

MDM1200FH33F

FEATURES

- * Low Reverse Recovery Loss diode module.
- * Low noise recovery: Ultra soft fast recovery diode.
- * High reverse recovery capability:
Super HiRC Structure.
- * High reliability, high durability diodes.
- * Isolated heat sink (terminal to base).
- * RoHS

ABSOLUTE MAXIMUM RATINGS (T_C=25°C)

Item	Symbol	Unit	MDM1200FH33F
Repetitive Peak Reverse Voltage	V _{RRM}	V	3,300
Forward Current	AC peak	A	1,200
	1ms		2,400
Junction Temperature	T _{vj op}	°C	-50 ~ +150
Maximum Junction Temperature	T _{vj max}	°C	150 (1)
Storage Temperature	T _{stg}	°C	-50 ~ +150 (2)
Isolation Test Voltage	Terminals-base	V _{RMS}	10,200(AC 1 minute)
	Terminal 1-Terminal 2		10,200(AC 1 minute)
Screw Torque	Terminals (M8)	N·m	10 (3)
	Mounting (M6)		6 (4)

- Notes: (1) Regarding the definition of T_{vj max} for each operation mode, please refer to LD-ES-130737.
(https://www.hitachi-power-semiconductor-device.co.jp/products/igbt/pdf/junction_temperature.pdf)
- (2) Terminal temperature shall not exceed the specified temperature in any operation.
- (3) Recommended Value 9±1N·m (4) Recommended Value 5.5±0.5N·m

ELECTRICAL CHARACTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Repetitive Reverse Current	I _{RRM}	mA	-	12	20	V _R =3,300V, T _{vj} =150°C
Forward Voltage Drop	V _F	V	2.9	3.3	3.6	I _F =1,200A, T _{vj} =150°C
Reverse Recovery Time	t _{rr}	μs	-	0.9	-	V _R =1,800V, I _F =1,200A, di/dt=-6000A/μs, L _S =135nH
Reverse Recovery Current	I _{rr}	A	-	1600	-	
Reverse Recovery Charge	Q _{rr}	μC	-	1700	-	T _{vj} =150°C, R _g =4.7Ω (5)
Reverse Recovery Loss	E _{rr}	J/P	-	2.3	-	
I ² t value	I ² t	kA ² s	400	-	-	T _{vj start} =150°C, 10ms, V _R =0V, half-sinewave

PACKAGE CHARACTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Terminal Resistance	R _{Ce}	mΩ	-	0.38	-	par arm, T _{vj} =25°C
Stray inductance module	L _{SCE}	nH	-	36	-	par arm
Thermal Impedance	R _{th(j-c)}	K/W	-	-	0.020	Junction to case (par arm)
Comparative tracking index	CTI	-	-	600	-	
Contact Thermal Impedance	R _{th(c-f)}	K/W	-	0.020	-	Case to fin

