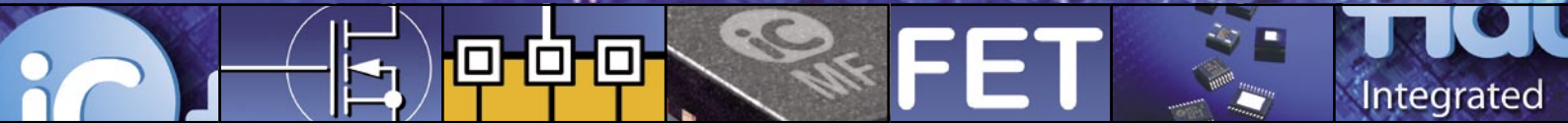
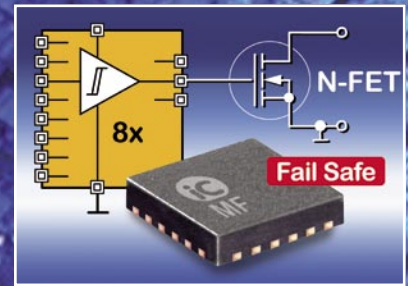


# iC-MF L/N/P

## 8-CHANNEL FAIL-SAFE FET-DRIVER



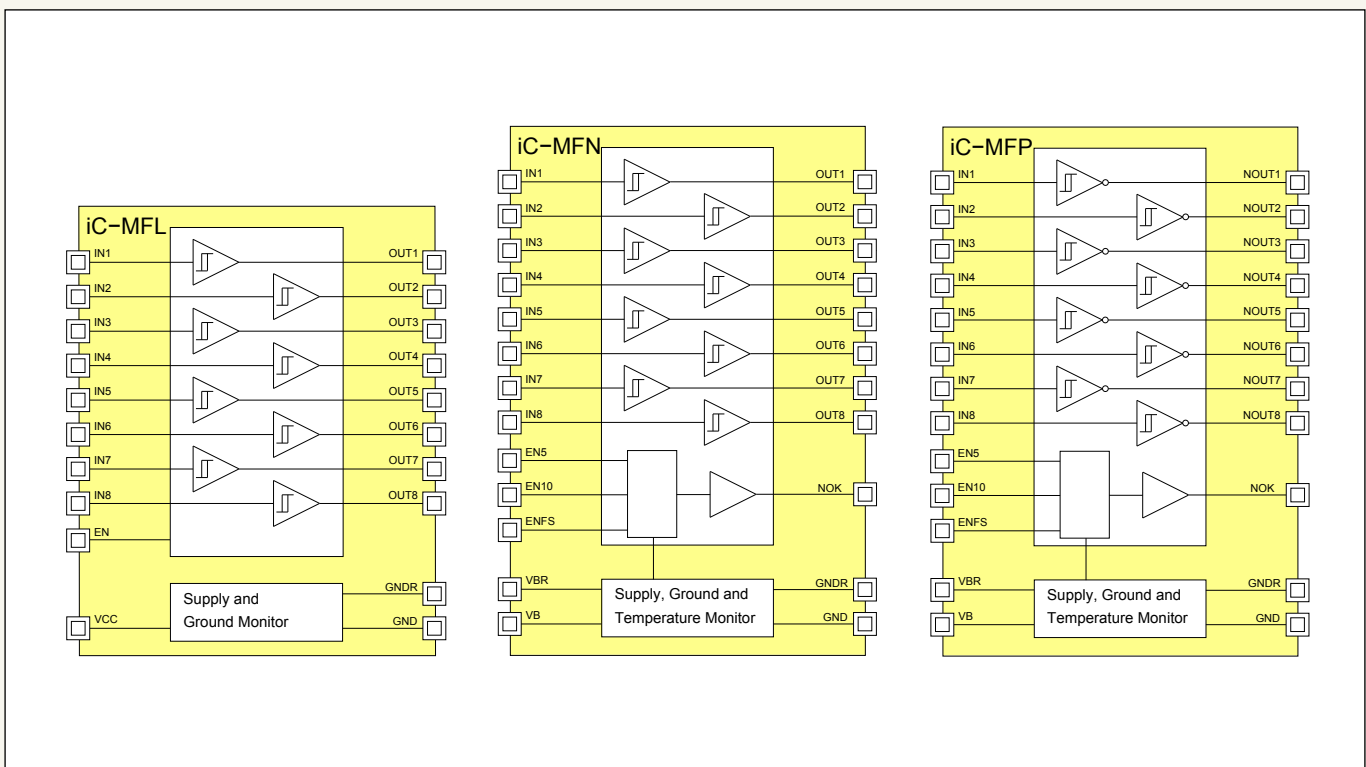
The iC-MF L/N/P are monolithically integrated 8-channel level adjustment devices and FET drivers. Their internal circuit blocks have been designed in such a way that with single errors, such as open pins (supply voltages, GND, GNDR) or the short-circuiting of two output pins, the output stages switch to a predefined, safe state (low for iC-MF L/N, high for iC-MFP). Externally connected FETs are thus shut down safely in the event of a single error.

