7-UNIT 400mA DARLINGTON TRANSISTOR ARRAY WITH CLAMP DIODE

DESCRIPTION

The M54530P, 7-channel sink driver, consists of 14 NPN transistors connected to form seven high current gain driver pairs.

FEATURES

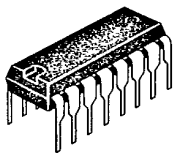
- High output sustaining voltage to 40V
- High output sink current to 400mA
- Integral diodes for transient suppression
- PMOS compatible input
- Wide operating temperature range (T_a = −20∼+75℃)

APPLICATION

Relay and printer driver, LED or incandescent display digit driver, Interfacing for standard MOS/BIPOLAR logics

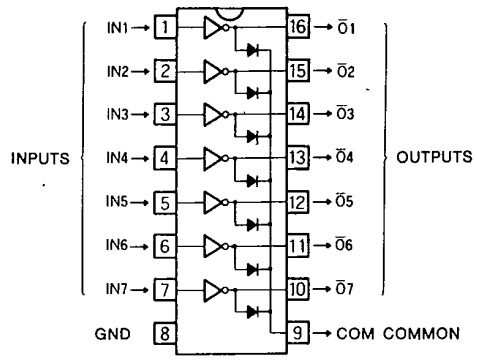
FUNCTION

The M54530P is comprised of seven NPN darlington driver pairs with 20kΩ series input resistors. Between pin 9 and each output, there are integral diodes for inductive load transient suppression. All emitters and the substrate are connected together to pin 8 . The outputs are capable of sinking 400mA and will withstand 40V in the OFF state.



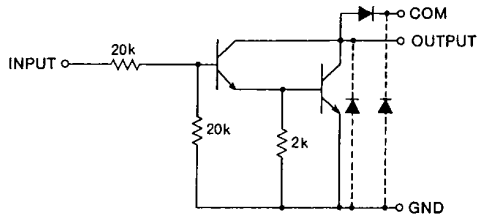
16-pin molded plastic DIP

PIN CONFIGURATION (TOP VIEW)



Outline 16P4

CIRCUIT SCHEMATIC



Unit : Ω

ABSOLUTE MAXIMUM RATINGS (T_a=−20∼+75℃, unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CEO}	Output sustaining voltage	Transistor OFF	−50∼+40	V
I_C	Collector current	Transistor ON	400	mA
V_I	Input voltage		40	V
I_F	Clamp diode forward current		400	mA
V_R	Clamp diode reverse voltage		40	V
P_d	Power dissipation	T_a=25℃	1.47	W
T_{opr}	Operating ambient temperature range		−20∼+75	℃
T_{stg}	Storage temperature range		−55∼+125	℃

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RECOMMENDED OPERATIONAL CONDITIONS (T_a=−20∼+75℃, unless otherwise noted)

Symbol	Parameter		Limits			Unit
			Min	Typ	Max	
V_O	Output voltage		0		40	V
I_C	Collector current per channel	Percent duty cycle less than 8%	0		400	mA
		Percent duty cycle less than 30%	0		200	
V_{IH}	"H" Input voltage	I_C=400mA	8		35	V
		I_C=200mA	5		35	V
V_{IL}	"L" Input voltage	$I_{O(leak)}$=50μA	0		0.5	V

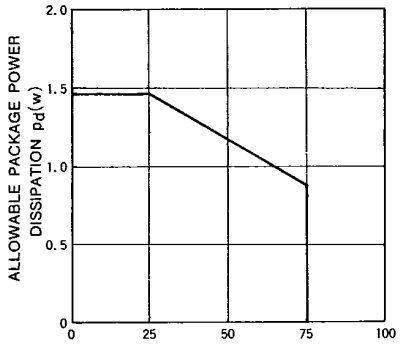
ELECTRICAL CHARACTERISTICS (T_a=−20∼+75℃, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ*	Max	
$V_{(BR)CEO}$	Output sustaining voltage	I_{CER}=100μA	40			V
$V_{CE(sat)}$	Output saturation voltage	V_I=8V, I_C=400mA		1.3	2.4	V
		V_I=5V, I_C=200mA		1	1.6	
I_I	Input current	V_I=17V		0.85	1.8	mA
		V_I=35V		2.0	3.8	
V_F	Clamp diode forward voltage	$I_{F(D)}$=400mA		1.5	2.4	V
V_R	Clamp diode reverse voltage	$V_{R(D)}$=100μA	40			V
h_{FE}	DC forward current gain	V_{CE}=4V, I_C=300mA, T_a=25℃	1000	3500		—

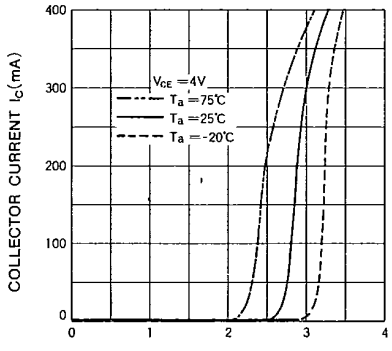
* : All typical values are at T_a=25℃.

TYPICAL CHARACTERISTICS

ALLOWABLE AVERAGE POWER DISSIPATION



OUTPUT CURRENT CHARACTERISTICS



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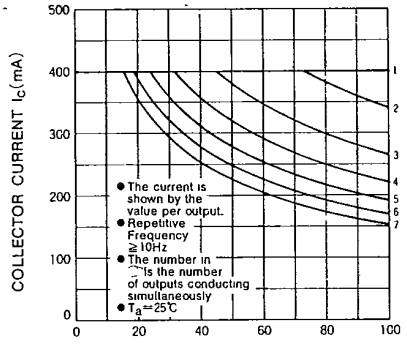
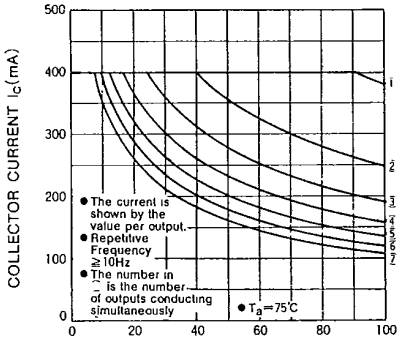
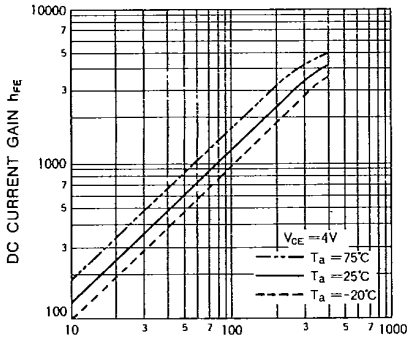
ALLOWABLE COLLECTOR CURRENT AS A FUNCTION OF DUTY CYCLE



ALLOWABLE COLLECTOR CURRENT AS A FUNCTION OF DUTY CYCLE



DC CURRENT GAIN CHARACTERISTICS



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