

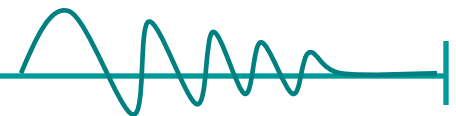


650V XPT™ Trench IGBTs

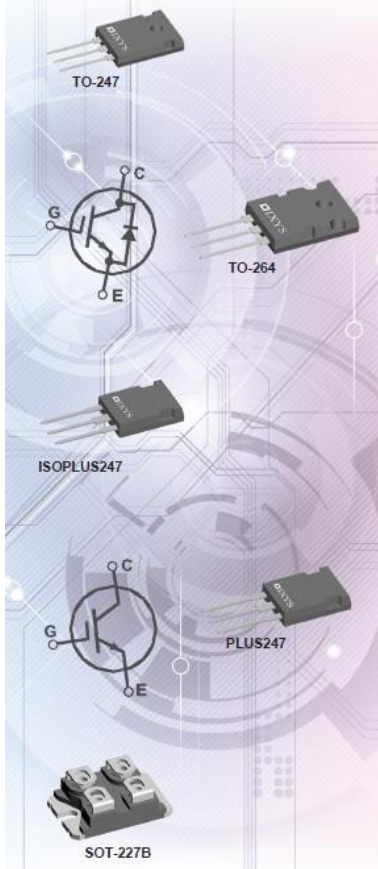
Highly Efficient Low On-State Voltage IGBTs

IXYS Corporation

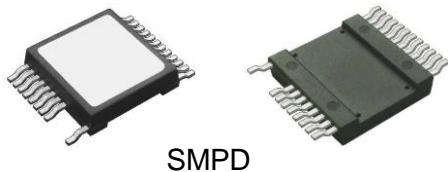
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Product Line Introduction (650V XPT™ Trench IGBTs)



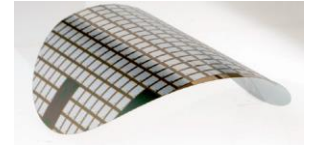
- Broadest discrete IGBTs portfolio at 650V (19 parts so far)
- From 30A to 200A current ratings at high temperature $T_C = 110^\circ\text{C}$
- Developed using IXYS' eXtreme-light Punch-Through (XPT™) thin-wafer technology and state-of-the-art Trench IGBT process
- Designed for high-efficiency power conversion applications
- Low on-state voltages
- Short circuit capability (10 μs)
- Low gate drive requirements
- Available in international standard packages (TO-247, TO-264, SOT-227B, PLUS247, ISOPLUS247™)
- Also available (upon request) in surface-mountable ultra-low profile SMPD and Mini-SMPD packages



SMPD

Technology Advantages

XPT™ Design Platform and GenX4™ Trench IGBT Process



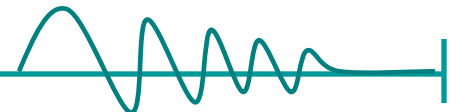
- Thin wafer technology
- Reduced thermal resistance (R_{thJC})
- Low energy losses
- Fast switching
- Low tail current
- Higher current densities
- Positive temperature coefficient of $V_{CE(sat)}$

Exceptional Ruggedness

- **Reverse Bias Safe Operating Area (RBSOA)**
 - “Square” up to the breakdown voltage of 650V
 - Able to operate without snubbers in hard-switching applications
- **Short Circuit Safe Operating Area (SCSOA)**
 - 10 μ s at a high temperature of 150°C
 - Ideal for motor drive applications

Ultra-Fast Anti-Parallel Sonic-FRD™ Diode

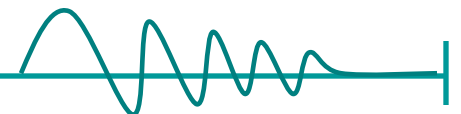
- Temperature stability of diode forward voltage V_F
- Optimized to reduce turn-off losses and suppress ringing oscillations
- Low electromagnetic interference (EMI)
- Short reverse recovery times (t_{rr})



650V XPT™ Trench IGBTs Summary Table

The largest selection of 650V IGBTs available in the industry!

