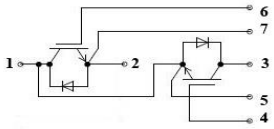
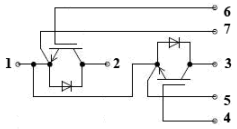
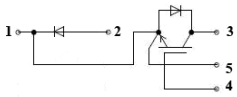
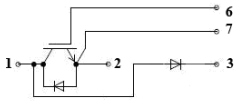
# Name: AnM300xxxB07M

**Features:**

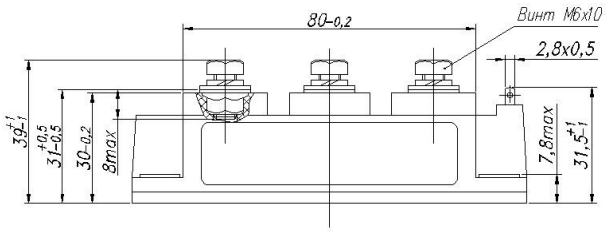
- Native Components
- Structure NPT+
- Low $V_{CE(sat)}$
- High short circuit capability
- Easy paralleling
- Positive temperature coefficient of $V_{CE(sat)}$
- Low $C_{ies}$, $C_{oes}$, $C_{res}$
- 100% control of the effect of double current
- Insulated base plate for heat dissipation
- Self-restraint on the short-circuit currents

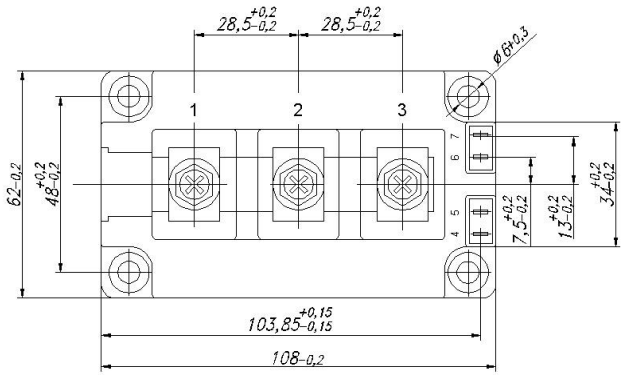
**Applications:**

- AC Motor Control
- Motion/Servo Control
- UPS
- Welding Power Supplies

| | |
|---|---|
| **HB** |  |
| **HBE** |  |
| **RC** |  |
| **LC** |  |

| Type | $V_{CE}$ | $I_C$ | Package | Packaging |
|---|---|---|---|---|
| AnM300HBB07M<br>AnM300HBEB07M<br>AnM300LCB07M<br>AnM300RCB07M | 650 V | 300 A | B – 62 mm | Box |

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***T a b l e 1 – Absolute Maximum Rated Values***

| | Parameter | | Units |
|---|---|---|---|
| **IGBT** | | | |
| $V_{CES}$ | Collector-to-Emitter Voltage | 650 | V |
| $V_{GES}$ | Gate-to-Emitter Voltage | ±20 | V |
| $I_C$, $T_C$=25 ºC | Collector Current | 370 | A |
| $I_{CM}$, $T_C$=25 ºC | Pulsed Collector Current | 740 | |
| $I_C$, $T_C$=70 ºC | Collector Current | 300 | |
| $I_{CM}$, $T_C$=70 ºC | Pulsed Collector Current | 600 | |
| $P_D$, $T_C$=25 ºC | Maximum Dissipation | 1100 | W |
| **Inverse diode** | | | |
| $I_F$, $T_C$=25 ºC | Forward Current | 290 | A |
| $I_{FM}$, $T_C$=25 ºC | Pulsed Forward Current | 580 | |
| $I_F$, $T_C$=70 ºC | Forward Current | 225 | |
| $I_{FM}$, $T_C$=70 ºC | Pulsed Emitter Current | 450 | |
| **Free-wheeling diode** | | | |
| $I_F$, $T_C$=25 ºC | Forward Current | 290 | A |
| $I_{FM}$, $T_C$=25 ºC | Pulsed Forward Current | 580 | |
| $I_F$, $T_C$=70 ºC | Forward Current | 225 | |
| $I_{FM}$, $T_C$=70 ºC | Pulsed Emitter Current | 450 | |
| $T_j$ | Operating Temperature | –55 to +150 | ºC |
| $T_{stg}$ | Storage Temperature | –55 to +125 | |
| | Mounting Torque, M6 | 3.0 to 5.0 | N * m |
| | Weight | 450 | g |
| $V_{is}$ | Insulation Test Voltage (*t*=1 min.) | 2500 | Vrms |

