

**PRELIMINARY**  
Notice: This is not a final specification.  
Some parametric limits are subject to change.

# M63834FP/KP

8-UNIT 500mA DARLINGTON TRANSISTOR-ARRAY

### DESCRIPTION

The M63834FP/KP 8-channel sinkdriver, consists of 8 PNP and 16 NPN transistors connected to form eight high current gain driver pairs.

### FEATURES

- High breakdown voltage ( $BV_{CEO} \geq 50V$ )
- High-current driving ( $I_{C(max)} = 500mA$ )
- 3V micro computer compatible input
- "L" active level input
- With input diode
- Wide operating temperature range ( $T_a = -40$  to  $+85^{\circ}C$ )

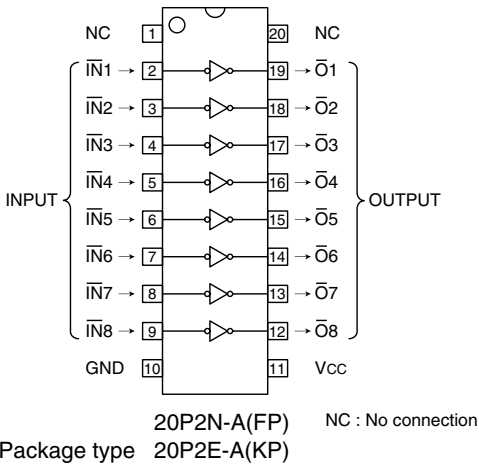
### APPLICATION

Output for 3 voltage microcomputer series and interface with high voltage system. Relay and small printer driver, LED, or incandescent display digit driver.

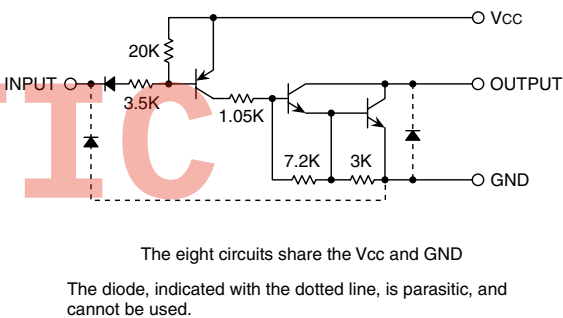
### FUNCTION

The M63834GP/KP is transistor-array of high active level eight units type which can do direct drive of 3 voltage micro-computer series. A resistor of  $3.5k\Omega$  is connected between the input and the base of PNP transistors. The input diode is intended to prevent the flow of current from the input to the Vcc. Without this diode, the current flows from "H" input to the Vcc and the "L" input circuit is activated, in such a case where one of the inputs of the 8 circuit is "H" and the other are "L" to save power consumption. The diode is inserted to prevent such mis-operation. The outputs are capable of driving 500mA and are rated for operation with output voltage up to 50V.

### PIN CONFIGURATION



### CIRCUIT DIAGRAM



### ABSOLUTE MAXIMUM RATINGS (Unless otherwise noted, $T_a = -40 \sim +85^{\circ}C$ )

| Symbol | Parameter                 | Conditions                                  | Ratings           | Unit        |
|--------|---------------------------|---------------------------------------------|-------------------|-------------|
| Vcc    | Supply voltage            |                                             | 7                 | V           |
| VCEO   | Collector-emitter voltage | Output, H                                   | -0.5 ~ +50        | V           |
| IC     | Collector current         | Current per circuit output, L               | 500               | mA          |
| VI     | Input voltage             |                                             | -0.5 ~ Vcc        | V           |
| Pd     | Power dissipation         | $T_a = 25^{\circ}C$ , when mounted on board | 1.10(FP)/0.68(KP) | W           |
| Topr   | Operating temperature     |                                             | -40 ~ +85         | $^{\circ}C$ |
| Tstg   | Storage temperature       |                                             | -55 ~ +125        | $^{\circ}C$ |

