M54571P

6-UNIT 350mA TRANSISTOR ARRAY AND MOTOR DRIVER

DESCRIPTION

The M54571P, 6-channel sink driver and voltage regulator, is designed for use with a small printer.

FEATURES

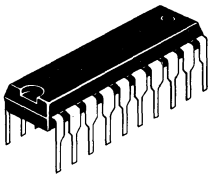
- High output sustaining voltage to 40V
- High output sink current to 350mA
- Voltage regulator with a control circuit
- Wide operating temperature range (T_a=−20∼+75℃)

APPLICATION

Small calculator printer driver

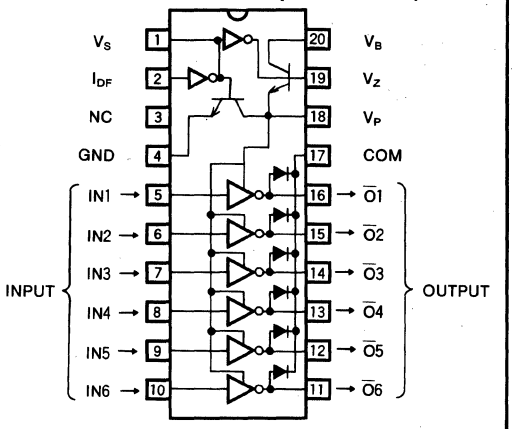
FUNCTION

The M54571P is designed for driving a small serial printer made by CITIZEN and EPSON, and consists of 6 relay drivers and 1.2A motor driver. Each driver has 4.3kΩ series input resistor and output transient suppression diode. The driver outputs are capable of sinking 350mA and will withstand 43V in the OFF state. The output of the motor driver at pin 18 can drive 1.2A.



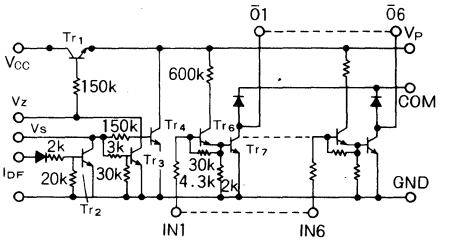
20-pin molded plastic DIL

PIN CONFIGURATION (TOP VIEW)



Outline 20P4 NC : NO CONNECTION

CIRCUIT SCHEMATIC



UNIT : Ω

ABSOLUTE MAXIMUM RATINGS (T_a=−20∼+75℃, unless otherwise noted)

Symbol	Parameter	Conditions	Rating	Unit
V_{CC}	Supply voltage		40	V
V_{CEO}	Output sustaining voltage		40	V
I_{C1}	Collector current	T_{r1}	100	mA
I_{C2}		T_{r2}	100	
I_{C3}		T_{r3}	100	
I_{C4}		T_{r4} Spike current 2A max Pulse width≦5 ms, Duty cycle≦5 %	1200	
I_{C7}		T_{r7} (Per channel)	350	
V_I	Input voltage	IN1∼IN6	40	V
$V_{I(IDF)}$			40	
$V_{R(IDF)}$	Input reverse voltage		−45	V
$V_{R(D)}$	Clamp diode reverse voltage		40	V
$I_{F(D)}$	Clamp diode forward current		350	mA
Pd	Power dissipation	T_a=25℃	1.79	W
T_{opr}	Operating ambient temperature range		−20∼+75	℃
T_{stg}	Storage temperature range		−55∼+125	℃

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

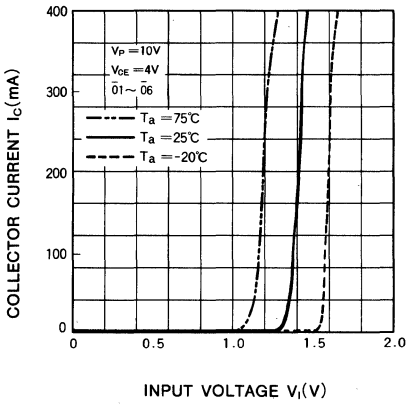
Symbol	Parameter		Limits			Unit
			Min	Typ	Max	
V_{CC}	Supply voltage		8		40	V
V_P	Supply voltage		4		18	V
V_S	Reference voltage			10		V
I_C	Collector current	$\bar{O}1$∼$\bar{O}6$			250	mA
		$\bar{O}1$∼$\bar{O}6$			100	
$V_{I(IDF)}$	Input voltage				−35	V
			9		17	
V_I		IN1∼IN6	9		17	
V_O	Output voltage	$\bar{O}1$∼$\bar{O}6$			40	V

