## Low $\mathrm{V}_{\mathrm{cE}(\text { sat) }}$ IGBT <br> High Speed IGBT

| Symbol | Test Conditions | Maximum Ratings |  |
| :---: | :---: | :---: | :---: |
| $\mathrm{V}_{\text {ces }}$ | $\mathrm{T}_{J}=25^{\circ} \mathrm{C}$ to $150^{\circ} \mathrm{C}$ | 1000 | V |
| $\mathrm{V}_{\text {cGR }}$ | $\mathrm{T}_{J}=25^{\circ} \mathrm{C}$ to $150^{\circ} \mathrm{C} ; \mathrm{R}_{\mathrm{GE}}=1 \mathrm{M} \Omega$ | 1000 | V |
| $\mathrm{V}_{\text {GES }}$ | Continuous | $\pm 20$ | V |
| $\mathrm{V}_{\text {GEm }}$ | Transient | $\pm 30$ | V |
| $\mathrm{I}_{\mathrm{c} 25}$ | $\mathrm{T}_{\mathrm{C}}=25^{\circ} \mathrm{C}$ | 24 | A |
| $\mathrm{I}_{\text {c90 }}$ | $\mathrm{T}_{\mathrm{C}}=90^{\circ} \mathrm{C}$ | 12 | A |
| $\mathrm{I}_{\mathrm{CM}}$ | $\mathrm{T}_{\mathrm{C}}=25^{\circ} \mathrm{C}, 1 \mathrm{~ms}$ | 48 | A |
| $\begin{aligned} & \hline \text { SSOA } \\ & \text { (RBSOA) } \end{aligned}$ | $\mathrm{V}_{\mathrm{GE}}=15 \mathrm{~V}, \mathrm{~T}_{\mathrm{VJ}}=125^{\circ} \mathrm{C}, \mathrm{R}_{\mathrm{G}}=150 \Omega$ <br> Clamped inductive load, $\mathrm{L}=300 \mu \mathrm{H}$ | $\begin{array}{r} \mathrm{I}_{\mathrm{CM}}=24 \\ @ 0.8 \mathrm{~V}_{\mathrm{CES}} \end{array}$ | A |
| $\mathrm{P}_{\mathrm{c}}$ | $\mathrm{T}_{\mathrm{c}}=25^{\circ} \mathrm{C}$ | 100 | W |
| TJ |  | $-55 \ldots+150$ | ${ }^{\circ} \mathrm{C}$ |
| $\mathrm{T}_{\text {JM }}$ |  | 150 | ${ }^{\circ} \mathrm{C}$ |
| $\mathrm{T}_{\text {stg }}$ |  | $-55 \ldots+150$ | ${ }^{\circ} \mathrm{C}$ |
| $\mathrm{M}_{\mathrm{d}}$ | Mounting torque (M3) | 1.13/10 | Nm/lb.in. |
| Weight |  | 6 | g |
| Maximum 1.6 mm (0. | d temperature for soldering 2 in.) from case for 10 s | 300 | ${ }^{\circ} \mathrm{C}$ |


| Symbol | Test Conditions | Characteristic Values ( $\mathrm{T}_{\mathrm{J}}=25^{\circ} \mathrm{C}$, unless otherwise specified) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Min. | Typ. | Max. |  |
| $B V_{\text {ces }}$ | $\mathrm{I}_{\mathrm{C}}=3 \mathrm{~mA}, \mathrm{~V}_{\mathrm{GE}}=0 \mathrm{~V}$ <br> $\mathrm{BV}_{\text {cEs }}$ temperature coefficient | t 1000 | 0.072 |  | $\begin{array}{r} \text { V } \\ \% / K \end{array}$ |
| $\mathrm{V}_{\text {GE(th) }}$ | $\mathrm{I}_{\mathrm{c}}=500 \mu \mathrm{~A}, \mathrm{~V}_{\mathrm{GE}}=\mathrm{V}_{\mathrm{GE}}$ <br> $\mathrm{V}_{\mathrm{GE}(\mathrm{h})}$ temperature coefficient | t 2.5 | -0.192 | 5.5 | $\begin{array}{r} V \\ \% / K \end{array}$ |
| $\mathrm{I}_{\text {ces }}$ | $\begin{aligned} & \mathrm{V}_{\mathrm{CE}}=0.8 \mathrm{~V}_{\mathrm{CES}} \\ & \mathrm{~V}_{\mathrm{GE}}=0 \mathrm{~V} \end{aligned}$ | $\begin{aligned} & \mathrm{T}_{J}=25^{\circ} \mathrm{C} \\ & \mathrm{~T}_{\mathrm{J}}=125^{\circ} \mathrm{C} \end{aligned}$ |  | 250 1 | $\begin{gathered} \mu \mathrm{A} \\ \mathrm{~mA} \end{gathered}$ |
| $\mathrm{I}_{\text {GES }}$ | $\mathrm{V}_{\text {CE }}=0 \mathrm{~V}, \mathrm{~V}_{\mathrm{GE}}= \pm 20 \mathrm{~V}$ |  |  | $\pm 100$ | nA |
| $\mathrm{V}_{\text {CE(sat) }}$ | $\mathrm{I}_{\mathrm{C}}=\mathrm{I}_{\mathrm{C90}}, \mathrm{~V}_{\mathrm{GE}}=15 \mathrm{~V}$ | $\begin{array}{r} \text { 12N100 } \\ \text { 12N100A } \end{array}$ |  | $\begin{aligned} & 3.5 \\ & 4.0 \end{aligned}$ | V |


| $\mathrm{V}_{\text {CES }}$ | $\mathrm{I}_{\text {C25 }}$ | $\mathrm{V}_{\text {CE(sat) }}$ |
| :---: | :---: | :---: |
| 1000 V | 24 A | 3.5 V |
| 1000 V | 24 A | 4.0 V |

TO-247AD


| $G=$ Gate | $C$ |
| :--- | :--- |
| $=$ Collector |  |
| $E=$ Emitter | $T A B=$ Collector |

## Features

- International standard package JEDEC TO-247 AD
- 2nd generation HDMOS ${ }^{\text {TM }}$ process
- Low $\mathrm{V}_{\text {CE(sat) }}$
- for low on-state conduction losses
- High current handling capability
- MOS Gate turn-on
drive simplicity
- Voltage rating guaranteed at high temperature $\left(125^{\circ} \mathrm{C}\right)$


## Applications

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


## Advantages

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

Symbol
Test Conditions


IXGH12N100/A characteristic curves may be found in the IXGH12N100U/AU1 data sheet.

TO-247 AD (IXGH) 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 |

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