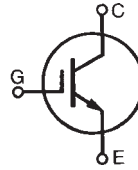


# GenX3™ 300V IGBT IXGH60N30C3

## High Speed IGBTs for 50-150kHz switching



$$V_{CES} = 300V$$

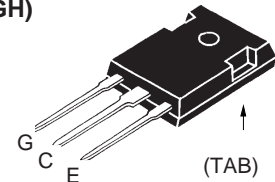
$$I_{C110} = 60A$$

$$V_{CE(sat)} \leq 1.8V$$

$$t_{fi \text{ typ}} = 70ns$$

Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ C$ to $150^\circ C$	300	V
$V_{CGR}$	$T_J = 25^\circ C$ to $150^\circ C$ , $R_{GE} = 1M\Omega$	300	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ C$ (Limited by leads)	75	A
$I_{C110}$	$T_C = 110^\circ C$ (chip capability)	60	A
$I_{CM}$	$T_C = 25^\circ C$ , 1ms	420	A
$I_A$	$T_C = 25^\circ C$	60	A
$E_{AS}$	$T_C = 25^\circ C$	400	mJ
<b>SSOA</b> <b>(RBSOA)</b>	$V_{GE} = 15V$ , $T_{VJ} = 125^\circ C$ , $R_G = 5\Omega$ Clamped inductive load @ $\leq 300V$	$I_{CM} = 170$	A
$P_C$	$T_C = 25^\circ C$	300	W
$T_J$		-55 ... +150	$^\circ C$
$T_{JM}$		150	$^\circ C$
$T_{stg}$		-55 ... +150	$^\circ C$
$T_L$	Maximum lead temperature for soldering	300	$^\circ C$
$T_{SOLD}$	1.6 mm (0.062 in.) from case for 10s	260	$^\circ C$
$M_d$	Mounting torque (TO-247)	1.13/10	Nm/lb.in.
<b>Weight</b>		6	g

TO-247 AD  
(IXGH)



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

### Features

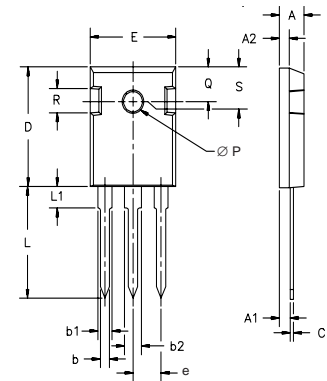
- High Frequency IGBT
- Square RBSOA
- High avalanche capability
- Drive simplicity with MOS Gate Turn-On
- High current handling capability

### Applications

- PFC Circuits
- PDP Systems
- Switched-mode and resonant-mode converters and inverters
- SMPS
- AC motor speed control
- DC servo and robot drives
- DC choppers

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ C$ , unless otherwise specified)		
		Min.	Typ.	Max.
$BV_{CES}$	$I_C = 250\mu A$ , $V_{GE} = 0V$	300		V
$V_{GE(th)}$	$I_C = 250\mu A$ , $V_{CE} = V_{GE}$	2.5		V
$I_{CES}$	$V_{CE} = V_{CES}$ $V_{GE} = 0V$ $T_J = 125^\circ C$			30 $\mu A$ 750 $\mu A$
$I_{GES}$	$V_{CE} = 0V$ , $V_{GE} = \pm 20V$			$\pm 100$ nA
$V_{CE(sat)}$	$I_C = 60A$ , $V_{GE} = 15V$ $T_J = 125^\circ C$	1.55 1.60	1.8	V V

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$g_{fs}$	$I_C = 0.5 \cdot I_{C110}$ , $V_{CE} = 10\text{V}$ Pulse test, $t \leq 300\mu\text{s}$ ; duty cycle, $d \leq 2\%$ .	28	46	S
$C_{ies}$	$V_{CE} = 25\text{V}$ , $V_{GE} = 0\text{V}$ , $f = 1\text{MHz}$		3800	pF
$C_{oes}$			240	pF
$C_{res}$			63	pF
$Q_g$	$I_C = I_{C110}$ , $V_{GE} = 15\text{V}$ , $V_{CE} = 0.5 \cdot V_{CES}$		101	nC
$Q_{ge}$			21	nC
$Q_{gc}$			37	nC
$t_{d(on)}$	<b>Inductive Load, <math>T_J = 25^\circ\text{C}</math></b> $I_C = 0.5 \cdot I_{C110}$ , $V_{GE} = 15\text{V}$ $V_{CE} = 200\text{V}$ , $R_G = 5\Omega$		23	ns
$t_{ri}$			28	ns
$E_{on}$			0.15	mJ
$t_{d(off)}$			108	160 ns
$t_{fi}$			68	ns
$E_{off}$			0.30	0.55 mJ
$t_{d(on)}$	<b>Inductive Load, <math>T_J = 125^\circ\text{C}</math></b> $I_C = 0.5 \cdot I_{C110}$ , $V_{GE} = 15\text{V}$ $V_{CE} = 200\text{V}$ , $R_G = 5\Omega$		22	ns
$t_{ri}$			28	ns
$E_{on}$			0.26	mJ
$t_{d(off)}$			120	ns
$t_{fi}$			101	ns
$E_{off}$			0.40	mJ
$R_{thJC}$			0.42	$^\circ\text{C/W}$
$R_{thCK}$		0.21		$^\circ\text{C/W}$

**TO-247 AD Outline**


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

**ADVANCE TECHNICAL INFORMATION**

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

4,835,592	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585	7,005,734 B2	7,157,338B2
4,850,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692	7,063,975 B2	
4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	6,771,478 B2	7,071,537	