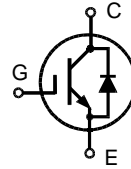


IGBT with optional Diode

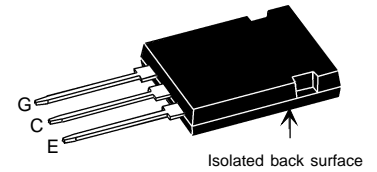
IXDR 35N60 BD1

$V_{CES} = 600\text{ V}$
 $I_{C25} = 38\text{ A}$
 $V_{CE(sat)typ} = 2.2\text{ V}$

High Speed,
Low Saturation Voltage



ISOPLUS 247™



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

* Patent pending

| Symbol | Conditions | Maximum Ratings | |
|--|--|---------------------------------------|------------------|
| V_{CES} | $T_J = 25^\circ\text{C to } 150^\circ\text{C}$ | 600 | V |
| V_{CGR} | $T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 20\text{ k}\Omega$ | 600 | V |
| V_{GES} | Continuous | ± 20 | V |
| V_{GEM} | Transient | ± 30 | V |
| I_{C25} | $T_C = 25^\circ\text{C}$ | 38 | A |
| I_{C90} | $T_C = 90^\circ\text{C}$ | 24 | A |
| I_{CM} | $T_C = 90^\circ\text{C}, t_p = 1\text{ ms}$ | 48 | A |
| RBSOA | $V_{GE} = \pm 15\text{ V}, T_J = 125^\circ\text{C}, R_G = 10\ \Omega$ Clamped inductive load, $L = 30\ \mu\text{H}$ | $I_{CM} = 110$ $V_{CEK} < V_{CES}$ | A |
| t_{SC} (SCSOA) | $V_{GE} = \pm 15\text{ V}, V_{CE} = 600\text{ V}, T_J = 125^\circ\text{C}$ $R_G = 10\ \Omega$, non repetitive | 10 | μs |
| P_c | $T_C = 25^\circ\text{C}$ | IGBT | 125 W |
| | | Diode | 50 W |
| T_J | | -55 ... +150 | $^\circ\text{C}$ |
| T_{stg} | | -55 ... +150 | $^\circ\text{C}$ |
| V_{ISOL} | 50/60 Hz RMS; $I_{ISOL} \leq 1\text{ mA}$ | 2500 | V~ |
| F_c | mounting force with clip | 20...120 | N |
| Weight | typical | 6 | g |

Features

- NPT IGBT technology
- low switching losses
- low tail current
- no latch up
- short circuit capability
- positive temperature coefficient for easy paralleling
- MOS input, voltage controlled
- optional ultra fast diode
- Epoxy meets UL 94V-0
- Isolated and UL registered E153432

Advantages

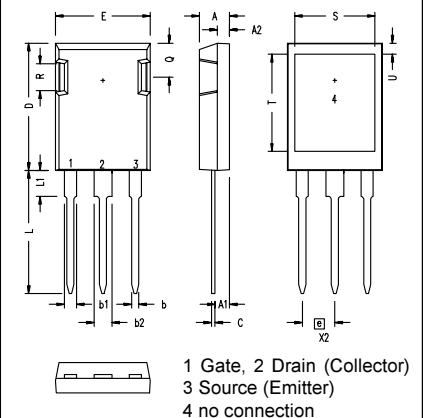
- DCB Isolated mounting tab
- Meets TO-247AD package Outline
- Package for clip or spring mounting
- Space savings
- High power density

Typical Applications

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

| Symbol | Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|---------------|---|---|------|---------------------|
| | | min. | typ. | max. |
| $V_{(BR)CES}$ | $V_{GE} = 0\text{ V}$ | 600 | | V |
| $V_{GE(th)}$ | $I_C = 0.7\text{ mA}, V_{CE} = V_{GE}$ | 3 | | 5 V |
| I_{CES} | $V_{CE} = V_{CES}$ $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$ | | 1 | 0.1 mA mA |
| I_{GES} | $V_{CE} = 0\text{ V}, V_{GE} = \pm 20\text{ V}$ | | | $\pm 500\text{ nA}$ |
| $V_{CE(sat)}$ | $I_C = 35\text{ A}, V_{GE} = 15\text{ V}$ | 2.2 | 2.7 | V |

