THE DATASHEET OF

IXSH35N120B

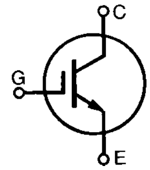
IXYS

IGBT

IXSH 35N120B
IXST 35N120B

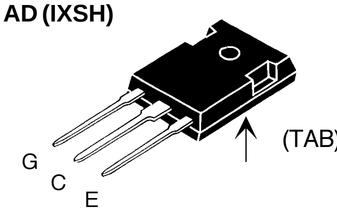
I_{C25} = 70 A
V_{CES} = 1200 V
$V_{CE(sat)}$ = 3.6 V

"S" Series - Improved SCSOA Capability

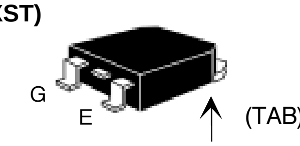


Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1200	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ	1200	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	70	A
I_{C90}	T_C = 90°C	35	A
I_{CM}	T_C = 25°C, 1 ms	140	A
SSOA (RBSOA)	V_{GE} = 15 V, T_J = 125°C, R_G = 5 Ω Clamped inductive load	I_{CM} = 90 @ 0.8 V_{CES}	A
t_{SC}	T_J = 125°C, V_{CE} = 720 V; V_{GE} = 15 V, R_G = 22 Ω	10	µs
P_C	T_C = 25°C	300	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
Weight	TO-247	6	g
	TO-268	4	g

TO-247 AD (IXSH)



TO-268 (IXST)



G = Gate C = Collector
E = Emitter 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°C, unless otherwise specified) min.	typ.	max.	
BV_{CES}	I_C = 1.0 mA, V_{GE} = 0 V		1200			V
$V_{GE(th)}$	I_C = 250 µA, V_{CE} = V_{GE}		3		6	V
I_{CES}	V_{CE} = 0.8 V_{CES}	T_J = 25°C			50	µA
	Note 1	T_J = 125°C			2.5	mA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V				±100	nA
$V_{CE(sat)}$	I_C = I_{C90}, V_{GE} = 15 V	T_J = 25°C			3.6	V
	Note 2	T_J = 125°C			2.9	V

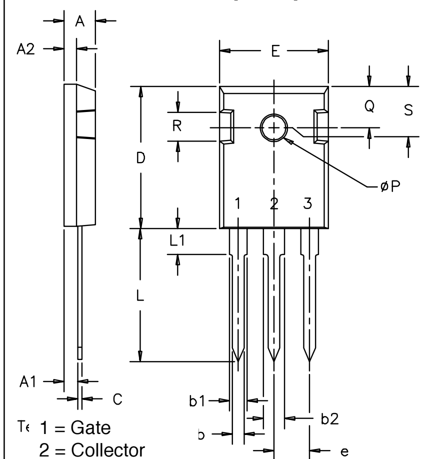
Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	$I_C = I_{C90}$; V_{CE} = 10 V, Note 2	16	23		S
C_{ies}			3600		pF
C_{oes}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		260		pF
C_{res}			75		pF
Q_g			120		nC
Q_{ge}	$I_C = I_{C90}$, V_{GE} = 15 V,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

Notes: 1. Device must be heatsunk for high temperature leakage current measurements to avoid thermal runaway.

2. Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %

3. Switching times may increase for V_{CE} (Clamp) > 0.8 V_{CES}, higher T_J or increased R_G.

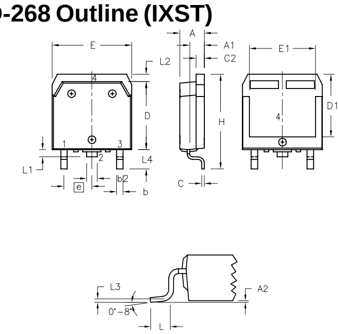
TO-247 AD Outline (IXSH)



1 = Gate
2 = Collector
3 = Emitter
Tab = Collector

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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
L1		.177		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 (IXST)



Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches 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
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

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