

5-UNIT 320mA TRANSISTOR ARRAY WITH STROBE

DESCRIPTION

The M54529AP, 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
- CMOS compatible input with strobe control
- Wide operating temperature range ($T_a = -20 \sim +75^\circ\text{C}$)

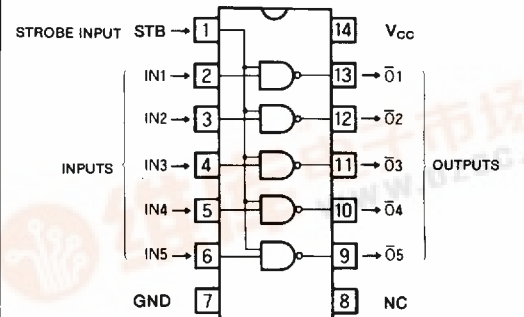
APPLICATION

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

FUNCTION

The M54529AP uses a predriver stage. Each input has a diode and $30\text{k}\Omega$ resistor in series to have a wide input voltage range from -25V to $+20\text{V}$. 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.

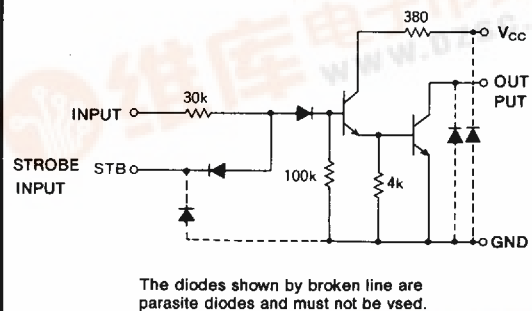
PIN CONFIGURATION (TOP VIEW)



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

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RECOMMENDED OPERATIONAL CONDITIONS ($T_a = -20 \sim +75^\circ\text{C}$, unless otherwise noted)

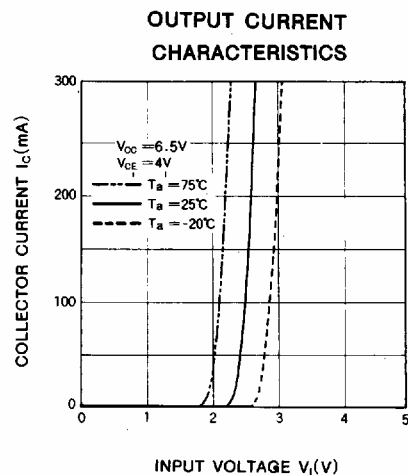
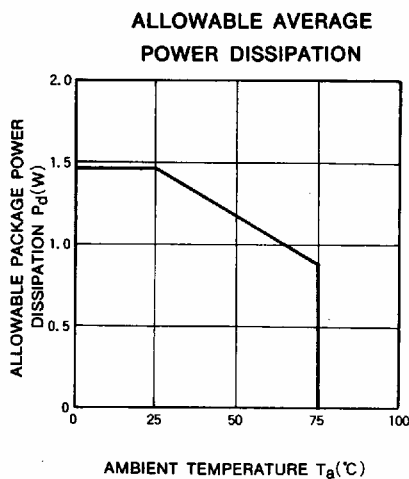
Symbol	Parameter	Limits			Unit
		Min	Typ	Max	
V_{CC}	Supply voltage	3	5	8	V
V_O	Output voltage	0		20	V
I_C	Collector current per channel	Percent duty cycle less than 33%, $V_{CC}=6.5\text{V}$	0	300	mA
		Percent duty cycle less than 80%, $V_{CC}=6.5\text{V}$	0	150	
V_{IH}	"H" Input voltage	$I_C=150\text{mA}$	3.5	15	V
		$I_C=300\text{mA}$	5	15	
V_{IL}	"L" Input voltage	$I_{OL(leak)}=50\mu\text{A}$	0	1	V
$V_{IH(STB)}$	"H" Input voltage (strobe input)		2.4	15	V
$V_{IL(STB)}$	"L" Input voltage (strobe input)		0	0.2	V

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

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ*	Max	
$V_{(BR)CEO}$	Output sustaining voltage	$V_{CC}=8\text{V}$, $V_I=8\text{V}$, $V_{I(STB)}=0.2\text{V}$ $I_{CEO}=100\mu\text{A}$	20			V
$V_{CE(sat)}$	Output saturation voltage	$V_{I(STB)}=2.4\text{V}$		0.35	0.85	V
		$V_{CC}=6.5\text{V}$, $V_I=5\text{V}$, $I_C=250\text{mA}$ $V_{CC}=3\text{V}$, $V_I=3.5\text{V}$, $I_C=150\text{mA}$		0.2	0.6	
I_I	Input current	$V_{CC}=5\text{V}$, $V_I=3.5\text{V}$, $V_{I(STB)}=2.4\text{V}$		20	120	μA
I_R	Input leakage current	$V_{CC}=8\text{V}$, $V_I=-20\text{V}$			-20	μA
$I_{I(STB)}$	Strobe input current	$V_{CC}=5\text{V}$, $V_I=5\text{V}$ all input $V_{I(STB)}=0.2\text{V}$		-0.8	-1.5	mA
$I_{R(STB)}$	Strobe input leakage current	$V_{CC}=8\text{V}$, $V_I=0\text{V}$, $V_{I(STB)}=20\text{V}$			10	μA
I_{CC}	Supply current	$V_{CC}=8\text{V}$, $V_I=5\text{V}$ all input $V_{I(STB)}=2.4\text{V}$		95	170	mA
h_{FE}	DC forward current gain	$V_{CE}=4\text{V}$, $V_{CC}=6.5\text{V}$, $I_C=300\text{mA}$, $T_a=25^\circ\text{C}$ $V_{IH(STB)}=2.4\text{V}$	1000	18000		—

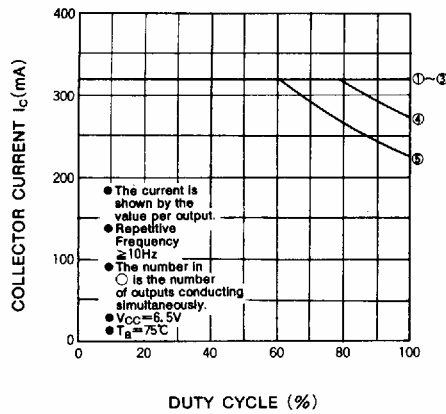
* : Typical values are at $T_a = 25^\circ\text{C}$.

TYPICAL CHARACTERISTICS

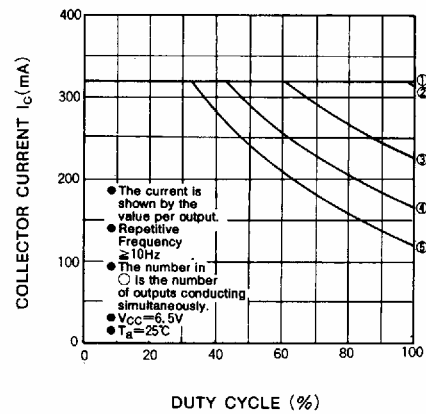


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**ALLOWABLE COLLECTOR CURRENT
AS A FUNCTION OF DUTY CYCLE**



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**DC CURRENT GAIN
CHARACTERISTICS**

