

M54539P

6-UNIT 700mA TRANSISTOR ARRAY WITH CLAMP DIODE

DESCRIPTION

The M54539P, 6-channel sink driver, consists of 12 NPN transistors connected to form high current gain driver pairs.

FEATURES

- Output breakdown voltage to 20V
- High output sink current to 700mA
- Integral diodes for transient suppression
- Wide operating temperature range ($T_a = -20 \sim +75^\circ\text{C}$)

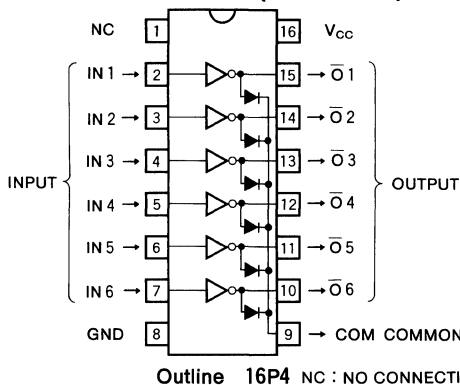
APPLICATIONS

- Relay and solenoid driver
- LED or incandescent display driver
- Thermal head driver

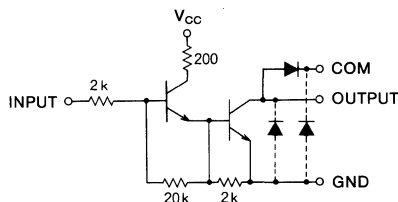
FUNCTION

The M54539P uses a predriver stage with $2k\Omega$ series input resistor. The power supply of the predrivers is connected to pin 16. Each output has an integral diode for inductive load transient suppression and the cathodes of the diodes are connected to pin 9. All emitters and the substrate are connected together to pin 8. The outputs are capable of sinking 700mA and will withstand 20V in the OFF state.

PIN CONFIGURATION (TOP VIEW)



CIRCUIT SCHEMATIC

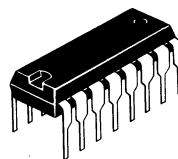


ABSOLUTE MAXIMUM RATINGS ($T_a = -20 \sim +75^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Limits	Unit
V_{CC}	Supply voltage		10	V
V_{CEO}	Output sustaining voltage	Transistor OFF	20	V
I_C	Collector current	Transistor ON	700	mA
V_I	Input voltage		10	V
V_R	Clamp diode reverse voltage		20	V
I_F	Clamp diode forward current	Pulse width $\leq 35\text{ms}$, Percent duty cycle $\leq 5\%$	700	mA
			350	mA
P_d	Power dissipation	$T_a = 25^\circ\text{C}$	1.47	W
T_{opr}	Operating ambient temperature range		$-20 \sim +75$	$^\circ\text{C}$
T_{stg}	Storage temperature range		$-55 \sim +125$	$^\circ\text{C}$

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	7	V
V_O	Output voltage			20	V
I_C	Collector current per channel	The three outputs conducting simultaneously Percent duty cycle less than 20%		700	mA
		The three outputs conducting simultaneously Percent duty cycle less than 90%		200	
V_{IH}	"H" Input voltage	$I_C = 450\text{mA}$		3	V
V_{IL}	"L" Input voltage	$I_O(\text{leak}) = 50\mu\text{A}$		0.3	V



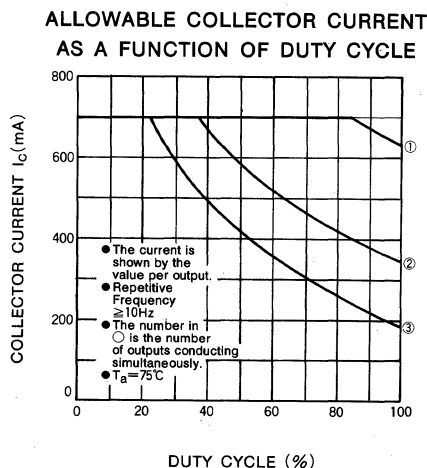
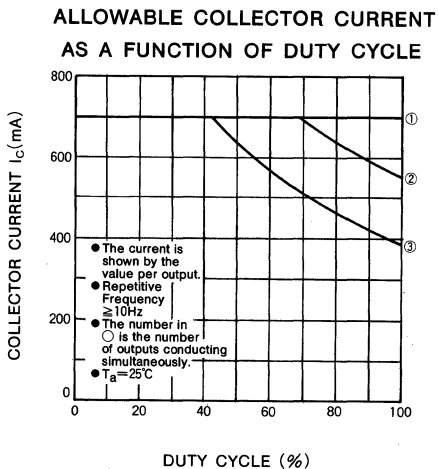
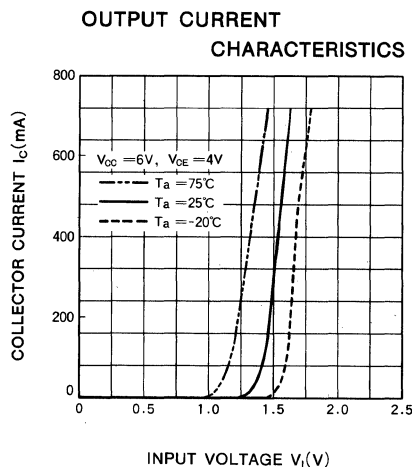
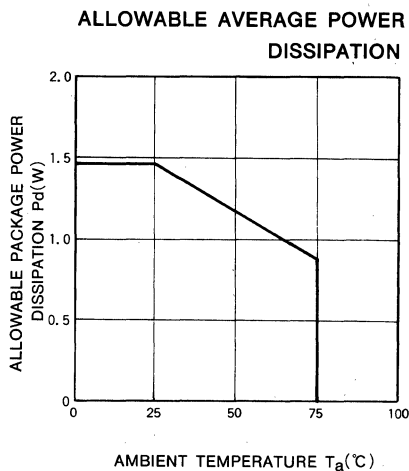
16-pin molded plastic DIP

6-UNIT 700mA TRANSISTOR ARRAY WITH CLAMP DIODE

ELECTRICAL CHARACTERISTICS (T_a = -20 ~ +75°C, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
V _{(BR)CEO}	Output sustaining voltage	V _{CC} =7V, I _{CEO} =100μA	20			V
V _{CE(sat)}	Output saturation voltage	V _{CC} =5V			0.8	V
		V _I =3V	I _C =450mA			
		I _C =200mA			0.45	V
I _I	Input current	V _{CC} =7V, V _I =3.2V			1.4	mA
V _R	Clamp diode reverse voltage	I _R =100μA	20			V
V _F	Clamp diode forward voltage	I _F =350mA			2.7	V
I _{CC}	Supply current	V _{CC} =7V, V _I =3.2V (all input)			300	mA
h _{FE}	DC forward current gain	V _{CE} =4V, V _{CC} =6V, I _C =300mA, T _a =25°C	3000			

TYPICAL CHARACTERISTICS



6-UNIT 700mA TRANSISTOR ARRAY WITH CLAMP DIODE

