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## M3776AM8A/MCA/MFA-XXXGP

SINGLE-CHIP 16-BIT MICROCOMPUTER

REJ03B0085-0100Z Rev.1.00 2004.02.17

### 1. DESCRIPTION

This microcomputer is a single-chip microcomputer that adopts a high-performance silicon gate CMOS process, and is contained in a 100-pin plastic mold QFP. This single-chip microcomputer is provided with an instruction queue buffer and a data buffer for executing instructions at high speed. The central processing unit runs in a 16-bit parallel processing mode but can be converted into an 8-bit parallel processing mode when necessary. This product has been designed exclusively for video equipment system controls, incorporating a time measuring circuit for VCR servo control, a real-time pattern generating circuit, analog amplifiers, an OSD display circuit, and a data slicer, among its many other peripheral capabilities.

1.1 FEATUR	ES	
●Number of basis	c instructions	103
<ul><li>Memory size</li></ul>	RAM	M3776AM8A-XXXGP:2048bytes
		M3776AMCA-XXXGP:2560bytes
		M3776AMFA-XXXGP:3072bytes
	ROM	M3776AM8A-XXXGP:64kbytes
		M3776AMCA-XXXGP:96kbytes
		M3776AMFA-XXXGP:120kbytes
●Instruction exec	cution time	
(fastest instruct	ion, 16 MHz h	nigh-speed mode) 250 ns
(fastest instruct	ion, 12 MHz c	double-speed mode)
		167 ns
●Single power so	ource	
In 16 MHz high	-speed mode	
(OSD/data slice	r off)	4.0 V to 5.5 V
(OSD/data slice	r on)	4.75 V to 5.25 V
In 12 MHz doub		
(OSD/data slice	r off)	4.0 V to 5.5 V
(OSD/data slice	r on)	4.75 V to 5.25 V
In 32 kHz low-s	•	
		2.6 V to 5.5 V
●OSD power sou	rce	4.75 V to 5.25 V
●Interrupt		23 factors, 6 levels
●16-bit timer		3
●8-bit timer		3
●Clock-synchron	ous serial I/O	2
(one of which care	an perform au	itomatic 64-byte transfers)
●I <sup>2</sup> C-Bus interfac	e (single mas	ter) 1
●8-bit A-D conve	rter1 u	nit (11 channel inputs)
●8-bit D-A conve	rter	2
●12/14-bit PWM		2
●14-bit PWM		1
●Time measurem	,	,
		g time to generate input signals
DRFG, CPFG,	CPPG, VSYN	G, and GEN
One counter fo	r measuring t	ime to generate input signals RLS

- Amplification circuits
  - CTL head control circuit, CTL amplifier, CTL schmidt circuit, drum PG circuit, drum FG circuit, capstan FG circuit, capstan FG amplifier circuit
- Pulse duty detection circuit (VISS and VASS signal detection features embedded) Measures PBCTL signal duty ratio.
- Synchronous signal separation circuit
- ●EOR output feature (HASW, CROT) ......2-bit output
- Watchdog timer

- 4 Embedded clock-generating circuits
   Built-in feed-back resistor between XIN–XOUT
   Built-in feed-back resistor between XCIN–XCOUT
- ●CPU double-speed enable (f(XIN) max. 12.0 MHz)
- ●ROM correction function included
- ●OSD function

Display characters	32 characters	X 16 lines
Kinds of characters	Composite Output	254 kinds
	RGB Output	285 kinds
Kinds of character sizes		8 kinds
Output method Composite	e video signal, RGB ou	utput (PAL,
MPAL, N7	rsc, npal)	
Special function	Display with backgroun	nd shadow
	(button display)	
	-0)	

On-chip sync correct circuit (AFC)

Data slicerOn-chip slicer for XDS

## 1.2 APPLICATION

VCR, TVCR

starting OSD vertical display

Remote-control noise filter (majority of 4 samplings)

Outputs real-time pattern to exterior, RECCTL signal to CTL head control circuit, trigger for start the A-D converter, trigger for

●Real-time pattern (RTP) generation circuit

and RIT

Sales Strategic Planning Div. Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan

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