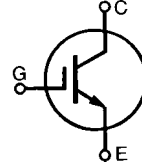


High Voltage, High speed IGBT

Short Circuit SOA Capability

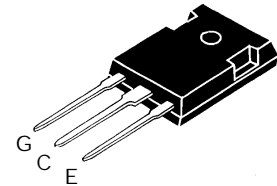
IXSH 35N140A
IXSH 35N135A

V_{CES}	I_{C25}	$V_{CE(sat)}$
1400 V	70 A	4 V
1350 V	70 A	4 V



Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C}$ to 150°C	35N140A 1400	V
		35N135A 1350	V
V_{GGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GE} = 1\text{ M}\Omega$	35N140A 1400	V
		35N135A 1350	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 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 ms	140	A
SSOA (RBSOA)	$V_{GE} = 15\text{ V}$, $T_J = 125^\circ\text{C}$, $R_G = 22\ \Omega$ Clamped inductive load, $L = 30\ \mu\text{H}$	$I_{CM} = 70$ @ 960	A V
t_{SC} (SCSOA)	$V_{GE} = 15\text{ V}$, $V_{CE} = 840\text{ V}$, $T_J = 125^\circ\text{C}$ $R_G = 22\ \Omega$, non repetitive	10	μs
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	1.13/10	Nm/lb.in.
Weight		6	g
	Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$

TO-247 AD



G = Gate, C = Collector,
E = Emitter, TAB = Collector

Features

- International standard package JEDEC TO-247
- High frequency IGBT with guaranteed Short Circuit SOA capability
- Fast Fall Time for switching speeds up to 20 kHz
- 2nd generation HD MOS™ 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 drive
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies
- Welding

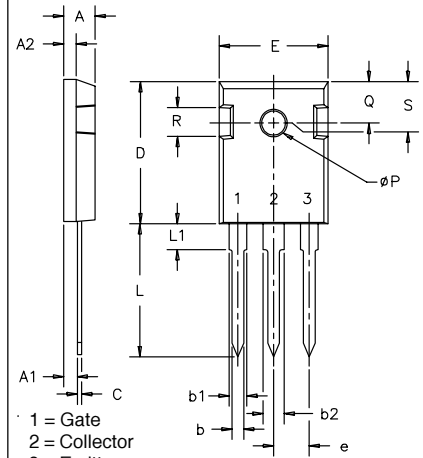
Advantages

- Easy to mount with 1 screw (isolated mounting screw hole)
- High power density

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
BV_{CES}	$I_C = 3\text{ mA}$, $V_{GE} = 0\text{ V}$	35N140A 1400 35N135A 1350		V
$V_{GE(th)}$	$I_C = 4\text{ mA}$, $V_{CE} = V_{GE}$	4		8 V
I_{CES}	$V_{CE} = 0.8 V_{CES}$ $V_{GE} = 0\text{ V}$	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$		400 mA 2 mA
I_{GES}	$V_{CE} = 0\text{ V}$, $V_{GE} = \pm 20\text{ V}$			$\pm 100\text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}$, $V_{GE} = 15\text{ V}$	3.4	4	V

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)			
		min.	typ.	max.	
g_{fs}	$I_C = I_{C90}$; $V_{CE} = 10\text{ V}$, Pulse test, $t \leq 300\text{ ms}$, duty cycle $d \leq 2\%$		26	S	
$I_{C(on)}$	$V_{GE} = 15\text{ V}$, $V_{CE} = 10\text{ V}$		210	A	
C_{ies}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$		4150	pF	
C_{oes}			235	pF	
C_{res}			55	pF	
Q_g	$I_C = I_{C90}$, $V_{GE} = 15\text{ V}$, $V_{CE} = 0.5 V_{CES}$		165	nC	
Q_{ge}			45	nC	
Q_{gc}			75	nC	
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_{C90}$, $V_{GE} = 15\text{ V}$, $L = 100\ \mu\text{H}$ $V_{CE} = 960\text{ V}$, $R_G = 2.7\ \Omega$ Switching times may increase for V_{CE} (Clamp) $> 960\text{ V}$, higher T_J or increased R_G		40	ns	
t_{ri}			60	ns	
$t_{d(off)}$			200	400	ns
t_{fi}			400	750	ns
E_{off}			12	mJ	
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = I_{C90}$, $V_{GE} = 15\text{ V}$, $L = 100\ \mu\text{H}$ $V_{CE} = 960\text{ V}$, $R_G = 2.7\ \Omega$ Remarks: Switching times may increase for V_{CE} (Clamp) $> 960\text{ V}$, higher T_J or increased R_G		40	ns	
t_{ri}			65	ns	
E_{on}			4	mJ	
$t_{d(off)}$			200	ns	
t_{fi}			800	ns	
E_{off}			18	mJ	
R_{thJC}			0.42	K/W	
R_{thCK}		0.25		K/W	

TO-247 AD Outline



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
ϕP	.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	

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