

<TRANSISTOR ARRAY>

M54513FP

8-UNIT 50mA TRANSISTOR ARRAY
SINK TYPE

DESCRIPTION

M54513FP are eight-circuit transistor arrays. The circuits are made of NPN transistors. Both the semiconductor integrated circuits perform high-current driving with extremely low input-current supply.

FEATURES

- High breakdown voltage ($BV_{CEO} \geq 40V$)
- Synchronizing current ($I_c(\max) = 50mA$)

APPLICATION

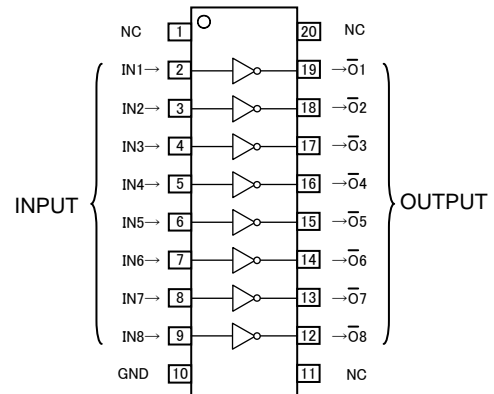
Driving of digit drives of indication elements (LEDs and lamps) with small signals

FUNCTION

The M54513FP each have eight circuits consisting of NPN transistors. These ICs have resistance of $2k\Omega$ at inputs and of $13.6k\Omega$ between the base and emitter. The GND is used in common in each circuit.

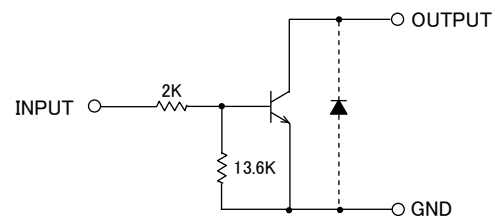
The transistors allow synchronous flow of 50mA collector current. A maximum of 40V voltage can be applied between the collector and emitter.

PIN CONFIGURATION



Package type 20P2N-A
NC : No connection

CIRCUIT DIAGRAM



The eight circuits share the GND.
The diode, indicated with the dotted line, is parasitic, and cannot be used.

Unit : Ω

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

Symbol	Parameter	Conditions	Ratings	Unit
V_{CEO}	Collector-emitter voltage	Output, H	-0.5 ~ +40	V
V_i	Input voltage		-0.5 ~ +10	V
I_c	Collector current	Current per circuit output, L	50	mA
P_d	Power dissipation	$T_a = 25\text{ C}$, when mounted on board	1.10	W
T_{opr}	Operating temperature		-20 ~ +75	$^{\circ}\text{C}$
T_{stg}	Storage temperature		-55 ~ +125	$^{\circ}\text{C}$

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RECOMMENDED OPERATING CONDITIONS (Unless otherwise noted, $T_a = -20 \sim +75 \text{ C}$)

Symbol	Parameter	Limits			Unit
		min	typ	max	
V_o	Output voltage	0	—	40	V
I_c	Collector current	0	—	30	mA
V_{IH}	“H” input voltage	2	—	8	V
V_{IL}	“L” input voltage	0	—	0.2	V

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

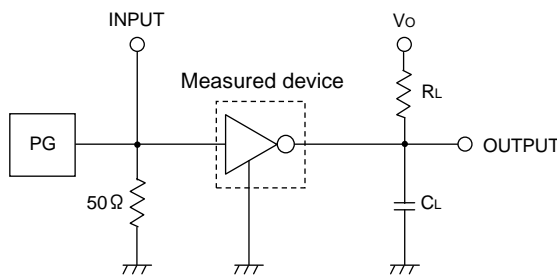
Symbol	Parameter	Test conditions	Limits			Unit
			min	typ	max	
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_{CEO} = 100 \mu A$	40	—	—	V
$V_{CE(sat)}$	Collector-emitter saturation voltage	$V_i = 2V, I_c = 10mA$	—	25	100	mV
		$V_i = 2.5V, I_c = 30mA$	—	70	170	
I_i	Input current	$V_i = 2.5V$	—	0.85	1.7	mA
h_{FE}	DC amplification factor	$V_{CE} = 4V, I_c = 30mA, T_a = 25^\circ C$	80	200	-	-

*: The typical values are those measured under ambient temperature (T_a) of 25 C. There is no guarantee that these values are obtained under any conditions.

