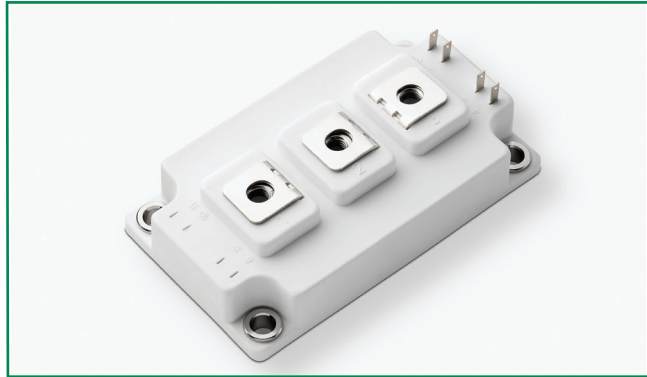


MG12300D-BA1MM



Features

- Ultra low loss
- High ruggedness
- High short circuit capability
- Positive temperature coefficient
- With fast free-wheeling diodes

Applications

- Inverter
- Converter
- Welder
- SMPS and UPS
- Induction heating

Agency Approvals

| AGENCY | AGENCY FILE NUMBER |
|--------|--------------------|
| | E71639 |

Module Characteristics (T_c = 25°C, unless otherwise specified)

| Symbol | Parameters | Test Conditions | Min | Typ | Max | Unit |
|-------------------|-------------------------------------|-------------------|-----|-----|------|------|
| R _{thJC} | Junction-to-Case Thermal Resistance | Per IGBT | | | 0.07 | K/W |
| R _{thJD} | | Per Inverse Diode | | | 0.15 | K/W |
| Torque | Module-to-Sink | Recommended (M6) | 3 | | 5 | N-m |
| Torque | Module Electrodes | Recommended (M6) | 2.5 | | 5 | N-m |
| Weight | | | | 285 | | g |

Absolute Maximum Ratings (T_c = 25°C, unless otherwise specified)

| Symbol | Parameters | Test Conditions | Values | Unit |
|---------------------|--------------------------------------|---|-------------|------|
| IGBT | | | | |
| V _{CES} | Collector - Emitter Voltage | | 1200 | V |
| V _{GES} | Gate - Emitter Voltage | | ±20 | V |
| I _c | DC Collector Current | T _c =25°C | 450 | A |
| | | T _c =80°C | 310 | A |
| I _{cpuls} | Pulsed Collector Current | T _c =25°C, t _p =1ms | 900 | A |
| | | T _c =80°C, t _p =1ms | 620 | |
| P _{tot} | Power Dissipation Per IGBT | | 1800 | W |
| T _J | Junction Temperature Range | | -40 to +150 | °C |
| T _{STG} | Storage Temperature Range | | -40 to +125 | °C |
| V _{isol} | Insulation Test Voltage | AC, t=1min | 3000 | V |
| Diode | | | | |
| V _{RRM} | Repetitive Reverse Voltage | | 1200 | V |
| I _{F(AV)} | Average Forward Current | T _c =25°C | 380 | A |
| | | T _c =80°C | 260 | A |
| I _{F(RMS)} | RMS Forward Current | | 380 | A |
| I _{FSM} | Non-Repetitive Surge Forward Current | T _J =45°C, t=10ms, Sine | 2260 | A |
| | | T _J =45°C, t=8.3ms, Sine | 2560 | |

Life Support Note:

Not Intended for Use in Life Support or Life Saving Applications

The products shown herein are not designed for use in life sustaining or life saving applications unless otherwise expressly indicated.

MG12300D-BA1MM

Electrical and Thermal Specifications ($T_c = 25^\circ\text{C}$, unless otherwise specified)

