Ultra-fast Power MOSFET / IGBT Drivers

Low Side MOSFET/IGBT Gate Driver Selection Guide

Part Number	Type	Logic Configuration	I_{PK} Output Current A	Output Resistance Ohm	Package (See Note 1)	Notes	Fig. No.
IXDI409CI	Single	Inverting	9	1.5	5-leaded TO-220	-	X006
IXDI409PI		Inverting			8-pin DIP	-	X500
IXDI409SI		Inverting			8-pin SOP-CT	-	X501
IXDI409YI		Inverting			5-leaded TO-263	-	X012a
IXDN409CI		Non-inverting			5-pin TO-220	-	X006
IXDN409PI		Non-inverting			8-pin DIP	-	X500
IXDN409SI		Non-inverting			8-pin SOP-CT	-	X501
IXDN409YI		Non-inverting			5-pin TO-263	-	X012a
IXDD409CI		Non-inverting			5-pin TO-220	2	X006
IXDD409PI		Non-inverting			8-pin DIP	2	X500
IXDD409SI		Non-inverting			8-pin SOP-CT	2	X501
IXDD409YI		Non-inverting			5-pin TO-263	2	X012a
IXDI414CI	Single	Inverting	14	1	5-pin TO-220	-	X006
IXDI414PI		Inverting			8-pin DIP	-	X500
IXDI414SI		Inverting			14-pin SOP-CT	-	X521
IXDI414YI		Inverting			5-pin TO-263	-	X012a
IXDN414CI		Non-inverting			5-pin TO-220	-	X006
IXDN414PI		Non-inverting			8-pin DIP	-	X500
IXDN414SI		Non-inverting			14-pin SOP-CT	-	X521
IXDN414YI		Non-inverting			5-pin TO-263	-	X012a
IXDD414CI		Non-inverting			5-pin TO-220	2	X006
IXDD414PI		Non-inverting			8-pin DIP	2	X500
IXDD414SI		Non-inverting			14-pin SOP-CT	2	X521
IXDD414YI		Non-inverting			5-pin TO-263	2	X012a
IXDI430CI	Single	Inverting	30	0.4	5-pin TO-220	3	X006
IXDI430MCI		Inverting			5-pin TO-220	4	X006
IXDI430MYI		Inverting			5-pin TO-263	4	X012a
IXDI430YI		Inverting			5-pin TO-263	3	X012a
IXDN430CI		Non-inverting			5-pin TO-220	3	X006
IXDN430MCI		Non-inverting			5-pin TO-220	4	X006
IXDN430MYI		Non-inverting			5-pin TO-263	4	X012a
IXDN430YI		Non-inverting			5-pin TO-263	3	X012a
IXDD430CI		Non-inverting			5-pin TO-220	3	X006
IXDD430MCI		Non-inverting			5-pin TO-220	4	X006
IXDD430MYI		Non-inverting			5-pin TO-263	4	X012a
IXDD430YI		Non-inverting			5-pin TO-263	3	X012a
IXDS430SI		Non-inverting / Inverting			28-pin SOP-CT	5	X550

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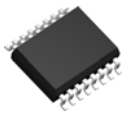
X531 16 pin SOP



X500 8-pin DIP

X006 TO-220 (5)

X012a TO-263(5)

X501 8-pin SOP

Notes

1. SOIC packages with suffix letter 'CT' have a grounded base solder tab.
2. Includes ENABLE function.
3. Includes ENABLE function + UVSEL = 11.75 V
4. Includes ENABLE function + UVSEL = 8.5 V.
5. Includes ENABLE function + Programmable UVSEL voltage level.

Half-Bridge Gate Drivers

Drivers from 0.6 A to 6.0 A with Superior Noise Immunity and Higher Power Handling Capability for Critical applications

IXYS 600V Half-Bridge Driver IC Product Line is a family of surface mount and leaded ICs optimized for gate drive applications up to 600V. This family provides a complete spectrum of solutions with 0.6A peak to 6.0A peak output drive current capability for applications ranging from 1 kHz to 1MHz. These Drivers draw upon a newly optimized architecture first introduced with the IX6R11, building on and enhancing the superior performance and high-end current handling capability of the IX6R11. As with the original IX6R11, IXYS 600V Driver IC Family gives better matching of propagation delays, enhanced fault tolerance and reliability, with improved efficiency and cooler operation.

