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MITSUBISHI <ANALOG ASSP>

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 ($T_a = -40 \sim +85^\circ\text{C}$)

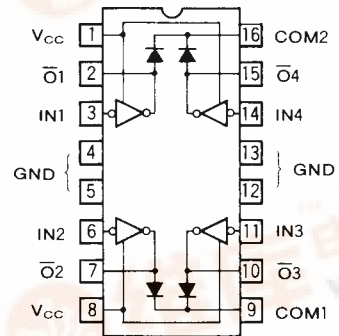
APPLICATION

Relay and printer driver, LED or incandescent display digit driver

FUNCTION

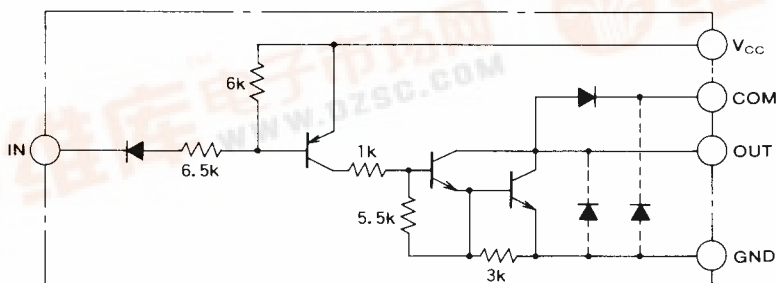
The M5248P/M5286P is comprised of four PNP invertors with $6.5\text{k}\Omega$ series input resistors and NPN darlington sink drivers. Each output has an integral diode for inductive load transient suppression and the anodes of the diode connected to pins 9 and 16. The outputs are capable of sinking 1.5A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

PIN CONFIGURATION (TOP VIEW)



Outline 16P4

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, 35μ m)	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)

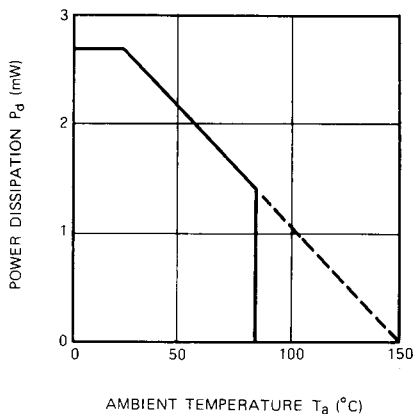
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
V _{(BR)CE0}	Output sustaining voltage	I _{CE0} = 100μA	80 (M5248P) / 60 (M5286P)			V
I _{COH}	Supply current (OUTPUT "H")	V _{CC} = 6V, V _I = V _{CC}			10.9	μA
I _{COL}	Supply current (OUTPUT "L")	V _{CC} = 6V, V _I = 0.5V			9.0	mA
V _{CE(sat)}	Output saturation voltage	V = 4V, I _C = 1.25A		1.4	1.8	V
		V _I = 0.5V, I _C = 0.7A		1.0	2.3	
I _I	Input current	V _I = V _{CC} - 3.5V			-0.6	mA
		V _I = V _{CC} - 6V			-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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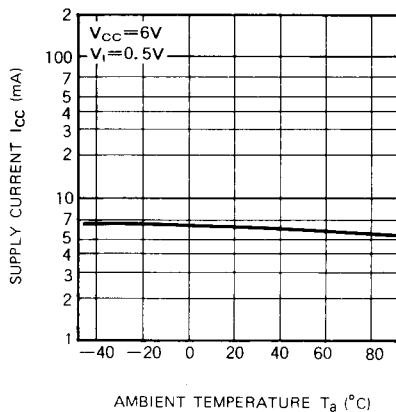
4-UNIT 1.5A DARLINGTON CURRENT DRIVER

TYPICAL CHARACTERISTICS

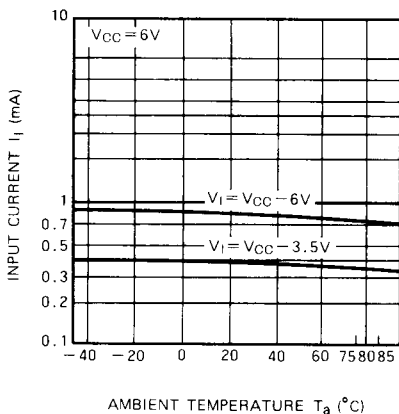
THERMAL DERATING



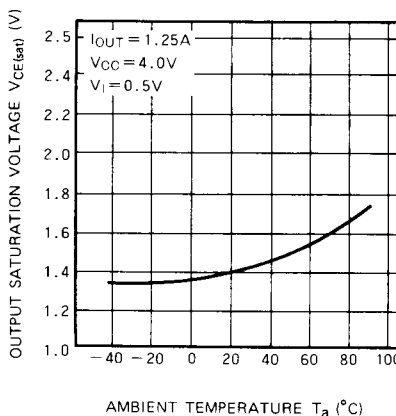
SUPPLY CURRENT VS. AMBIENT TEMPERATURE



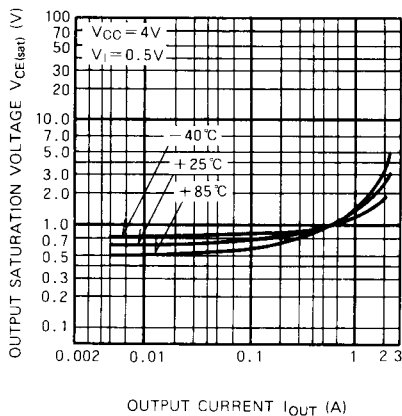
INPUT CURRENT VS. AMBIENT TEMPERATURE



OUTPUT SATURATION VOLTAGE VS. AMBIENT TEMPERATURE



OUTPUT SATURATION VOLTAGE VS. OUTPUT CURRENT



CLAMP DIODE CHARACTERISTICS

