

M5248P/M5286P

4-UNIT 1.5A DARLINGTON CURRENT DRIVER

DESCRIPTION

The M5248P/M5286P, 4-channel sink driver, consists of 4 PNP and 14 NPN transistors to form high current gain driver pairs.

FEATURES

- High output sustaining voltage to 80V (M5248P)/60V (M5286P)
- High output current to 1.5A
- Integral diodes for transient suppression
- Micro Computer Compatible input.
- Wide operating temperature range ($T_a = -40 \sim +85^\circ\text{C}$)

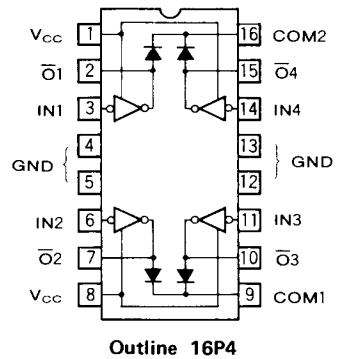
APPLICATION

Relay and printer driver, LED or incandescent display digit driver

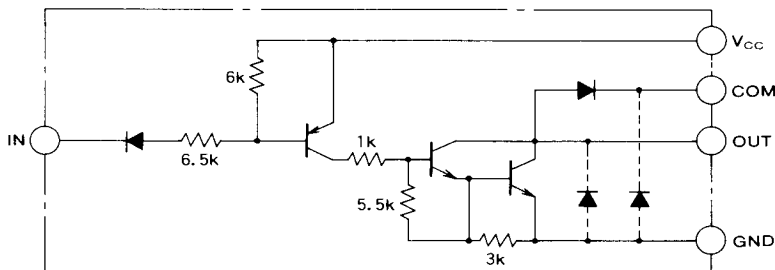
FUNCTION

The M5248P/M5286P is comprised of four PNP invertors with $6.5k\Omega$ series input resistors and NPN darlington sink drivers. Each output has an integral diode for inductive load transient suppression and the anodes of the diode connected to pins 9 and 16. The outputs are capable of sinking 1.5A and will withstand 80V (M5248P)/60V (M5286P) in the OFF state.

PIN CONFIGURATION (TOP VIEW)



CIRCUIT DIAGRAM



Unit: Ω

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

Symbol	Parameter	Conditions	Ratings	Unit
V _{CC}	Supply voltage		20	V
V _{CE0}	Output sustaining voltage	Transistor OFF	80 (M5248P) / 60 (M5286P)	V
V _I	Input voltage		20	V
I _C	Collector current	Transistor ON	1.5	A
V _R	Clamp diode reverse voltage		80	V
I _F	Clamp diode forward current		1.5	A
P _d	Power dissipation	GND with Cu foil (900mm, 35μm)	2.7	W
T _{opr}	Operating ambient temperature range		-40 ~ +85	°C
T _{stg}	Storage temperature range		-55 ~ +125	°C

RECOMMENDED OPERATIONAL CONDITIONS (Ta = -40 ~ +85°C unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
V _C	Supply voltage		4	5	6	V
V _O	Output voltage		0		70 (M5248P) / 50 (M5286P)	V
I _C	Collector current		0		1.25	A
V _R	Clamp diode reverse voltage		0		70 (M5248P) / 50 (M5286P)	V
I _F	Clamp diode forward current		0		1.25	A
P _d	Power dissipation		0		1.0	W

ELECTRICAL CHARACTERISTICS (Ta = -40 ~ +85°C unless otherwise noted)

