

MDM1200E33D

FEATURES

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

ABSOLUTE MAXIMUM RATINGS (T_C=25°C)

Item	Symbol	Unit	MDM1200E33D
Repetitive Peak Reverse Voltage	V _{RRM}	V	3,300
Forward Current	DC	A	1,200
	1ms		2,400
Junction Temperature	T _{vj op}	°C	-40 ~ +125
Storage Temperature	T _{stg}	°C	-40 ~ +125
Isolation Test Voltage	Terminals-base	V _{ISO}	6,000(AC 1 minute)
	Terminal 1-Terminal 2	V _{ISO T-T}	6,000(AC 1 minute)
Screw Torque	Terminals (M8)	-	15 (1)
	Mounting (M6)	-	6 (2)

Notes: (1) Recommended Value 15⁺⁰₋₃N·m

(2) Recommended Value 5.5±0.5N·m

ELECTRICAL CHARACTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Repetitive Reverse Current	I _{RRM}	mA	-	3.0	30.0	V _{AK} =3,300V, T _{vj} =125°C
Forward Voltage Drop	V _F	V	2.3	2.8	3.3	I _F =1,200A, T _{vj} =125°C
Reverse Recovery Time	t _{rr}	μs	-	0.6	1.1	V _{CC} =1,650V, I _F =1,200A, L _S =100nH
Reverse Recovery Loss	E _{rr(10%)}	J/P	-	1.2	1.9	R _G =3.3Ω, T _{vj} =125°C (3)

Notes: (3) Counter arm: MBN1200E33D VGE= ±15V

R_G are the test condition's value to define the switching characteristics not recommended value.

Please, determine the suitable R_G value after the measurement of switching waveforms (overshoot voltage, etc.) with appliance mounted.

PACKAGE CHARACTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Terminal Resistance	R _{CE}	mΩ	-	0.4	-	T _C =25°C, per arm
Stray inductance module	L _{SCE}	nH	-	35	-	per arm
Thermal Impedance	R _{th(j-c)}	K/W	-	-	0.017	Junction to case (par arm)
Comparative tracking index	CTI	-	-	600	-	
Contact Thermal Impedance	R _{th(c-f)}	K/W	-	0.008	-	Case to fin (par module)

* 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.

