

IXSH15N120A

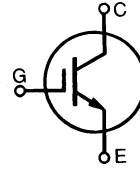
IGBT

"S" Series - Improved SCSOA Capability

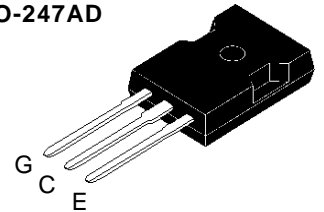
$$I_{C25} = 30 \text{ A}$$

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

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



TO-247AD



Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C}$ to 150°C	1200	V
V_{CGR}	$T_J = 25^\circ\text{C}$ to 150°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 ms	60	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}$, $T_J = 125^\circ\text{C}$, $R_G = 82 \Omega$ 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	μs
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.
Weight		6	g
Max. Lead Temperature for Soldering (1.6mm from case for 10s)		300	$^\circ\text{C}$

Features

- 2nd 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	$I_C = I_{C90}, V_{GE} = 15\text{ V}, V_{CE} = 0.5\text{ V}_{CES}$		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
$t_{d(off)}$	$R_G = 82\ \Omega, V_{CLAMP} = 0.8\text{ V}_{CES}$		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
$t_{d(off)}$	$V_{CLAMP} = 0.8\text{ V}_{CES}$		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) $> 0.8\text{ V}_{CES}$, higher T_J or R_G values.
 - 2.) Device must be heatsunk for high temperature leakage current measurements to avoid thermal runaway.

