

IRS2053 3 Channel Integrated Class D Audio Driver IC with PWM Modulator

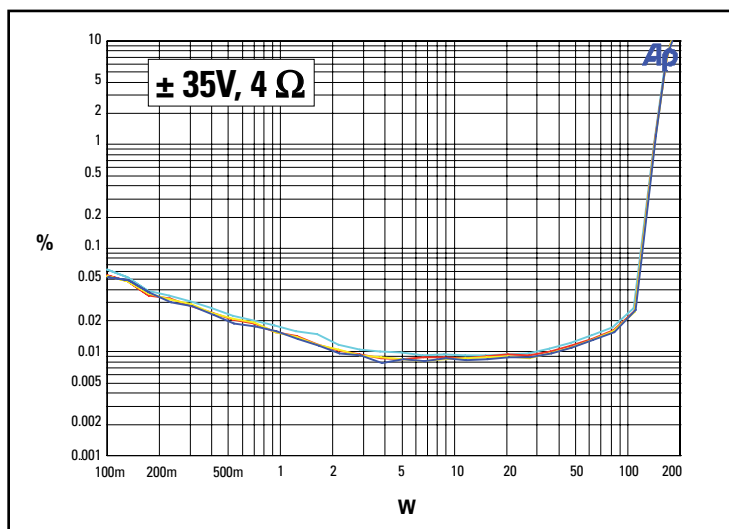
IR Advantage

- 3 channel
- Integrated analog input
- Programmable bidirectional over-current protection with self-reset control
- Start and stop click noise reduction
- Floating inputs enable easy half-bridge implementation
- Programmable preset deadtime for scalable power design
- High noise immunity
- $\pm 100V$ ratings deliver up to 150W in output power
- PWM frequency up to 800kHz
- 48-pin MLPQ
- Over temperature
- Protection input
- DC offset detection input
- Clipping detection



The IRS2053 has been designed for high performance Class D Audio applications from 50W to 150W per channel including home theater systems and car audio amplifiers.

Based upon a half bridge topology, the IRS2053 integrates four channels of high-voltage, high-performance Class D audio amplifier drivers with PWM modulators in a single IC. Housed in a compact MLPQ48 package, the new IC shrinks board size by a further 50 percent compared to previous offerings.



The IRS2053 offers error amplifier, PWM comparator, gate driver, and robust protection circuitry. In addition the new 200V device features an analog PWM modulator with frequency up to 800kHz, programmable bidirectional over-current protection (OCP) with self-reset control, under-voltage lockout protection (UVLO), and programmable preset deadtime for a scalable power design.

Typical THD + N vs Output Power

IRS2053 Integrated Class D Audio Driver IC with PWM Modulator

Digital Audio MOSFETs

The IRS2053 audio IC may be paired with an extensive range of IR digital audio MOSFETs addressing output power from 50W to 150W. These MOSFETs, have been optimized around parameters critical to audio performance such as efficiency, THD, and EMI. For detailed performance information, please refer to the MOSFET data sheets available online at www.irf.com.

The chipset forms a Class D audio solution that is much smaller than a comparable Class AB design. In a 100W application, for example, the IRS2053 IC and IRF6665 DirectFET® MOSFETs reduce board size by 50% to the previous offerings

IC Specification

Part Number	Channel	Offset Voltage	Sink/Source Current	VCC Range (with UVLO)	Min/Max Output Voltage	Selectable Dead Time
IRS2053MPBF	4	±100V	0.6 / 0.5A	10-15V	10-15V	45/65/85/105ns

Companion Digital Audio MOSFETs

DirectFET®				
Clipping Power	Without Heatsink		With Heatsink	
	4 Ohms	8 Ohms	4 Ohms	8 Ohms
50W - 100W	IRF6645	IRF6665	IRF6665	IRF6665
100W - 120W	IRF6645		IRF6645	IRF6775M
120W - 200W			IRF6645	IRF6775M

IRFx Families			
Clipping power	Package	Load	
		4 Ohms	8 Ohms
50W - 60W	TO-220 Full-Pak 5-Pin	IRFI4024H-117P	IRFI4212H-117P
	TO-220	—	IRFB4212PbF
60W - 100W	TO-220 Full-Pak 5-Pin	IRFI4212H-117P	IRFI4212H-117P
	TO-220	IRFB4212PbF	IRFB4212PbF
100W - 200W	TO-220 Full-Pak 5-Pin	IRFI4212H-117P	IRFI4019H-117P
	TO-220	IRFB4212PbF	IRFB4019PbF



Reference Design:

The IRAUDAMP11 reference design speeds development and evaluation. Based upon the IRS2053 IC and the IRF6665 DirectFET® MOSFETs, the IRAUDAMP11 features 120W x 3 channels. The design offers an efficiency of 90% at 120W in the MOSFET stage, and a THD+N of 0.02% at 60W, four ohms (both typical).

DirectFET® is a registered trademark of International Rectifier Corp.