M54529P

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~+75℃)

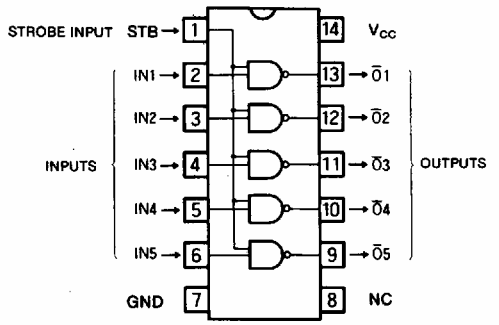
APPLICATION

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.

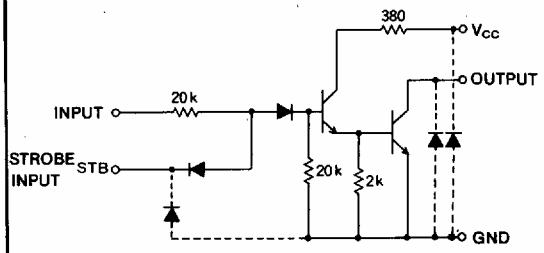
PIN CONFIGURATION (TOP VIEW)



Outline 14P4

NC : No connection

CIRCUIT SCHEMATIC



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

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~+75℃, 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℃	1.47	W
Topr	Operating temperature		−20~+75	℃
Tstg	Storage temperature		−55~+125	℃

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

Symbol	Parameter		Limits			Unit
			Min	Typ	Max	
V_{CC}	Supply voltage		3		8	V
V_O	Output voltage		0		20	V
I_C	Collector current per channel	Percent duty cycle less than 33%, V_{CC}=6.5V	0		300	mA
		Percent duty cycle less than 80%, V_{CC}=6.5V	0		150	
V_{IH}	"H" Input voltage	I_C=300mA	7		15	V
		I_C=150mA	6		15	
V_{IL}	"L" Input voltage	$I_{O(leak)}$=50μA	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

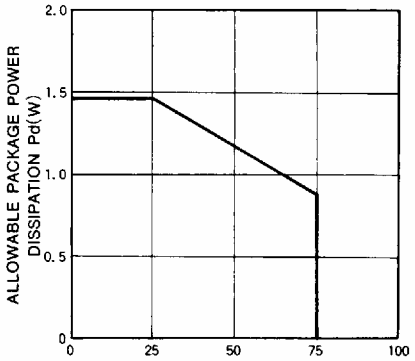
ELECTRICAL CHARACTERISTICS (T_a=−20~+75℃, unless otherwise noted)

Symbol	Parameter	Test conditions		Limits			Unit
				Min	Typ*	Max	
$V_{(BR)CEO}$	Output sustaining voltage	V_{CC}=8V, V_I=7V, $V_{I(STB)}$=0.2V, I_{CEO}=100μA		20			V
$V_{CE(sat)}$	Output saturation voltage	V_I=7V	V_{CC}=6.5V, I_C=250mA		0.5	0.85	V
		$V_{I(STB)}$=2.4V	V_{CC}=3V, I_C=120mA		0.3	0.5	
I_I	Input current	V_{CC}=8V, V_I=18V, $V_{I(STB)}$=2.4V			0.9	1.8	mA
I_R	Input leakage current	V_{CC}=8V, V_I=−25V			0	−20	μA
$I_{I(STB)}$	Strobe input current	V_{CC}=8V, V_I=7V all input, $V_{I(STB)}$=0.2V			−4		mA
$I_{R(STB)}$	Strobe input leakage current	V_{CC}=8V, V_I=0V, $V_{I(STB)}$=20V			0	10	μA
I_{CC}	Supply current	V_{CC}=8V, V_I=7V all input, $V_{I(STB)}$=2.4V			95	170	mA
h_{FE}	DC forward current gain	V_{CE}=4V, V_{CC}=6.5V, I_C=300mA, T_a=25℃, $V_{IH(STB)}$=2.4V		1000	3000		—

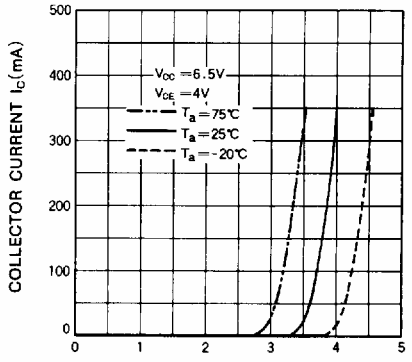
* : Typical values are at T_a = 25℃.

TYPICAL CHARACTERISTICS

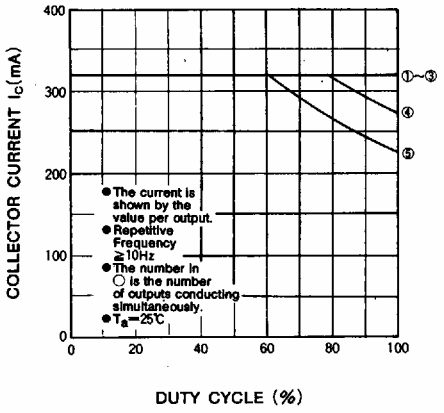
ALLOWABLE AVERAGE POWER DISSIPATION



OUTPUT CURRENT CHARACTERISTICS

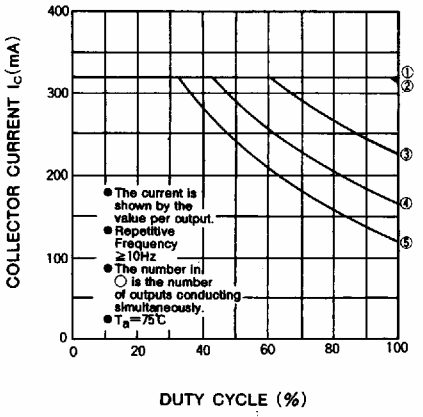


ALLOWABLE COLLECTOR CURRENT AS A FUNCTION OF DUTY CYCLE



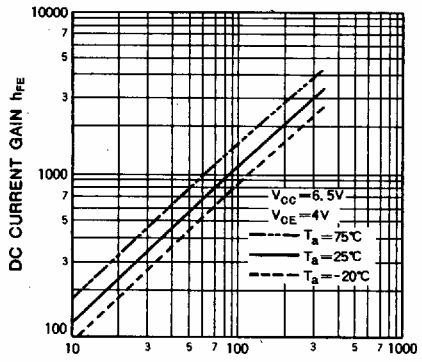
DUTY CYCLE (%)

ALLOWABLE COLLECTOR CURRENT AS A FUNCTION OF DUTY CYCLE



DUTY CYCLE (%)

DC CURRENT GAIN CHARACTERISTICS



COLLECTOR CURRENT I_C(mA)