



Product brief

1ED44176N01F

25 V single-channel low-side gate driver with integrated overcurrent protection, fault reporting, and enable functionality

Designers are constantly challenged with developing compact, cost-effective systems while maintaining a high level of reliability and energy efficiency. The 1ED44176N01F is made for ground-referenced gate-drive applications such as digitally controlled Power-Factor Correction (PFC) circuit requiring Overcurrent Protection (OCP).

OCP is typically implemented using a current measurement circuit with a comparator such as LM293 and a network of resistors and capacitors. 1ED44176N01F provides up to 20 percent cost and 50 percent space savings by integrating the OCP comparator, which features an accurate current sensing threshold tolerance of ± 5 percent. 1ED44176N01F also integrates fault output reporting

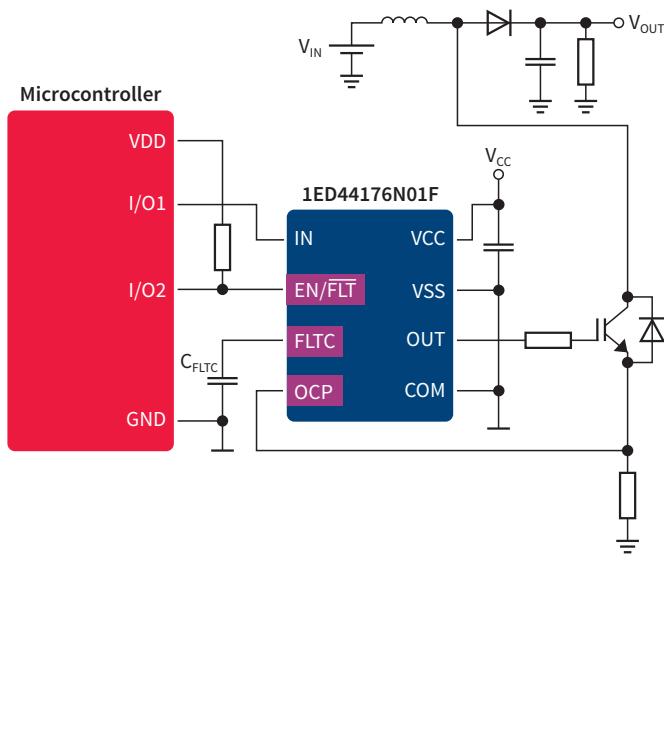
to the controller and driver enable functionality on the same pin. The driver IC also has separate logic and power ground pins for operational ruggedness. 1ED44176N01F is offered in an industry standard, DSO-8 package.

Potential applications

- › General purpose low-side gate driver for single-ended topologies (e.g. digitally controlled PFC or digital power supplies)
- › Residential and commercial air conditioners
- › Home appliances
- › Industrial applications

Key features	Key specifications	System benefits
<ul style="list-style-type: none">› Integrated overcurrent protection comparator with accurate OCP threshold› Single pin for fault output and enable function	<ul style="list-style-type: none">› 0.5 V overcurrent threshold with accurate ± 5 percent tolerance› Internal Schmitt trigger comparator for the enable function	<ul style="list-style-type: none">› Potential space savings up to 50 percent and cost savings up to 20 percent compared to the discrete solution
<ul style="list-style-type: none">› Programmable fault clear time	<ul style="list-style-type: none">› External capacitor (C_{FLTC}) sets the length of the fault clear time	<ul style="list-style-type: none">› Flexible fault clear time set-up for different microcontroller processing speeds
<ul style="list-style-type: none">› Low quiescent supply current	<ul style="list-style-type: none">› Max I_{QCC}: 750 μA	<ul style="list-style-type: none">› Minimizes power consumption
<ul style="list-style-type: none">› Separate logic ground and gate driver return	<ul style="list-style-type: none">› VSS and COM pins	<ul style="list-style-type: none">› Avoids noise coupling from output to input which improves noise immunity
<ul style="list-style-type: none">› Undervoltage lockout (UVLO) protection	<ul style="list-style-type: none">› Specific UVLO level for IGBTs (typ. on/off = 11.9 V / 11.4 V)	<ul style="list-style-type: none">› Eliminates switching loss at low V_{CC} supply voltage

Typical connection diagram



Pin configuration 1ED44176N01F

OCP	1	8	COM
FLTC	2	7	OUT
EN/FLT	3	6	VSS
IN	4	5	VCC

Evaluation board: EVAL-1ED44176N01F



Quickly test the main features and key parameters of 1ED44176N01F. Order the evaluation board today.

Product specifications at a glance

Part number	Source/sink current (typ) [A]	Propagation delay (typ) [ns]		UVLO (typ) [V]	V _{OCTH} [V]			Features	Package
		On	Off		min	typ	max		
1ED44176N01F	+0.8/-1.75		50	11.9/11.4	475	500	525	<ul style="list-style-type: none"> › Integrated overcurrent protection comparator › Programmable fault-clear time › Single enable input/fault output pin › Separate logic and power ground 	DSO-8

Recommended related products

The 1ED44176N01F can drive up to 50 A/650 V IGBTs from Infineon at frequency up to 50 kHz for PFC applications. If higher frequency is required, Infineon's CoolMOS™ C7 superjunction MOSFET are recommended.

TRENCHSTOP™ 3 IGBT and TRENCHSTOP™ 5 IGBT		CoolMOS™ C7 superjunction MOSFET		RAPID 1 diode
IKFW40N60DH3E	IKW30N65H5	IPW(Z)65R019C7	IPW(Z)65R095C7	IDW30E65D1
IKFW50N60DH3E	IKW40N65H5	IPW(Z)65R045C7	IPW65R125C7	IDW40E65D1(E)
IKFW60N60DH3E	IKW50N65H5	IPW(Z)65R065C7	IPW65R190C7	IDW60C65D1

For more options visit www.infineon.com/IGBT, www.infineon.com/MOSFET, and www.infineon.com/rapiddiodes

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