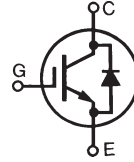


HiPerFAST™ IGBT IXGH15N120B2D1 IXGT15N120B2D1

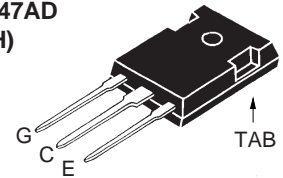
Optimized for 10-20 KHz hard switching and up to 100 KHz resonant switching



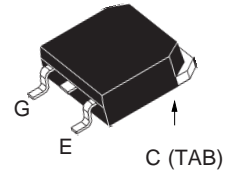
$$\begin{aligned} V_{CES} &= 1200 \text{ V} \\ I_{C25} &= 30 \text{ A} \\ V_{CE(sat)} &= 3.3 \text{ V} \\ t_{fi(typ)} &= 137 \text{ ns} \end{aligned}$$

Symbol	Test Conditions	Maximum Ratings
V_{CES}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1200 V
V_{CGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	1200 V
V_{GES}	Continuous	± 20 V
V_{GEM}	Transient	± 30 V
I_{C25}	$T_C = 25^\circ\text{C}$	30 A
I_{C90}	$T_C = 90^\circ\text{C}$	15 A
I_{CM}	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	60 A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 10 \Omega$ Clamped inductive load	$I_{CM} = 40$ @ $0.8 V_{CES}$ A
P_C	$T_C = 25^\circ\text{C}$	192 W
T_J		-55 ... +150 °C
T_{JM}		150 °C
T_{stg}		-55 ... +150 °C
M_d	Mounting torque (TO-247)	1.13/10 Nm/lb.in.
	Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s	300 °C
	Maximum tab temperature soldering SMD devices for 10s	260 °C
Weight	TO-247AD / TO-268	6 / 4 g

TO-247AD
(IXGH)



TO-268
(IXGT)



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

Features

- International standard packages: JEDEC TO-247AD & TO-268
- IGBT and anti-parallel FRED in one package
- MOS Gate turn-on
 - drive simplicity
- Fast Recovery Exipitaxial Diode (FRED)
 - soft recovery with low I_{RM}

Applications

- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

Advantages

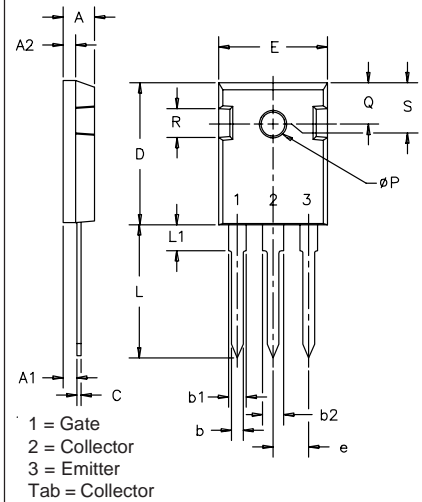
- Saves space (two devices in one package)
- Easy to mount with 1 screw (isolated mounting screw hole)
- Reduces assembly time and cost

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{CES}	$I_C = 250 \mu\text{A}, V_{GE} = 0 \text{ V}$	1200		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}, V_{CE} = V_{GE}$	2.5		V
I_{CES}	$V_{CE} = V_{CES}$ $V_{GE} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$		100 μA
		$T_J = 125^\circ\text{C}$		3.5 mA
I_{GES}	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			± 100 nA
$V_{CE(sat)}$	$I_C = I_{CE90}, V_{GE} = 15$			3.3 V
		$T_J = 125^\circ\text{C}$	2.7	V