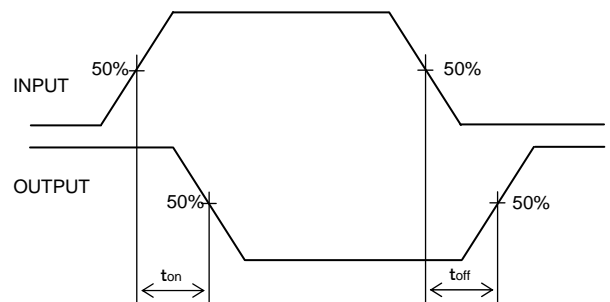
SWITCHING CHARACTERISTICS (Unless otherwise noted, $T_a = -20 \sim +75 \text{ C}$)

Symbol	Parameter	Test conditions	Limits			Unit
			min	typ	max	
t_{on}	Turn-on time	$C_L = 15pF$ (note 1)	—	65	—	ns
t_{off}	Turn-off time		—	1200	—	ns

NOTE 1 TEST CIRCUIT

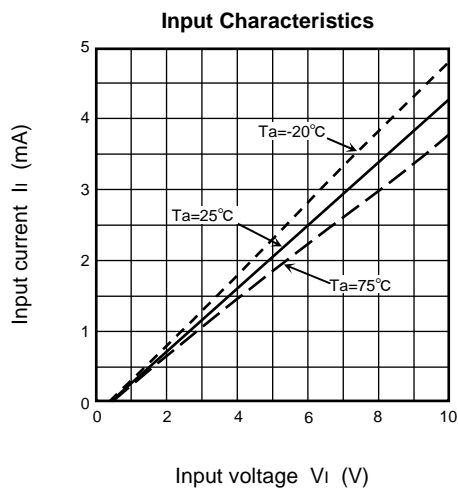
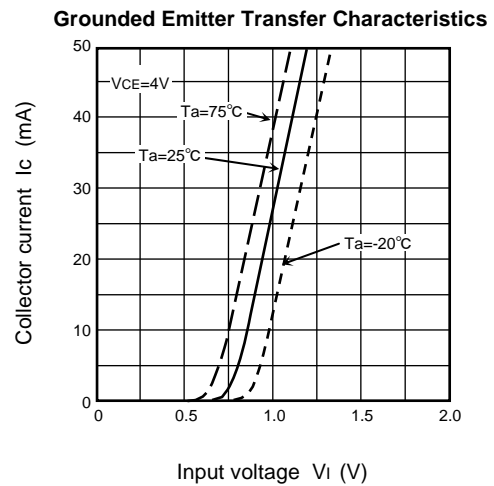
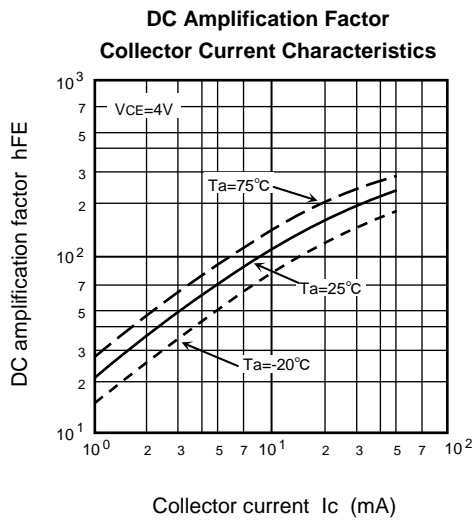
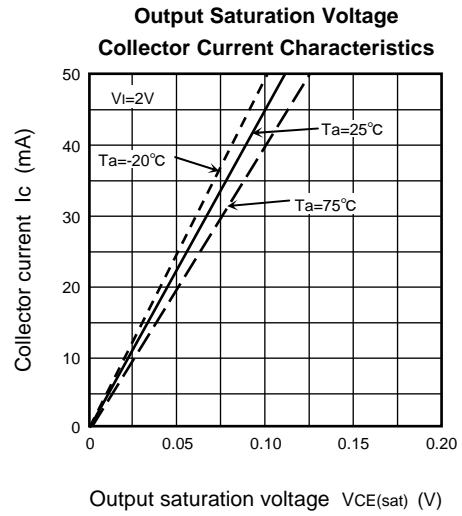
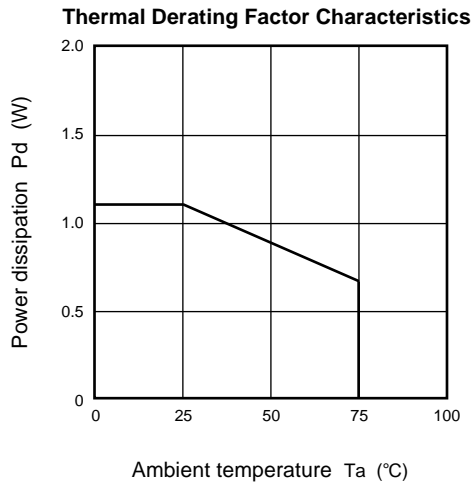


