

MITSUBISHI (DGTL LOGIC)

M54516P**5-UNIT 500mA DARLINGTON TRANSISTOR ARRAY****DESCRIPTION**

The M54516P, 5-channel sink driver, consists of 10 NPN transistors connected to form five high current gain driver pairs.

FEATURES

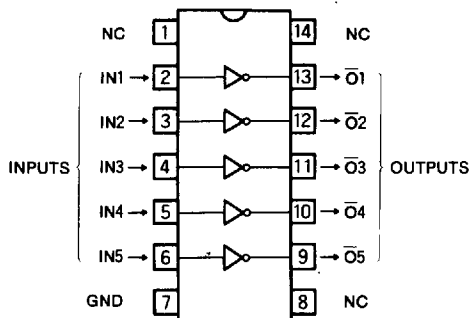
- Output sustaining voltage to 25 V
- High output sink current to 500mA
- PMOS Compatible Input
- Wide operating temperature range ($T_a = -20 \sim +75^\circ\text{C}$)

APPLICATION

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

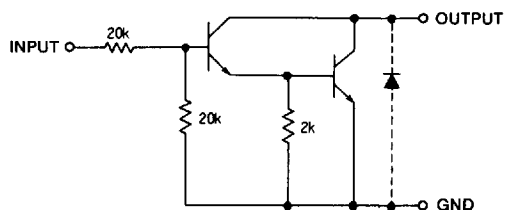
FUNCTION

The M54516P is comprised of five NPN darlington driver pairs with $20\text{k}\Omega$ series input resistors. All emitter and the substrate are connected together to pin 7. The output are capable of sinking 500mA and will withstand 25V 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 **ABSOLUTE MAXIMUM RATINGS** ($T_a = -20 \sim +75^\circ\text{C}$, unless otherwise noted)

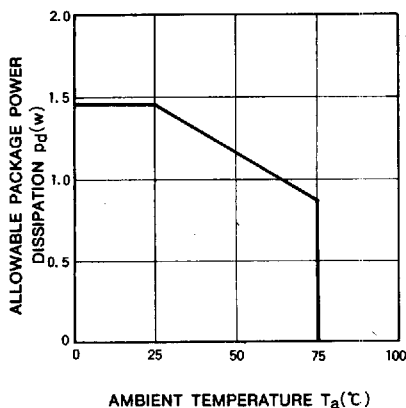
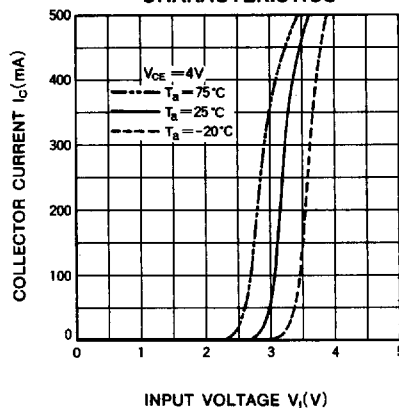
Symbol	Parameter	Conditions	Ratings	Unit
V_{CEO}	Output sustaining voltage	Transistor OFF	-0.5 ~ +25	V
I_C	Collector current per channel	Transistor ON	500	mA
V_i	Input voltage		25	V
P_d	Power dissipation	$T_a = 25^\circ\text{C}$	1.47	W
T_{opr}	Operating temperature		-20 ~ +75	$^\circ\text{C}$
T_{stg}	Storage temperature		-55 ~ +125	$^\circ\text{C}$

5-UNIT 500mA DARLINGTON TRANSISTOR ARRAY**RECOMMENDED OPERATIONAL CONDITIONS** ($T_a = -20 \sim +75^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter		Limits			Unit
			Min	Typ	Max	
V_O	Output voltage		0		25	V
I_C	Collector current per channel	Percent duty cycle less than 10%	0		400	mA
		Percent duty cycle less than 55%	0		200	
V_{IH}	"H" Input voltage	$I_C = 400\text{mA}$	8		20	V
		$I_C = 200\text{mA}$	5		20	
V_{IL}	"L" Input voltage	$I_{C(\text{leak})} = 50\mu\text{A}$	0		0.5	V

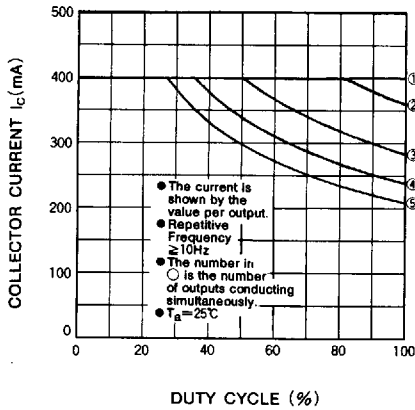
ELECTRICAL CHARACTERISTICS ($T_a = -20 \sim +75^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ*	Max	
$V_{(BR)CEO}$	Output sustaining voltage	$I_{CEO} = 100\mu\text{A}$	25			V
$V_{CE(\text{sat})}$	Output saturation voltage	$V_I = 8\text{V}, I_C = 400\text{mA}$		1.15	2.2	V
		$V_I = 5\text{V}, I_C = 200\text{mA}$		0.95	1.4	
I_I	Input current	$V_I = 17\text{V}$	0.3	0.8	1.8	mA
h_{FE}	DC forward current gain	$V_{CE} = 4\text{V}, I_C = 400\text{mA}, T_a = 25^\circ\text{C}$	1000	4000		—

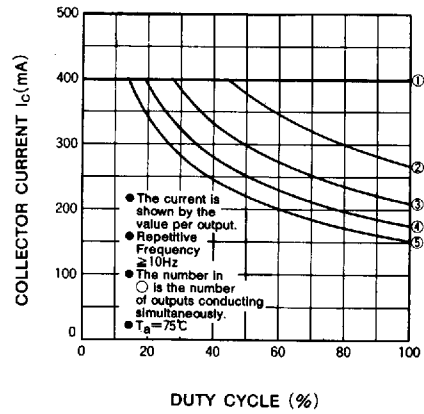
* : A typical value at $T_a = 25^\circ\text{C}$.**TYPICAL CHARACTERISTICS****ALLOWABLE AVERAGE POWER DISSIPATION****OUTPUT CURRENT CHARACTERISTICS**

5-UNIT 500mA DARLINGTON TRANSISTOR ARRAY

ALLOWABLE COLLECTOR CURRENT AS A FUNCTION OF DUTY CYCLE



ALLOWABLE COLLECTOR CURRENT AS A FUNCTION OF DUTY CYCLE



DC CURRENT GAIN CHARACTERISTICS