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values			
		Min.	Typ.	Max.	
g_{fs}	$I_C = I_{C90}$; $V_{CE} = 10\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$	12	15	S	
C_{ies}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$		1700	pF	
C_{oes}			95	pF	
C_{res}			38	pF	
Q_g	$I_C = I_{C90}$, $V_{GE} = 15\text{ V}$, $V_{CE} = 0.5 V_{CES}$		86	nC	
Q_{ge}			13	nC	
Q_{gc}			26	nC	
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_{C90}$, $V_{GE} = 15\text{ V}$ $V_{CE} = 960\text{ V}$, $R_G = R_{off} = 10\ \Omega$ Remarks: Switching times may increase for V_{CE} (Clamp) $> 0.8 V_{CES}$, higher T_J or increased R_G		25	ns	
t_{ri}			15	ns	
$t_{d(off)}$			165	240	ns
t_{fi}			137	255	ns
E_{off}			1.4	2.3	mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = I_{C90}$, $V_{GE} = 15\text{ V}$ $V_{CE} = 960\text{ V}$, $R_G = R_{off} = 10\ \Omega$ Remarks: Switching times may increase for V_{CE} (Clamp) $> 0.8 V_{CES}$, higher T_J or increased R_G		25	ns	
t_{ri}			18	ns	
E_{on}			0.60	mJ	
$t_{d(off)}$			260	ns	
t_{fi}			305	ns	
E_{off}			2.8	mJ	
R_{thJC}		TO-247		0.25	0.65 K/W
R_{thCK}				K/W	

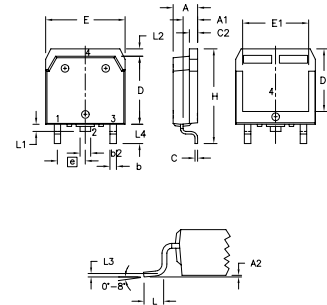
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
I_F	$T_C = 100^\circ\text{C}$			15 A
V_F	$I_F = 15\text{ A}$, $V_{GE} = 0\text{ V}$ $I_F = 15\text{ A}$, $V_{GE} = 0\text{ V}$, $T_J = 125^\circ\text{C}$		2.1	2.8 V
I_{RM}	$I_F = 25\text{ A}$; $-di_F/dt = 100\text{ A}/\mu\text{s}$, $V_R = 100\text{ V}$ $V_{GE} = 0\text{ V}$; $T_J = 100^\circ\text{C}$		6	A
t_{rr}			165	ns
R_{thJC}				1.6 K/W

TO-247 AD Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.185	.209	4.7	5.3
A ₁	.087	.102	2.2	2.54
A ₂	.059	.098	2.2	2.6
b	.040	.055	1.0	1.4
b ₁	.065	.084	1.65	2.13
b ₂	.113	.123	2.87	3.12
C	.016	.031	.4	.8
D	.819	.845	20.80	21.46
E	.610	.640	15.75	16.26
e	.215 BSC		5.45 BSC	
L	.780	.800	19.81	20.32
L ₁	.177	.177	4.50	4.50
ØP	.140	.144	3.55	3.65
Q	.212	.244	5.4	6.2
R	.170	.216	4.32	5.49
S	.242 BSC		6.15 BSC	

TO-268 Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.9	5.1	.193	.201
A ₁	2.7	2.9	.106	.114
A ₂	.02	.25	.001	.010
b	1.15	1.45	.045	.057
b ₂	1.9	2.1	.75	.83
C	.4	.65	.016	.026
D	13.80	14.00	.543	.551
E	15.85	16.05	.624	.632
E ₁	13.3	13.6	.524	.535
e	5.45 BSC		.215 BSC	
H	18.70	19.10	.736	.752
L	2.40	2.70	.094	.106
L ₁	1.20	1.40	.047	.055
L ₂	1.00	1.15	.039	.045
L ₃	0.25 BSC		.010 BSC	
L ₄	3.80	4.10	.150	.161

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

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

4,850,072	4,931,844	5,034,796	5,063,307	5,237,481	5,381,025	6,404,065B1	6,162,665	6,534,343	6,583,505
4,835,592	4,881,106	5,017,508	5,049,961	5,187,117	5,486,715	6,306,728B1	6,259,123B1	6,306,728B1	6,683,344