Part Number	V_{CES} (V)	I_{C25} $T_c=25^\circ\text{C}$ (A)	I_{C110} $T_c=110^\circ\text{C}$ (A)	$V_{CE(sat)}$ max $T_j=25^\circ\text{C}$ (V)	t_n typ $T_j=150^\circ\text{C}$ (ns)	E_{off} typ $T_j=150^\circ\text{C}$ (mJ)	$R_{th(jc)}$ max IGBT ($^\circ\text{C}/\text{W}$)	Configuration	Package Style
IXXH30N65B4	650	65	30	2	100	0.6	0.65	Single	TO-247
IXXH60N65B4H1	650	116	60	2	94	1.34	0.33	Copacked (Sonic-FRD™)	TO-247
IXXH60N65B4	650	116	60	2	94	1.34	0.33	Single	TO-247
IXXH60N65C4	650	118	60	2.2	47	0.93	0.33	Single	TO-247
IXXH40N65B4	650	120	40	1.8	73	0.78	0.33	Single	TO-247
IXXR110N65B4H1	650	150	70	2.15	105	1.4	0.33	Copacked (Sonic-FRD™)	ISOPLUS247™
IXXH80N65B4	650	160	80	2	65	1.65	0.24	Single	TO-247
IXXH80N65B4H1	650	160	80	2	65	1.65	0.24	Copacked (Sonic-FRD™)	TO-247
IXXN110N65C4H1	650	210	110	2.35	43	0.77	0.2	Copacked (Sonic-FRD™)	SOT-227B
IXXN110N65B4H1	650	215	110	2.1	105	1.4	0.2	Copacked (Sonic-FRD™)	SOT-227B
IXXH110N65C4	650	234	110	2.35	43	0.77	0.17	Single	TO-247
IXXK110N65B4H1	650	240	110	2.1	105	1.4	0.17	Copacked (Sonic-FRD™)	TO-264
IXXX110N65B4H1	650	240	110	2.1	105	1.4	0.17	Copacked (Sonic-FRD™)	PLUS247
IXXK160N65C4	650	290	160	2.1	57	1.3	0.16	Single	TO-264
IXXX160N65C4	650	290	160	2.1	57	1.3	0.16	Single	PLUS247
IXXK160N65B4	650	310	160	1.8	160	2.36	0.16	Single	TO-264
IXXX160N65B4	650	310	160	1.8	160	2.36	0.16	Single	PLUS247
IXXK200N65B4	650	370	200	1.7	110	2.54	0.13	Single	TO-264
IXXX200N65B4	650	370	200	1.7	110	2.54	0.13	Single	PLUS247

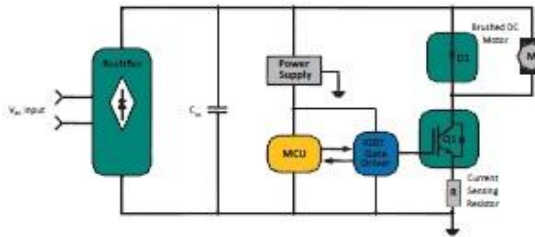


Applications

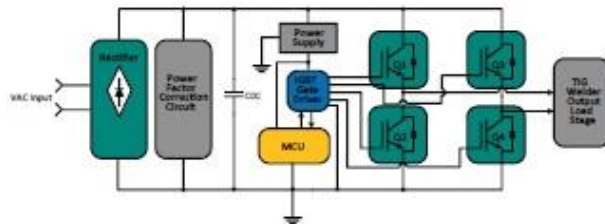
Targeted for high-efficiency power conversion applications
(hard or soft switching – up to 60kHz)



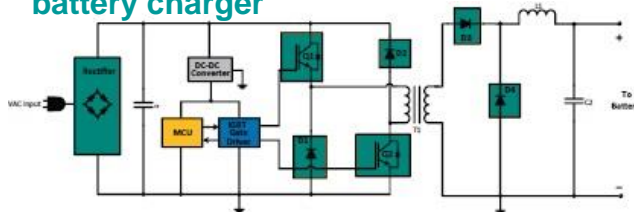
brushed DC motor drive



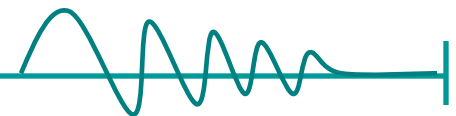
TIG welding inverter



battery charger



- battery chargers
- e-bikes
- lamp ballasts
- motor drives
- power inverters
- power factor correction (PFC) circuits
- switch-mode power supplies
- uninterruptible power supplies (UPS)
- welding machines



Trade-Off Curve

Superior trade-off (turn-off energy loss vs. on-state voltage)