| Symbol | Parameters | Test Conditions | Min | Typ | Max | Unit | |
|---------------|--|---|-------------------------|------|------|---------------|----|
| IGBT | | | | | | | |
| $V_{GE(th)}$ | Gate - Emitter Threshold Voltage | $V_{CE}=V_{GE}, I_C=12\text{mA}$ | 5.0 | 6.2 | 7.0 | V | |
| $V_{CE(sat)}$ | Collector - Emitter Saturation Voltage | $I_C=300\text{A}, V_{GE}=15\text{V}, T_J=25^\circ\text{C}$ | | 1.9 | | V | |
| | | $I_C=300\text{A}, V_{GE}=15\text{V}, T_J=125^\circ\text{C}$ | | 2.1 | | V | |
| I_{CES} | Collector Leakage Current | $V_{CE}=1200\text{V}, V_{GE}=0\text{V}, T_J=25^\circ\text{C}$ | | 0.4 | 2 | mA | |
| | | $V_{CE}=1200\text{V}, V_{GE}=0\text{V}, T_J=125^\circ\text{C}$ | | 10 | | mA | |
| I_{GES} | Gate Leakage Current | $V_{CE}=0\text{V}, V_{GE}=\pm 20\text{V}$ | -400 | | 400 | nA | |
| Q_{ge} | Gate Charge | $V_{CC}=600\text{V}, I_C=300\text{A}, V_{GE}=\pm 15\text{V}$ | | 3060 | | nC | |
| C_{ies} | Input Capacitance | $V_{CE}=25\text{V}, V_{GE}=0\text{V}, f=1\text{MHz}$ | | 21.2 | | nF | |
| C_{oes} | Output Capacitance | | | 1.42 | | | |
| C_{res} | Reverse Transfer Capacitance | | | 0.94 | | | |
| $t_{d(on)}$ | Turn - on Delay Time | Inductive Load $V_{CC}=600\text{V}$ $I_C=300\text{A}$ $R_G=3.4\Omega$ $V_{GE}=\pm 15\text{V}$ | $T_J=25^\circ\text{C}$ | | 190 | | ns |
| | | | $T_J=125^\circ\text{C}$ | | 220 | | ns |
| t_r | Rise Time | | $T_J=25^\circ\text{C}$ | | 60 | | ns |
| | | | $T_J=125^\circ\text{C}$ | | 60 | | ns |
| $t_{d(off)}$ | Turn - off Delay Time | | $T_J=25^\circ\text{C}$ | | 460 | | ns |
| | | | $T_J=125^\circ\text{C}$ | | 530 | | ns |
| t_f | Fall Time | | $T_J=25^\circ\text{C}$ | | 55 | | ns |
| | | | $T_J=125^\circ\text{C}$ | | 75 | | ns |
| E_{on} | Turn - on Energy | | $T_J=25^\circ\text{C}$ | | 22.4 | | mJ |
| | | | $T_J=125^\circ\text{C}$ | | 33.4 | | mJ |
| E_{off} | Turn - off Energy | $T_J=25^\circ\text{C}$ | | 19.6 | | mJ | |
| | | $T_J=125^\circ\text{C}$ | | 30.6 | | mJ | |
| Diode | | | | | | | |
| V_F | Forward Voltage | $I_F=300\text{A}, V_{GE}=0\text{V}, T_J=25^\circ\text{C}$ | | 2.0 | 2.44 | V | |
| | | $I_F=300\text{A}, V_{GE}=0\text{V}, T_J=125^\circ\text{C}$ | | 1.7 | 2.20 | V | |
| t_{rr} | Reverse Recovery Time | $I_F=300\text{A}, V_R=800\text{V}$ $di_F/dt=-1000\text{A}/\mu\text{s}$ $T_J=125^\circ\text{C}$ | | 410 | | ns | |
| I_{RRM} | Max. Reverse Recovery Current | | | 120 | | A | |
| Q_{rr} | Reverse Recovery Charge | | | 25 | | μC | |

