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M63803P/FP/GP/KP

7-UNIT 300mA TRANSISTOR ARRAY

DESCRIPTION

M63803P, M63803FP, M63803GP and M63803KP are seven-circuit Singe 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

- Four package configurations (P, FP, GP and KP)
- Medium breakdown voltage ($BV_{CEO} \geq 35V$)
- Synchronizing current ($I_{C(max)}$ = 300mA)
- Low output saturation voltage
- Wide operating temperature range (Ta = –40 to +85°C)

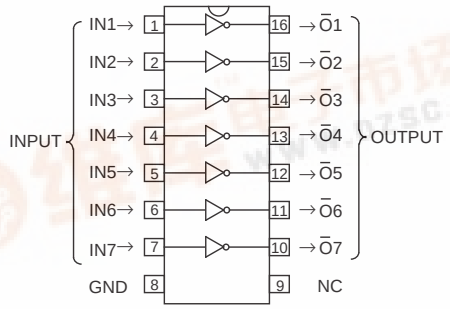
APPLICATION

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

FUNCTION

The M63803P, M63803FP, M63803GP and M63803KP each have seven circuits consisting of NPN transistor. The transistor emitters are all connected to the GND pin (pin 8)
The transistors allow synchronous flow of 300mA collector current. A maximum of 35V voltage can be applied between the collector and emitter.

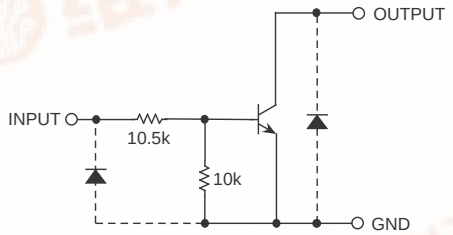
PIN CONFIGURATION



Package type 16P4(P) 16P2N-A(FP) 16P2S-A(GP) 16P2Z-A(KP)

NC : No connection

CIRCUIT DIAGRAM



The seven 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, Ta = –40 ~ +85°C)

Symbol	Parameter	Conditions		Ratings	Unit
V_{CEO}	Collector-emitter voltage	Output, H		–0.5 ~ +35	V
I_C	Collector current	Current per circuit output, L		300	mA
V_I	Input voltage			–0.5 ~ +35	V
P_d	Power dissipation	Ta = 25°C, when mounted on board	M63803P	1.47	W
			M63803FP	1.00	
			M63803GP	0.80	
			M63803KP	0.78	
T_{opr}	Operating temperature			–40 ~ +85	°C
T_{stg}	Storage temperature			–55 ~ +125	°C

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RECOMMENDED OPERATING CONDITIONS (Unless otherwise noted, Ta = –40 ~ +85°C)

Symbol	Parameter		Test conditions	Limits min	Limits typ	Limits max	Unit
V_O	Output voltage			0	—	35	V
I_C	Collector current (Current per 1 circuit when 7 circuits are coming on simultaneously)	M63803P	Duty Cycle no more than 45%	0	—	250	mA
			Duty Cycle no more than 100%	0	—	160	
		M63803FP	Duty Cycle no more than 30%	0	—	250	
			Duty Cycle no more than 100%	0	—	130	
		M63803GP	Duty Cycle no more than 24%	0	—	250	
			Duty Cycle no more than 100%	0	—	120	
		M63803KP	Duty Cycle no more than 24%	0	—	250	
			Duty Cycle no more than 100%	0	—	120	
V_{IN}	Input voltage			0	—	20	V

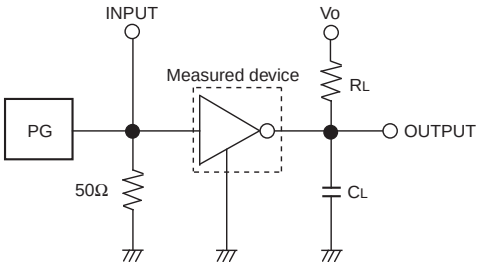
ELECTRICAL CHARACTERISTICS (Unless otherwise noted, Ta = 25°C)