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DEFINITION OF TEST CIRCUIT

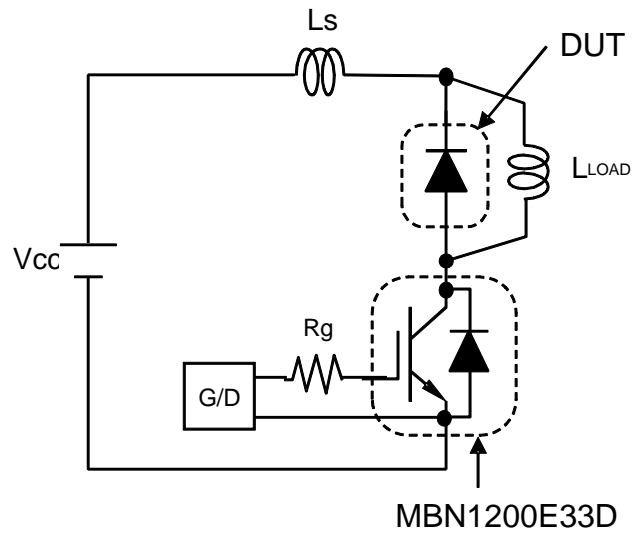


Fig.1 Switching test circuit

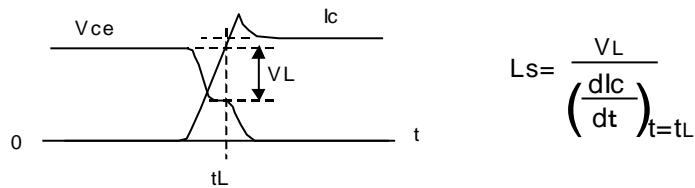


Fig.2 Definition of stray inductance

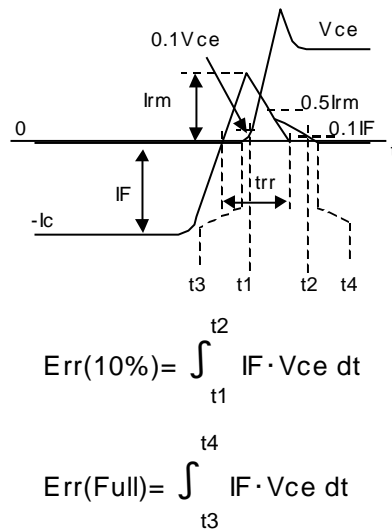
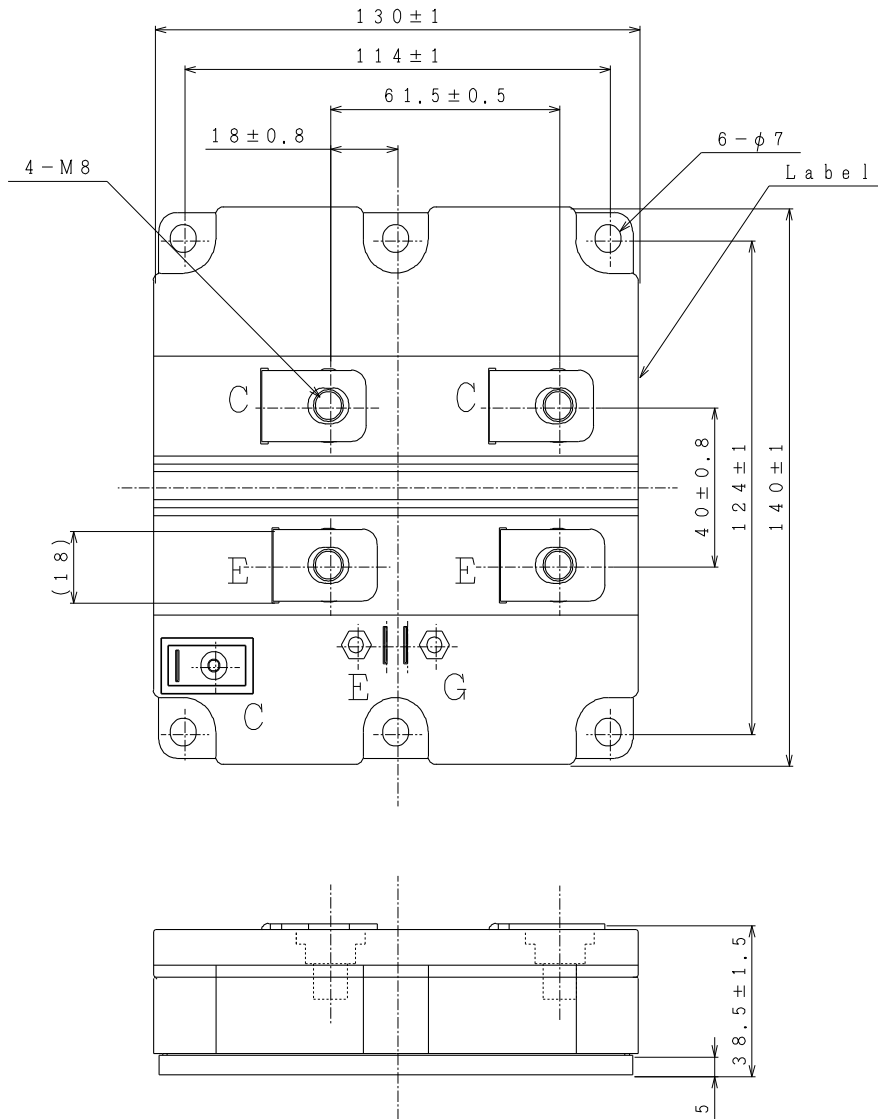


Fig.3 Definition of switching loss

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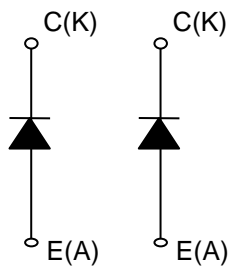
OUTLINE DRAWING



