# MDM1200E33D

## FEATURES

- Low noise due to soft and fast recovery diodes.
- High reliability, high durability diodes.
- Isolated heat sink(terminal to base).

## ABSOLUTE MAXIMUM RATINGS (TC=25 °C)

| Item | | Symbol | Unit | MDM1200E33D | |
|---|---|---|---|---|---|
| Repetitive Peak Reverse Voltage | | $V_{RRM}$ | V | 3,300 | |
| Forward Current | DC | $I_F$ | A | 1,200 | |
| | 1ms | $I_{FM}$ | | 2,400 | |
| Junction Temperature | | Tj | °C | -40 ~ +125 | |
| Storage Temperature | | Tstg | °C | -40 ~ +125 | (1) |
| Isolation Test Voltage | Terminals-base | $V_{ISO}$ | $V_{RMS}$ | 6,000(AC 1 minute) | |
| | Terminal 1-Terminal 2 | $V_{ISO\ T\text{-}T}$ | | 6,000(AC 1 minute) | |
| Screw Torque | Terminals (M8) | - | N·m | 15 | (2) |
| | Mounting (M6) | - | | 6 | (3) |

Notes: (1) Terminal temperature shall not exceed the specified temperature in any operation.
(2) Recommended Value $15^{+0}/_{-3}$N·m (3) Recommended Value 5.5±0.5N·m

## ELECTRICAL CHARECTERISTICS

| Item | Symbol | Unit | Min. | Typ. | Max. | Test Conditions |
|---|---|---|---|---|---|---|
| Repetitive Reverse Current | $I_{RRM}$ | mA | - | 3.0 | 30.0 | VAK=3,300V, Tj=125°C |
| Forward Voltage Drop | $V_F$ | V | 2.3 | 2.8 | 3.3 | IF=1,200A, Tj=125°C |
| Reverse Recovery Time | trr | μs | - | 0.6 | 1.1 | $V_{CC}$=1,650V, IF=1,200A, L=100nH |
| Reverse Recovery Loss | $E_{rr(10\%)}$ | J/P | - | 1.2 | 1.9 | Tj=125°C,Rg=3.3Ω (4) |

## PACKAGE CHARECTERISTICS

| Item | Symbol | Unit | Min. | Typ. | Max. | Test Conditions |
|---|---|---|---|---|---|---|
| Terminal Resistance | RCE | mΩ | - | 0.3 | - | |
| Terminal Stray Inductance | LsCE | nH | - | 35 | - | |
| Thermal Impedance | Rth(j-c) | K/W | - | - | 0.017 | Junction to case |
| Comparative tracking index | CTI | | - | 600 | - | |
| Contact Thermal Impedance | Rth(c-f) | K/W | - | 0.008 | - | Case to fin per module |
| Base Plate material | | | Al-SiC | | | |
| Insulation substrate material | | | AlN | | | |

Notes:(4) Counter arm; MBN1200E33D VGE=+/-15V
$R_G$ value is the test condition's value for evaluation of the switching times, not recommended value.
Please, determine the suitable $R_G$ value after the measurement of switching waveforms
(overshoot voltage, etc.) with appliance mounted.

* Please contact our representatives at order.
* For improvement, specifications are subject to change without notice.
* For actual application, please confirm this spec sheet is the newest revision.

# MDM1200E33D

## DEFINITION OF TEST CIRCUIT

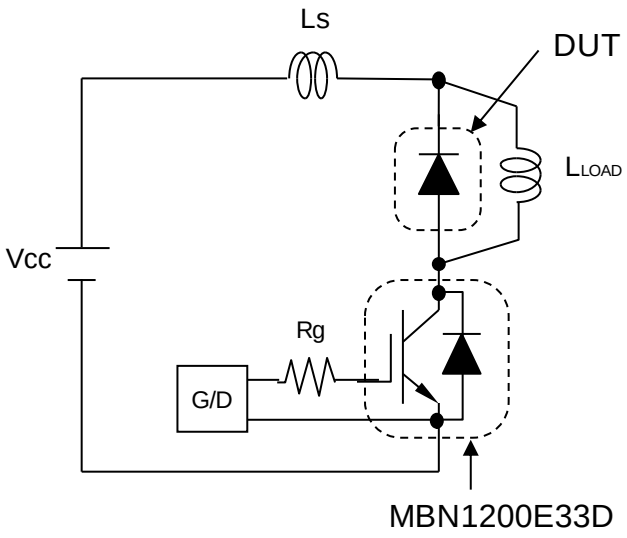
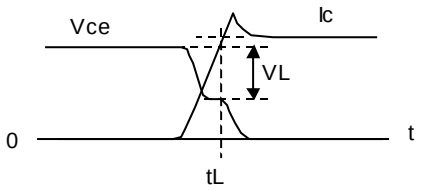
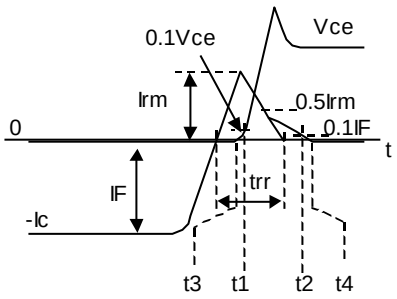



