

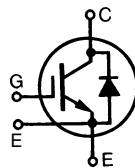
IGBT with Diode IXLN 35N120AU1

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

$$I_{C25} = 40 \text{ A}$$

$$V_{CE(sat)} = 3.5 \text{ V}$$

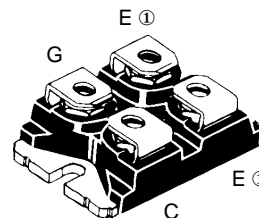
High Short Circuit SOA Capability



Preliminary data

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}	$T_C = 25^\circ\text{C}$	40	A
I_{C90}	$T_C = 90^\circ\text{C}$	24	A
I_{CM}	$T_C = 25^\circ\text{C}$, 1 ms	50	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}$, $T_{VJ} = 125^\circ\text{C}$, $R_G = 22 \Omega$ Clamped inductive load, $L = 30 \mu\text{H}$ @ $0.8 V_{CES}$	$I_{CM} = 50$	A
t_{SC} (SCSOA)	$V_{GE} = 15 \text{ V}$, $V_{CE} = 0.6 \cdot V_{CES}$, $T_J = 125^\circ\text{C}$ $R_G = 22 \Omega$, non repetitive	10	μs
P_C	$T_C = 25^\circ\text{C}$	230	W
V_{ISOL}	50/60 Hz $I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ min}$	2500 V~
		$t = 1 \text{ s}$	3000 V~
T_J		-40 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-40 ... +150	$^\circ\text{C}$
M_d	Mounting torque	1.5/13	Nm/lb.in.
	Terminal connection torque (M4)	1.5/13	Nm/lb.in.
Weight		30	g

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G = Gate, C = Collector, E = Emitter
 ① either emitter terminal can be used as Main or Kelvin Emitter

Features

- International standard package
- Isolation voltage 3000 V~
- 3rd generation HDMOS™ process
 - for high short circuit SOA
 - for reduced switching losses
- MOS Gate turn-on
 - drive simplicity
- Fast Recovery Epitaxial Diode (FRED)
 - short t_{rr} and low I_{RM}
- Low collector-to-case capacitance (< 50 pF)
 - reduced RFI
- Low package inductance (< 10 nH)
 - easy to drive and to protect

Applications

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

Advantages

- Space savings
- Easy to mount with 2 screws
- High power density

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
BV_{CES}	$I_C = 1 \text{ mA}$, $V_{GE} = 0 \text{ V}$	1200		V
$V_{GE(th)}$	$I_C = 1 \text{ mA}$, $V_{CE} = V_{GE}$	5		9 V
I_{CES}	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$		750 μA
		$T_J = 125^\circ\text{C}$		15 mA
I_{GES}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$			$\pm 500 \text{ nA}$
$V_{CE(sat)}$	$I_C = 25 \text{ A}$, $V_{GE} = 15 \text{ V}$	3.5	3.8	V

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

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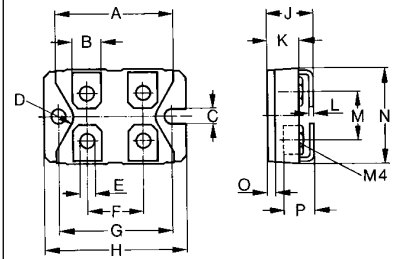
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Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
$I_{C(on)}$	$V_{GE} = 15\text{ V}, V_{CE} = 10\text{ V}$		150	A
C_{ies}	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		3	nF
C_{oes}			0.22	nF
C_{res}			0.03	nF
Q_g	$I_C = I_{C90}, V_{GE} = 15\text{ V}, V_{CE} = 0.5 V_{CES}$		tbd	nC
Q_{ge}			tbd	nC
Q_{gc}			tbd	nC
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = 25\text{ A}, V_{GE} = 15\text{ V},$ $V_{CE} = 600\text{ V}, R_{on} = 6.8\ \Omega, R_{off} = 22\ \Omega$ Remarks: Switching times may increase for V_{CE} (Clamp) > 600 V, higher T_J or increased R_G		65	ns
t_{rv}			80	ns
$t_{d(off)}$			200	ns
t_{fi}			200	ns
E_{on}			3	mJ
E_{off}			5.0	mJ
R_{thJC}				0.54 K/W
R_{thCK}		0.1		K/W

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_F	$I_F = 25\text{ A}, V_{GE} = 0\text{ V},$ Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$			2.3 V
I_{RM}	$I_F = 25\text{ A}, V_{GE} = 0\text{ V}, -di_F/dt = 240\text{ A}/\mu\text{s}$ $T_J = 100^\circ\text{C}, V_R = 540\text{ V}$		16	18 A
t_{rr}			150	ns
t_{rr}	$T_J = 25^\circ\text{C}, I_F = 1\text{ A}, V_R = 30\text{ V}, -di_F/dt = 200\text{ A}/\mu\text{s}$		40	60 ns
R_{thJC}				0.9 K/W

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M4 screws (4x) supplied

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.5	31.7	1.241	1.249
B	7.8	8.2	0.307	0.323
C	4.0	-	0.158	-
D	4.1	4.3	0.162	0.169
E	4.1	4.3	0.162	0.169
F	14.9	15.1	0.587	0.595
G	30.1	30.3	1.186	1.193
H	38.0	38.2	1.497	1.505
J	11.8	12.2	0.465	0.481
K	8.9	9.1	0.351	0.359
L	0.75	0.85	0.030	0.033
M	12.6	12.8	0.496	0.504
N	25.2	25.4	0.993	1.001
O	1.95	2.05	0.077	0.081
P	-	5.0	-	0.197