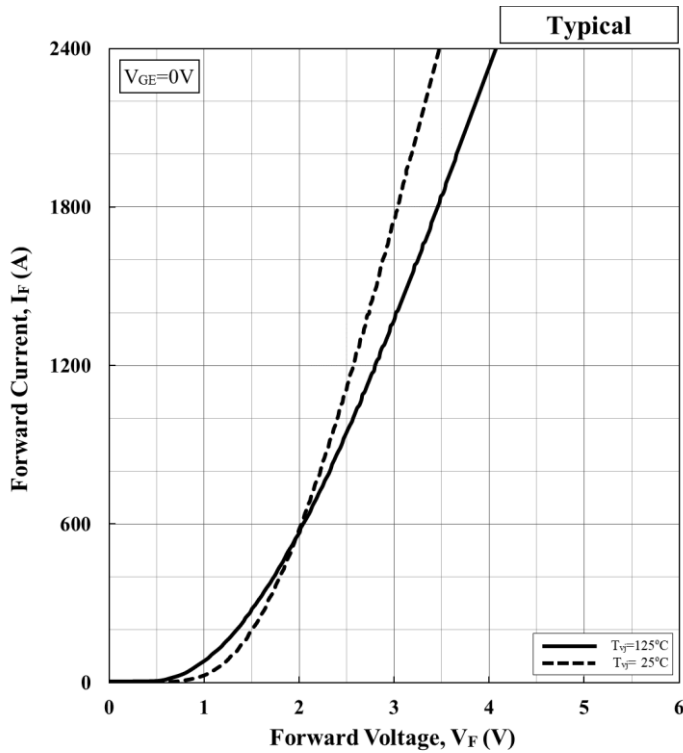
Unit in mm

Weight: 900g

CIRCUIT DIAGRAM



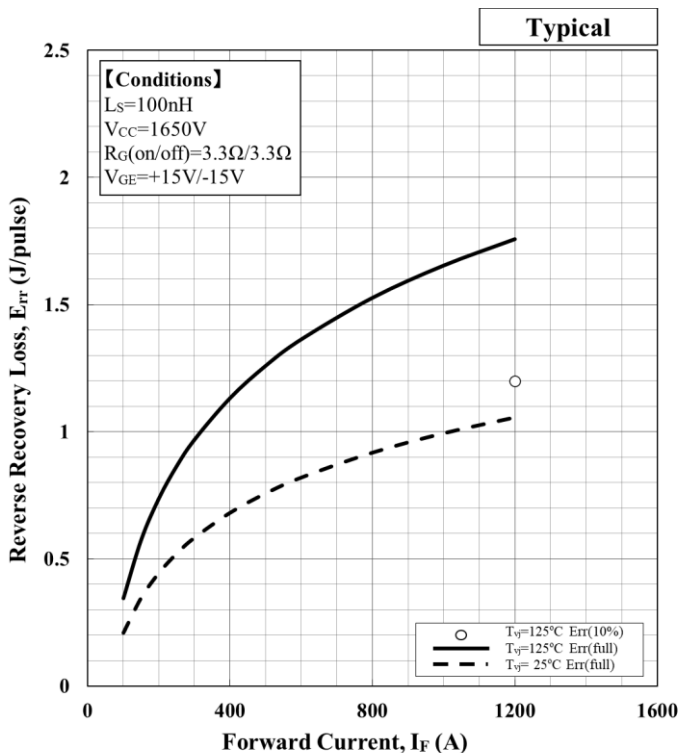
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$$V_F[V] = a_3 \cdot |I_F|^3 + a_2 \cdot |I_F|^2 + a_1 \cdot |I_F| + a_0$$

Temp.[°C]	a_3	a_2	a_1	a_0
25	1.13E-10	-5.60E-07	1.65E-03	1.20E+00
125	1.37E-10	-6.92E-07	2.20E-03	9.39E-01

