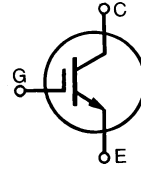


# IXSH15N120A

## IGBT

"S" Series - Improved SCSOA Capability



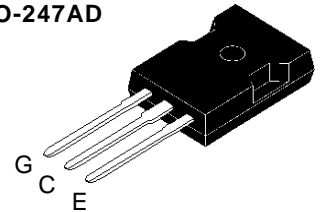
$$I_{C25} = 30 \text{ A}$$

$$V_{CES} = 1200 \text{ V}$$

$$V_{CE(sat)} = 4.0 \text{ V}$$

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
$I_{C25}$	$T_C = 25^\circ\text{C}$	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
<b>SSOA</b> <b>(RBSOA)</b>	$V_{GE} = 15 \text{ V}, T_J = 125^\circ\text{C}, R_G = 82 \Omega$ Clamped inductive load, $L = 100 \mu\text{H}$	$I_{CM} = 30$ @ $0.8 V_{CES}$	A
$t_{sc}$	$T_J = 125^\circ\text{C}, V_{CE} = 720 \text{ V}; V_{GE} = 15 \text{ V}, R_G = 82 \Omega$	5	$\mu\text{s}$
$P_C$	$T_C = 25^\circ\text{C}$	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	1.15/10	Nm/lb-in.
<b>Weight</b>		6	g
<b>Max. Lead Temperature for Soldering</b> (1.6mm from case for 10s)		300	$^\circ\text{C}$

TO-247AD



### Features

- 2<sup>nd</sup> generation HDMOS™ process  
Low  $V_{CE(sat)}$   
- for minimum on-state conduction losses
- MOS Gate turn-on  
- 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

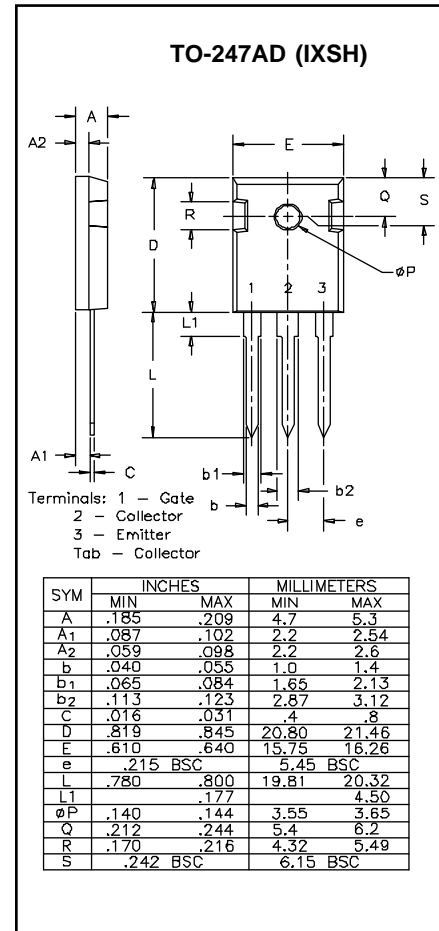
### Advantages

- Easy to mount (isolated mounting hole)
- Reduces assembly time and cost

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$BV_{CES}$	$I_C = 3.0 \text{ mA}, V_{GE} = 0 \text{ V}$	1200		V
$V_{GE(th)}$	$I_C = 1.5 \text{ mA}, V_{CE} = V_{GE}$	4		8 V
$I_{CES}$	$V_{CE} = 0.8 V_{CES}, V_{GE} = 0 \text{ V}$ Note 2			$200 \mu\text{A}$ 1 mA
$I_{GES}$	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}, V_{GE} = 15 \text{ V}$			4.0 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 $\leq 2\%$	6	7	S
$I_{C(on)}$	$V_{GE} = 15\text{ V}, V_{CE} = 10\text{ V}$		65	A
$C_{ies}$	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		1800	pF
$C_{oes}$			160	pF
$C_{res}$			45	pF
$Q_g$	$I_C = I_{C90}, V_{GE} = 15\text{ V}, V_{CE} = 0.5 V_{CES}$		75	nC
$Q_{ge}$			20	nC
$Q_{gc}$			35	nC
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$		100	ns
$t_{ri}$	$I_C = I_{C90}, V_{GE} = 15\text{ V}, L = 100\ \mu\text{H}$		200	ns
$t_{d(off)}$	$R_G = 82\ \Omega, V_{CLAMP} = 0.8 V_{CES}$		450	ns
$t_{fi}$	Note 1		600	ns
$E_{off}$			5.4	mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$		100	ns
$t_{ri}$	$I_C = I_{C90}, V_{GE} = 15\text{ V}, L = 100\ \mu\text{H}$		200	ns
$E_{(on)}$	$R_G = 82\ \Omega$		1.1	mJ
$t_{d(off)}$	$V_{CLAMP} = 0.8 V_{CES}$		650	ns
$t_{fi}$	Note 1		900	ns
$E_{off}$			14.5	mJ
$R_{thJC}$				0.83K/W
$R_{thCK}$		0.25		K/W

- Notes:
- 1.) Switching times may increase for  $V_{CE}$  (Clamp)  $> 0.8 V_{CES}$ , higher  $T_J$  or  $R_G$  values.
  - 2.) Device must be heatsunk for high temperature leakage current measurements to avoid thermal runaway.



Data contained herein reflects measurements and characterization data from engineering lots.  
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: 4,835,592 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715  
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025