Figure 1: Typical Output Characteristics

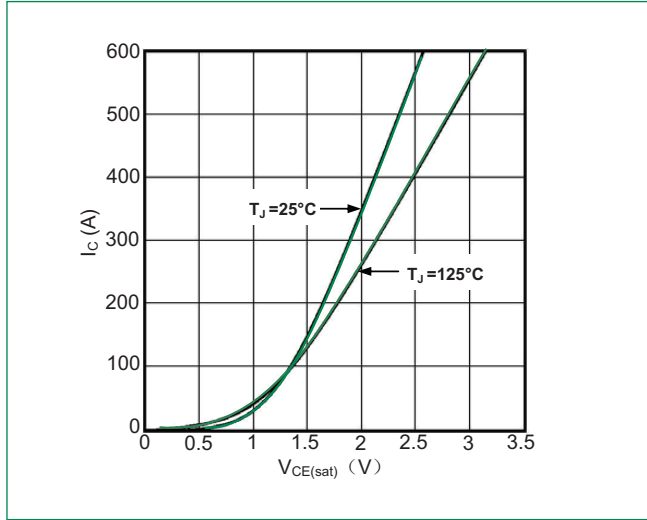


Figure 2: Typical Transfer characteristics

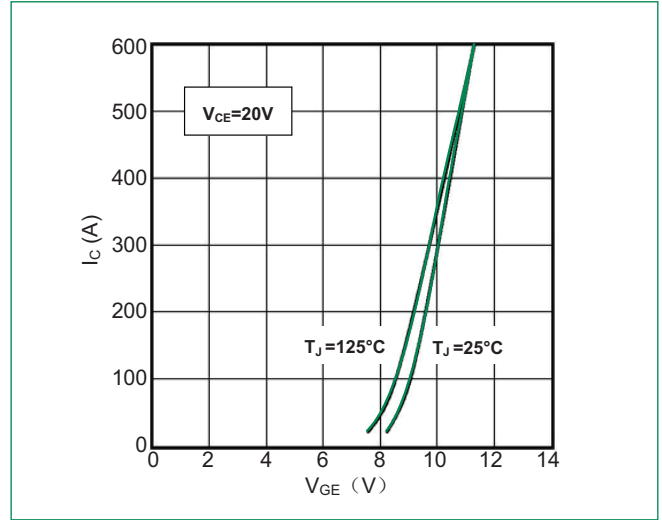


Figure 3: Switching Energy vs. Collector Current

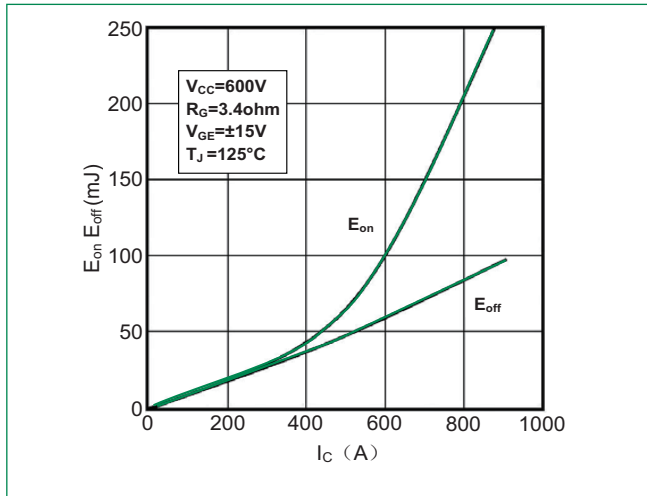


Figure 4: Switching Energy vs. Gate Resistor

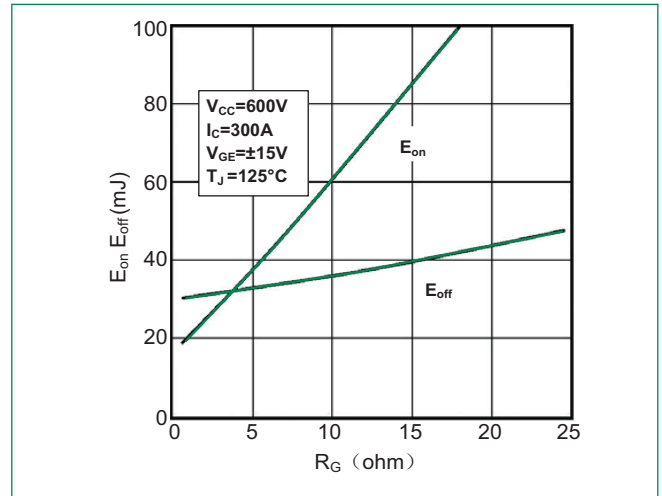


Figure 5: Switching Times vs. Collector Current

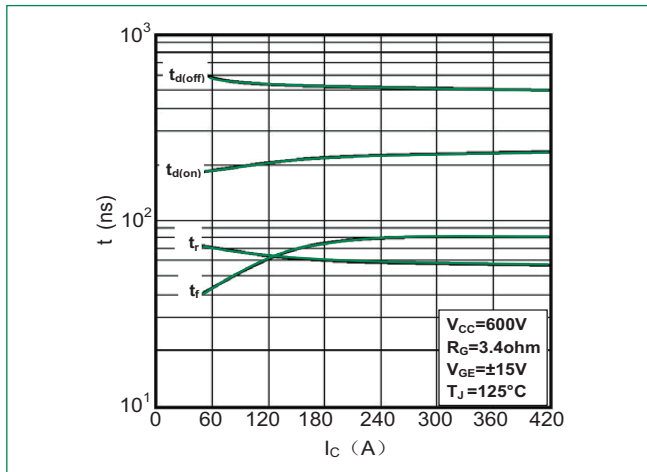