### Features

- 8-fold level shifting and FET drive
  - 5 V output voltage (iC-MF L)
  - Output levels of 5 V, 10 V or full scale (up to 40 V) (iC-MF N/P)
  - Push-pull current sources for driving N-FETs (iC-MF L/N) or P-FETs (iC-MF P)
- Output stages current-limited and short-circuit-proof
- Safe output state in the event of single errors
- Schmitt trigger inputs with two-stage pull-down current
- Inputs compatible with TTL and CMOS levels (1.8 to 5 V)
- Loss of ground and supply voltage monitor
- Temperature monitor (iC-MF N/P)
- Protective ESD circuitry
- Extended temperature range from -40 to 125°C

### Applications

- Level shifter from TTL/CMOS to 5 V, 10 V, VB (full scale)
- Operation of 5 V logic level N-FETs from 3.3 V systems (iC-MFL)
- FET drive of up to 40 V<sub>DS</sub> from 3.3 V systems (iC-MFN, iC-MFP)



# iC-MF L/N/P 8-CHANNEL FAIL-SAFE FET-DRIVER

The inputs of the eight channels consist of a Schmitt trigger with a pull-down current source and are compatible with TTL and CMOS levels (1.8 to 5 V). Each output consists of a current-limited push-pull output stage and a shunt resistor (pull down for iC-MF L/N, pull up for iC-MF P).

Depending on the selected enable pins (EN5, EN10, ENFS: one out of three for iC-MF N/P; EN: iC-MFL), the drivers supply an output signal of 5 V, 10 V or full scale amplitude.

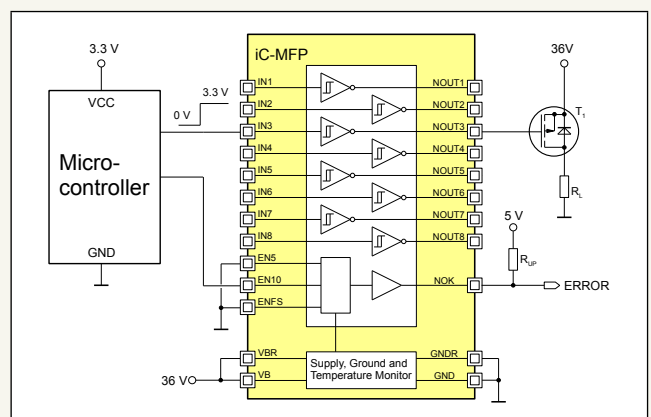
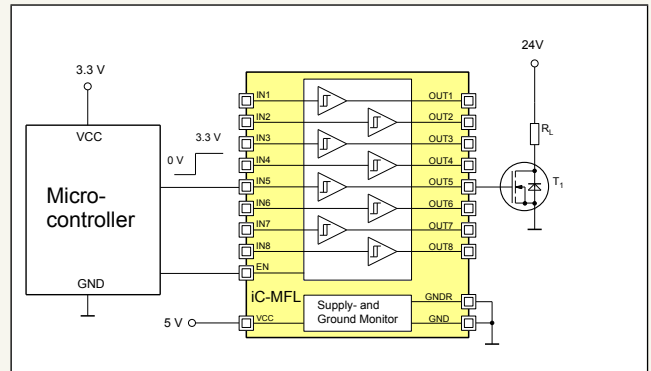
Open inputs IN1...8 and EN (EN5, EN10 and ENFS for iC-MF N/P) are actively tied to GND by pull-down currents. The pull-down currents have two stages in order to limit power dissipation with enhanced noise immunity. The devices are protected against destruction by ESD.

