

M51901P

6249826 MITSUBISHI ELEK (LINEAR)

80C 09158 D T-52-13-07

12-POINT/23-MODE LED DRIVER

DESCRIPTION

The M51901P is a semiconductor integrated circuit consisting of a driver circuit capable of driving 12 LEDs in 23 modes.

When a DC voltage is applied to the input pin the LED driving outputs are activated either 1 or 2 at a time to provide 23 LED drive modes in accordance with the applied voltage level. In addition, a blanking function is available when the reference voltage is made a low level.

The M51901P consists of 12 differential amplifiers and the associated ladder circuit as well as a blanking circuit.

FEATURES

- 12 LEDs may be driven in accordance with the level of a DC voltage applied to the input, using a built-in A-D conversion capability.
- 23 operating modes are provided
- Built-in blanking function
- The reference voltage level may be freely selected

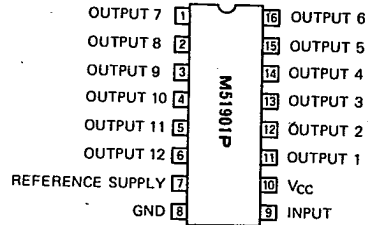
APPLICATION

23-mode drivers for 12 LEDs, simplified A-D converters

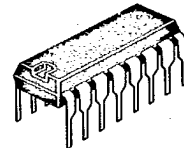
RECOMMENDED OPERATING CONDITIONS

- Supply voltage range 10.2~16.5V
- Rated supply voltage 13.2V
- Reference voltage range 5.0~7.5V
- Input voltage range 0~9.2V

PIN CONFIGURATION (TOP VIEW)

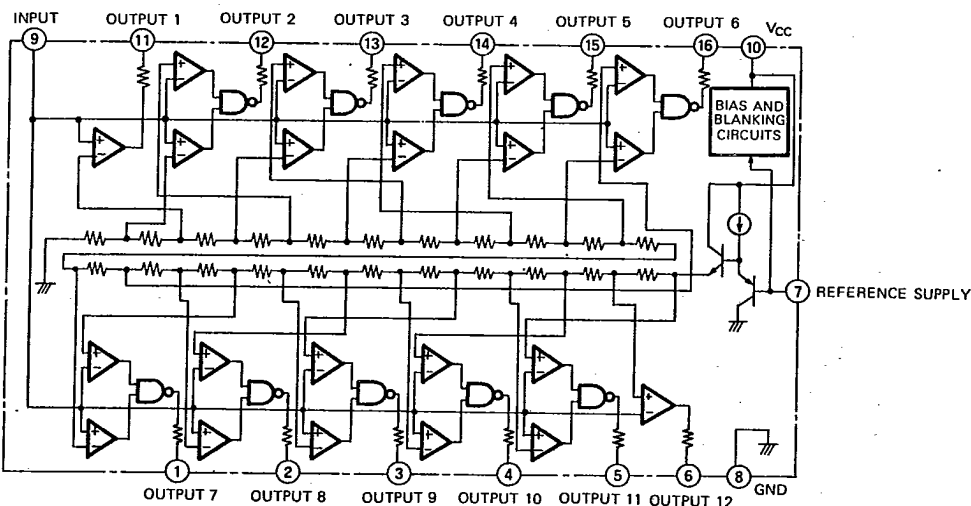


Outline 16P4



16-pin molded plastic DIP

BLOCK DIAGRAM



12-POINT/23-MODE LED DRIVER

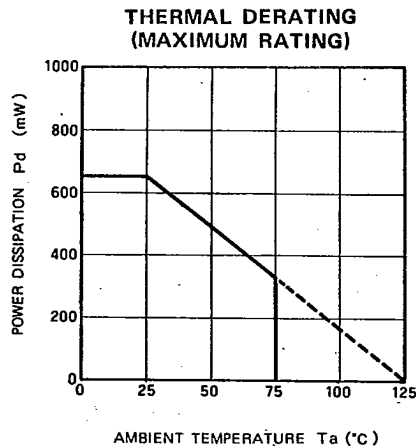
ABSOLUTE MAXIMUM RATINGS (Ta=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
V _{CC}	Supply voltage		18	V
I _O	Output current		30	mA
P _d	Power dissipation		650	mW
K _θ	Derating	T _a ≥ 25°C	6.5	mW/°C
T _{opg}	Operating temperature		-20 ~ +75	°C
T _{stg}	Storage temperature		-40 ~ +125	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C, V_{CC}=±13.2V, V_{REF}=7.20V, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I _{CO}	Circuit current	V _{IN} =0V, outputs open		2	5	mA
I _I	Input current	V _{IN} =9.2V			100	μA
V _O	Output voltage (pins ①~⑫)	R _L =620 Ω	4.2	5.5	6.8	V
V _B	Blanking voltage	V _{IN} =9.2V, I _O =100μA			0.8	V
I _①	Pin ① output current	V _{IN} =0V			15	μA
V _②	Output 2 on-state central input voltage	I _O ≥ 1mA		1.99		V
V _③	Output 3 on-state central input voltage	I _O ≥ 1mA		2.51		V
V _④	Output 4 on-state central input voltage	I _O ≥ 1mA		3.03		V
V _⑤	Output 5 on-state central input voltage	I _O ≥ 1mA		3.55		V
V _⑥	Output 6 on-state central input voltage	I _O ≥ 1mA		4.07		V
V _⑦	Output 7 on-state central input voltage	I _O ≥ 1mA		4.59		V
V _⑧	Output 8 on-state central input voltage	I _O ≥ 1mA		5.11		V
V _⑨	Output 9 on-state central input voltage	I _O ≥ 1mA		5.63		V
V _⑩	Output 10 on-state central input voltage	I _O ≥ 1mA		6.15		V
V _⑪	Output 11 on-state central input voltage	I _O ≥ 1mA		6.67		V

