

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

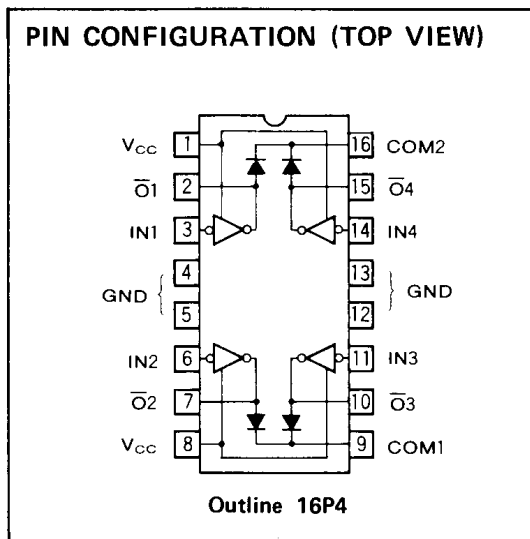
APPLICATION

Relay and printer driver, LED or incandescent display digit driver

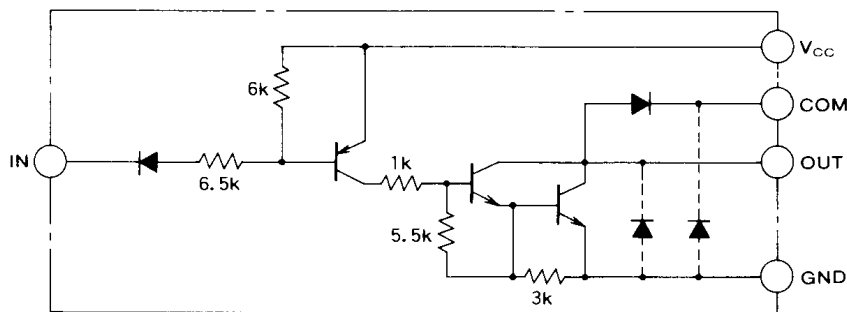
FUNCTION

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 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 ($T_a = 25^\circ\text{C}$, 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, 35 μ m)	2.7	W
T_{opr}	Operating ambient temperature range		-40 ~ +85	$^\circ\text{C}$
T_{stg}	Storage temperature range		-55 ~ +125	$^\circ\text{C}$

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

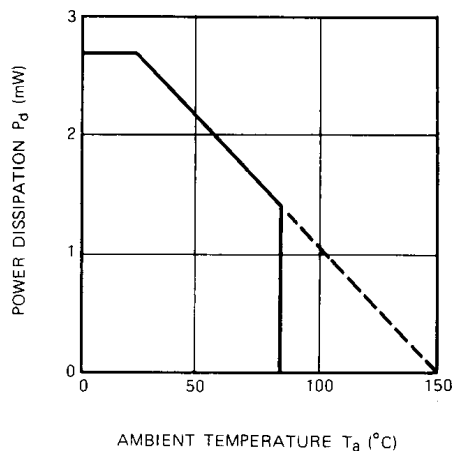
ELECTRICAL CHARACTERISTICS ($T_a = -40 \sim +85^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit	
			Min	Typ	Max		
$V_{(BR)CE0}$	Output sustaining voltage	$I_{CE0} = 100\mu\text{A}$	80 (M5248P) / 60 (M5286P)			V	
I_{CCH}	Supply current (OUTPUT "H")	$V_{CC} = 6\text{V}$, $V_i = V_{CC}$			10.9	μA	
I_{CCL}	Supply current (OUTPUT "L")	$V_{CC} = 6\text{V}$, $V_i = 0.5\text{V}$			9.0	mA	
$V_{CE(sat)}$	Output saturation voltage	$V = 4\text{V}$		$I_C = 1.25\text{A}$	1.4	1.8	V
		$V_i = 0.5\text{V}$		$I_C = 0.7\text{A}$	1.0	2.3	
I_i	Input current	$V_i = V_{CC} - 3.5\text{V}$				-0.6	mA
		$V_i = V_{CC} - 6\text{V}$				-1.2	
$I_{O(leak)}$	Output leak current	$V = 80\text{V}$, $T_a = 85^\circ\text{C}$ (M5248P) / $V = 60\text{V}$, $T_a = 85^\circ\text{C}$ (M5286P)				100	μA
I_R	Clamp diode leak current	$V_R = 80\text{V}$ (M5248P) / $V_R = 60\text{V}$ (M5286P)				50	μA
V_R	Clamp diode reverse voltage	$I_R = 100\mu\text{A}$	80 (M5248P) / 60 (M5286P)				V
V_{FE}	Clamp diode forward voltage	$I_F = 1.25\text{A}$		1.6	2.0		V
h_{IH}	DC forward current gain	$V_{CC} = 4\text{V}$, $V_{CF} = 4\text{V}$, $I_C = 1\text{A}$		4000			—
V_{iL}	"H" Input voltage	$I_{O(leak)} = 50\mu\text{A}$		$V_{CC} - 1.3$			V
V_{iL}	"L" Input voltage	$I_C = 1.25\text{A}$				$V_{CC} - 3.5$	V

