Features

- **Three Input Comparators with Schmitt-trigger Characteristic**
- **Input Clamping Current Capability of ±10 mA**
- **Integrated Protection Cells (EMC, ESD, RF) Dedicated to all Input Stages**
- **Common Shutdown by Junction-temperature Monitor**
- **Reset with Hysteresis at Low Voltage**
- **ESD Protection Acording to Human Body Model: ±2000 V (C = 100 pF, R = 1.5 kΩ)**
- **Output Stages:**
  - **Short-circuit Protected**
  - **Load-dump Protected at 1 kΩ**
  - **No Crosstalk on Adjacent Channels**
  - **Jump Start Possible**

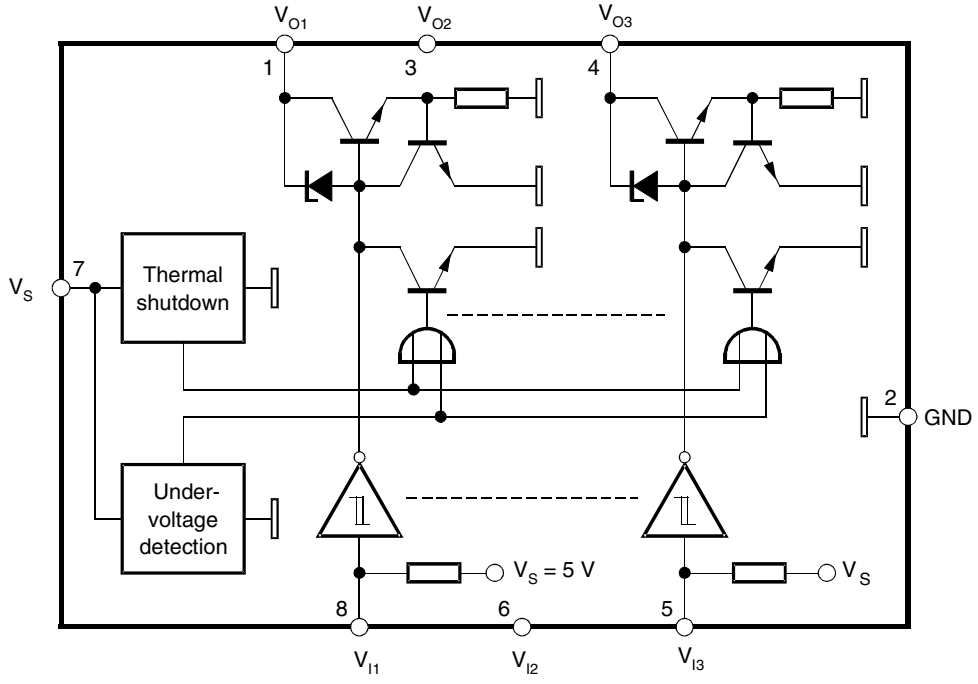
Triple Driver IC with Thermal Monitoring

U6803B

Description

The triple driver IC includes three non-inverted and current-limited output stages with an open collector. Common thermal shutdown protects the outputs against critical junction temperatures. Each output can sink a current of 20 mA, parallel output operation is possible. The digital inputs have Schmitt-trigger function with pull-up resistors to 5 V.

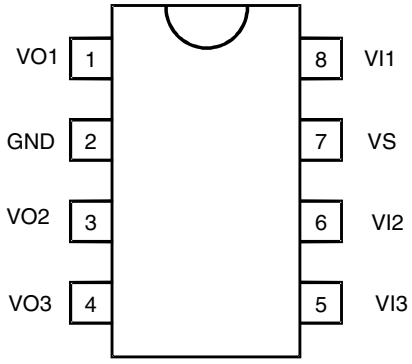
Figure 1. Block Diagram



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Pin Configuration

Figure 2. Pinning SO8



Pin Description

Pin	Symbol	Function
1	VO1	Output 1
2	GND	Ground
3	VO2	Output 2
4	VO3	Output 3
5	VI3	Input 3
6	VI2	Input 2
7	VS	Supply voltage 5 V
8	VI1	Input 1

Basic Circuitry

The integrated circuit U6803B requires a stabilized supply voltage (V_S = 5 V ±5%) to comply with its electrical characteristics. An external buffer capacitor of C = 100 nF is recommended. An integrated 14 V Zener diode between V_S and ground protects the supply pin.

All input stages are provided with an integrated 250 kΩ pull-up resistor and can be directly connected to a microcontroller.

All output stages are open collectors, each capable of sinking 20 mA. Recommended external components:

- Pull-up resistor, R = 1 kΩ
- Capacitor to GND, C = 470 pF, see Figure 3 on page 4

Functional Description

General

ON state: A low level at the input stage activates the corresponding output stage.

OFF state: The internal pull-up resistor provides a high level to the input comparator and deactivates the output stage.

7 V Zener diodes between each input pin and GND are capable of ±10 mA clamping currents without crosstalk on adjacent input stages.

A total clamping current of ±30 mA should be observed with respect to the power dissipation.

Current Limitation of the Output Stages and Overtemperature Shutdown

A temperature-dependent current limitation in the range of 25 to 100 mA protects the stages in case of a short. Additionally, the chip temperature is monitored. For T_{Chip} > 148°C, all outputs are disabled and automatically enabled with a hysteresis of T_{Chip} > 5°C.