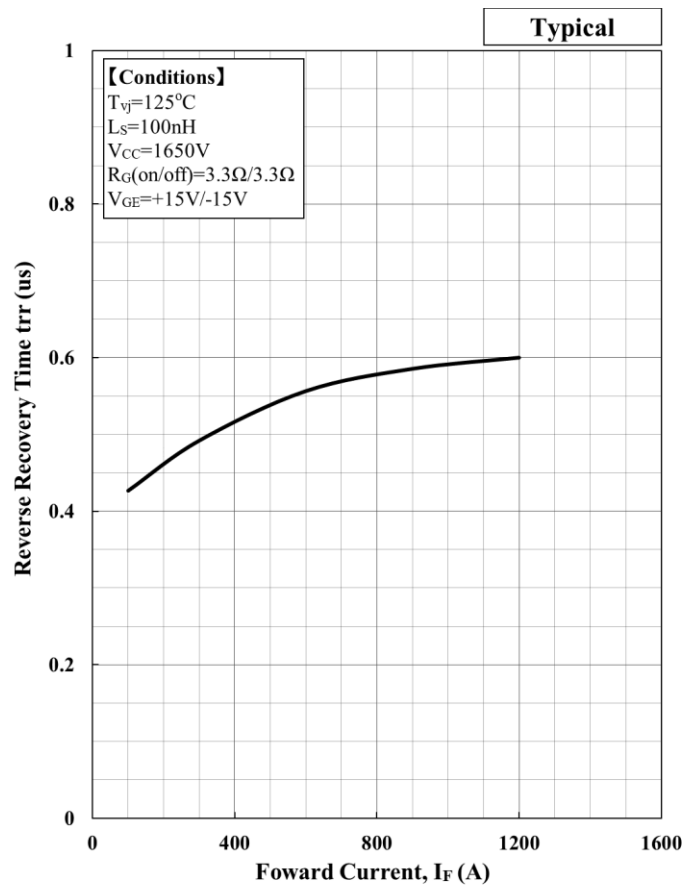
Forward Voltage of diode



$$E [J] = a_3 \cdot |I_F|^3 + a_2 \cdot |I_F|^2 + a_1 \cdot |I_F| + a_0$$

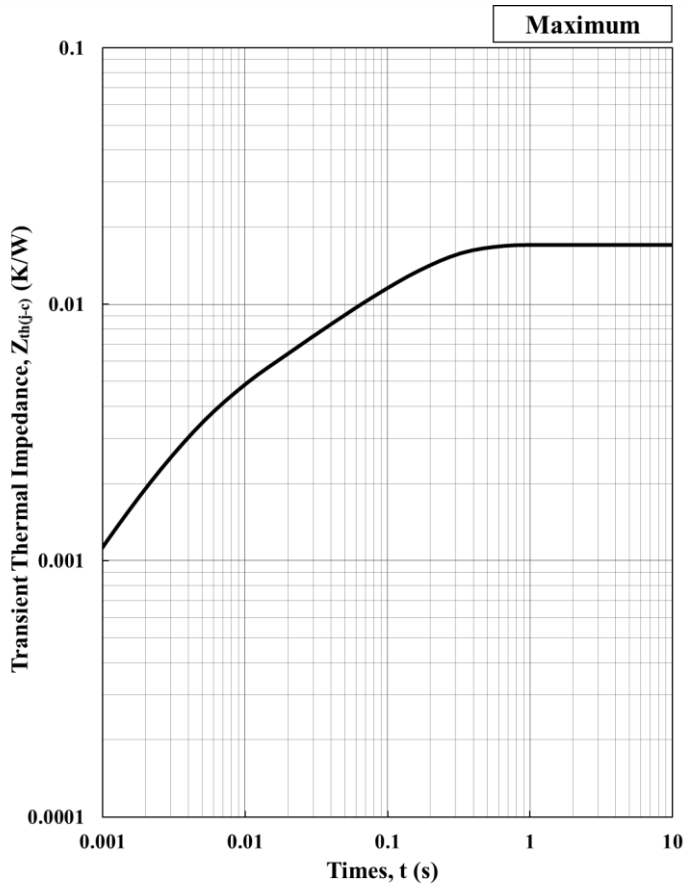
Temp.[°C]	a_3	a_2	a_1	a_0
25	9.98E-10	-2.63E-06	2.61E-03	1.07E-03
125	1.66E-09	-4.38E-06	4.34E-03	1.78E-03

Recovery loss vs. Forward current



Reverse Recovery Time vs. Forward Current

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Transient Thermal Impedance Curve

Foster model lumped circuit constant

n	1	2	3	4
R th, Diode [n]	1.04E-02	3.19E-03	3.08E-03	2.99E-04
C th, Diode [n]	1.45E+01	7.81E+00	1.25E+00	2.21E+00

Cauer model lumped circuit constant

n	1	2	3	4
R th, Diode [n]	2.34E-03	2.88E-03	5.68E-03	6.10E-03
C th, Diode [n]	6.91E-01	7.19E-01	5.21E+00	1.59E+01

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. 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)".
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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

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