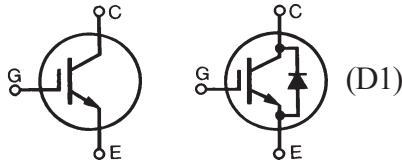


HiPerFAST™ IGBT

IXGK 35N120C
IXGX 35N120C
IXGK 35N120CD1
IXGX 35N120CD1

$$\begin{aligned}
 V_{CES} &= 1200 \text{ V} \\
 I_{C25} &= 70 \text{ A} \\
 V_{CE(sat)} &= 4.0 \text{ V} \\
 t_{fi(typ)} &= 115 \text{ ns}
 \end{aligned}$$



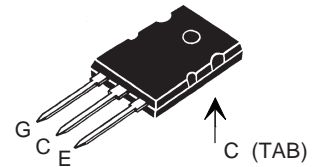
| Symbol | Test Conditions | Maximum Ratings | |
|---------------------|---|----------------------------------|------------------|
| V_{CES} | $T_J = 25^\circ\text{C to } 150^\circ\text{C}$ | 1200 | V |
| V_{CGR} | $T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$ | 1200 | V |
| V_{GES} | Continuous | ± 20 | V |
| V_{GEM} | Transient | ± 30 | V |
| I_{C25} | $T_C = 25^\circ\text{C}$ | 70 | A |
| I_{C90} | $T_C = 90^\circ\text{C}$ | 35 | A |
| I_{CM} | $T_C = 25^\circ\text{C}, 1 \text{ ms}$ | 140 | A |
| SSOA (RBSOA) | $V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 5 \Omega$ Clamped inductive load | $I_{CM} = 90$ @ $0.8 V_{CES}$ | A |
| P_C | $T_C = 25^\circ\text{C}$ | 350 | W |
| T_J | | -55 ... +150 | $^\circ\text{C}$ |
| T_{JM} | | 150 | $^\circ\text{C}$ |
| T_{stg} | | -55 ... +150 | $^\circ\text{C}$ |

Maximum Lead temperature for soldering
1.6 mm (0.062 in.) from case for 10 s

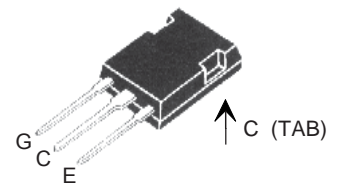
| | | |
|---------------|-----------------------------|------------------|
| M_d | Mounting torque (M3) (IXGK) | 1.13/10Nm/lb.in. |
| Weight | TO-264 AA | 10 g |
| | PLUS247™ | 6 g |

| 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 |
| $V_{GE(th)}$ | $I_C = 750 \mu\text{A}, V_{CE} = V_{GE}$ | 2.5 | | V |
| I_{CES} | $V_{CE} = V_{CES}$ $V_{GE} = 0 \text{ V}$ | $T_J = 25^\circ\text{C}$ | | 250 μA |
| | | $T_J = 125^\circ\text{C}$ | | 5 mA |
| I_{GES} | $V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$ | | | $\pm 100 \text{ nA}$ |
| $V_{CE(sat)}$ | $I_C = I_{C90}, V_{GE} = 15 \text{ V}$ $T_J = 125^\circ\text{C}$ | 3.2 | | 4.0 V |

TO-264 AA (IXGK)



PLUS 247™ (IXGX)



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

Features

- International standard packages JEDEC TO-264 and PLUS247™
- Low switching losses, low $V_{(sat)}$
- MOS Gate turn-on - drive simplicity

Applications

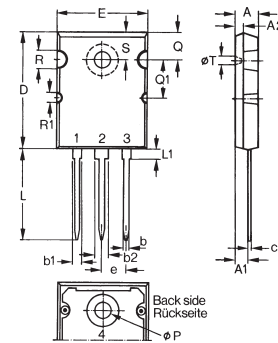
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies

Advantages

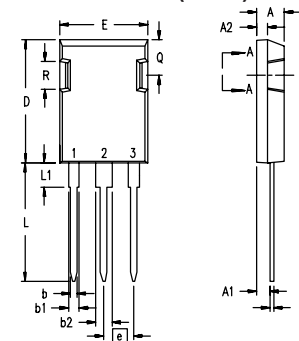
- High power density
- Easy to mount with 1 screw, (isolated mounting screw hole)
- Spring clip or clamp assembly possible.