This Half-Bridge Driver Family provides compatibility with similar Drivers from other suppliers, while offering the superior performance of our architecture. The Family also provides unique Customer options in packaging and configurations. Several Drivers are offered in packages that offer small size (16-Pin SOIC, 48-Pin SSLGA) or thermal advantages (18-Pin SOIC-CT). A unique product configuration is the IX6S11, offered for split-rail circuit configurations (+300V/-200V), with control logic ground referenced.

Performance advantages common to IXYS Half-Bridge Driver ICs include 50 V/ns dV/dt noise immunity and 200V negative voltage transient immunity, 8 times that of competiting Half-Bridge Drivers. Noise immunity is further enhanced by the use of non-latching level translation. IXYS level translation technique exhibits lower power dissipation versus techniques using high-voltage transistors typical of competiting Half-Bridge Drivers. Lower dissipation enables the use of IXYS Drivers for larger loads, at higher bus voltages, and for higher switching frequencies. Lower dissipation means also that IXYS Drivers can be pushed to higher temperatures.

This Family of Drivers offers a wide mix of user options for input logic types, output current ratings and packages. The high peak current capability of the IX6R11 enables one to drive larger MOSFET and IGBT die sizes at higher frequency without additional discrete transistors and components. 600mA Drivers, such as the IXD611, are used in lower power/lower frequency applications such as small power tools. Other user options covered by this Family include fixed and programmable delays, shutdown options, protection features, as well as high and low side under voltage protection. Other performance advantages include extended voltage range operation, and extended temperature operation from –40°C to +125°C.

IXYS is a global leader in Power Semiconductors, Gate Drive ICs and RF Power Devices. With over 20 years experience, IXYS products are designed to meet the demands of the power market for best-in- class Performance, Quality and Reliability.

Applications

- Welding
- Power Factor Correction
- Offline Power Conversion
- UPS
- Appliance
- Battery Chargers
- Automotive
- Motor Drive

Features

- Floating High Side Driver with bootstrap Power supply along with a Low Side Driver.
- I_{PK} = 0.6A to 6A
- Full operation to 600V BUS
- ± 50 V/ns dV/dt noise immunity
- Gate drive voltage range of 10V to 35V
- Non-latching level translation
- -200V high side drive signal negative transient immunity (8X greater than competitor)
- Versions including undervoltage protection, enable / shutdown functions, fixed and programmable delays, cross-conduction prevention and prorammable current limits
- Heat-sinkable versions, such as the 18-Pin SOIC-CT, R_{THJC} = 3°C/W
- High Density SMD and Hybrid Package Options.
- Extended temperature: -40°C to +125°C
- Rail to rail gate drive voltage swing
- Immune to negative voltage transients
- Separate Logic power supply range: 3.3 V to V_{CL}

Benefits

- Higher switching frequency with larger devices
- Replaces multiple ICs and discrete components
- Full operation to 600V BUS
- Fault tolerant due to non-latching architecture

