

5-UNIT 320mA TRANSISTOR ARRAY WITH STROBE

DESCRIPTION

The M54529P, 5-channel sink driver, consists of 10 NPN transistors connected to form high current gain driver pairs.

FEATURES

- Output sustaining voltage to 20V
- High output sink current to 320mA
- PMOS Compatible input with strobe control
- Wide operating temperature range ( $T_a = -20 \sim +75^\circ\text{C}$ )

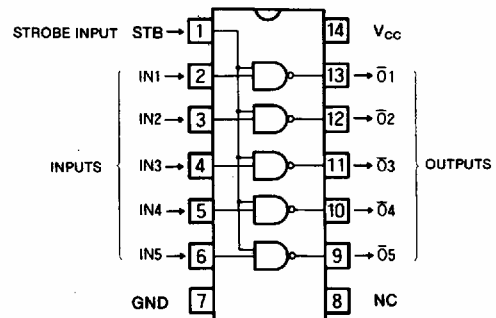
APPLICATION

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

FUNCTION

The M54529P uses a predriver stage. Each input has a diode and 20kΩ resistor in series to have a wide input voltage range from -25V to +20V. All input can be controlled simultaneously by a strobe input at pin 1. The power supply of the predrivers is connected to pin 14. All emitters and the substrate are connected together to pin 7. The outputs are capable of sinking 320mA and will withstand 20V in the OFF state.

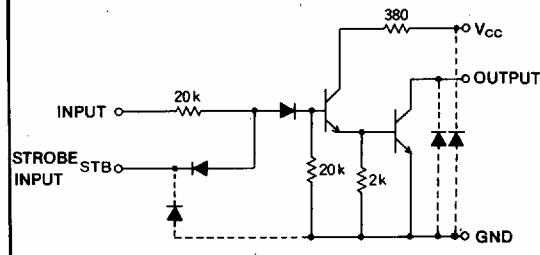
PIN CONFIGURATION (TOP VIEW)



Outline 14P4

NC : No connection

CIRCUIT SCHEMATIC



The diodes shown by broken line are parasite diodes and must not be used.

Unit : Ω

FUNCTIONAL TABLE

IN	STB	OUT
L	L	H
H	L	H
L	H	H
H	H	L

ABSOLUTE MAXIMUM RATINGS ( $T_a = -20 \sim +75^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
$V_{CC}$	Supply voltage		-0.5 ~ +10	V
$V_{CEO}$	Output sustaining voltage	Transistor OFF	-0.5 ~ +20	V
$I_C$	Collector current per channel	Transistor ON	320	mA
$V_i$	Input voltage		-25 ~ +20	V
$V_{i(STB)}$	Strobe input voltage		-0.5 ~ +20	V
$P_d$	Power dissipation	$T_a = 25^\circ\text{C}$	1.47	W
$T_{opr}$	Operating temperature		-20 ~ +75	$^\circ\text{C}$
$T_{stg}$	Storage temperature		-55 ~ +125	$^\circ\text{C}$

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RECOMMENDED OPERATIONAL CONDITIONS (T<sub>a</sub> = -20~+75°C, unless otherwise noted)

Symbol	Parameter	Limits			Unit	
		Min	Typ	Max		
V <sub>CC</sub>	Supply voltage	3		8	V	
V <sub>O</sub>	Output voltage	0		20	V	
I <sub>C</sub>	Collector current per channel	Percent duty cycle less than 33%, V <sub>CC</sub> =6.5V	0		300	mA
		Percent duty cycle less than 80%, V <sub>CC</sub> =6.5V	0		150	
V <sub>IH</sub>	"H" Input voltage	I <sub>C</sub> =300mA	7		15	V
		I <sub>C</sub> =150mA	6		15	
V <sub>IL</sub>	"L" Input voltage	I <sub>OL</sub> (leak)=50μA	0		1	V
V <sub>IH(STB)</sub>	"H" Input voltage (strobe input)		2.4		15	V
V <sub>IL(STB)</sub>	"L" Input voltage (strobe input)		0		0.2	V

