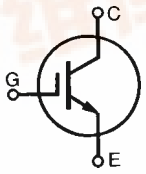
IXYS

IGBT

IXSH 35N120B
IXST 35N120B

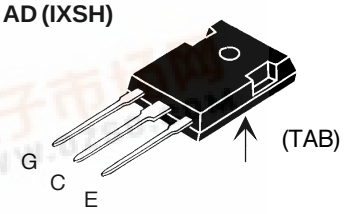
I_{C25} = 70 A
V_{CES} = 1200 V
$V_{CE(sat)}$ = 3.6 V

"S" Series - Improved SCSOA Capability

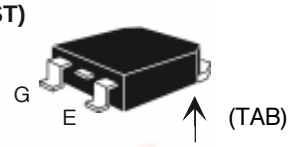


Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1200	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ	1200	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	70	A
I_{C90}	T_C = 90°C	35	A
I_{CM}	T_C = 25°C, 1 ms	140	A
SSOA (RBSOA)	V_{GE} = 15 V, T_J = 125°C, R_G = 5 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 TO-268	6 4	g 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} Note 1	T_J = 25°C T_J = 125°C			50 2.5	µA mA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V				±100	nA
$V_{CE(sat)}$	I_C = I_{C90}, V_{GE} = 15 V Note 2	T_J = 25°C T_J = 125°C			3.6 2.9	V V

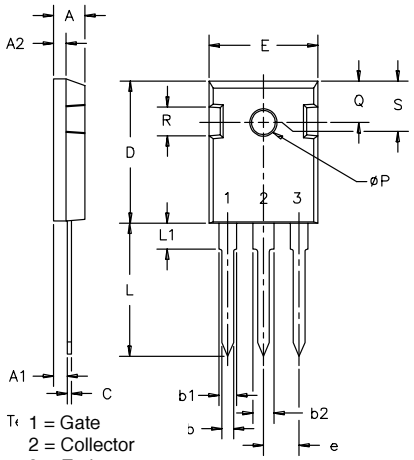
Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	$I_C = I_{C90}$; V_{CE} = 10 V, Note 2	16	23		S
C_{ies}			3600		pF
C_{oes}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		260		pF
C_{res}			75		pF
Q_g			120		nC
Q_{ge}	$I_C = I_{C90}$, V_{GE} = 15 V, 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} Note 3		180	300	ns
E_{off}			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} 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

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.

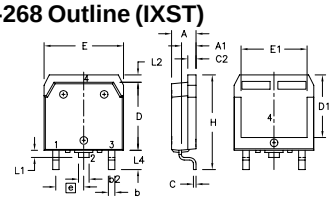
TO-247 AD Outline (IXSH)

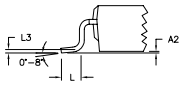


Terminals: 1 = Gate
2 = Collector
3 = Emitter
Tab = Collector

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