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 ~ +85°C)

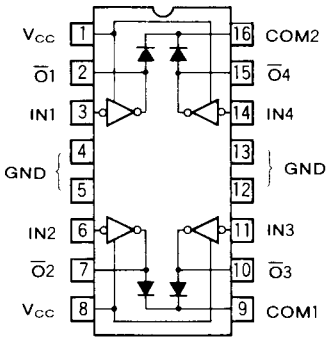
APPLICATION

Relay and printer driver, LED or incandescent display digit driver

FUNCTION

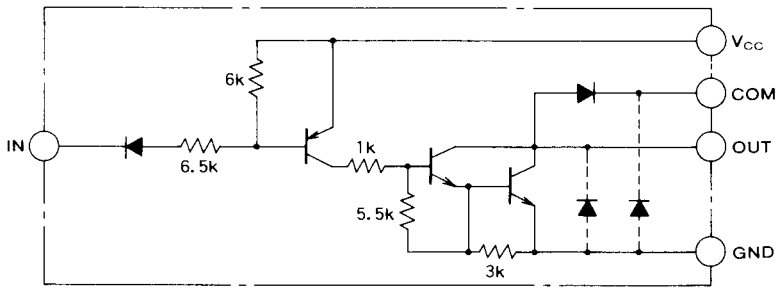
The M5248P/M5286P is comprised of four PNP invertors with 6.5kΩ series input resistors and NPN darlington sink drivers. Each output has an integral diode for inductive load transient suppression and the anodes of the diode connected to pins 9 and 16. The outputs are capable of sinking 1.5A and will withstand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

PIN CONFIGURATION (TOP VIEW)



Outline 16P4

CIRCUIT DIAGRAM



Unit: Ω

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4-UNIT 1.5A DARLINGTON CURRENT DRIVER

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

Symbol	Parameter	Conditions	Ratings	Unit
V_{CC}	Supply voltage		20	V
V_{CEO}	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	℃
T_{stg}	Storage temperature range		−55 ~ +125	℃

RECOMMENDED OPERATIONAL CONDITIONS (Ta=−40 ~ +85℃ unless otherwise noted)

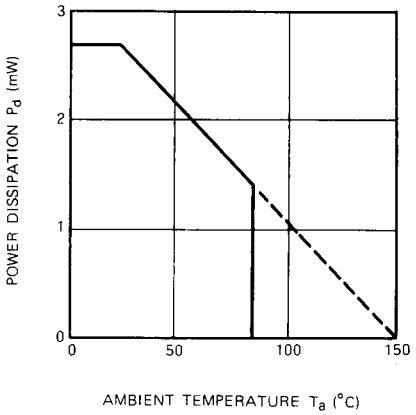
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
V_C	Supply voltage		4	5	6	V
V_O	Output voltage		0		70(M5248P)/50(M5286P)	V
I_C	Collector current		0		1.25	A
V_R	Clamp diode reverse voltage		0		70(M5248P)/50(M5286P)	V
I_F	Clamp diode forward curent		0		1.25	A
P_d	Power dissipation		0		1.0	W

ELECTRICAL CHARACTERISTICS (Ta=−40 ~ +85℃ unless otherwise noted)

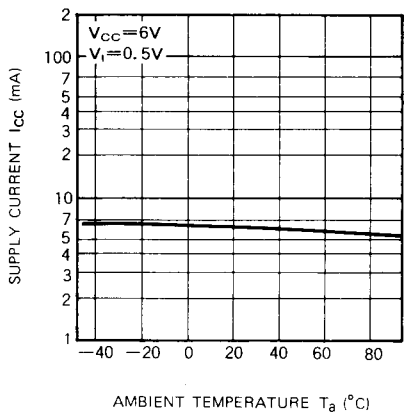
Symbol	Parameter	Test conditions		Limits			Unit
				Min	Typ	Max	
$V_{(BR)CEO}$	Output sustaining voltage	I_{CEO}=100μA		80(M5248P)/60(M5286P)			V
I_{CCH}	Supply current (OUTPUT "H")	V_{CC}=6V, V_I=V_{CC}				10.9	μA
I_{CCL}	Supply current (OUTPUT "L")	V_{CC}=6V, V_I=0.5V				9.0	mA
$V_{CE(sat)}$	Output saturation voltage	V=4V	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℃ (M5248P)/V=60V, Ta=85℃ (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

TYPICAL CHARACTERISTICS

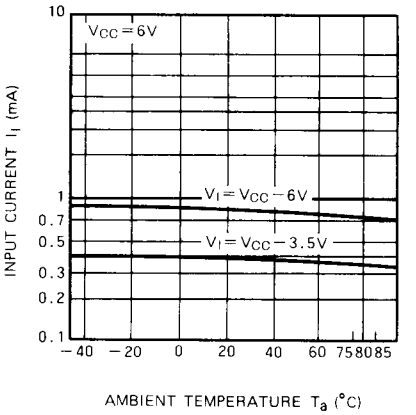
THERMAL DERATING



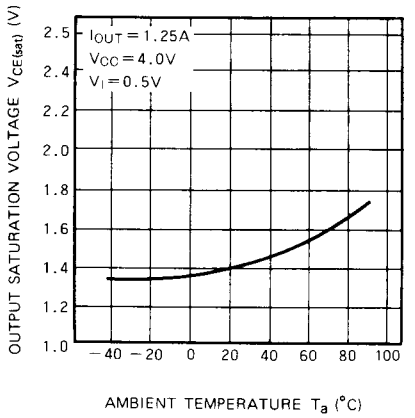
SUPPLY CURRENT VS. AMBIENT TEMPERATURE



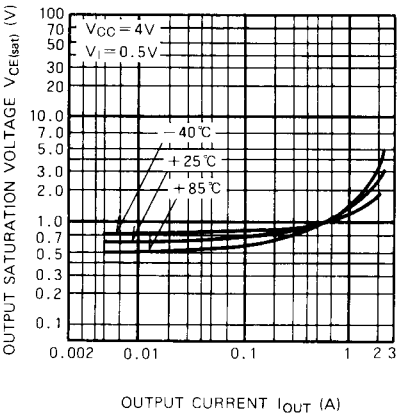
INPUT CURRENT VS. AMBIENT TEMPERATURE



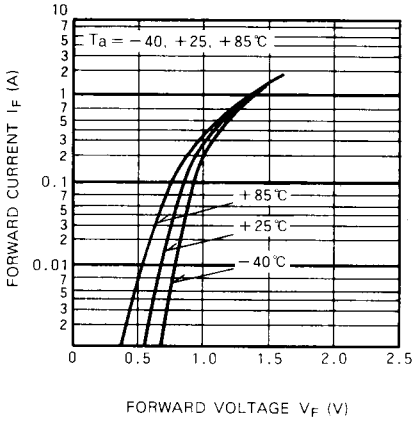
OUTPUT SATURATION VOLTAGE VS. AMBIENT TEMPERATURE



OUTPUT SATURATION VOLTAGE VS. OUTPUT CURRENT



CLAMP DIODE CHARACTERISTICS



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