Symbol	Parameter	Test conditions	Limits min	Limits typ	Limits max	Unit
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	I_{CEO} = 10μA	35	—	—	V
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_{IN} = 1mA, I_C = 10mA	—	—	0.2	V
		I_{IN} = 2mA, I_C = 150mA	—	—	0.8	
$V_{IN(on)}$	"On" input voltage	I_{IN} = 1mA, I_C = 10mA	2.4	3.5	4.2	V
h_{FE}	DC amplification factor	V_{CE} = 10V, I_C = 10mA	50	—	—	—

SWITCHING CHARACTERISTICS (Unless otherwise noted, Ta = 25°C)

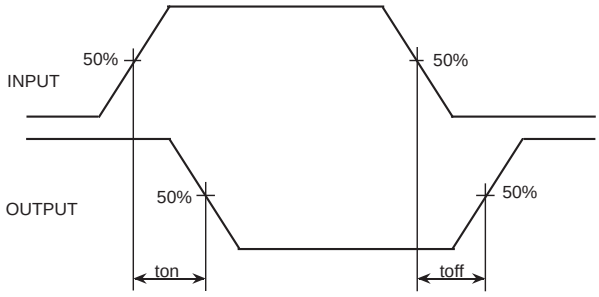
Symbol	Parameter	Test conditions	Limits min	Limits typ	Limits max	Unit
t_{on}	Turn-on time	C_L = 15pF (note 1)	—	125	—	ns
t_{off}	Turn-off time		—	250	—	ns

NOTE 1 TEST CIRCUIT



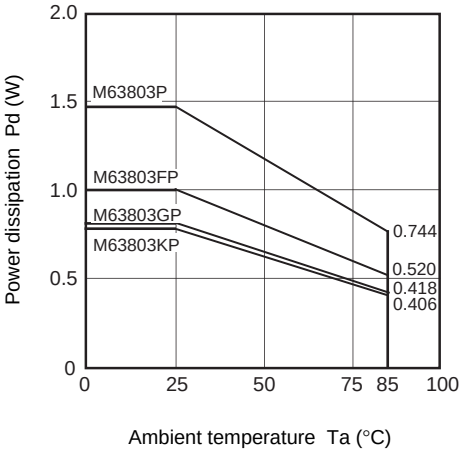
(1)Pulse generator (PG) characteristics : PRR=1kHz, tw = 10μs, tr = 6ns, tf = 6ns, Zo = 50Ω, V_{IH} = 3V
(2)Input-output conditions : R_L = 220Ω, Vo = 35V
(3)Electrostatic capacity C_L includes floating capacitance at connections and input capacitance at probes