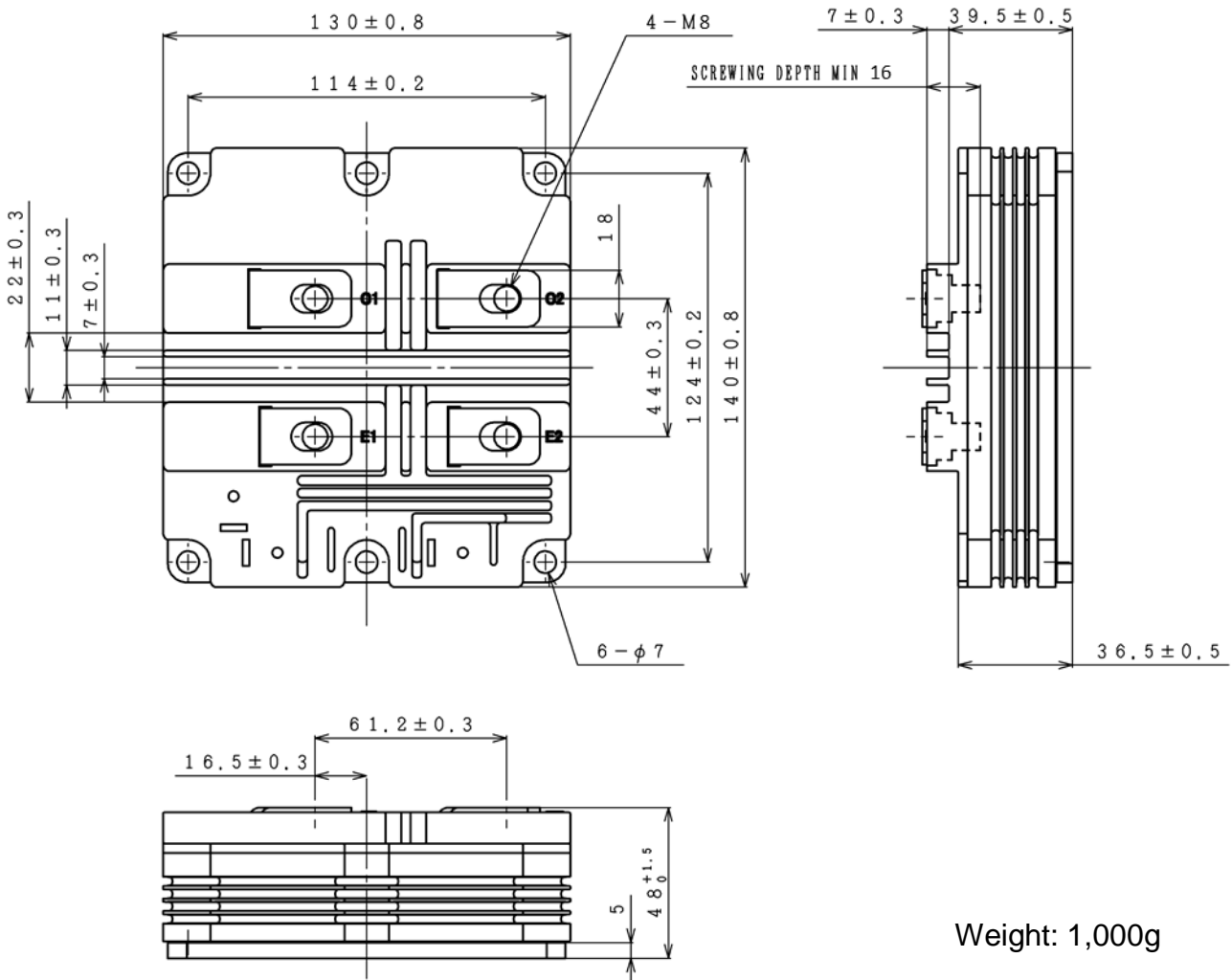
- Notes: (5) Counter arm; MBN1800FH33F V_{GE}=+/-15V
R_G value is the test condition's value for evaluation of the switching times, not recommended value.
Please, determine the suitable R_G value after the measurement of switching waveforms (overshoot voltage, etc.) with appliance mounted

- * 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.
- * ELECTRICAL CHARACTERISTIC items shown in above table are according to IEC 60747-2.

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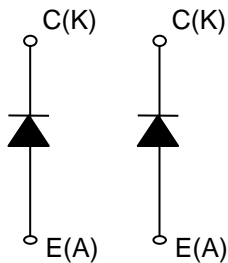
OUTLINE DRAWING