MOSFET / IGBT Half-Bridge Gate Drivers

Part Number ➤ New	Closet IR Cross	I_{PK} T_C=25°C A	Shutdown	Inputs / Keying	Protection Features	Deadtime	Package (Note 1)	Fig. No.
➤ **IXA611P7** ②	IR2112	0.6	Yes (High)	Dual/In Phase	No	No	14-Pin PDIP	X520
➤ **IXA611S3** ②	IR2112S		Yes (High)	Dual/In Phase	No	No	16-Pin SOP	X531
➤ **IXB611P1** ②	IR2103		No	Dual/High-In Phase/Low-Inv	Cross-Conduct	Fixed-520ns Typ	8-Pin PDIP	X500
➤ **IXB611S1** ②	IR2103S		No	Dual/High-In Phase/Low-Inv	Cross-Conduct	Fixed-520ns Typ	8-Pin SOP	X501
➤ **IXC611P1** ②	IR2111		No	Single/High Side	Cross-Conduct	Fixed-650ns Typ	8-Pin PDIP	X500
➤ **IXC611S1** ②	IR2111S		No	Single/High Side	Cross-Conduct	Fixed-650ns Typ	8-Pin SOP	X501
➤ **IXD611P1** ②	IR2106		No	Dual/In Phase	No	No	8-Pin PDIP	X500
➤ **IXD611P7** ②	IR2106		No	Dual/In Phase	No	No	14-Pin PDIP	X520
➤ **IXD611S1** ②	IR2106S		No	Dual/In Phase	No	No	8-Pin SOP	X501
➤ **IXD611S7** ②	IR2106S		No	Dual/In Phase	No	No	14-Pin SOP	X521
➤ **IXE611P1** ③	IR2301		No	Dual/In Phase	No	No	8-Pin PDIP	X500
➤ **IXE611S1** ③	IR2301S		No	Dual/In Phase	No	No	8-Pin SOP	X501
➤ **IXF611P1** ③	IR2302		Yes (Low)	Single/High Side	Cross-Conduct	Fixed-540ns Typ	8-Pin PDIP	X500
➤ **IXF611S1** ③	IR2302S		Yes (Low)	Single/High Side	Cross-Conduct	Fixed-540ns Typ	8-Pin SOP	X501
➤ **IXG611P1** ②	IR2304		No	Dual/In Phase	Cross-Conduct	Fixed-100ns Typ	8-Pin PDIP	X500
➤ **IXG611S1** ②	IR2304S		No	Dual/In Phase	Cross-Conduct	Fixed-100ns Typ	8-Pin SOP	X501
➤ **IXH611P1** ②	IR2308		No	Dual/In Phase	Cross-Conduct	Fixed-540ns Typ	8-Pin PDIP	X500
➤ **IXH611S1** ②	IR2308S		No	Dual/In Phase	Cross-Conduct	Fixed-540ns Typ	8-Pin SOP	X501
➤ **IXJ611P1** ②	IR2101		No	Dual/In Phase	No	No	8-Pin PDIP	X500
➤ **IXJ611S1** ②	IR2101S		No	Dual/In Phase	No	No	8-Pin SOP	X501
➤ **IXK611P1** ②	IR2102		No	Dual/Out of Phase	No	No	8-Pin PDIP	X500
➤ **IXK611S1** ②	IR2102S		No	Dual/Out of Phase	No	No	8-Pin SOP	X501
➤ **IX2A11P1** ②	IR2184	2	Yes (Low)	Single/High Side	Cross-Conduct	Fixed-500ns Typ	8-Pin PDIP	X500
➤ **IX2A11S1** ②	IR2184S		Yes (Low)	Single/High Side	Cross-Conduct	Fixed-500ns Typ	8-Pin SOP	X501
➤ **IX2B11P7** ②	IR21844		Yes (Low)	Single/High Side	Cross-Conduct	Programmable	14-Pin PDIP	X520
➤ **IX2B11S7** ②	IR21844S		Yes (Low)	Single/High Side	Cross-Conduct	Programmable	14-Pin SOP	X521
➤ **IX2C11P1** ②	IR2181		No	Dual/In Phase	No	No	8-Pin PDIP	X500
➤ **IX2C11S1** ②	IR2181S		No	Dual/In Phase	No	No	8-Pin SOP	X501
➤ **IX2D11P7** ②	IR21814		No	Dual/In Phase	No	No	14-Pin PDIP	X520
➤ **IX2D11S7** ②	IR21814S		No	Dual/In Phase	No	No	14-Pin SOP	X521
IX2R11P7 ②	IR2113		Yes (High)	Dual/In Phase	No	No	14-Pin PDIP	X520
IX2R11S3 ②	IR2113S		Yes (High)	Dual/In Phase	No	No	16-Pin SOP	X531
IX4R11P7 ②	IR2113	4	Yes (High)	Dual/In Phase	No	No	14-Pin PDIP	X520
IX4R11S3 ②	IR2113S		Yes (High)	Dual/In Phase	No	No	16-Pin SOP	X531
IX6R11P7 ②	IR2113	6	Yes (High)	Dual/In Phase	No	No	14-Pin PDIP	X520
IX6R11S3 ②	IR2113S		Yes (High)	Dual/In Phase	No	No	16-Pin SOP	X531
IX6R11S6 ②	IR2113S		Yes (High)	Dual/In Phase	No	No	18-Pin SOIC-CT	X542
➤ **IX6S11S6** ②	None		No	Dual/In Phase	No	No	18-Pin SOIC-CT	X542

② UVLO Level for MOSFETs
③ UVLO Level for Logic
Note 1. SOIC packages with suffix letter 'CT' have a grounded base solder tab.

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3 phase Driver

Part Number ➤ New	Closet IR Cross	I_{PK} T_C=25°C A	UVLO Level IGBT, MOSFET LOGIC	Shutdown	Inputs / Keying	Protection Features	Deadtime	Package	Fig. No.
➤ **IXA531L4** ①	IR21363J	0.6	IGBT	No	Six/ Out of Phase	Cross-, Conduct OCP (Prog. Reset)	No	44-Pin PLCC	X585
➤ **IXA531S10** ①	IR21363J	0.6	IGBT	No	Six/ Out of Phase	Cross- Conduct OCP (Prog. Reset)	No	48-Pin SSLGA	X595

① UVLO Level for IGBTs

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