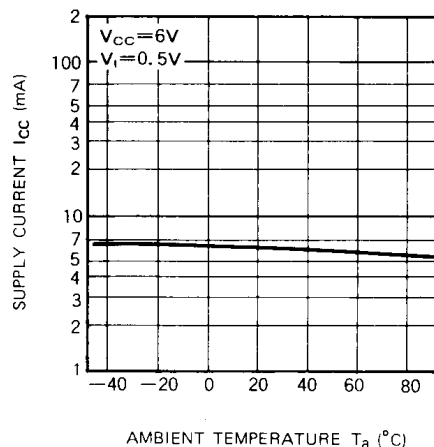
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TYPICAL CHARACTERISTICS

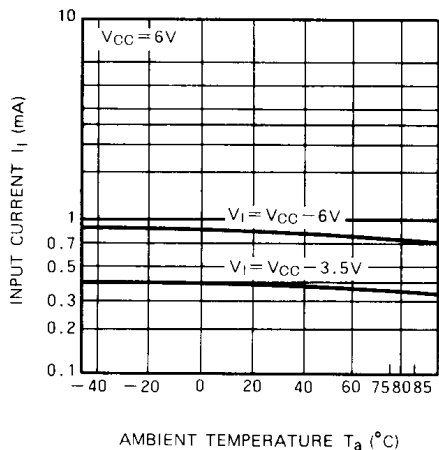
THERMAL DERATING



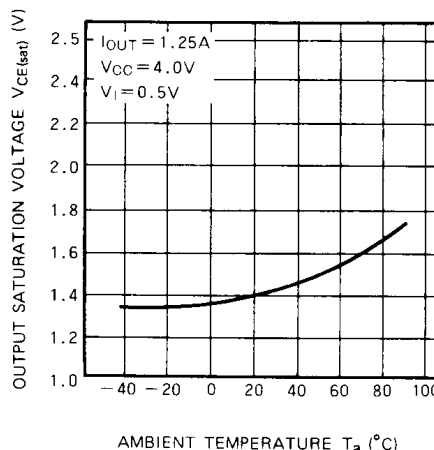
SUPPLY CURRENT VS. AMBIENT TEMPERATURE



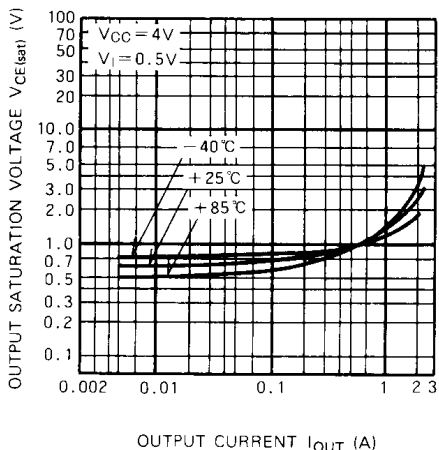
INPUT CURRENT VS. AMBIENT TEMPERATURE



OUTPUT SATURATION VOLTAGE VS. AMBIENT TEMPERATURE



OUTPUT SATURATION VOLTAGE VS. OUTPUT CURRENT



CLAMP DIODE CHARACTERISTICS