## Key Specifications

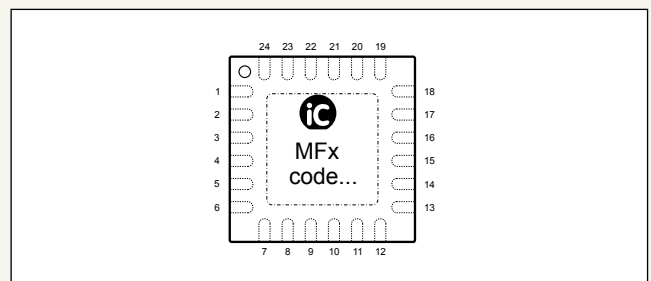
iC-MF N/P	
Supply Voltage Range VB	4.5 ... 40 V
Supply Current (no load)	< 7 mA
Output Drive Current (high / low)	4 mA
Temperatur Monitor (Toff / Ton)	160 / 147 °C
Ground Monitor Threshold	< 270 mV
Supply Monitor Threshold	< 270 mV
Propagation Delay, CL = 1 nF	
EN5: ( 5 V Output Range)	< 2.5 µs
EN10: (10 V Output Range)	< 4.0 µs
ENFS: (40 V Output Range)	< 10 µs

iC-MF L	
Supply Voltage Range VCC	5V ±10%
Supply Current (no load)	< 7 mA
Output Drive Current (high / low)	3 mA
Ground Monitor Threshold	< 150 mV
Propagation Delay, no load	< 200 ns

## Application



## Pin Configuration QFN24



## Pin Functions

iC-MFN			iC-MFP			iC-MFL		
No.	Name	Function	No.	Name	Function	No.	Name	Function
1	OUT1	Output, channel 1	1	NOUT1	Inverted Output, channel 1	1	OUT1	Output, channel 1
2	VB	Supply Voltage	2	VB	Supply Voltage	2	(n.c.)	-
3	VBR	Supply Voltage (Reference)	3	VBR	Supply Voltage (Reference)	3	(n.c.)	-
4	EN5	Enable high-level = 5V	4	EN5	Enable low-level = VB - 5V	4	GNDR	Ground (Reference)
5	EN10	Enable high-level = 10V	5	EN10	Enable low-level = VB - 10V	5	VCC	5 V Supply Voltage
6..13	IN1..IN8	Inputs, channel 1..8	6..13	IN1..IN8	Inputs, channel 1..8	6..13	IN1..IN8	Inputs, channel 1..8
14	NOK	Inverted status	14	NOK	Inverted status	14	(n.c.)	-
15	ENFS	Enable high-level full scale	15	ENFS	Enable low-level full scale	15	EN	Enable Input
16	GNDR	Ground (Reference)	16	GNDR	Ground (Reference)	16	(n.c.)	-
17	GND	Ground	17	GND	Ground	17	GND	Ground
18..24	OUT8..2	Outputs, channel 8..2	18..24	NOUT8..2	Inv. Outputs, channel 8..2	18..24	OUT8..2	Outputs, channel 8..2