

<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

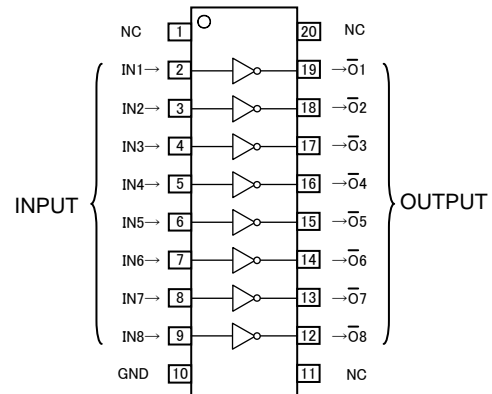
Driving of digit drives of indication elements (LEDs and lamps) with small signals

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.

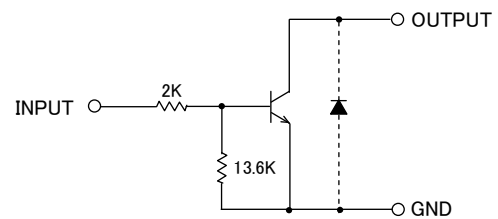
The transistors allow synchronous flow of 50mA collector current. A maximum of 40V voltage can be applied between the collector and emitter.

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, Ta = -20 ~ +75 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, Ta = -20 ~ +75 C)

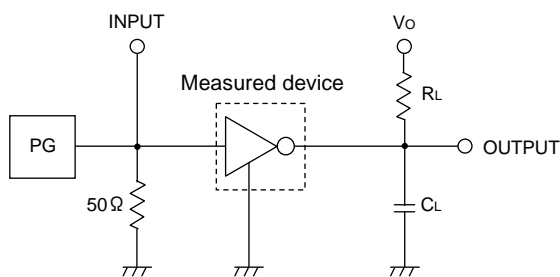
Symbol	Parameter	Test conditions	Limits			Unit
			min	typ	max	
V _{(BR)CEO}	Collector-emitter breakdown voltage	I _{CEO} = 100 μA	40	—	—	V
V _{CE(sat)}	Collector-emitter saturation voltage	V _I = 2V, I _c = 10mA	—	25	100	mV
		V _I = 2.5V, I _c = 30mA	—	70	170	
I _i	Input current	V _I = 2.5V	—	0.85	1.7	mA
hFE	DC amplification factor	V _{CE} = 4V, I _c = 30mA, Ta = 25°C	80	200	-	-

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

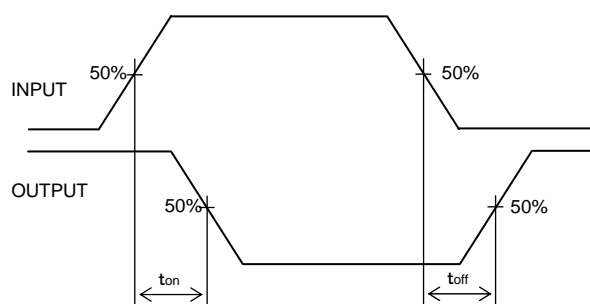
SWITCHING CHARACTERISTICS (Unless otherwise noted, Ta = -20 ~ +75 C)

Symbol	Parameter	Test conditions	Limits			Unit
			min	typ	max	
ton	Turn-on time	CL = 15pF(note 1)	—	65	—	ns
toff	Turn-off time		—	1200	—	ns

NOTE 1 TEST CIRCUIT

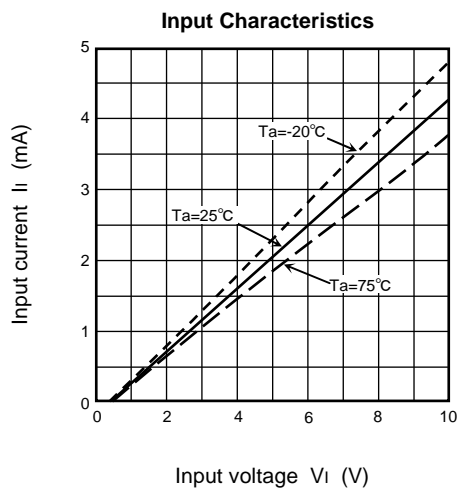
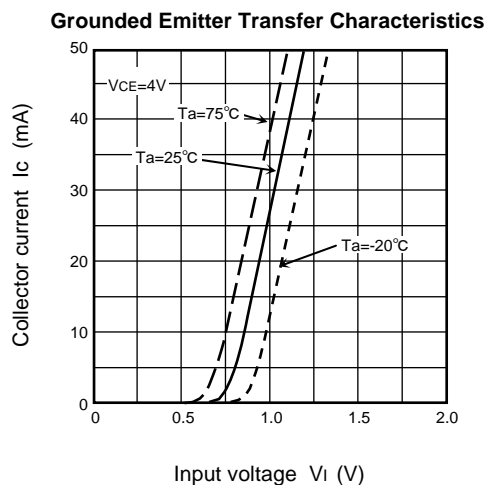
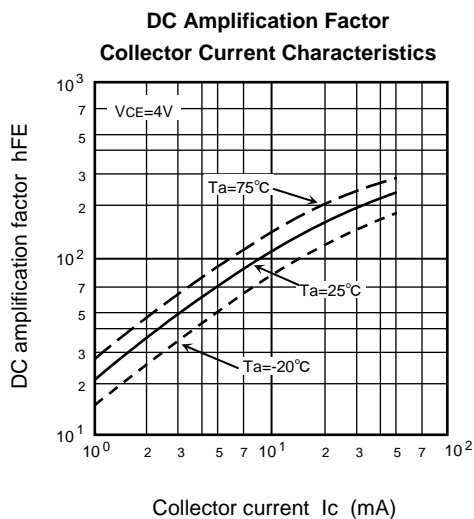
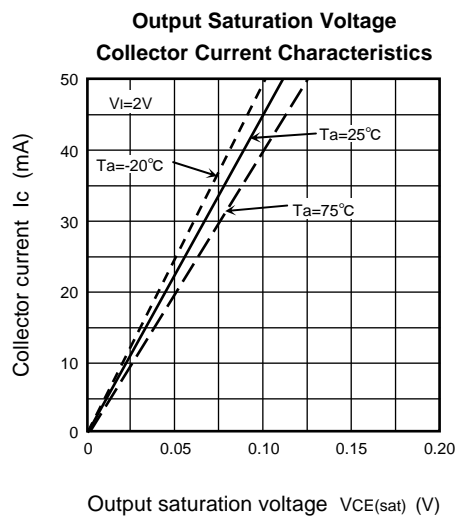
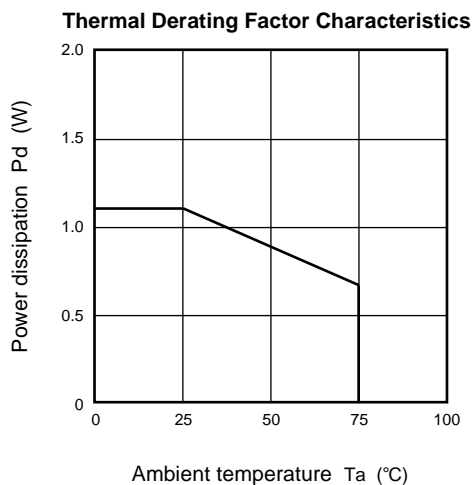