Unit in mm

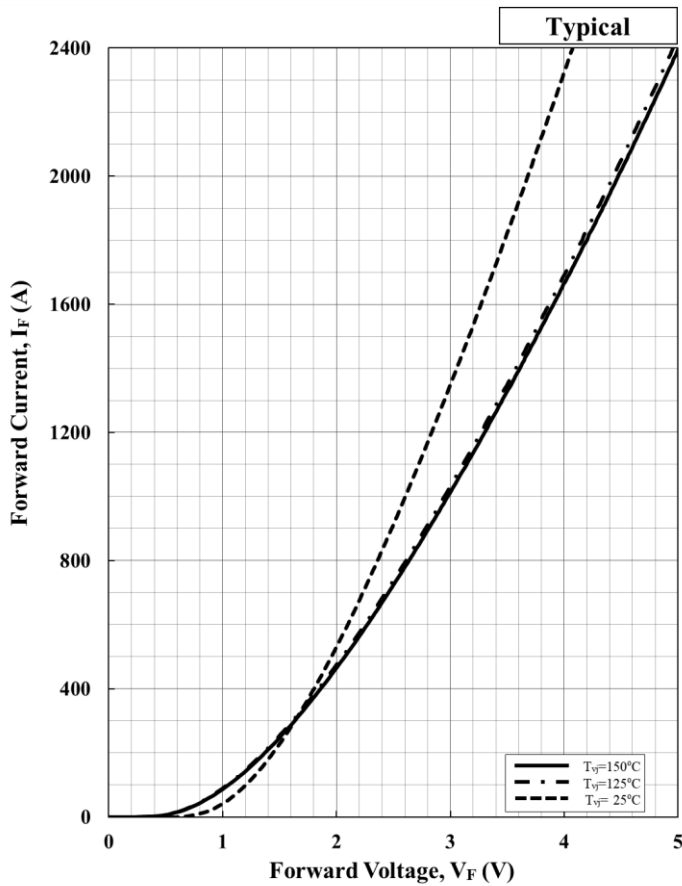


Weight: 1,000g

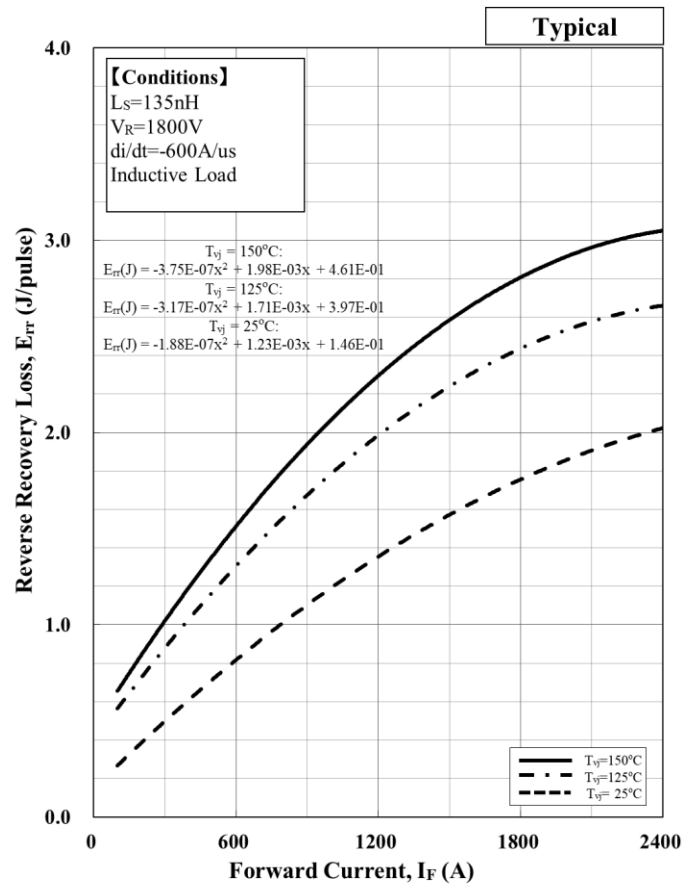
CIRCUIT DIAGRAM



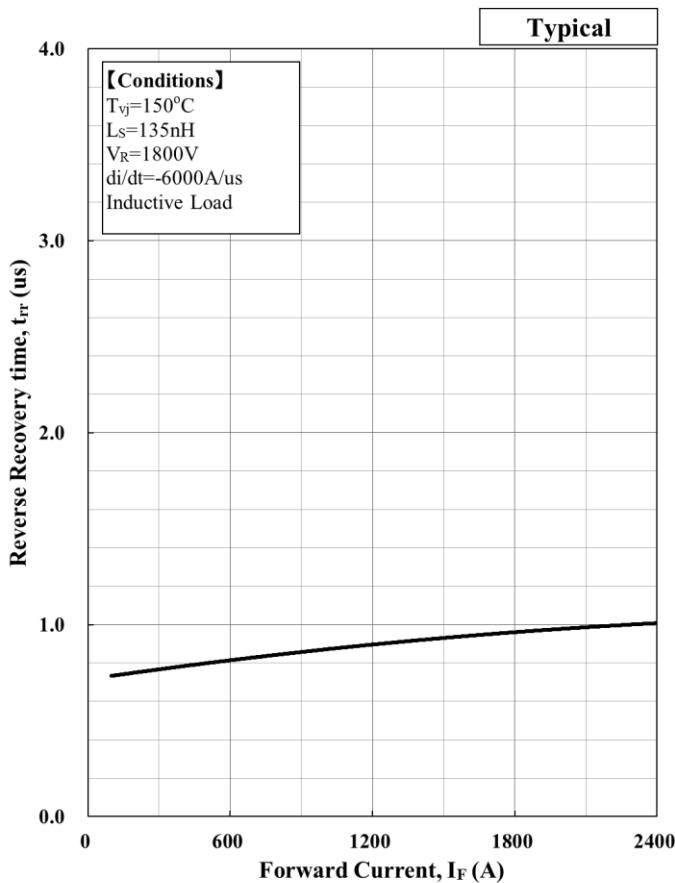
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