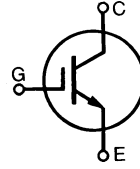


High Voltage, High speed IGBT

Short Circuit SOA Capability

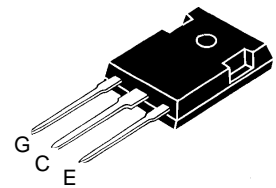
IXSH 35N140A
IXSH 35N135A

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 35N135A	1400 1350	V
V_{CGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GE} = 1\text{ M}\Omega$	35N140A 35N135A	1400 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



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 HDMOS™ process
- Low $V_{CE(sat)}$
 - for minimum on-state conduction losses
- MOS Gate turn-on
 - drive simplicity

Applications

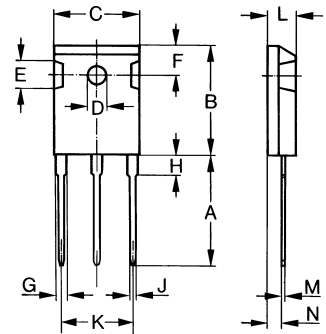
- AC motor speed control
- DC servo and robot drive
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies
- Welding

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 35N135A	1400 1350	V
$V_{GE(th)}$	$I_C = 4\text{ mA}$, $V_{CE} = V_{GE}$		5	8 V
I_{CES}	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0\text{ V}$	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$		400 μA 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, $t \leq 300\ \mu\text{s}$, 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 $V_{CE}(\text{Clamp}) > 960\text{ V}$, higher T_J or increased R_G		100	ns	
t_{ri}			150	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 $V_{CE}(\text{Clamp}) > 960\text{ V}$, higher T_J or increased R_G		100	ns	
t_{ri}			150	ns	
E_{on}			TBD		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 (IXSH) Outline


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209
M	0.4	0.8	0.016	0.031
N	1.5	2.49	0.087	0.102