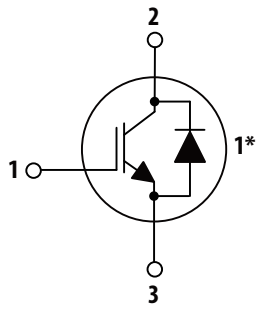
NEW PRODUCT BRIEF

Bourns® Model BID Series Insulated Gate Bipolar Transistors (IGBTs)

INTRODUCTION

The Bourns® Model BID Series discrete insulated gate bipolar transistor (IGBT) products combine technology from a MOSFET gate and a bipolar transistor, resulting in an optimum solution for high voltage and high current applications. These devices use Trench-Gate Field-Stop (TGFS) technology providing excellent control of dynamic characteristics while resulting in a lower collector-emitter saturation voltage ($V_{CE(sat)}$) and lower switching losses. In addition, the devices provide a lower thermal resistance ($R_{th(j-c)}$) due to the thermally efficient TO-252, TO-247 and TO-247N packages. These cost-effective, industry-leading products are also RoHS compliant.



1 - Gate
2 - Collector
3 - Emitter
***1 - Built-in FRD**

APPLICATIONS

Bourns® BID Series is designed to address the power management needs of several high-volume, high-growth applications including home appliances, industrial motor drives, and welding.

Through advanced trench-gate-field-stop technology that enables low conduction and switching losses, these Bourns® IGBTs address the growing need for cost-effective power efficiency.

FEATURES

- Discrete IGBT co-packed with Fast Recovery Diode (FRD)
- Advanced Trench-Gate Field-Stop (TGFS) technology
- Low saturation voltage drop ($V_{CE(sat)}$)
- Low switching loss
- TO-252, TO-247 and TO-247N packages
- Qualified according to JEDEC standard for power switching products
- RoHS compliant*

MARKET TRENDS

The discrete IGBT market eclipsed $1.3 billion in sales in 2020 and is expected to exceed $1.6 billion by 2026. (Reference: Yole Development 2021), driven by strong growth in home appliances, welding, industrial motor drives, and automotive applications.

Together, discrete IGBT devices and IGBT modules are projected to achieve a worldwide compound annual growth rate (CAGR) of 7.5 % from 2020 to 2026 (Reference: Yole Development 2021) despite the concurrent proliferation of SiC-MOSFETs and GaN solutions. In general, medium- and high-voltage applications use IGBT modules, while consumer and other low-voltage applications prefer discrete components.

HOW TO ORDER

B I D W 50 N 65 T

- B = Bourns
- I = IGBT
- Type
  - D = Discreet
- Package Code
  - W = TO-247-3L
- Current Rating
  - 50 - 50 A
- Device Type
  - N = N-Channel
- Nominal Voltage (diviced by 10)
  - 65 = 650 V
- Optimization
  - T = Medium Speed

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

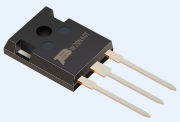
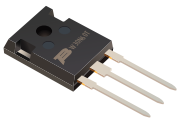
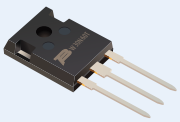
NEW PRODUCT BRIEF

Bourns® Model BID Series Insulated Gate Bipolar Transistors (IGBTs)

TO-252 SMD IGBT (T_C = 25 °C, Unless Otherwise Specified)

Model Number	Photo	Package	Type	V_{CES} (V)	I_C @ T=100 °C (A)	Typ. $V_{CE(sat)}$ @I_C, V_{ge}=15 V (V)	I_F @ T_C=100 °C (A)	Operating Junction Temperature
BIDD05N60T		TO-252	Medium Speed	600	5	1.5	–	–55 °C to +150 °C

TO-247 DIP IGBT (T_C = 25 °C, Unless Otherwise Specified)

Model Number	Photo	Package	Type	V_{CES} (V)	I_C @ T=100 °C (A)	Typ. $V_{CE(sat)}$ @I_C, V_{ge}=15 V (V)	I_F @ T_C=100 °C (A)	Operating Junction Temperature
BIDW20N60T		TO-247	Medium Speed	600	20	1.7	20	–55 °C to +150 °C
BIDW30N60T		TO-247	Medium Speed	600	30	1.65	30	–55 °C to +150 °C
BIDW50N65T		TO-247	Medium Speed	650	50	1.65	50	–55 °C to +150 °C
BIDNW30N60H3		TO-247N	High Speed	600	30	1.65	12	–55 °C to +150 °C

IGBT Product Portfolio

V_{CES}, I_C (V) / (A)	TO-252	TO-247	TO-247N
600 V, 5 A	BIDD05N60T	–	–
600 V, 20 A	–	BIDW20N60T	–
600 V, 30 A	–	BIDW30N60T	BIDNW30N60H3
650 V, 50 A	–	BIDW50N65T	–

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