1200V XPT™ IGBT Summary Table

Part Number	V_{CES} (V)	I_{C25} T_C=25°C (A)	I_{C110} T_C=110°C (A)	$V_{CE(sat)}$ max T_J=25°C (V)	t_{fi} typ T_J=125°C (ns)	E_{off} typ T_J=125°C (mJ)	R_{thJC} max IGBT (°C/W)	Configuration	Package Style
IXYJ20N120C3D1	1200	16	7	4	105(T_J =150 °C)	0.7(T_J =150 °C)	1.78	Copacked (FRED)	ISO TO-247
IXYH20N120C3D1	1200	36	17	4	105(T_J =150 °C)	0.7(T_J =150 °C)	0.54	Copacked (FRED)	TO-247
IXYH20N120C3	1200	40	20	4	105(T_J =150 °C)	0.7(T_J =150 °C)	0.54	Single	TO-247
IXYP20N120C3	1200	40	20	4	105(T_J =150 °C)	0.7(T_J =150 °C)	0.54	Single	TO-220
IXYH30N120C3	1200	66	30	4	88	0.9	0.3	Single	TO-247
IXYH30N120C3D1	1200	66	30	4	88	0.9	0.3	Copacked (FRED)	TO-247
IXYP30N120C3	1200	66	30	4	88	0.9	0.3	Single	TO-220
IXYR50N120C3D1	1200	56	32 (T_C=90°C)	4	60(T_J=150 °C)	1.4 (T_J=150 °C)	0.43	Copacked (FRED)	ISOPLUS247
IXYH40N120B3	1200	96	40	2.9	206	2.05	0.26	Single	TO-247
IXYH40N120B3D1	1200	86	40	2.9	206	2.05	0.26	Copacked (FRED)	TO-247
IXYH40N120C3	1200	70	40	4	38	0.7	0.26	Single	TO-247
IXYH40N120C3D1	1200	64	40	4	38	0.7	0.26	Copacked (FRED)	TO-247
IXYN82N120C3	1200	105	46	3.2	95	3.7	0.25	Single	SOT-227B
IXYN82N120C3H1	1200	105	46	3.2	95	3.7	0.25	Copacked (FRED)	SOT-227B
IXYH50N120C3	1200	100	50	3.5	60(T_J=150 °C)	1.4	0.2	Single	TO-247
IXYH50N120C3D1	1200	90	50	4	60(T_J=150 °C)	1.4 (T_J=150 °C)	0.2	Copacked (FRED)	TO-247
IXYR100N120C3	1200	104	58	3.5	125	3.55	0.32	Single	ISOPLUS247
IXYN100N120C3H1	1200	134	62	3.5	125	3.55	0.18	Copacked (FRED)	SOT-227B
IXYB82N120C3H1	1200	160	82	3.2	95	3.7	0.12	Copacked (FRED)	PLUS264
IXYH82N120C3	1200	160	82	3.2	95	3.7	0.12	Single	TO-247
IXYN100N120C3	1200	152	86	3.5	125	3.55	0.18	Single	SOT-227B
IXYK100N120C3	1200	188	100	3.5	125	3.55	0.13	Single	TO-264
IXYX100N120C3	1200	188	100	3.5	125	3.55	0.13	Single	PLUS247
IXYK120N120C3	1200	220	120	3.5	120(T_J=150 °C)	5.3 (T_J=150 °C)	0.1	Single	TO-264
IXYX120N120C3	1200	220	120	3.5	120(T_J=150 °C)	5.3 (T_J=150 °C)	0.1	Single	PLUS247

Application Circuits

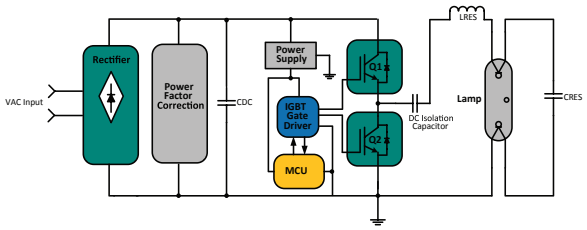

Figure 1: Electronic Lamp Ballast

Figure 1 illustrates a simplified electronic lamp ballast circuit. It consists of a primary rectifier, power factor correction circuit, control unit (Power supply, MCU, and IGBT Gate Driver), half-bridge inverter and resonant output stage. Two IXYH50N120C3D1 XPT™ IGBTs (Q1 & Q2) are paired to form the half-bridge power inverter stage used to facilitate the ignition and sustain the nominal running AC voltage across the resonant output stage of the lamp.

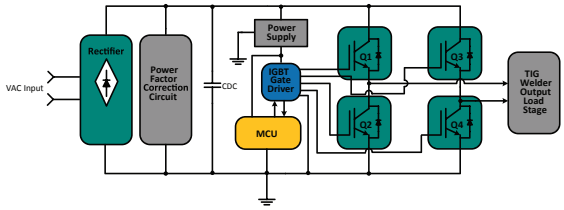

Figure 2: TIG Welding Inverter

Figure 2 shows a general circuit diagram of a high-current TIG welding inverter. This topology is comprised of a rectification stage, power factor correction (PFC) stage, control stage (Power supply, MCU, and IGBT Gate Driver), and power-inverter stage. An AC input (185VAC-265VAC) from the power grid is applied to the rectification stage to be converted into a DC value. This DC value then goes through the PFC circuit where its distorted current is reshaped into a waveform in phase with the input voltage. The DC output of the PFC circuit next enters the power-inverter stage, which is a full-bridge inverter and made up of four IXYB82N120C3H1 XPT™ IGBTs (Q1, Q2, Q3, Q4), to be converted back to an AC voltage that has a higher frequency (typically ranging from 30kHz to 50kHz). This AC voltage signal is applied to the output stage of the TIG welder.

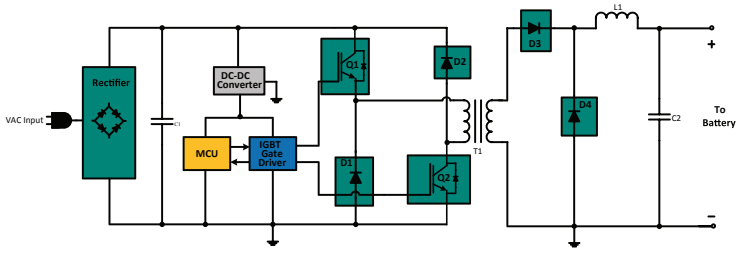

Figure 3: Battery Charger Circuit

Figure 3 illustrates a battery charger circuit that utilizes a half-bridge asymmetrical forward converter topology. Commonly implemented on the primary side of 220VAC offline switch-mode power supplies, it consists of a primary rectifier, a control unit (DC-DC converter, MCU, IGBT Gate Driver), and a half-bridge asymmetrical forward converter. Two XPT™ IGBT devices, IXYH40N120B3D1 (Q1 & Q2), form the forward converter stage of the circuit, providing a reliable and energy-efficient power conversion.