TIMING DIAGRAM

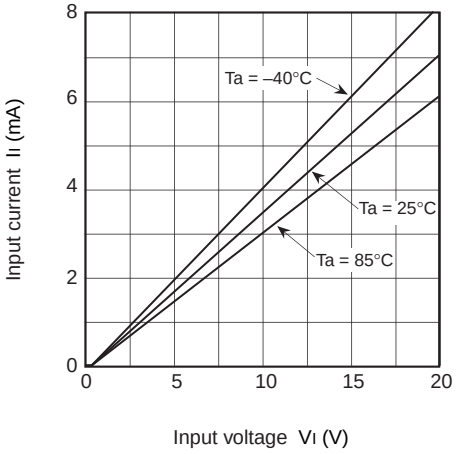


TYPICAL CHARACTERISTICS

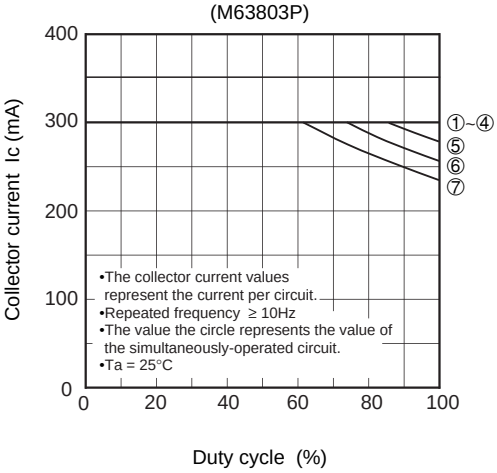
Thermal Derating Factor Characteristics



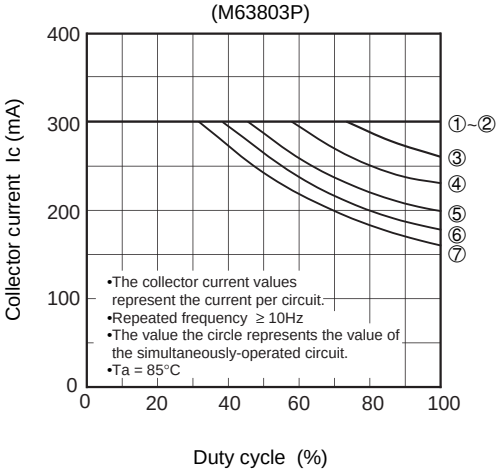
Input Characteristics



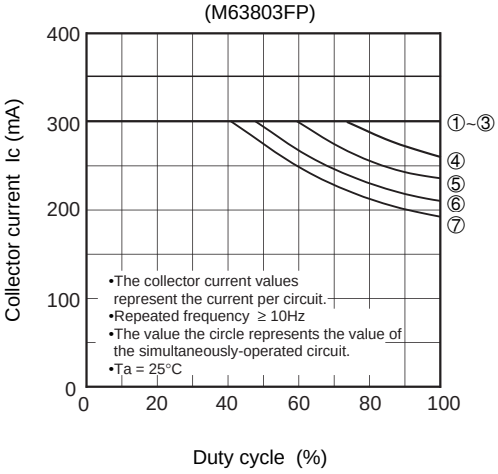
Duty Cycle-Collector Characteristics
(M63803P)



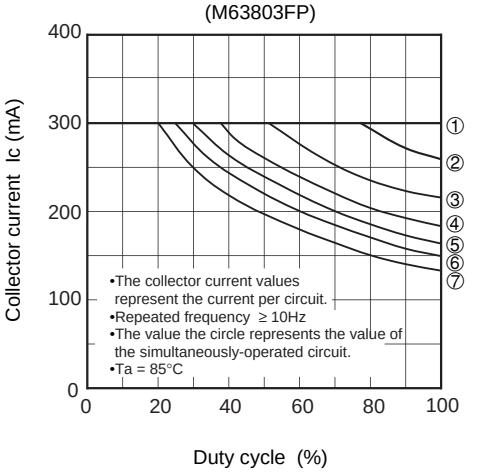
Duty Cycle-Collector Characteristics
(M63803P)



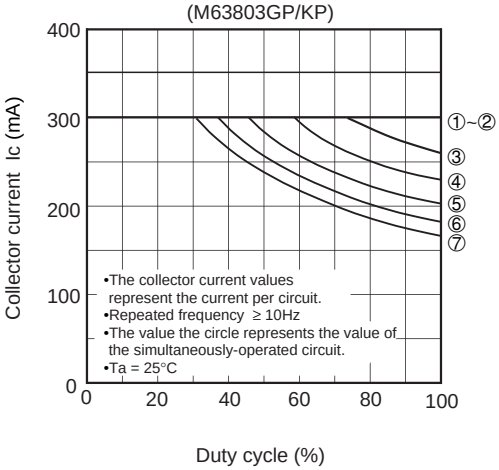
Duty Cycle-Collector Characteristics
(M63803FP)



