

## Excellent Integrated System Limited

Stocking Distributor

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[IXSH35N120B](#)

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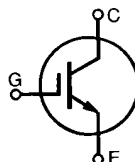
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# IGBT

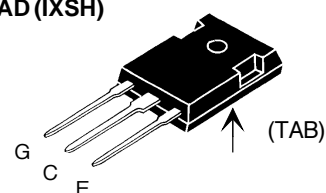
**IXSH 35N120B**
**IXST 35N120B**
 $I_{C25} = 70 \text{ A}$ 
 $V_{CES} = 1200 \text{ V}$ 
 $V_{CE(sat)} = 3.6 \text{ V}$ 

"S" Series - Improved SCSOA Capability

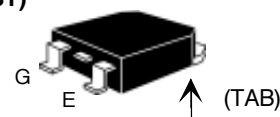


Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1200	V
$V_{CGR}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	1200	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	70	A
$I_{C90}$	$T_C = 90^\circ\text{C}$	35	A
$I_{CM}$	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	140	A
<b>SSOA (RBSOA)</b>	$V_{GE} = 15 \text{ V}, T_J = 125^\circ\text{C}, R_G = 5 \Omega$ Clamped inductive load	$I_{CM} = 90$ @ $0.8 V_{CES}$	A
$t_{sc}$	$T_J = 125^\circ\text{C}, V_{CE} = 720 \text{ V}; V_{GE} = 15 \text{ V}, R_G = 22 \Omega$	10	$\mu\text{s}$
$P_C$	$T_C = 25^\circ\text{C}$	300	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 (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	$^\circ\text{C}$
<b>Weight</b>	TO-247	6	g
	TO-268	4	g

TO-247 AD (IXSH)



TO-268 (IXST)


 G = Gate  
E = Emitter

 C = Collector  
TAB = Collector

## Features

- Epitaxial Silicon drift region
  - fast switching
  - small tail current
- MOS gate turn-on for drive simplicity

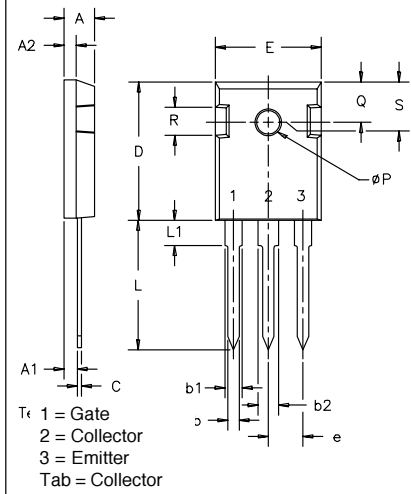
## Applications

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

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$BV_{CES}$	$I_C = 1.0 \text{ mA}, V_{GE} = 0 \text{ V}$	1200		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}, V_{CE} = V_{GE}$	3		6 V
$I_{CES}$	$V_{GE} = 0.8 V_{CES}$ Note 1			$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$ 50 $\mu\text{A}$ 2.5 mA
$I_{GES}$	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}, V_{GE} = 15 \text{ V}$ Note 2			$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$ 3.6 V 2.9 V

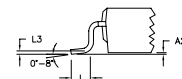
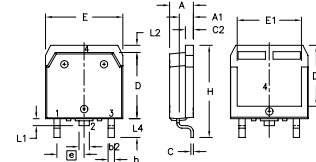
Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$g_{fs}$	$I_C = I_{C90}; V_{CE} = 10\text{ V}$ , Note 2	16	23	S
$C_{ies}$	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		3600	pF
$C_{oes}$		260	pF	
$C_{res}$		75	pF	
$Q_g$	$I_C = I_{C90}, V_{GE} = 15\text{ V}, V_{CE} = 0.5 V_{CES}$		120	nC
$Q_{ge}$		33	nC	
$Q_{gc}$		49	nC	
$t_{d(on)}$	<b>Inductive load, <math>T_J = 25^\circ\text{C}</math></b>		36	ns
$t_{ri}$	$I_C = I_{C90}, V_{GE} = 15\text{ V}$ $R_G = 5\ \Omega$		27	ns
$t_{d(off)}$	$V_{CE} = 0.8 V_{CES}$ Note 3		160	300 ns
$t_{fi}$		180	300 ns	
$E_{off}$			5	9 mJ
$t_{d(on)}$	<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b>		38	ns
$t_{ri}$	$I_C = I_{C90}, V_{GE} = 15\text{ V}$ $R_G = 5\ \Omega, V_{CE} = 0.8 V_{CES}$		29	ns
$E_{on}$	Note 3		2.5	mJ
$t_{d(off)}$		240	ns	
$t_{fi}$			340	ns
$E_{off}$			9	mJ
$R_{thJC}$				0.42 K/W
$R_{thCK}$	(TO-247)		0.25	K/W

**TO-247 AD Outline (IXSH)**



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.185	.209	4.7	5.3
A1	.087	.102	2.2	2.54
A2	.059	.098	2.2	2.6
b	.040	.055	1.0	1.4
b1	.065	.084	1.65	2.13
b2	.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
L1		.177		4.50
$\phi P$	.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 (IXST)**



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.9	5.1	.193	.201
A1	2.7	2.9	.106	.114
A2	.02	.25	.001	.010
b	1.15	1.45	.045	.057
b2	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
E1	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
L1	1.20	1.40	.047	.055
L2	1.00	1.15	.039	.045
L3	0.25 BSC		.010 BSC	
L4	3.80	4.10	.150	.161

- Notes: 1. Device must be heatsunk for high temperature leakage current measurements to avoid thermal runaway.
2. Pulse test,  $t \leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$
3. Switching times may increase for  $V_{CE}$  (Clamp)  $> 0.8 V_{CES}$ , higher  $T_J$  or increased  $R_G$ .

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