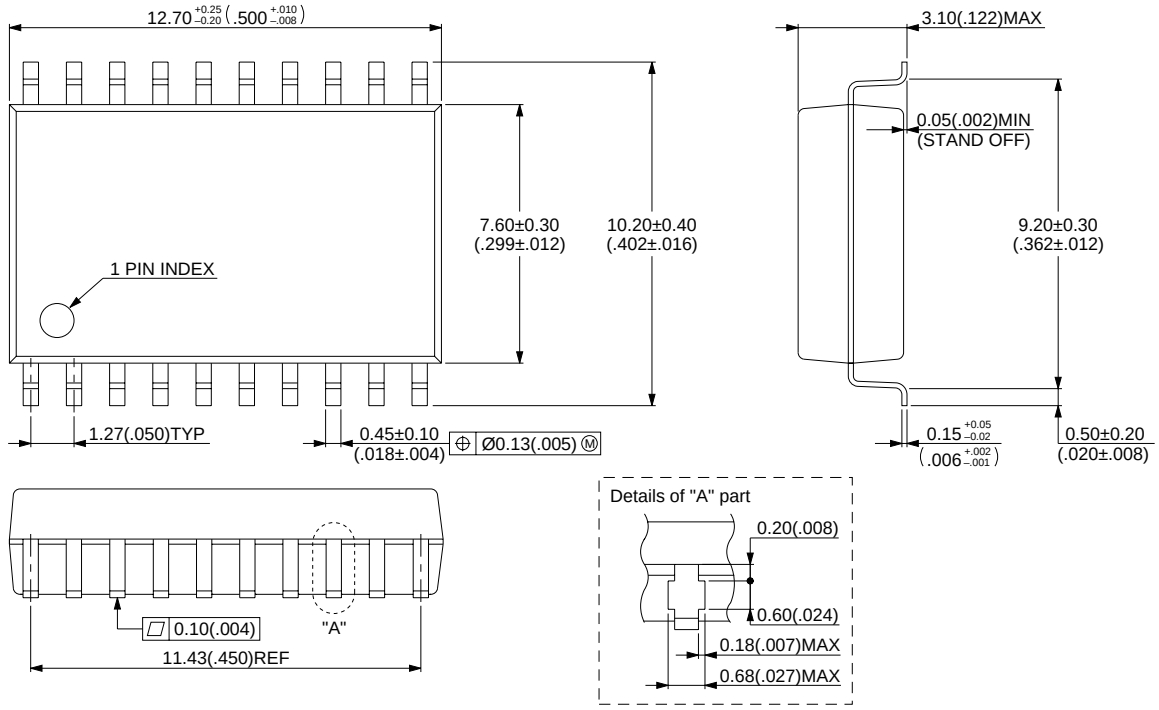
Plastic DIP, 20 pin
(DIP-20P-M01)



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Dimensions in mm(inches)

Plastic FPT, 20 pin
(FPT-20P-M02)



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Dimensions in mm(inch)

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