M54536P

7-UNIT 150mA TRANSISTOR ARRAY WITH CLAMP DIODE AND STROBE

DESCRIPTION

The M54536P, 7-channel sink driver, consists of 14 NPN transistors connected to form high current gain driver pairs.

FEATURES

- Output sink current to 150mA
- Strobe input control
- TTL Compatible input
- Wide operating temperature range (T_a=−20∼+75℃)

APPLICATIONS

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

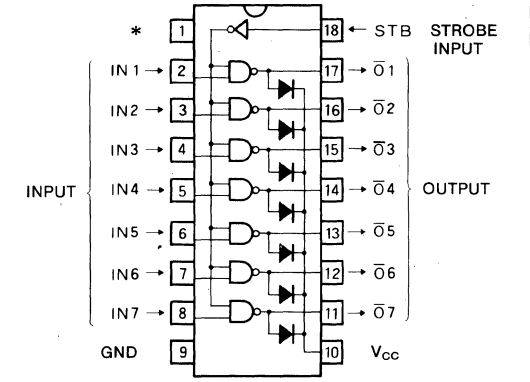
FUNCTION

The M54536P uses a predriver stage. Each input has a diode and 20kΩ resistor in series to allow a negative voltage input. All inputs can be controlled simultaneously by a strobe input at pin 18. Each output has an integral diode for inductive load transient suppression.

The cathodes of the diodes and the power supply of the predrivers are connected to pin 10. All emitters and the substrate are connected together to pin 9 .

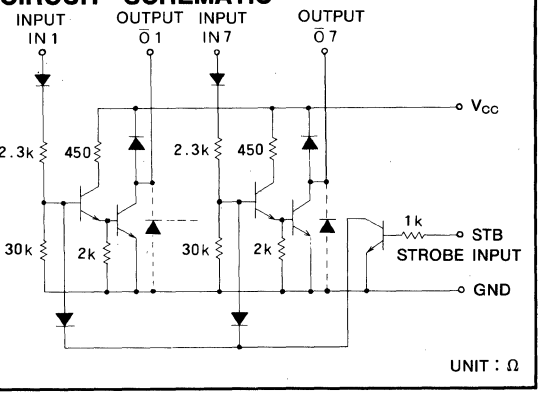
The outputs are capable of sinking 150mA and will withstand 10V in the OFF state.

PIN CONFIGURATION (TOP VIEW)



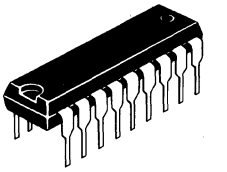
Outline 18P4

CIRCUIT SCHEMATIC



FUNCTION TABLE

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



18-pin molded plastic DIL

ABSOLUTE MAXIMUM RATINGS (T_a=−25∼+75℃, unless otherwise noted)

Symbol	Parameter	Conditions	Limits	Unit
V_{CC}	Supply voltage		10	V
V_O	Output voltage	Transistor OFF	V_{CC}	V
I_C	Collector current	Transistor ON	150	mA
V_I	Input voltage		−25, 10	V
$V_{I(STB)}$	Strobe input voltage		20	V
$V_{R(D)}$	Clamp diode reverse voltage		10	V
$I_{F(D)}$	Clamp diode forward current		150	mA
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	℃

7-UNIT 150mA TRANSISTOR ARRAY WITH CLAMP DIODE AND STROBE

RECOMMENDED OPERATIONAL CONDITIONS (T_a=−25∼+75℃, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
V_{CC}	Supply voltage		3		8	V
V_O	Output voltage	V_{CC}=10V			10	V
I_C	Collector current per channel	Percent duty cycle less than 65%			150	mA
V_{IH}	"H" Input voltage	I_C=100mA	3.2			V
V_{IL}	"L" Input voltage				0.8	V
$V_{IH(STB)}$	"H" Input voltage (strobe input)	V_I=3.5V	1.3			V
		V_I=10V	2.4			
$V_{IL(STB)}$	"L" Input voltage (strobe input)				0.2	V

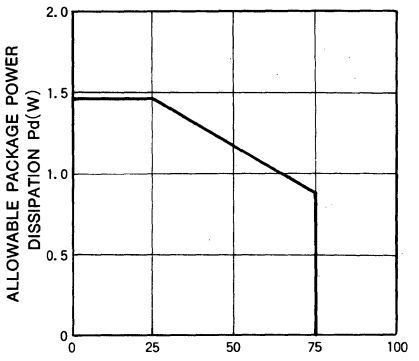
ELECTRICAL CHARACTERISTICS (T_a=−25∼+75℃, unless otherwise noted)

Symbol	Parameter	Test conditions		Limits			Unit
				Min	Typ*	Max	
$V_{CE(sat)}$	Output saturation voltage	$V_{I(STB)}$=0.2V, V_{CC}=6V, I_I=300μA, I_C=100mA				0.3	V
		V_I=3.2V, $V_{I(STB)}$=0.2V	V_{CC}=3V, I_C=100mA			0.3	V
			V_{CC}=8V, I_C=150mA			0.5	V
$I_{O(leak)}$	Output leak current	V_{CC}=8V, V_I=0.8V, V_O=8V, $V_{I(STB)}$=0.2V				50	μA
I_I	Input current	V_{CC}=8V, V_I=3.5V, $V_{I(STB)}$=0.2V				1.2	mA
I_R	Input leakage current	V_{CC}=8V, V_I=−25V				−20	μA
$I_{I(STB)}$	Strobe input current	V_I=3.5V, $V_{I(STB)}$=2.4V				3	mA
$V_{F(D)}$	Clamp diode forward voltage	$I_{F(D)}$=150mA				2.1	V
$V_{R(D)}$	Clamp diode reverse voltage	$I_{R(D)}$=100μA		10			V
I_{CC}	Supply current	V_{CC}=8V, V_I=3.5V (all input), $V_{I(STB)}$=0.2V			120	200	mA
h_{FE}	DC forward current gain	V_{CE}=4V, V_{CC}=6V, I_C=150mA, T_a=25℃		700			

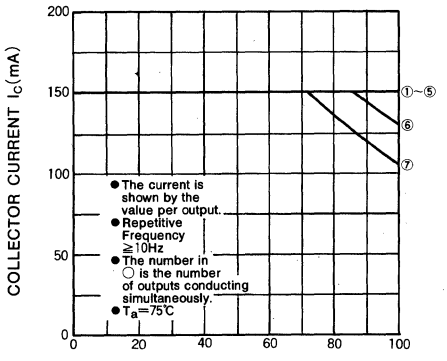
* : A typical value is at T_a=25℃.

TYPICAL CHARACTERISTICS

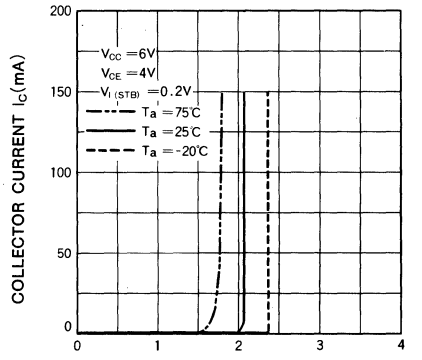
ALLOWABLE AVERAGE POWER DISSIPATION



ALLOWABLE COLLECT CURRENT AS A FUNCTION OF DUTY CYCLE



OUTPUT CURRENT CHARACTERISTICS



DC CURRENT GAIN CHARACTERISTICS