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

| Symbol | Parameter                                                                              |                                                             | Limits  |     |         | Unit |
|--------|----------------------------------------------------------------------------------------|-------------------------------------------------------------|---------|-----|---------|------|
|        |                                                                                        |                                                             | min     | typ | max     |      |
| Vcc    | Supply voltage                                                                         |                                                             | 2.7     | 3.0 | 3.6     | V    |
| Ic     | Collector current (Current per 1 circuit when 8 circuits are coming on simultaneously) | Duty Cycle<br>FP : no more than 4%<br>KP : no more than 2%  | 0       | —   | 400     | mA   |
|        |                                                                                        | Duty Cycle<br>FP : no more than 15%<br>KP : no more than 6% | 0       | —   | 200     |      |
| VIH    | “H” input voltage                                                                      |                                                             | Vcc-0.5 | —   | Vcc     | V    |
| VIL    | “L” input voltage                                                                      |                                                             | 0       | —   | Vcc-2.2 | V    |

ELECTRICAL CHARACTERISTICS
(Unless otherwise noted, Ta = -40 ~ +85°C)

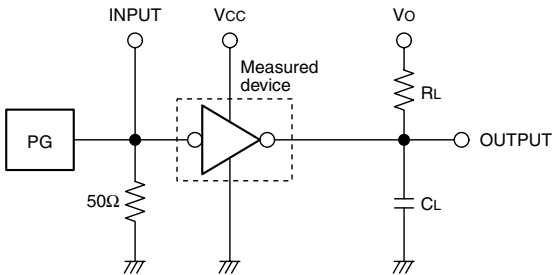
| Symbol     | Parameter                            | Test conditions                             | Limits |       |      | Unit |
|------------|--------------------------------------|---------------------------------------------|--------|-------|------|------|
|            |                                      |                                             | min    | typ*  | max  |      |
| V (BR) CEO | Collector-emitter breakdown voltage  | ICEO = 100μA                                | 50     | —     | —    | V    |
| VCE(sat)   | Collector-emitter saturation voltage | VCC = 2.7V, VI = 0.5V, IC = 400mA           | —      | 1.15  | 2.4  | V    |
|            |                                      | VCC = 2.7V, VI = 0.5V, IC = 200mA           | —      | 0.93  | 1.6  |      |
| Ii         | Input current                        | VI = Vcc-2.2V                               | —      | -220  | -600 | μA   |
| ICC        | Supply current (AN only Input)       | VCC = 3.6V, VI = 0.5V                       | —      | 2.6   | 4.0  | mA   |
| hFE        | DC amplification factor              | VCC = 2.7V, VCE = 2V, IC = 0.35A, Ta = 25°C | 2000   | 10000 | —    | —    |

\*: Typical values are at Ta = 25°C

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

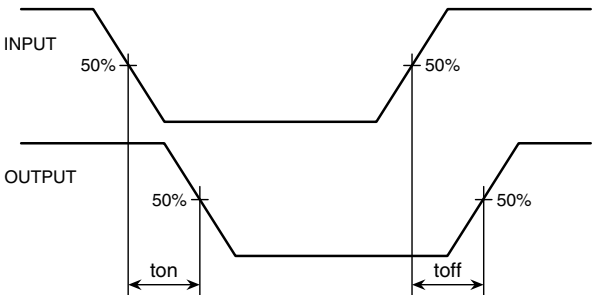
| Symbol | Parameter     | Test conditions    | Limits |      |     | Unit |
|--------|---------------|--------------------|--------|------|-----|------|
|        |               |                    | min    | typ  | max |      |
| ton    | Turn-on time  | CL = 15pF (note 1) | —      | 120  | —   | ns   |
| toff   | Turn-off time |                    | —      | 4500 | —   | ns   |

NOTE 1 TEST CIRCUIT



- (1)Pulse generator (PG) characteristics : PRR=1kHz, tw = 10μs, tr = 6ns, tf = 6ns, Zo = 50Ω  
VI = 0.5 ~ 2.7V
- (2)Input-output conditions : RL = 30Ω, Vo = 10V, Vcc = 2.7V
- (3)Electrostatic capacity CL includes floating capacitance at connections and input capacitance at probes