Fig.1 Switching test circuit




$$Ls = \frac{V_L}{\left(\frac{dIc}{dt}\right)_{t=tL}}$$

Fig.2 Definition of stray inductance




$$Err(10\%) = \int_{t1}^{t2} IF \cdot Vce \, dt$$

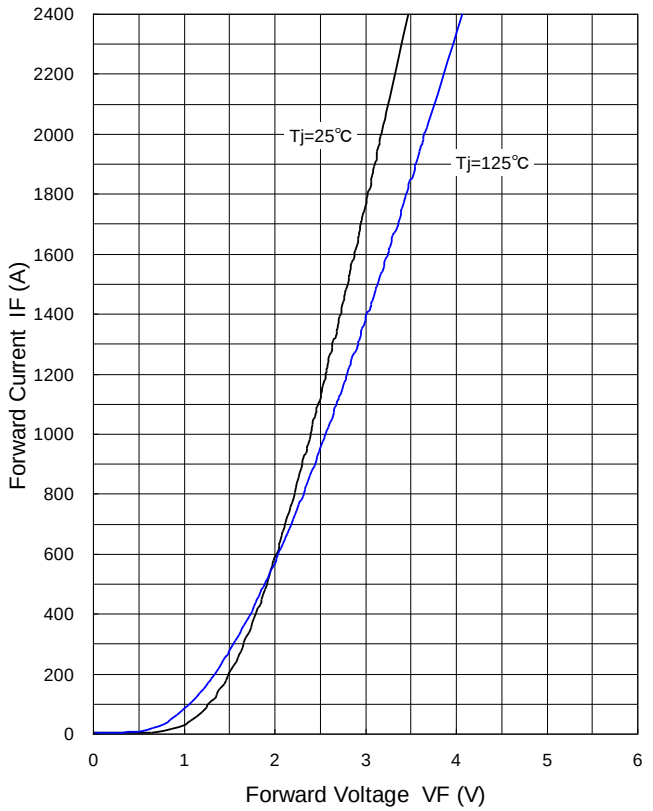
$$Err(Full) = \int_{t3}^{t4} IF \cdot Vce \, dt$$

