

Product Brief

IRS2890DS

600 V half-bridge gate driver IC with overcurrent protection

Designers are constantly challenged with developing compact, energy-efficient solutions while maintaining a high level of reliability and ruggedness. The IRS2890DS is tailored for motor drive applications requiring over current protection and best in class fault reporting accuracy in a small form-factor with high power density. The new 600 V half-bridge gate driver IC utilizes our advance high voltage IC process to realize a compact, efficient and robust monolithic construction while integrating several features.

The IRS2890DS achieves high-power density by integrating the bootstrap FET, Undervoltage Lockout (UVLO) protection, shoot-through protection, overcurrent protection, fault reporting, and fault clear function. The overcurrent protection feature has an internal threshold of $\pm 5\%$ for accurate reporting. Additionally, the IRS2890DS has V_s operational logic of -8 V and is tolerant to negative transient voltages. The IRS2890DS is offered in a fourteen-pin SOIC and requires the use of less pins than comparable parts on the market.

Applications

- > Refrigeration compressor drives
- > Pump and fan drives
- > Air conditioner and washing machine drives
- > Mini and micro inverter drives
- > Servo drives and GP inverters

Product features

- > 220/480 mA typical sink/source current
- > 85/30 ns typical turn-on rise and turn-off fall time
- > Less than 50 ns delay matching time
- > Undervoltage Lockout (UVLO) protection
- > Deadtime and cross-conduction prevention logic
- > Overcurrent protection and fault reporting
- > Fully operational to +600 V offset voltage
- > Tolerate to negative transient voltage, dV/dt immune
- > Logic operational for V_s of -8 V
- > Operational for transient negative V_s -50 V with a 50 ns pulse width
- > Integrated bootstrap FET (200 Ω)
- > Integrated comparator (with 0.5 V $\pm 5\%$ ref)
- > Standard pin configuration

Benefits

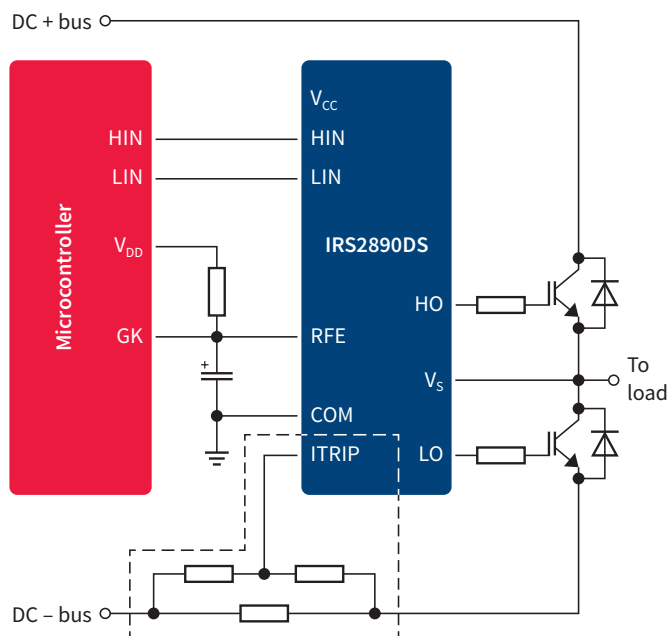
- > High-power efficiency
- > Reliable switching
- > Protection under abnormal operation
- > Increased device reliability due to rugged hard switching performance and high power capability
- > Eliminates the need for an external components
- > Increased power density
- > Easy-to-use, straight-forward design
- > Fast design-in time means quick time to market



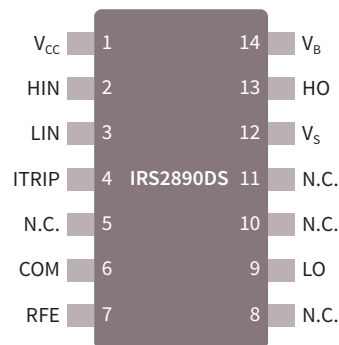
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Typical connection diagram



Pin configurations



Product specifications at a glance

Part number	Voltage class [V]	Integrated bootstrap FET	Source/sink current (typ) [mA]	MT (max) [ns]	Deadtime (typ) [ns]	Typ. propagation delay [ns]		Input filter [ns]	UVLO (typ) [V]	Package
						on	off			
IRS2890DS	600	✓	220/480	50	300	500		300	7.7–8.9	14-lead SOIC

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