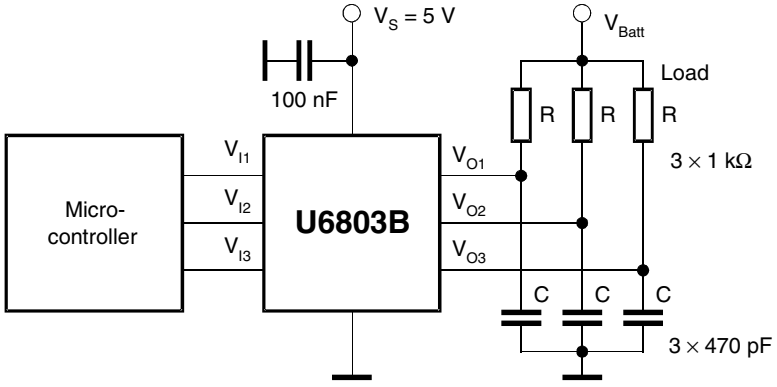
Transients and Load Dump

An integrated 28 V Zener diode protects each output stage against transients and load-dump (Schaffner pulses). With the help of an external 1 kΩ resistor, the output transistor is capable of handling the corresponding current which flows during each of these conditions. Apart from that, the outputs are short-circuit and overload protected.

Low-voltage Detection

When the supply voltage is switched on, a power-on reset pulse is generated internally which disables all output stages until a defined supply-voltage level is reached. The low-voltage detection is provided with a hysteresis of V_{hyst} = 0.5 V typically.

Figure 3. Application Schematic



Absolute Maximum Ratings

Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Parameters	Symbol	Value	Unit
Supply voltage	V_S	7.0	V
Ambient temperature range	T_{amb}	-40 to +125	°C
Storage temperature range	T_{stg}	-50 to +150	°C
Maximum junction temperature	T_j	+150	°C

Thermal Resistance

Parameters	Symbol	Value	Unit
Junction ambient	R_{thJA}	160	K/W

Electrical Characteristics

V_S = 5 V ±5%, T_{amb} = 27°C, reference point pin 2 (GND), unless otherwise specified, see Figure 1 on page 1 and Figure 3 on page 4

Parameters	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Supply, Pin 7						
Supply voltage		V_S	4.75		5.25	V
Supply current	Inputs open Inputs closed to GND	I_S I_S	0.8 7		3.2 13	mA mA
Low-voltage detection threshold	ON OFF	$V_{TH(ON)}$ $V_{TH(OFF)}$	3.7 3.0		4.6 3.8	V V
Low-voltage hysteresis		V_{hyst}	0.55		1.05	V
Temperature shutdown		T_{Chip}	140		149	°C
Temperature shutdown hysteresis		T_{hyst}	5			°C
Input; Pins 5, 6, 8						
Zener-diode protection voltage	I_I = 10 mA	V_I	6.7		8.5	V
Zener-diode clamping current		I_I			±10	mA
Pull-up resistor		R_I	170	250	305	kΩ
Switching threshold	OFF ON	V_I V_I		3.3 1.8		V V
Hysteresis		V_{hyst}		1.5		V
Output; Pins 1, 3, 4						
Zener-diode protection voltage	I_O = 10 mA	V_O	26.5			V
Integrated capacitor				5		pF
Leakage current		I_{Leak}			2.5	µA
Saturation voltage	(I_O = 20 mA)	V_{Sat}			0.7	V
Current limitation		I_{limit}	25		100	mA
Propagation delay	(470 pF, 1 kΩ, 20 V)	t_d			5	µs

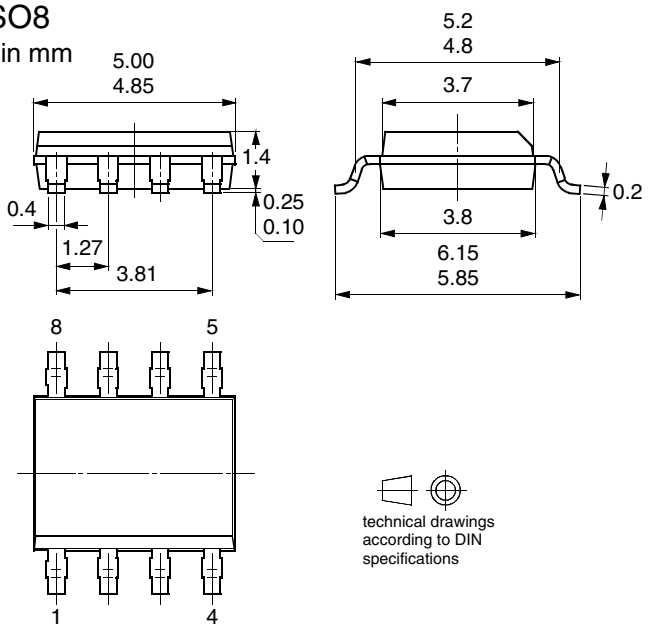
Ordering Information

Extended Type Number	Package	Remarks
U6803B-MFP	SO8	Tube
U6803B-MFPG3	SO8	Taped and reeled

Package Information

Package SO8

Dimensions in mm



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