TIMING DIAGRAM



- (1) Pulse generator (PG) characteristics : PRR = 1kHz,
tw = 10 s, tr = 6ns, tf = 6ns, ZO = 50
VP = 2.5VP-P
- (2) Output conditions : RL = 300 , VO = 10V
- (3) Electrostatic capacity CL includes floating capacitance at connections and input capacitance at probes

TYPICAL CHARACTERISTICS



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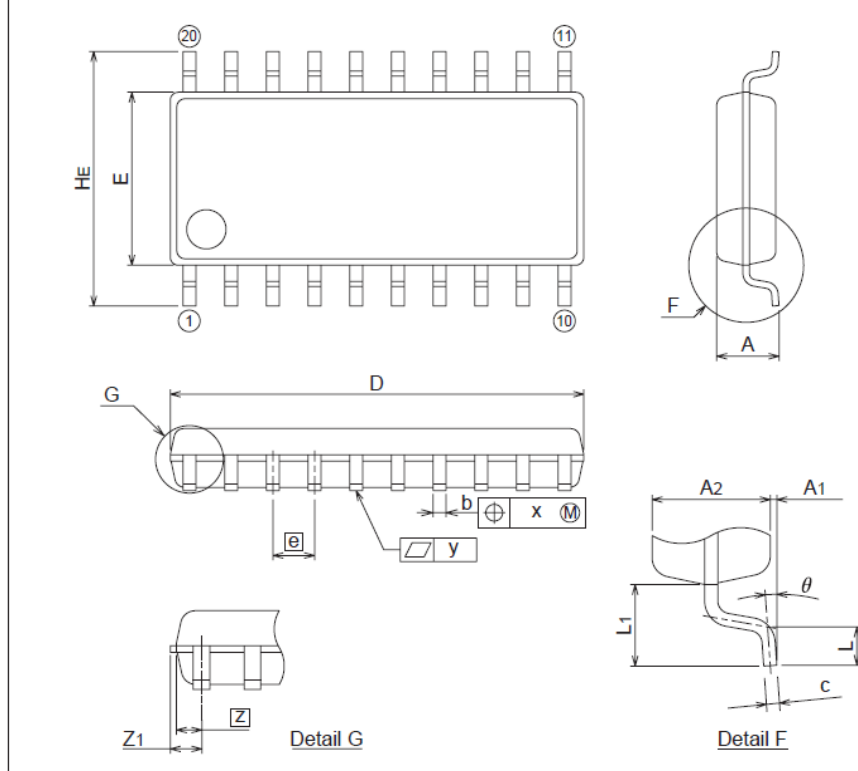
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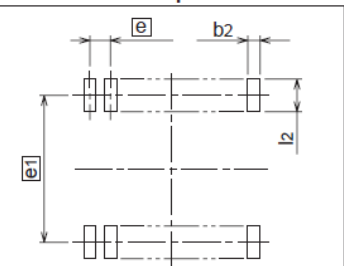
PACKAGE OUTLINE

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



Recommended Mount Pad

Symbol	Dimension in Millimeters		
	Min	Nom	Max
A	-	-	2.1
A1	0	0.1	0.2
A2	-	1.8	-
b	0.35	0.4	0.5
c	0.18	0.2	0.25
D	12.5	12.6	12.7
E	5.2	5.3	5.4
e	-	1.27	-
HE	7.5	7.8	8.1
L	0.4	0.6	0.8
L1	-	1.25	-
Z	-	0.585	-
Z1	-	-	0.735
x	-	-	0.25
y	-	-	0.1
θ	0°	-	8°
b2	-	0.76	-
e1	-	7.62	-
l2	1.27	-	-

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