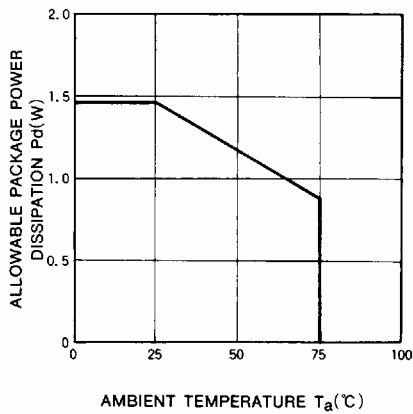
ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = -20~+75°C, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ*	Max	
V <sub>(BR)CEO</sub>	Output sustaining voltage	V <sub>CC</sub> =8V, V <sub>I</sub> =7V, V <sub>I(STB)</sub> =0.2V I <sub>CEO</sub> =100μA	20			V
V <sub>CE(sat)</sub>	Output saturation voltage	V <sub>I</sub> =7V		0.5	0.85	V
		V <sub>I(STB)</sub> =2.4V	V <sub>CC</sub> =6.5V, I <sub>C</sub> =250mA V <sub>CC</sub> =3V, I <sub>C</sub> =120mA	0.3	0.5	
I <sub>I</sub>	Input current	V <sub>CC</sub> =8V, V <sub>I</sub> =18V, V <sub>I(STB)</sub> =2.4V		0.9	1.8	mA
I <sub>R</sub>	Input leakage current	V <sub>CC</sub> =8V, V <sub>I</sub> =-25V		0	-20	μA
I <sub>I(STB)</sub>	Strobe input current	V <sub>CC</sub> =8V, V <sub>I</sub> =7V all input V <sub>I(STB)</sub> =0.2V		-4		mA
I <sub>R(STB)</sub>	Strobe input leakage current	V <sub>CC</sub> =8V, V <sub>I</sub> =0V, V <sub>I(STB)</sub> =20V		0	10	μA
I <sub>CC</sub>	Supply current	V <sub>CC</sub> =8V, V <sub>I</sub> =7V all input V <sub>I(STB)</sub> =2.4V		95	170	mA
h <sub>FE</sub>	DC forward current gain	V <sub>CE</sub> =4V, V <sub>CC</sub> =6.5V, I <sub>C</sub> =300mA, T <sub>a</sub> =25°C V <sub>IH(STB)</sub> =2.4V	1000	3000		—

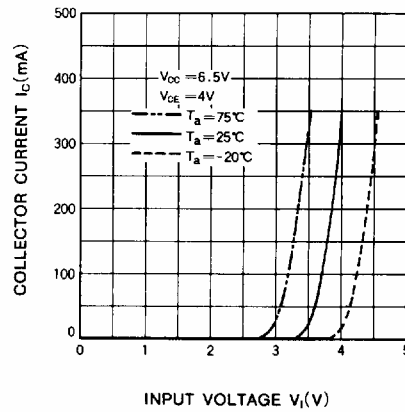
\* : Typical values are at T<sub>a</sub> = 25°C.

TYPICAL CHARACTERISTICS

ALLOWABLE AVERAGE POWER DISSIPATION

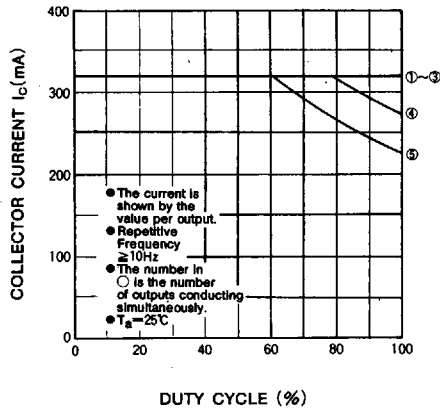


OUTPUT CURRENT CHARACTERISTICS

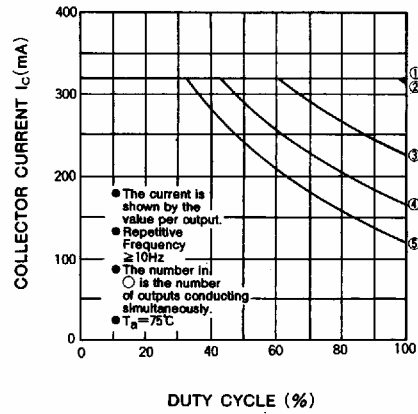


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ALLOWABLE COLLECTOR CURRENT AS A FUNCTION OF DUTY CYCLE



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DC CURRENT GAIN CHARACTERISTICS