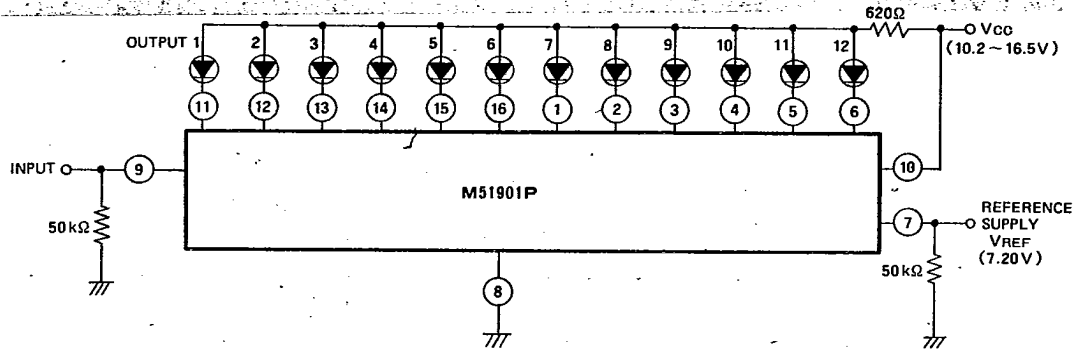
TYPICAL CHARACTERISTICS (T_a=25°C, unless otherwise noted)



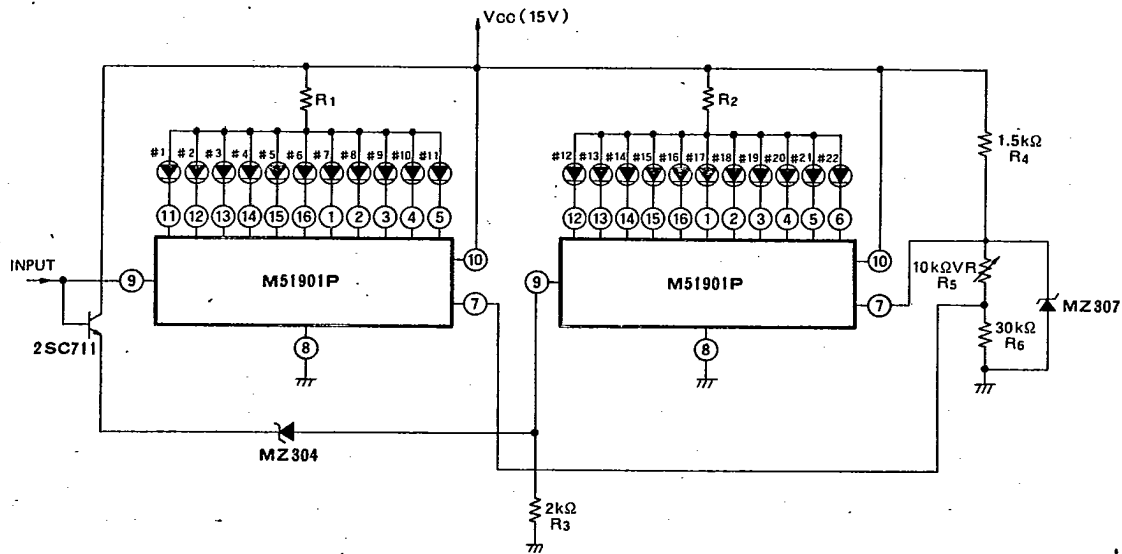
12-POINT/23-MODE LED DRIVER

APPLICATION EXAMPLES

(1) 23-MODE DRIVER FOR 12 LEDs



(2) 22-LED DRIVER (USING CASCADE CONNECTION)



Note R_5 is chosen such that the lower drive level limit for LED #12 is just 0.24V higher than higher drive level limit for LED #10.