TIMING DIAGRAM



- (1) Pulse generator (PG) characteristics : PRR = 1kHz,
 $t_w = 10 \text{ s}, t_r = 6ns, t_f = 6ns, Z_0 = 50$
 $V_P = 2.5VP-P$
- (2) Output conditions : $R_L = 300 \Omega, V_O = 10V$
- (3) Electrostatic capacity C_L includes floating capacitance at connections and input capacitance at probes

TYPICAL CHARACTERISTICS



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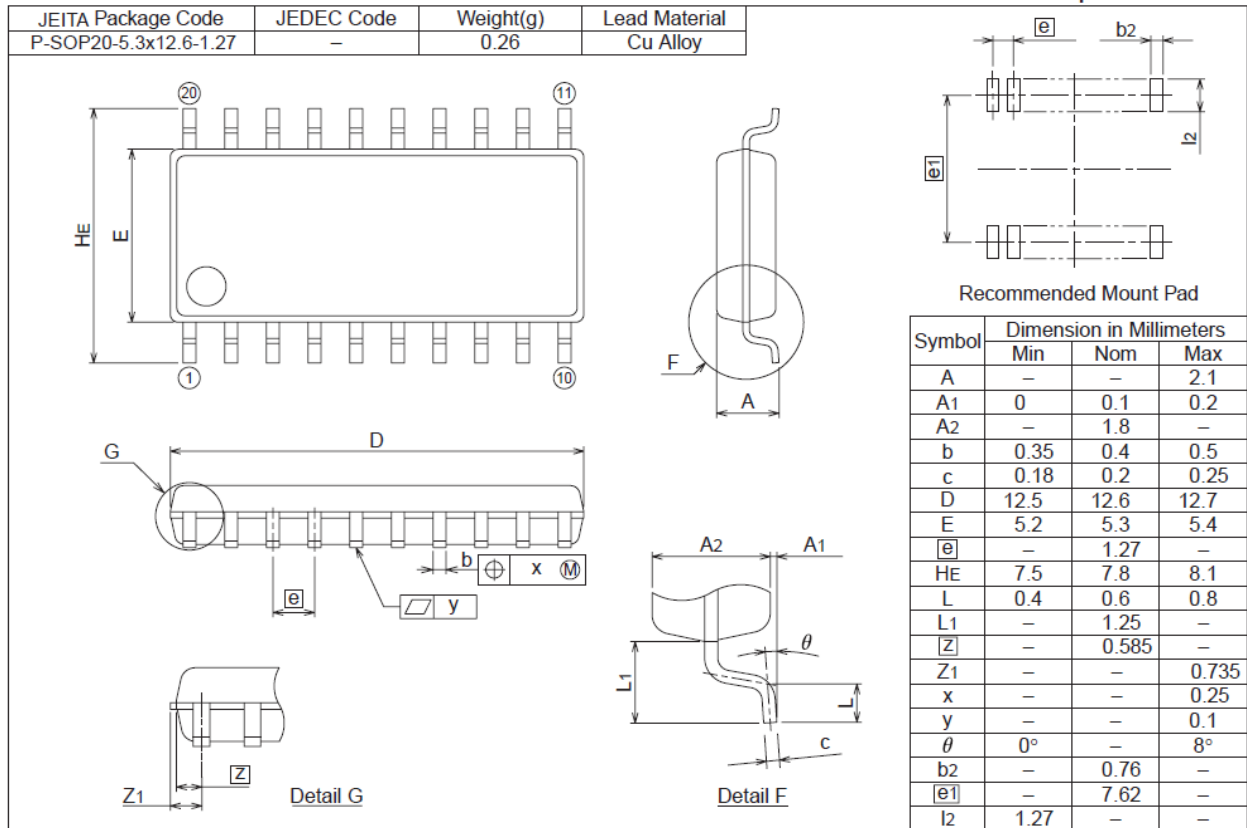
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PACKAGE OUTLINE

20P2N-A

JEITA Package Code	JEDEC Code	Weight(g)	Lead Material
P-SOP20-5.3x12.6-1.27	-	0.26	Cu Alloy

Plastic 20pin 300mil SOP



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