Figure 6: Switching Times vs. Gate Resistor

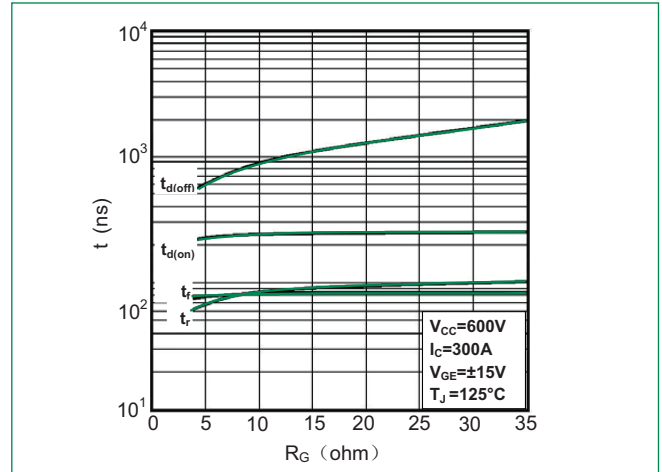


Figure 7: Gate Charge characteristics

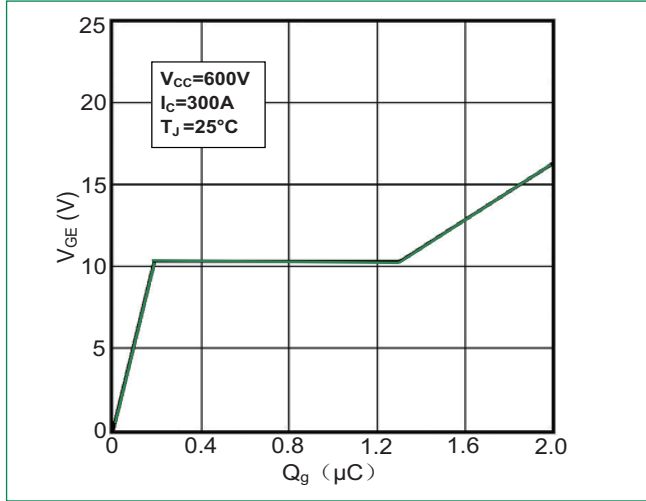


Figure 8: Typical Capacitances vs. V_{CE}

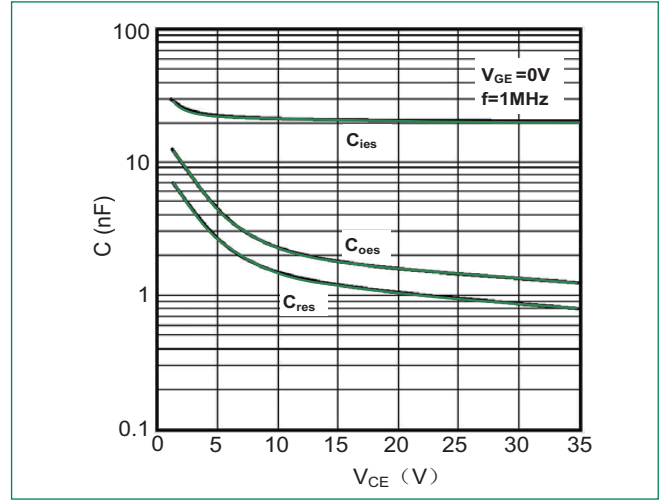


Figure 9: Reverse Biased Safe Operating Area

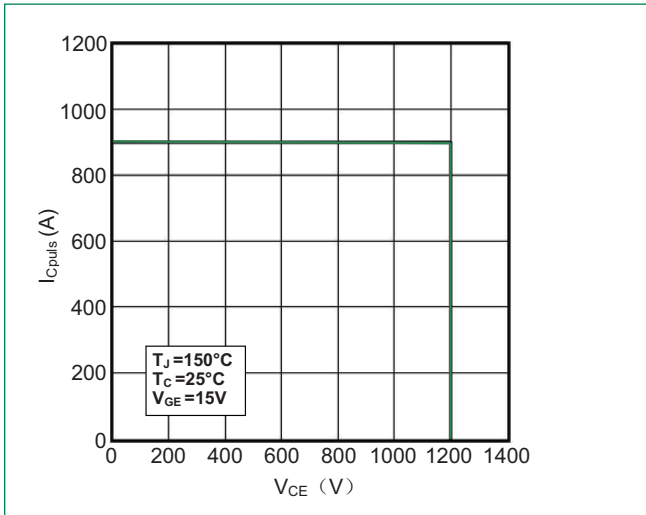


Figure 10: Short Circuit Safe Operating Area

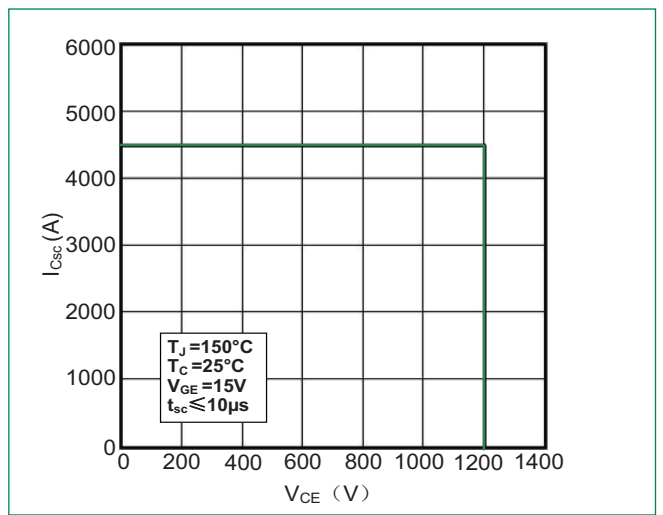


