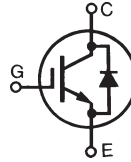
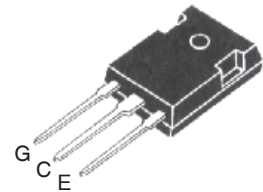


**HiPerFAST™ IGBT  
B2-Class High Speed IGBT**
**IXGH 16N60B2D1**

$$\begin{aligned}
 V_{CES} &= 600 \text{ V} \\
 I_{C25} &= 40 \text{ A} \\
 V_{CE(sat)} &= 2.0 \text{ V} \\
 t_{fi(typ)} &= 80 \text{ ns}
 \end{aligned}$$



Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	600	V
$V_{CGR}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	600	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	40	A
$I_{C110}$	$T_C = 110^\circ\text{C}$	16	A
$I_{F110}$	$T_C = 110^\circ\text{C}$ (IXG_16N60B2D1 diode)	11	A
$I_{CM}$	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	100	A
<b>SSOA (RBSOA)</b>	$V_{GE} = 15 \text{ V}, T_J = 125^\circ\text{C}, R_G = 22 \Omega$ Clamped inductive load	$I_{CM} = 32$ @ $0.8 V_{CES}$	A
$P_C$	$T_C = 25^\circ\text{C}$	150	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +150	$^\circ\text{C}$
$M_d$	Mounting torque	1.13/10 Nm/lb.in.	
	Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
<b>Weight</b>		6	g

**TO-247 (IXGH)**


G = Gate      C = Collector  
E = Emitter    TAB = Collector

**Features**

- International standard packages
- IGBT and anti-parallel FRED for resonant power supplies
  - Induction heating
  - Rice cookers
- MOS Gate turn-on
  - drive simplicity
- Fast Recovery Expitaxial Diode (FRED)
  - soft recovery with low  $I_{RM}$

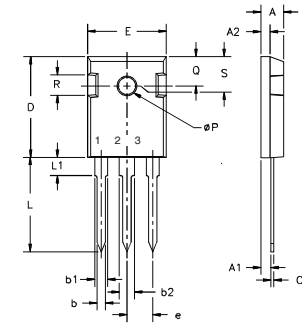
**Advantages**

- Saves space (two devices in one package)
- Easy to mount with 1 screw
- Reduces assembly time and cost

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{GE(th)}$	$I_C = 250 \mu\text{A}, V_{CE} = V_{GE}$	2.5		5.0 V
$I_{CES}$	$V_{CE} = V_{CES}$ $V_{GE} = 0 \text{ V}$ $T_J = 125^\circ\text{C}$			50 $\mu\text{A}$ 1 mA
$I_{GES}$	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = 12 \text{ A}, V_{GE} = 15 \text{ V}$ Note 2 $T_J = 125^\circ\text{C}$		1.8	2.3 V V

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$g_{fs}$	$I_C = 12\text{A}; V_{CE} = 10\text{V}$ , Note 2.	8	12	S
$C_{ies}$	$V_{CE} = 25\text{V}, V_{GE} = 0\text{V}, f = 1\text{MHz}$		780	pF
$C_{oes}$			65	pF
$C_{res}$			19	pF
$Q_g$	$I_C = 20\text{A}, V_{GE} = 15\text{V}, V_{CE} = 0.5 V_{CES}$		32	nC
$Q_{ge}$			6	nC
$Q_{gc}$			10	nC
$t_{d(on)}$			25	ns
$t_{ri}$	<b>Inductive load, <math>T_J = 25^\circ\text{C}</math></b>		15	ns
$t_{d(off)}$	$I_C = 12\text{A}; V_{GE} = 15\text{V}$		70	150 ns
$t_{fi}$	$V_{CE} = 400\text{V}; R_G = R_{off} = 22\ \Omega$ Note 1.		80	150 ns
$E_{off}$			150	260 $\mu\text{J}$
$t_{d(on)}$			25	ns
$t_{ri}$	<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b>		18	ns
$E_{on}$	$I_C = 12\text{A}; V_{GE} = 15\text{V}$		700	$\mu\text{J}$
$t_{d(off)}$	$V_{CE} = 400\text{V}; R_G = R_{off} = 22\ \Omega$		110	ns
$t_{fi}$	Note 1		170	ns
$E_{off}$			350	$\mu\text{J}$
$R_{thJC}$				0.83 K/W
$R_{thCK}$			0.25	K/W

### TO-247 Outline



Terminals: 1 - Gate    2 - Drain  
3 - Source            Tab - Drain

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A <sub>1</sub>	2.2	2.54	.087	.102
A <sub>2</sub>	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b <sub>1</sub>	1.65	2.13	.065	.084
b <sub>2</sub>	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
∅P	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15	BSC	242	BSC

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_F$	$I_F = 10\text{A}, V_{GE} = 0\text{V}$ $T_J = 125^\circ\text{C}$			2.66 V 1.66 V
$I_{RM}$	$I_F = 12\text{A}; -di_F/dt = 100\text{A}/\mu\text{s}, V_R = 100\text{V}$		2.5	A
$t_{rr}$	$V_{GE} = 0\text{V}; T_J = 125^\circ\text{C}$		110	ns
$t_{rr}$	$I_F = 1\text{A}; -di_F/dt = 100\text{A}/\mu\text{s}; V_R = 30\text{V}, V_{GE} = 0\text{V}$		30	ns
$R_{thJC}$				2.5 K/W

- Notes:
- Switching times may increase for  $V_{CE}(\text{Clamp}) > 0.8 \cdot V_{CES}$ , higher  $T_J$  or increased  $R_G$ .
  - Pulse test,  $t < 300\ \mu\text{s}$ , duty cycle  $d < 2\%$

IXYS reserves the right to change limits, test conditions, and dimensions.