***T a b l e 2 – Thermal Resistance***

| Symbol | Parameter | Min | Max | Units | Test Conditions |
|---|---|---|---|---|---|
| $R_{thJC}$ | Thermal Resistance, Junction-to-Case | – | 0.11 | ºC/W | Per IGBT |
| $R_{thJCD}$ | Thermal Resistance, Junction-to-Case | – | 0.23 | | Per FWD |

***T a b l e 3 – Electrical Characteristics @ $T_J$=25 °C (unless otherwise specified)***

| Symbol | Parameter | Min. | Typ. | Max. | Units | Test Conditions |
|---|---|---|---|---|---|---|
| **IGBT** | | | | | | |
| $V_{CE(sat)}$ | Collector-to-Emitter Saturation Voltage | – | 1.9 | 2.2 | V | $V_{GE}$=15 V, $I_C$=300 A[3)] |
| | | – | 2.3 | 2.5 | | $V_{GE}$=15 V, $I_C$=300 A[3)], $T_j$=125 °C |
| $V_{GE(th)}$ | Gate Threshold Voltage | 4.0 | 5.1 | 7.0 | V | $V_{GE}$=$V_{GES}$, $I_C$=5.0 mA |
| $I_{CES}$ | Zero Gate Voltage Collector Current | – | 0.02 | 0.7 | mA | $V_{CE}$=1200 V, $V_{GE}$=0 V |
| | | – | 0.9 | 5.0 | | $V_{CE}$=1200 V, $V_{GE}$=0 V, $T_j$=125 °C |
| $I_{GES(F)}$ | Gate-to-Source Leakage Forward | – | 10 | 100 | nA | $V_{GE}$=20 V |
| | | – | 20 | 150 | | $V_{GE}$=20 V, $T_j$=125 °C |
| $I_{GES(R)}$ | Gate-to-Source Leakage Reverse | –100 | –10 | – | | $V_{GE}$=–20 V |
| | | –150 | –20 | – | | $V_{GE}$=–20 V, $T_j$=125 °C |
| $C_{ies}$ | Input Capacitance | – | tbd | – | nF | $V_{GE}$=0 V, $V_{CE}$=25 V, f=1 MHz |
| $C_{oes}$ | Output Capacitance | – | tbd | – | | |
| $C_{res}$ | Reverse Transfer Capacitance | – | tbd | – | | |
| $t_{d(On)}$ | Turn-On Delay Time | – | tbd | – | ns | $V_{CC}$=350 V, $I_C$=300 A, $V_{GE}$=±15 V, $R_G$=10 Ω, $T_j$=125 °C, Inductive Load |
| $t_r$ | Rise Time | – | tbd | – | | |
| $t_{d(Off)}$ | Turn-Off Delay Time | – | tbd | – | | |
| $t_f$ | Fall Time | – | tbd | – | | |
| $E_{on}$ | Turn-On Energy | – | tbd | – | mJ | $V_{CC}$=350 V, $I_C$=300 A, $V_{GE}$=±15 V, $R_G$=10 Ω, $T_j$=125 °C, Inductive Load |
| $E_{off}$ | Turn-Off Energy | – | tbd | – | | |
| $E_{tot}$ | Total Energy | – | tbd | – | | |
| $I_{SC}$ | Short circuit collector current | – | 1000 | – | A | $t_p$≤10 µsec, $V_{GE}$≤15 V, $R_G$=10 Ω, $T_j$=125 °C, $V_{CC}$=400 V, $V_{CEmax}$=$V_{CES}$-$L_{sCE}$*di/dt |

**Inverse and Free-Wheeling Diode**

| | | | | | | |
|---|---|---|---|---|---|---|
| $V_F$ | Forward Voltage | – | 1.7 | 2.0 | V | $I_F$=300 A, $V_{GE}$=0 V |
| $I_{rrm}$ | Maximum Reverse Recovery Current | – | 140 | – | A | $I_F$=300 A, $di_F/dt$=0.5 A/ns, $V_{GE}$=0 V, $T_j$=25 ºC |
| $t_{rr}$ | Diode Reverse Recovery Time | – | 170 | 300 | ns | |
| $Q_{rr}$ | Diode Reverse Recovery Charge | – | 14 | – | µC | |

**Precious metal content into 1000 pieces:**

Gold _____ g;
Silver _____g.

***T a b l e 4 – Revision history***

| Date | Revision | Changes |
|---|---|---|
| 03-October-2016 | 1 | Complete version. Preliminary. |