| Symbol | Conditions | Characteristic Values | | |
|---------------------|---|---|------|-------|
| | | (T _J = 25°C, unless otherwise specified) | | |
| | | min. | typ. | max. |
| C _{ies} | V _{CE} = 25 V, V _{GE} = 0 V, f = 1 MHz | | 1600 | pF |
| C _{oes} | | | 150 | pF |
| C _{res} | | | 90 | pF |
| Q _g | I _C = 35 A, V _{GE} = 15 V, V _{CE} = 480V | | 140 | nC |
| t _{d(on)} | Inductive load, T _J = 125°C I _C = 35 A, V _{GE} = ±15 V, V _{CE} = 300 V, R _G = 10 Ω | | 30 | ns |
| t _r | | | 45 | ns |
| t _{d(off)} | | | 320 | ns |
| t _f | | | 70 | ns |
| E _{on} | | | 1.6 | mJ |
| E _{off} | | 0.8 | mJ | |
| R _{thJC} | Package with heatsink compound | | | 1 K/W |
| R _{thCH} | | | 0.25 | K/W |

ISOPLUS 247 OUTLINE


| Dim. | Millimeter | | Inches | |
|----------------|------------|-------|----------|------|
| | Min. | Max. | Min. | Max. |
| A | 4.83 | 5.21 | .190 | .205 |
| A ₁ | 2.29 | 2.54 | .090 | .100 |
| A ₂ | 1.91 | 2.16 | .075 | .085 |
| b | 1.14 | 1.40 | .045 | .055 |
| b ₁ | 1.91 | 2.13 | .075 | .084 |
| b ₂ | 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 | .244 |
| R | 4.32 | 4.83 | .170 | .190 |
| S | 13.21 | 13.72 | .520 | .540 |
| T | 15.75 | 16.26 | .620 | .640 |
| U | 1.65 | 3.03 | .065 | .080 |

| Symbol | Conditions | Characteristic Values | | |
|-------------------|--|---|------------|--------------------|
| | | (T _J = 25°C, unless otherwise specified) | | |
| | | min. | typ. | max. |
| V _F | I _F = 35 A, V _{GE} = 0 V I _F = 35 A, V _{GE} = 0 V, T _J = 125°C | | 2.1 1.6 | 2.3 V V |
| I _F | T _C = 25°C T _C = 90°C | | | 35 18 A A |
| I _{RM} | I _F = 15 A, -di _F /dt = 400 A/μs, V _R = 300 V | | 13 | A |
| t _{rr} | V _{GE} = 0 V, T _J = 125°C | | 90 | ns |
| t _{rr} | I _F = 1 A, -di _F /dt = 100 A/μs, V _R = 30 V, V _{GE} = 0 V | | 40 | ns |
| R _{thJC} | | | | 2.3 K/W |