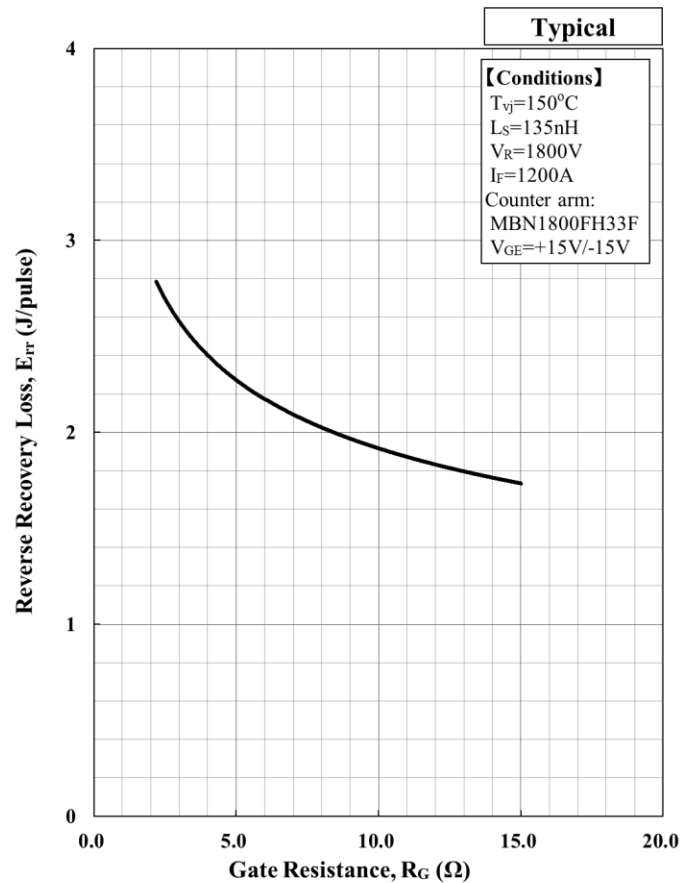
Forward Current vs. Forward Voltage



Reverse Recovery loss vs. Forward current

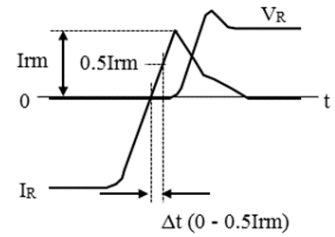
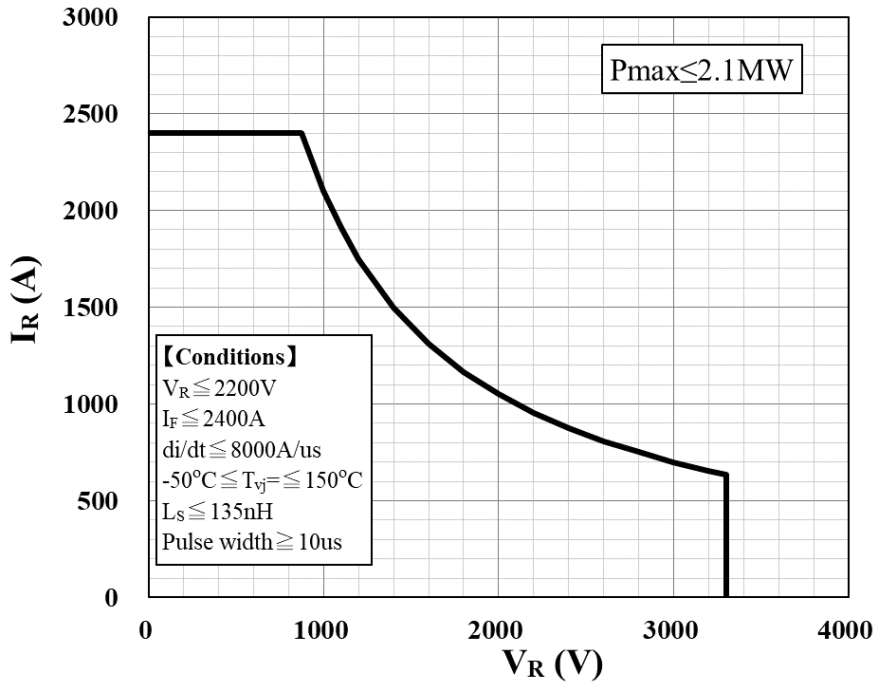