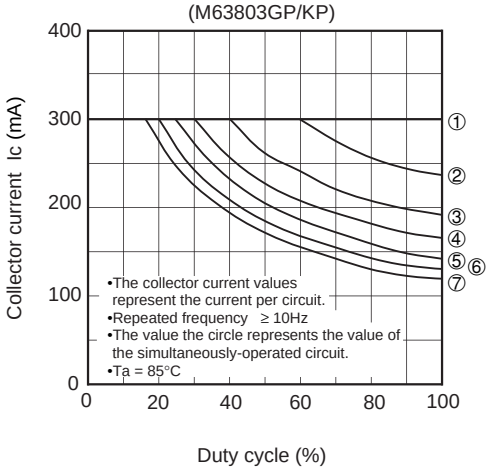
Duty Cycle-Collector Characteristics
(M63803FP)



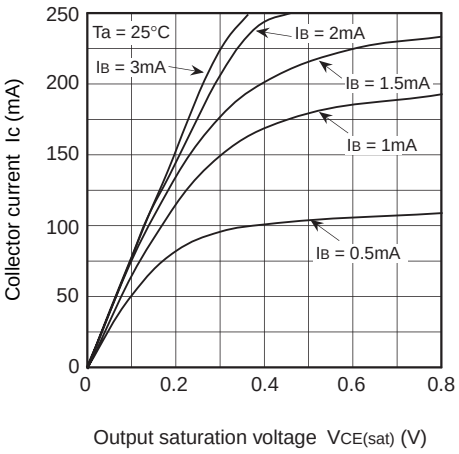
Duty Cycle-Collector Characteristics
(M63803GP/KP)



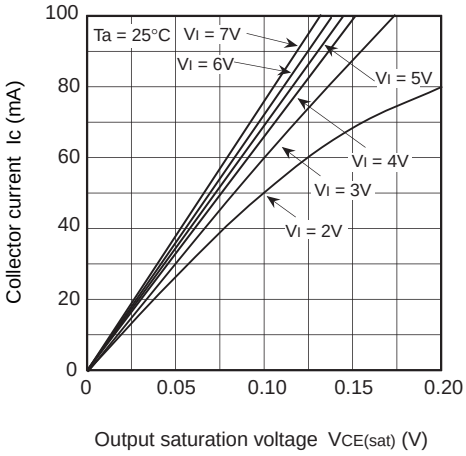
Duty Cycle-Collector Characteristics
(M63803GP/KP)



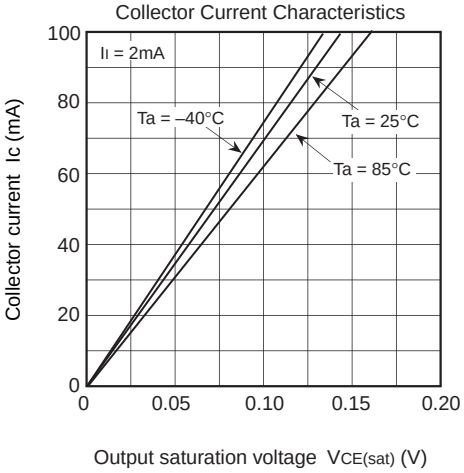
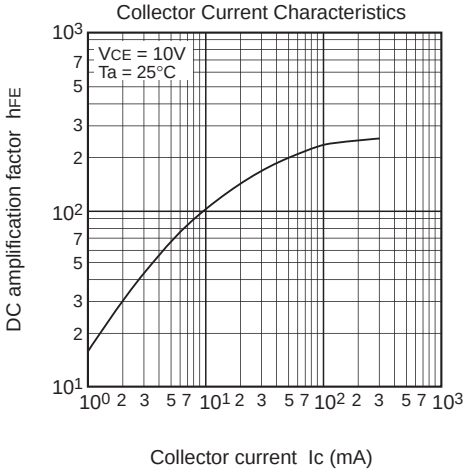
Output Saturation Voltage
Collector Current Characteristics



Output Saturation Voltage
Collector Current Characteristics



Output Saturation Voltage
Collector Current Characteristics



DC Amplification Factor
Collector Current Characteristics