TIMING DIAGRAM

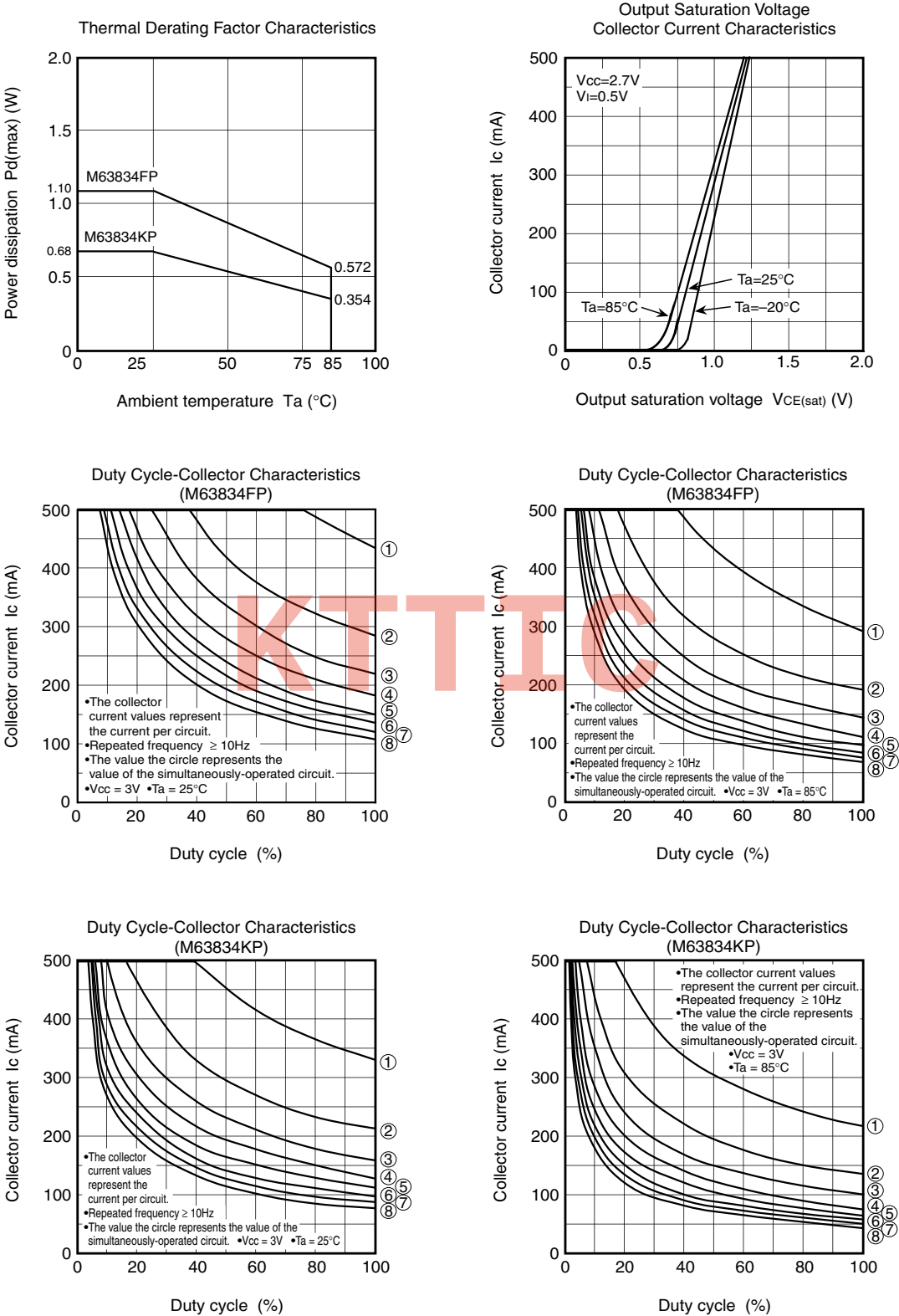


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**TYPICAL CHARACTERISTICS**



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