| 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 $\leq 2\%$ | 30 | 40 | S | |
| C_{ies} | $V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$ | | 4620 | pF | |
| C_{oes} | | | 260 | pF | |
| C_{res} | | | 90 | pF | |
| Q_g | $I_C = I_{C90}$, $V_{GE} = 15\text{ V}$, $V_{CE} = 0.5 V_{CES}$ | | 170 | nC | |
| Q_{ge} | | | 28 | nC | |
| Q_{gc} | | | 57 | nC | |
| $t_{d(on)}$ | Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_{C90}$, $V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}$, $R_G = R_{off} = 5\ \Omega$ Remarks: Switching times may increase for V_{CE} (Clamp) $> 0.8 \cdot V_{CES}$, higher T_J or increased R_G | | 50 | ns | |
| t_{ri} | | | 27 | ns | |
| $t_{d(off)}$ | | | 150 | 220 | ns |
| t_{fi} | | | 115 | 190 | ns |
| E_{off} | | | 3.0 | 4.2 | mJ |
| $t_{d(on)}$ | Inductive load, $T_J = 125^\circ\text{C}$ $I_C = I_{C90}$, $V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}$, $R_G = R_{off} = 5\ \Omega$ Remarks: Switching times may increase for V_{CE} (Clamp) $> 0.8 \cdot V_{CES}$, higher T_J or increased R_G | | 55 | ns | |
| t_{ri} | | | 31 | ns | |
| E_{on} | | | 2.6 | mJ | |
| $t_{d(off)}$ | | | 220 | ns | |
| t_{fi} | | | 260 | ns | |
| E_{off} | | 6.2 | mJ | | |
| R_{thJC} | | | | 0.35 K/W | |
| R_{thCK} | | 0.15 | | K/W | |

| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|------------|--|---|------|----------|
| | | min. | typ. | max. |
| V_F | $I_F = I_{C90}$, $V_{GE} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$, $T_J = 125^\circ\text{C}$ | | | 2.35 V |
| I_{RM} | $I_F = I_{C90}$, $V_{GE} = 0\text{ V}$, $-di_F/dt = 480\text{ A}/\mu\text{s}$ $V_R = 540\text{ V}$ $T_J = 100^\circ\text{C}$ $I_F = 1\text{ A}$; $-di/dt = 200\text{ A}/\mu\text{s}$; $V_R = 30\text{ V}$ $T_J = 25^\circ\text{C}$ | | 32 | 36 A |
| t_{rr} | | | 225 | ns |
| | | | 40 | 60 |
| R_{thJC} | | | | 0.65 K/W |

TO-264 AA Outline (IXGK)


| Dim. | Millimeter | | Inches | |
|------|------------|-------|----------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.82 | 5.13 | .190 | .202 |
| A1 | 2.54 | 2.89 | .100 | .114 |
| A2 | 2.00 | 2.10 | .079 | .083 |
| b | 1.12 | 1.42 | .044 | .056 |
| b1 | 2.39 | 2.69 | .094 | .106 |
| b2 | 2.90 | 3.09 | .114 | .122 |
| c | 0.53 | 0.83 | .021 | .033 |
| D | 25.91 | 26.16 | 1.020 | 1.030 |
| E | 19.81 | 19.96 | .780 | .786 |
| e | 5.46 BSC | | .215 BSC | |
| J | 0.00 | 0.25 | .000 | .010 |
| K | 0.00 | 0.25 | .000 | .010 |
| L | 20.32 | 20.83 | .800 | .820 |
| L1 | 2.29 | 2.59 | .090 | .102 |
| P | 3.17 | 3.66 | .125 | .144 |
| Q | 6.07 | 6.27 | .239 | .247 |
| Q1 | 8.38 | 8.69 | .330 | .342 |
| R | 3.81 | 4.32 | .150 | .170 |
| R1 | 1.78 | 2.29 | .070 | .090 |
| S | 6.04 | 6.30 | .238 | .248 |
| T | 1.57 | 1.83 | .062 | .072 |

PLUS247™ Outline (IXGX)


Terminals: 1 - Gate
2 - Drain (Collector)
3 - Source (Emitter)
4 - Drain (Collector)

| Dim. | Millimeter | | Inches | |
|------|------------|-------|----------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.83 | 5.21 | .190 | .205 |
| A1 | 2.29 | 2.54 | .090 | .100 |
| A2 | 1.91 | 2.16 | .075 | .085 |
| b | 1.14 | 1.40 | .045 | .055 |
| b1 | 1.91 | 2.13 | .075 | .084 |
| b2 | 2.92 | 3.12 | .115 | .123 |
| C | 0.61 | 0.80 | .024 | .031 |
| D | 20.80 | 21.34 | .819 | .840 |
| E | 15.75 | 16.13 | .620 | .635 |
| e | 5.45 BSC | | .215 BSC | |
| L | 19.81 | 20.32 | .780 | .800 |
| L1 | 3.81 | 4.32 | .150 | .170 |
| Q | 5.59 | 6.20 | .220 | 0.244 |
| R | 4.32 | 4.83 | .170 | .190 |

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
4,850,072 4,931,844 5,034,796

5,049,961 5,187,117 5,486,715 6,306,728B1
5,063,307 5,237,481 5,381,025