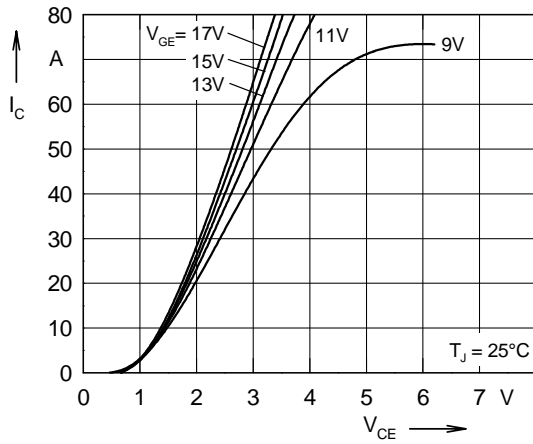


Fig. 1 Typ. output characteristics

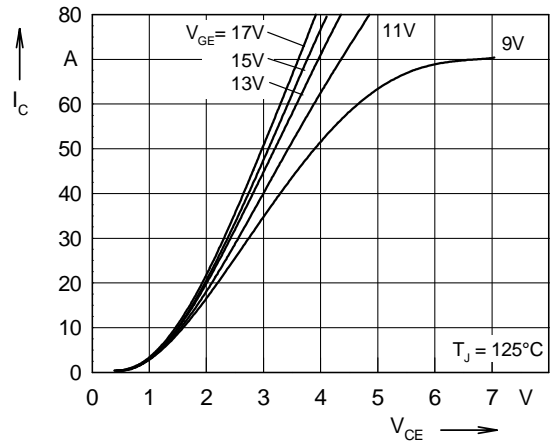


Fig. 2 Typ. output characteristics

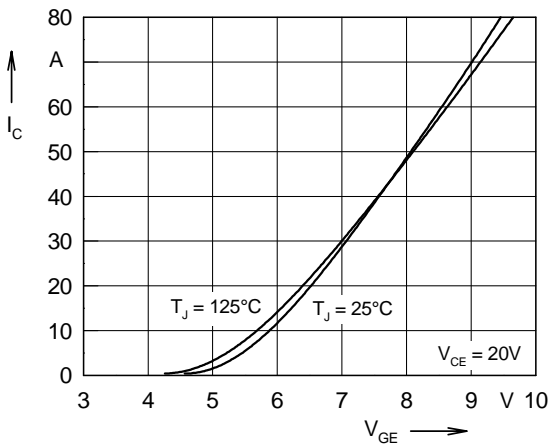


Fig. 3 Typ. transfer characteristics

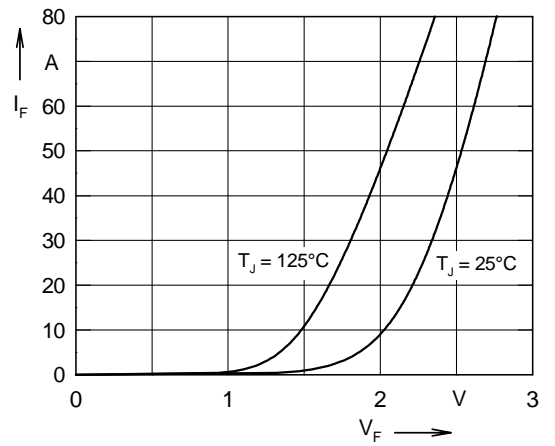


Fig. 4 Typ. forward characteristics of free wheeling diode

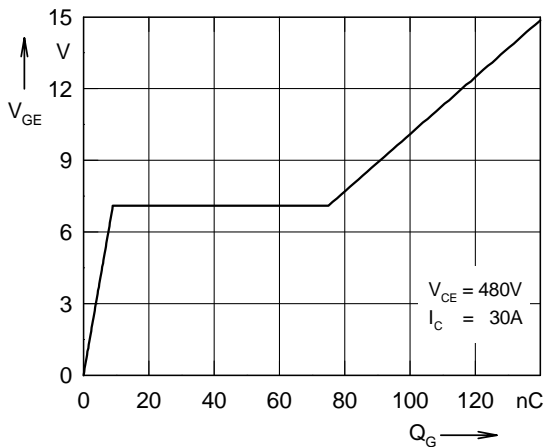


Fig. 5 Typ. turn on gate charge

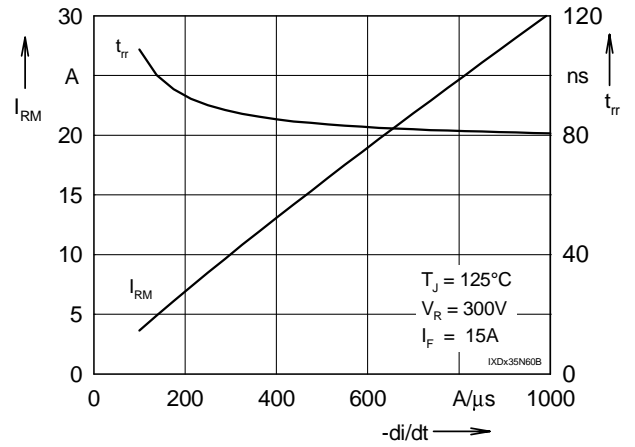


Fig. 6 Typ. turn off characteristics of free wheeling diode

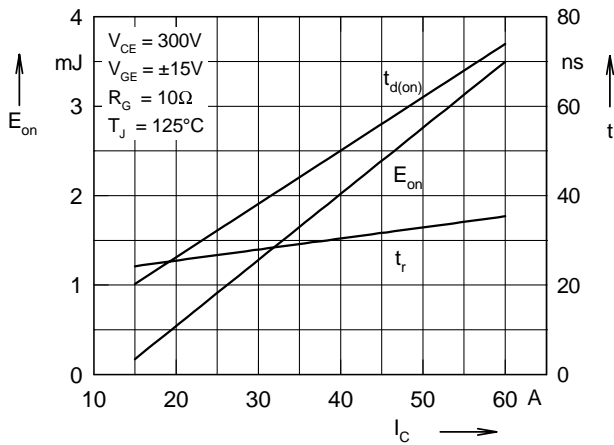


Fig. 7 Typ. turn on energy and switching times versus collector current