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

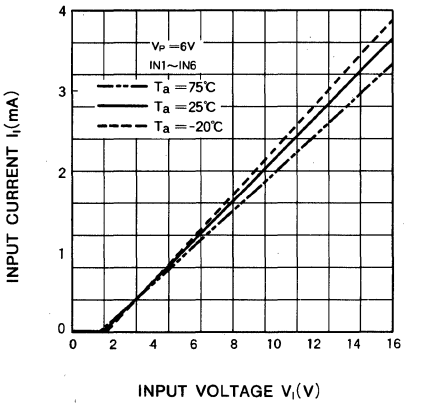
Symbol	Parameter		Test conditions	Limits			Unit
				Min	Typ	Max	
$V_{BR(CEO)}$	Output sustaining voltage		I_{CEO}=100μA, V_P=5V, ($\bar{O}1$∼$\bar{O}7$)	40			V
$V_{CE(sat)}$	Collector emitter saturation voltage	01 ∼ 07	V_P=6.5V, V_I=3V, I_C=250mA			0.8	V
			V_P=3V, V_I=2.4V, I_C=120mA			0.5	
		T_{r1}	I_B=1mA, I_C=10mA, V_P=0V			0.5	
		T_{r2}	$V_{I(IDF)}$=10V, I_{VS}=100mA			0.5	
		T_{r3}	$V_{I(Vs)}$=3V, I_{VZ}=30mA, $V_{I(IDF)}$=0V			0.4	
		T_{r4}	I_{VS}=50mA, I_{VP}=0.3V, $V_{I(IDF)}$=0V			0.45	
			I_{VS}=80mA, I_{VP}=1A, $V_{I(IDF)}$=0V			1.2	
I_I	Input current		V_P=6V, V_I=10V, (IN1∼IN6)			3.5	mA
$I_{I(IDF)}$			$V_{I(IDF)}$=10V			6.5	
$I_{I(Vs)}$			$V_{I(Vs)}$=3V, $V_{I(IDF)}$=0V			26	
$I_{R(IDF)}$	Input leakage current		$V_{R(IDF)}$=−35V			−20	μA
$V_{F(D)}$	Clamp diode forward voltage		$I_{F(D)}$=250mA			2.4	V
I_{VP}	Supply current		V_P=17V, V_I=10V (all input)			240	mA
			V_P=5V, V_I=10V (all input)			60	
h_{FE} 1	DC forward current gain	T_{r4}	I_C=50mA, V_{CE}=4V, T_a=25℃	100			
h_{FE} 2	DC forward current gain	T_{r4}	I_C=1A, V_{CE}=4V, T_a=25℃	80			
h_{FE} 3	DC forward current gain	$\bar{O}1$∼$\bar{O}7$	V_P=6.5V, I_C=350mA, V_{CE}=4V, T_a=25℃	1000			

TYPICAL CHARACTERISTICS

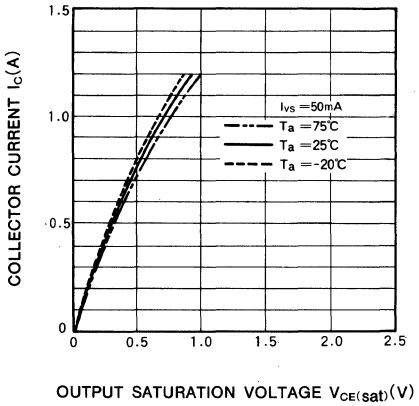
OUTPUT CURRENT CHARACTERISTICS



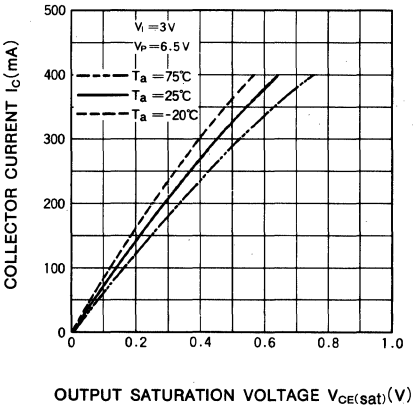
INPUT CHARACTERISTICS



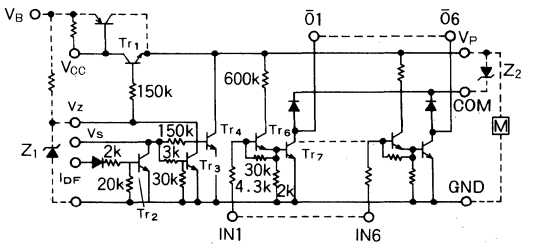
MOTOR DRIVER OUTPUT SATURATION CHARACTERISTICS



MAGNET RELAY DRIVER OUTPUT SATURATION CHARACTERISTICS



TYPICAL APPLICATION



NOTE

	V_B	V_{Z1}	Z_2	Magnet Relay Drive Current
EPSON Printer	15~40V	18V	—	90mA
CITIZEN Printer	3 ~ 9 V	6 V	connect between the V_P and the COM	250mA