

The iC-DX / iC-DXC are monolithic switches for ohmic, inductive and capacitive loads. The supply voltage VB of the devices can range from 8 to 30 V and has integrated reverse polarity protection.
The operational output source/sink-current is up to 150 mA for the iC-DX and up to 200 mA for the iC-DXC with maximum saturation voltages of 2 V . Their short circuit currents are limited to 450 mA . With input 0 E on high level state, the output works as a push-pull driver controlled by input IN. If IN is set either to high or low level, the output acts as a high-side (PNP) or low-side (NPN) driver which is activated by a high logic level on input 0 E . Output transitions are slew-rate limited to minimize interference (on lines). The devices are short circuit protected by shutting down with excessive temperature. A regulated 5 V power supply is available at pin VOUT to supply external circuitry with up to 10 mA .
The iC-DXC additional features a feedback path of the state of output pin OUT. Forcing OUT externally from its current state is signalled at pin MON. This can be used to implement an IO-Link Wake-Up detection.

## Features

- Configurable high-side, low-side and push-pull operation
- 150 mA (iC-DX) and 200 mA (iC-DXC) output current
- IO-Link compliant (iC-DXC)
- Reverse polarity protection
- $5 \mu$ s input filter for spike supression
- Current limited output (< 450 mA )
- Wide supply voltage range from 8 to 30 V
- Driver shutdown with overtemperature
- Integrated free-wheeling diode for inductive loads
- Sensor supply voltage output of $5 \mathrm{~V}(10 \mathrm{~mA})$


## Applications

- Digital sensors
- Light barriers
- Proximity switches



## Applications Examples



## Pin Configuration



DFN6 2x2


DFN8 3x3

Key Specifications

| General | iC-DX | iC-DXC |
| :---: | :---: | :---: |
| Supply Voltage | 8 to 30 V |  |
| Supply Current (max.) | 1.5 mA | 1.6 mA |
| Output Short-Circuit Duration | Indefinite |  |
| Operating Temperature Range | $-40^{\circ} \mathrm{C}$ to $+150^{\circ} \mathrm{C}$ |  |
| Driver Output OUT | iC-DX | iC-DXC |
| Saturation Voltage low/high (@ 100 mA ) | 1.5 V max. | - |
| Saturation Voltage low/high (@150 mA) | 2.0 V max. | 1.5 V max. |
| Saturation Voltage low/high (@ 200 mA ) | - | 2.0 V max. |
| Short-Circuit Current low/high | 450 mA max. |  |
| Slew Rate VB $=30 \mathrm{~V}, \mathrm{CL}=2.2 \mathrm{nF}$ | $40 \mathrm{~V} / \mu \mathrm{s}$ max. |  |


| Thermal Shutdown | iC-DX $\quad$ CC-DXC |
| :--- | :---: |
| Power-On Threshold | 8 V max. |
| Thermal Shutdown Temperature | $150^{\circ} \mathrm{C}$ min., $180^{\circ} \mathrm{C}$ max. |
| Regulator Output VOUT  <br> Output Voltage, VB $=9.30 \mathrm{~V}$, <br> I(VOUT) $=0 . .10 \mathrm{~mA}$  <br> Short-Circuit Current, VOUT to GND 4.7 V min., 5.3 V max. |  |


| Inputs OE, IN | iC-DX | iC-DXC |
| :--- | :--- | :--- |
| Propagation Delay, <br> IN to OUT, OE to OUT | $5.2 \mu \mathrm{~s}$ <br> max. | $6.5 \mu \mathrm{~s}$ <br> max. |
| Required Pulse Width at IN, OE <br> for switching | $4 \mu \mathrm{~s}$ min. |  |
| Spurious Pulse Width at IN, OE <br> for non-switching | $1.6 \mu \mathrm{~s}$ max. |  |


| Feedback Channel | iC-DXC |
| :--- | :--- |
| Propagation Delay OUT to CFO | $1 \mu \mathrm{~s}$ min., $5 \mu \mathrm{~s}$ max. |
| Propagation Delay OUT to MON, <br> short circuit detection | $5.5 \mu \mathrm{~s}$ min., $14 \mu \mathrm{~s}$ max. |
| Input Threshold high at OUT $(\mathrm{VB}>18 \mathrm{~V})$ | 10 V min., 12.5 V max. |
| Input Threshold low at OUT, (VB $>18 \mathrm{~V})$ | 8.3 V min., 10.5 V max. |

## Pin Functions

| iC-DX | iC-DXC | Name | Function |
| :--- | :--- | :--- | :--- |
| 1 | 1 | VOUT | Regulated +5 V Voltage |
| - | 2 | MON | Monitor Output |
| 2 | 3 | GND | Ground |
| 3 | 4 | IN | Input |
| 4 | 5 | OE | Output Enable |
| - | 6 | CFO | Feedback Channel Output |
| 5 | 7 | OUT | Driver Output |
| 6 | 8 | VB | +8 V to +30 V Supply Voltage |