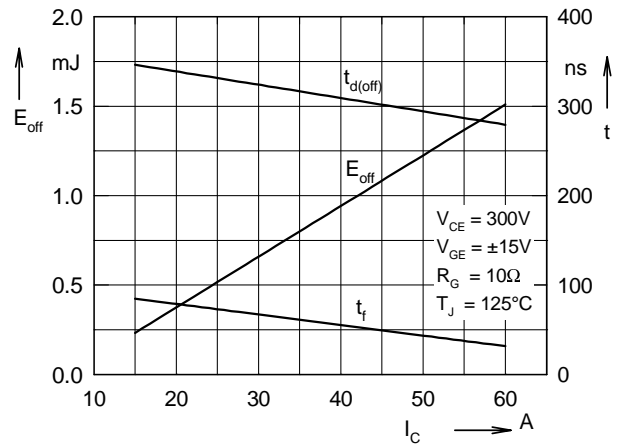


Fig. 8 Typ. turn off energy and switching times versus collector current

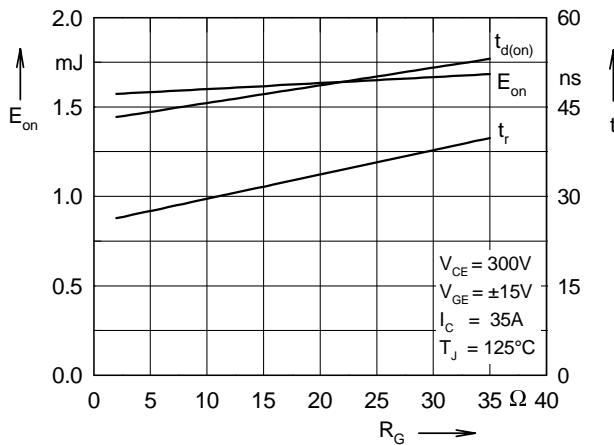


Fig. 9 Typ. turn on energy and switching times versus gate resistor

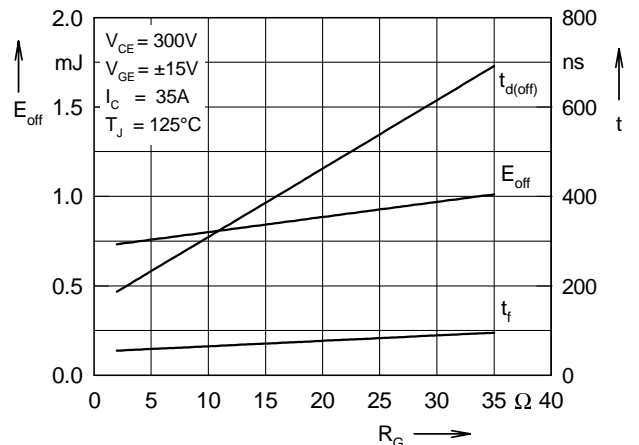


Fig.10 Typ. turn off energy and switching times versus gate resistor

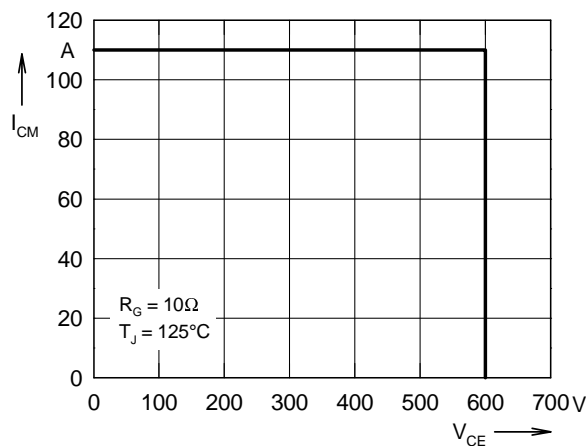


Fig. 11 Reverse biased safe operating area RBSOA

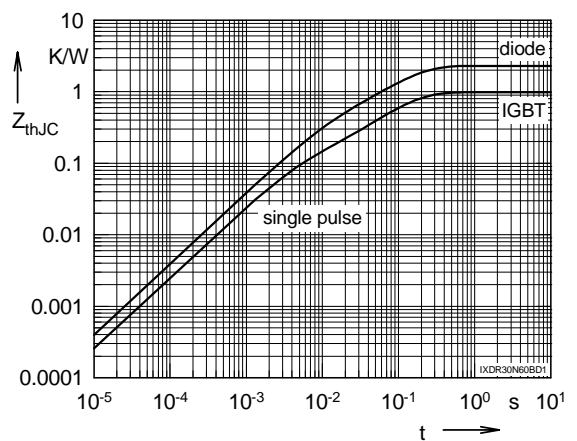


Fig. 12 Typ. transient thermal impedance



LittleDiode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

LittleDiode.com

Looking forward to providing you with the best possible service.