Figure 11: Rated Current vs. T_c

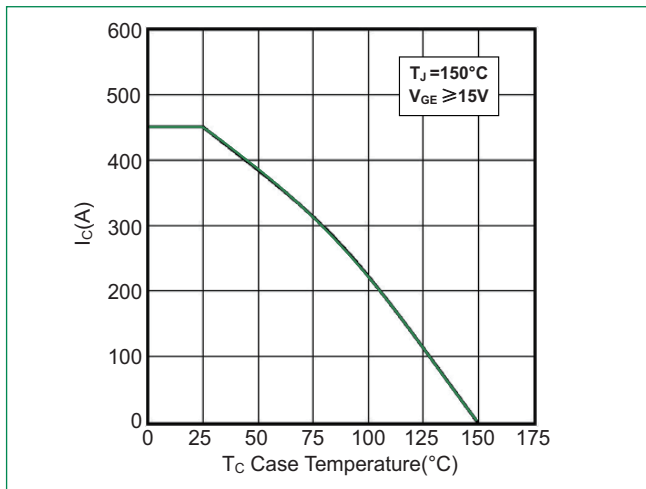


Figure 12: Diode Forward Characteristics

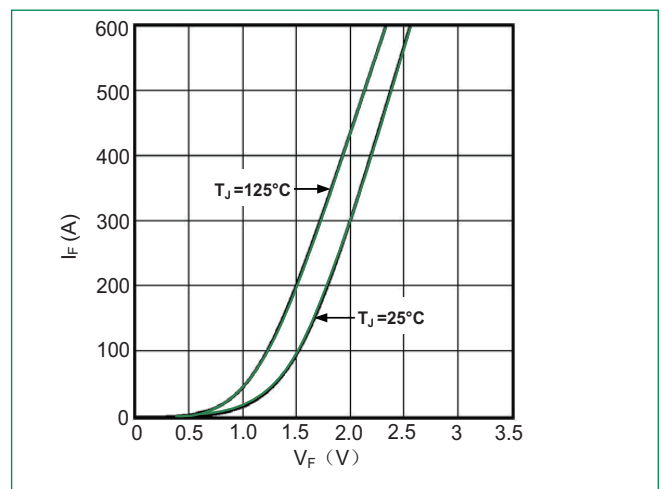


Figure 13: Transient Thermal Impedance of IGBT

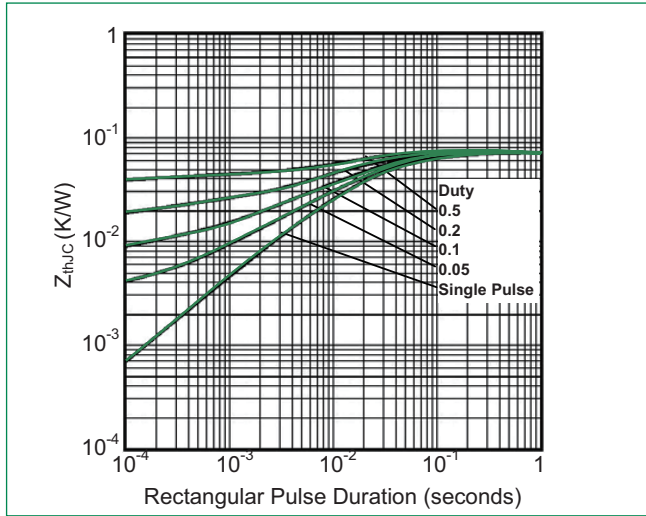
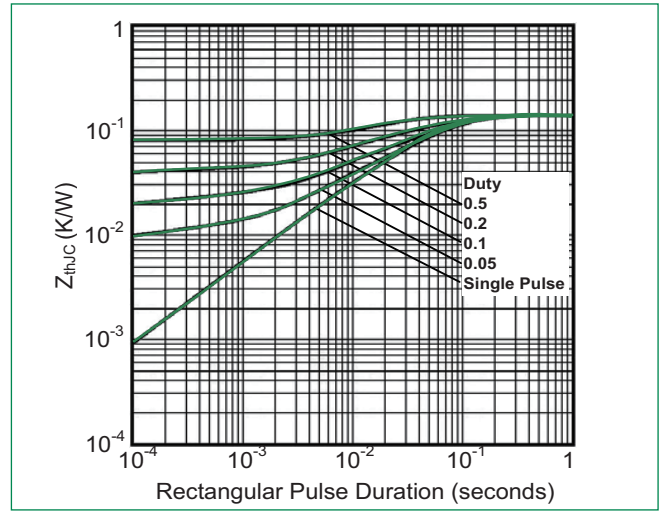
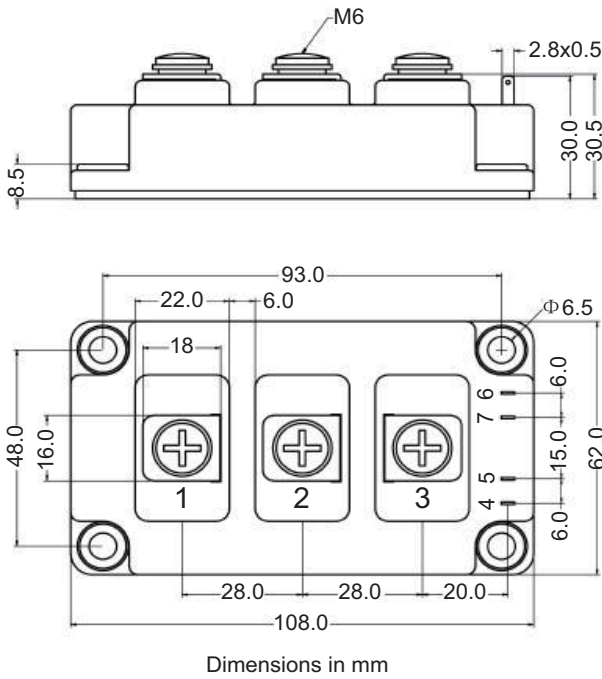


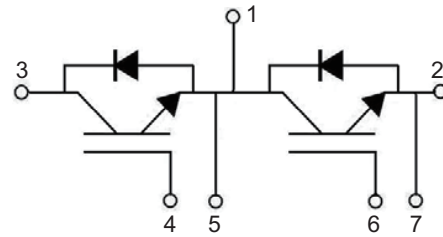
Figure 14: Transient Thermal Impedance of Diode



Dimensions-Package D



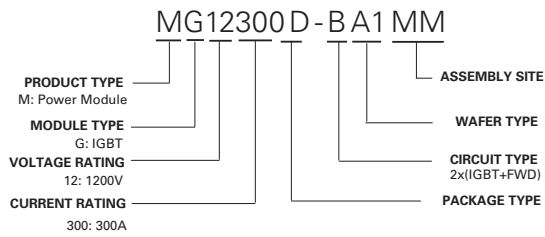
Circuit Diagram



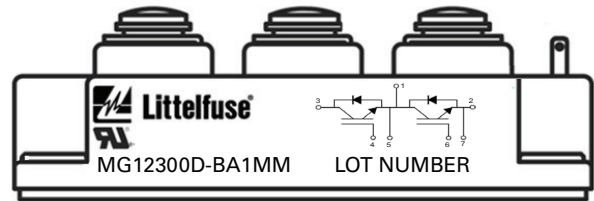
Packing Options

| Part Number | Marking | Weight | Packing Mode | M.O.Q |
|----------------|----------------|--------|--------------|-------|
| MG12300D-BA1MM | MG12300D-BA1MM | 285g | Bulk Pack | 60 |

Part Numbering System



Part Marking System



Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9