Fig.3 Definition of switching loss

# MDM1200E33D

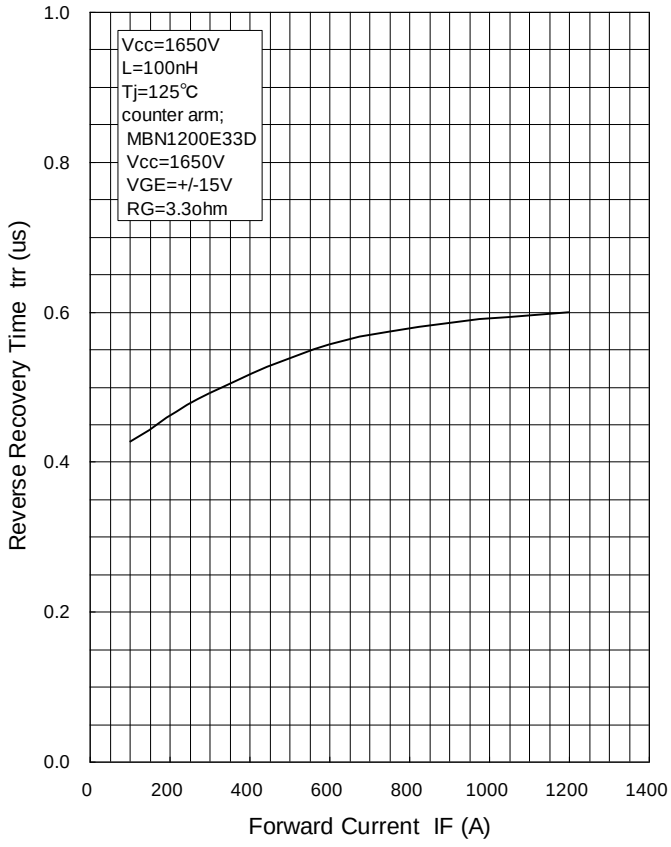
## STATIC CHARACTERISTICS

**TYPICAL**

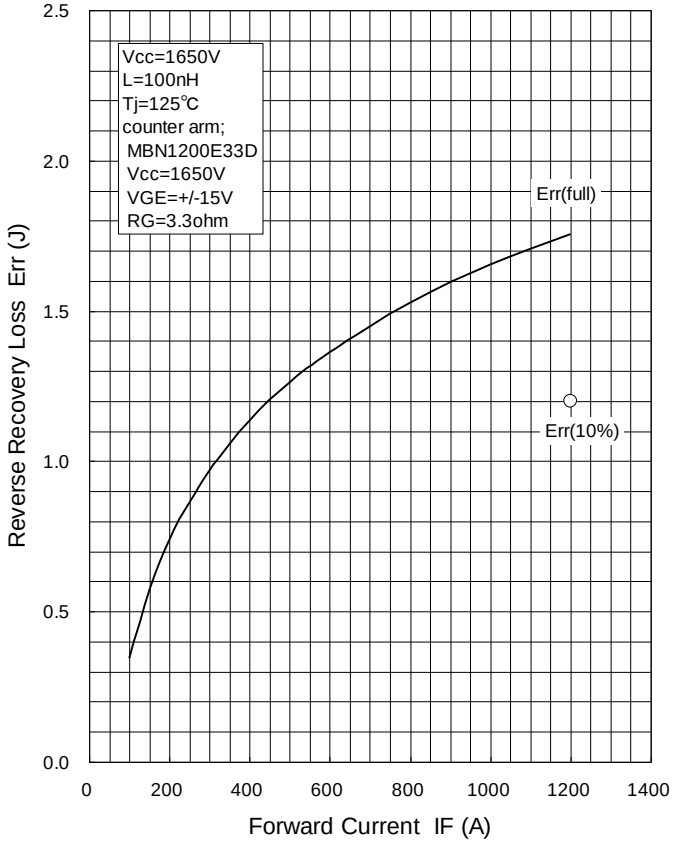



## DYNAMIC CHARACTERISTICS

**TYPICAL**




**TYPICAL**



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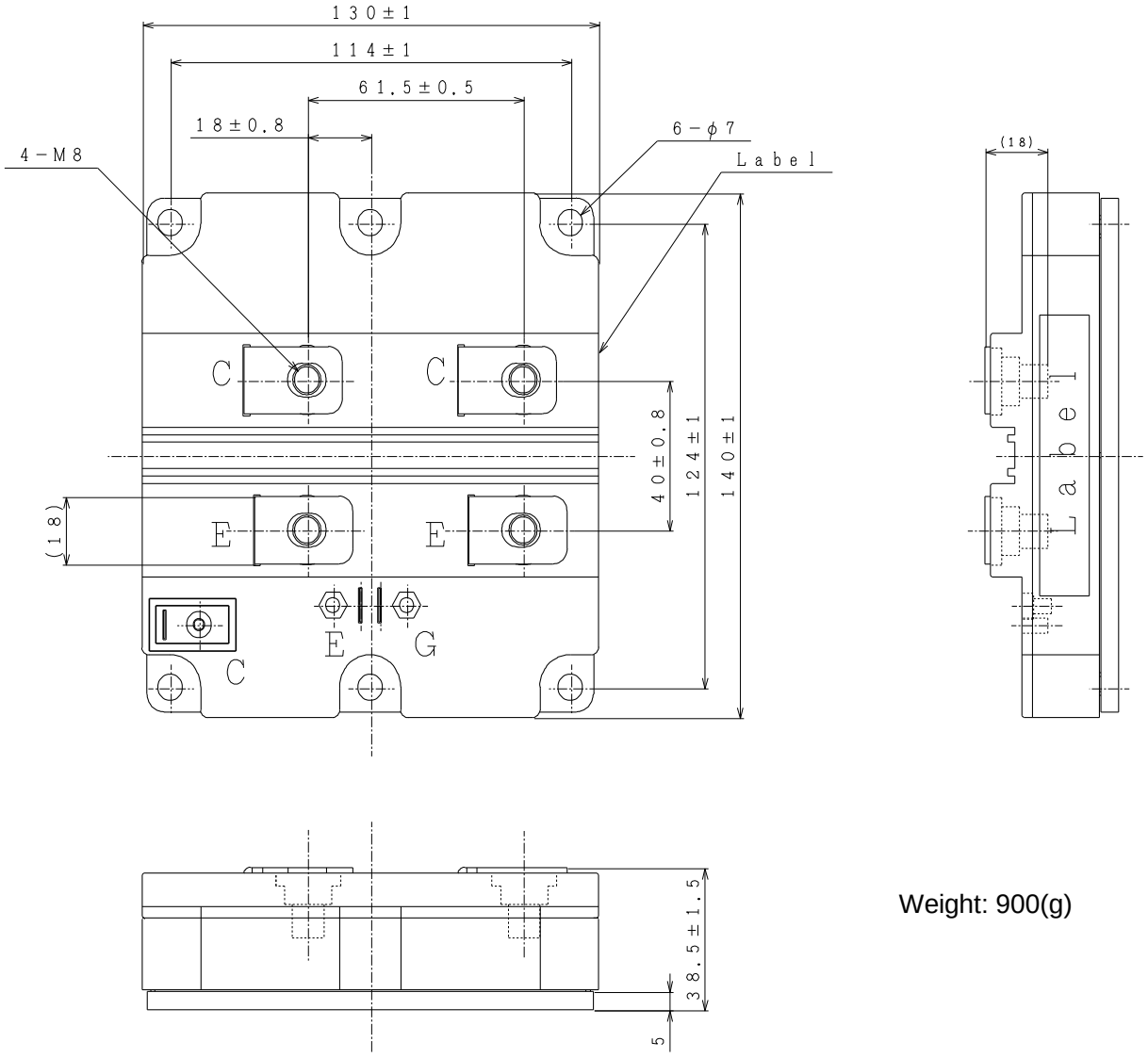
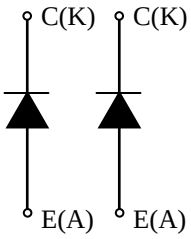
## PACKAGE OUTLINE DRAWING