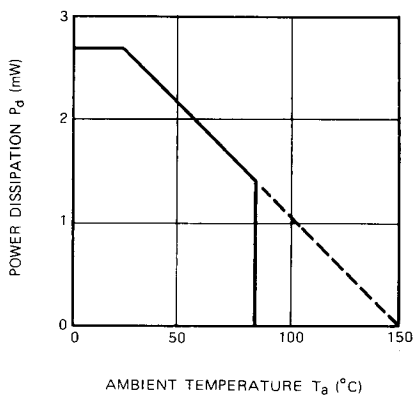
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
V _{(BR)CEO}	Output sustaining voltage	I _{CE0} = 100μA	80 (M5248P) / 60 (M5286P)			V
I _{CCH}	Supply current (OUTPUT "H")	V _{CC} = 6V, V _I = V _{CC}			10.9	μA
I _{CCL}	Supply current (OUTPUT "L")	V _{CC} = 6V, V _I = 0.5V			9.0	mA
V _{CE(sat)}	Output saturation voltage	V = 4V		1.4	1.8	V
		V _I = 0.5V	I _C = 1.25A	1.0	2.3	
I _I	Input current	V _I = V _{CC} - 3.5V			-0.6	mA
		V _I = V _{CC} - 6V	I _C = 0.7A		-1.2	
I _{O(Leak)}	Output leak current	V = 80V, Ta = 85°C (M5248P) / V = 60V, Ta = 85°C (M5286P)			100	μA
I _R	Clamp diode leak current	V _R = 80V (M5248P) / V _R = 60V (M5286P)			50	μA
V _R	Clamp diode reverse voltage	I _R = 100μA	80 (M5248P) / 60 (M5286P)			V
V _{FE}	Clamp diode forward voltage	I _F = 1.25A		1.6	2.0	V
h _{IH}	DC forward current gain	V _{CC} = 4V, V _{CF} = 4V, I _C = 1A	4000			—
V _{IL}	"H" Input voltage	I _{O(Leak)} = 50μA	V _{CC} - 1.3			V
V _{IL}	"L" Input voltage	I _C = 1.25A			V _{CC} - 3.5	V



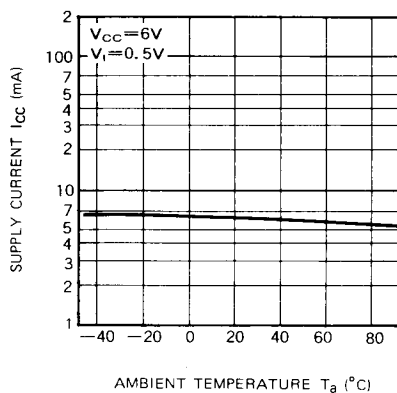
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TYPICAL CHARACTERISTICS

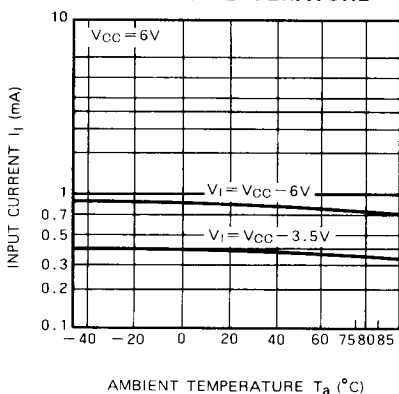
THERMAL DERATING



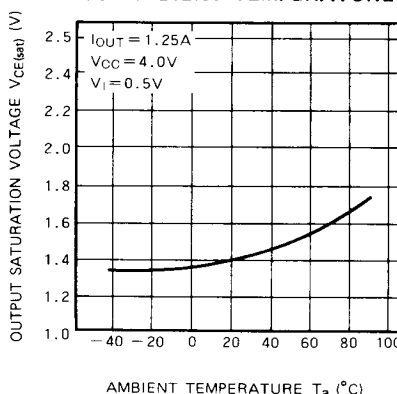
SUPPLY CURRENT VS. AMBIENT TEMPERATURE



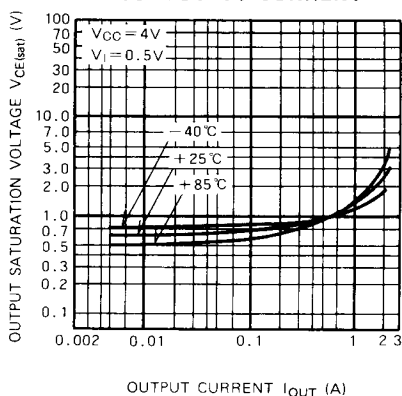
INPUT CURRENT VS. AMBIENT TEMPERATURE



OUTPUT SATURATION VOLTAGE VS. AMBIENT TEMPERATURE



OUTPUT SATURATION VOLTAGE VS. OUTPUT CURRENT



CLAMP DIODE CHARACTERISTICS