Reverse Recovery time vs. Forward Current



Reverse Recovery loss vs. Gate Resistance

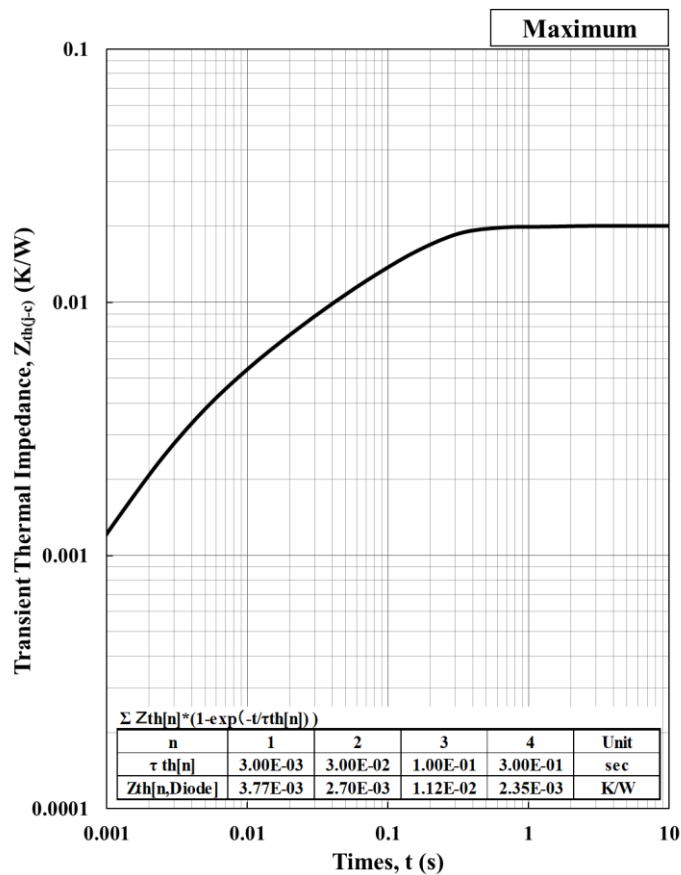
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$$\frac{di}{dt} = \frac{0.5I_{rm}}{\Delta t}$$

Definition of Recovery di/dt

(Defined at power terminals)
Reverse Recovery Safe Operation Area (RRSOA)



Transient Thermal Impedance Curve

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HITACHI POWER SEMICONDUCTORS

Notices

1. Since mishandling of semiconductor devices may cause malfunctions, please be sure to read "Precautions for Safe Use and Notices" in the individual brochure before use.
2. When designing an electronic circuit using semiconductor devices, please do not exceed the absolute maximum rating specified for the device under any external fluctuations. And for pulse applications, please also do not exceed the "Safe Operating Area (SOA)".
3. Semiconductor devices may sometimes break down by accidental or unexpected surge voltage, so please be careful about the safety design such as redundant design and malfunction prevention design which don't cause the damage expand even if they break down.
4. In cases where extremely high reliability is required (such as use in nuclear power control, aerospace and aviation, traffic equipment, life-support-related medical equipment, fuel control equipment and various kinds of safety equipment), safety should be ensured by using semiconductor devices that feature assured safety or by means of users' fail-safe precautions or other arrangement. Or consult with Hitachi's sales department staff. (When semiconductor devices fail, as a result the semiconductor devices or wiring, wiring pattern may smoke, ignite, or the semiconductor devices themselves may burst.)
5. A semi-processed article is done now using solder which contains lead inside the semiconductor devices. There is possibility of the regulation substance depend on the applied models, so please check before using.
6. This specification is a material for component selection, which describes specifications of power semiconductor devices (hereinafter referred to as products), characteristic charts, and external dimension drawings.
7. 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 with Hitachi power semiconductor sales department for the latest version of this data sheets.
8. For handling other than described in this manual, follow the handling instructions (IGBT-HI-00002).

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- For inquiries relating to the products, please contact nearest representatives that is located "Inquiry" portion on the top page of a home page.
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Hitachi power semiconductor home page address

<http://www.hitachi-power-semiconductor-device.co.jp/>

<http://www.hitachi-power-semiconductor-device.co.jp/en/>

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HITACHI POWER SEMICONDUCTORS

Usage

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