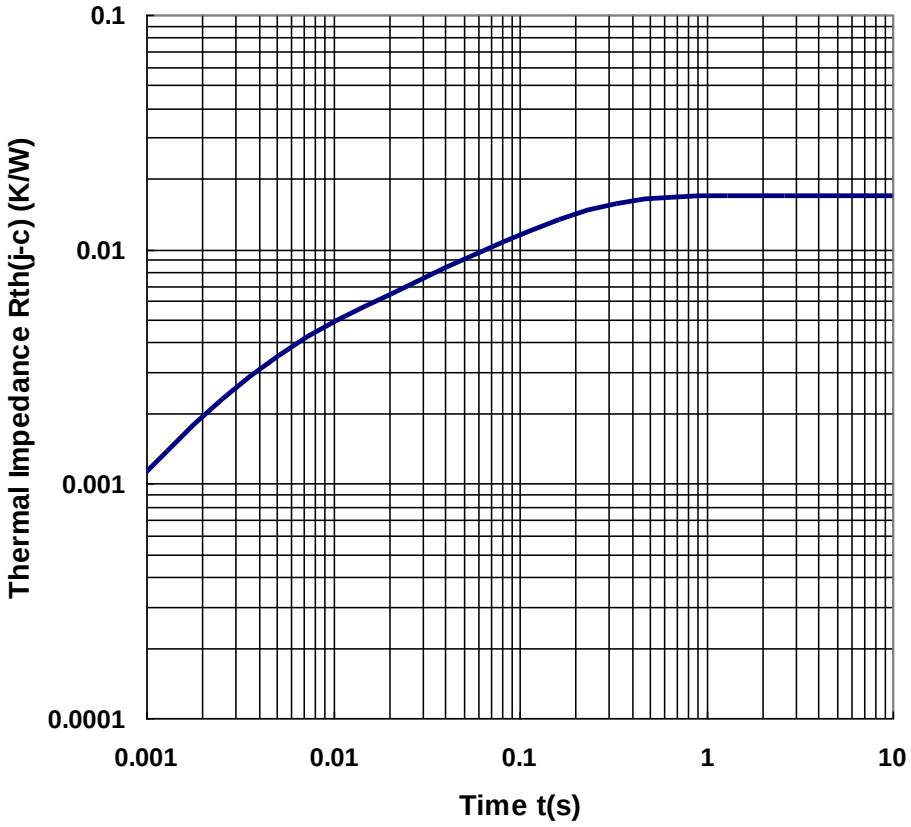

Weight: 900(g)




**Circuit diagram**

# MDM1200E33D

## TRANSIENT THERMAL IMPEDANCE




**Transient Thermal Impedance Curve (Maximum Value)**

### Material declaration

Please note the following materials are contained in the product, in order to keep characteristic and reliability level.

| Material | Contained part |
|---|---|
| Lead (Pb) and its compounds | Solder |

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## HITACHI POWER SEMICONDUCTORS

## Notices

1. The information given herein, including the specifications and dimensions, is subject to change without prior notice to improve product characteristics. Before ordering, purchasers are advised to contact Hitachi sales department for the latest version of this data sheets.
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