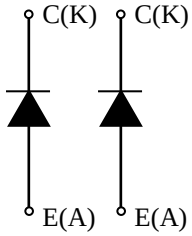
MDM1200H45E2-H

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).

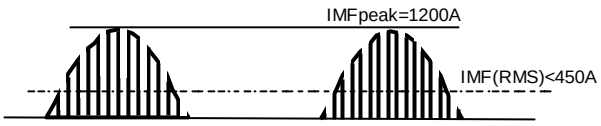
CIRCUIT DIAGRAM



ABSOLUTE MAXIMUM RATINGS (TC=25℃)

Item		Symbol	Unit	MDM1200H45E2-H
Repetitive Peak Reverse Voltage		V_{RRM}	V	4,500
Forward Current	AC peak	I_{MFpeak}	A	1,200
	1ms	I_{Fpulse}		2,400
Junction Temperature		Tj	℃	-40 ～ +125
Maximum Junction Temperature		$T_{vj\ max}$	℃	150 (1)
Storage Temperature		Tstg	℃	-50 ～ +125 (2)
Isolation Test Voltage	Terminals-base	V_{ISO}	V_{RMS}	10,200 (AC 1 minute)
	Terminal 1-Terminal 2	$V_{ISO\ T\text{-}T}$		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.
(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 CHARECTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Repetitive Reverse Current	I_{RRM}	mA	-	2.0	25	VAK=4,500V, Tj=125℃
Forward Voltage Drop	V_F	V	-	4.2	4.7	IF=1,200A, Tj=125℃
Reverse Recovery Time	trr	μs	-	0.9	1.8	V_{CC}=2,600V, IF=1,200A, Ls=180nH
Reverse Recovery Loss	$E_{rr(10\%)}$	J/P	-	2.7	4.0	Tj=125°C Rg=3.3Ω (5)

Notes:(5) Counter arm; MBN1200H45E2-H 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.

PACKAGE CHARECTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Terminal Resistance	R_{CE}	mΩ	-	0.3	-	per arm
Terminal Stray Inductance	L_{SCE}	nH	-	42	-	per arm
Thermal Impedance	Rth(j-c)	K/W	-	-	0.017	Junction to case (per arm)
Comparative tracking index	CTI		-	600	-	
Contact Thermal Impedance	Rth(c-f)	K/W	-	0.007	-	Case to fin (λgrease=1W/(m·K), Heat-sink flatness ≤50um)

* 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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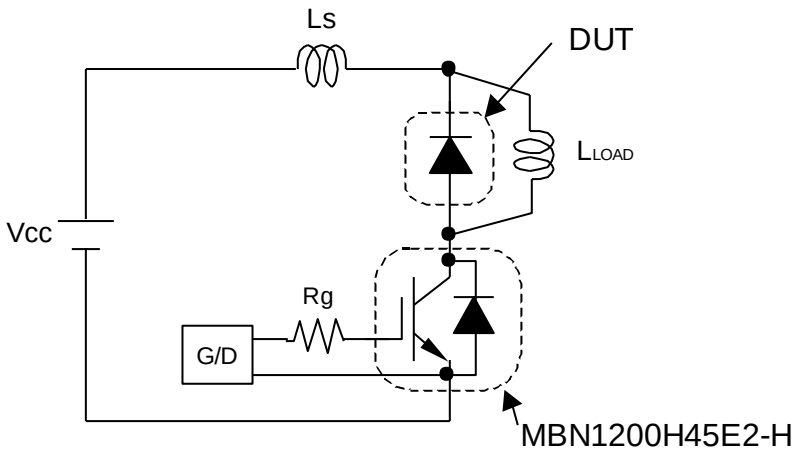


Fig.1 Switching test circuit

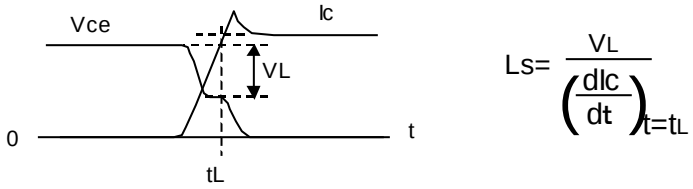
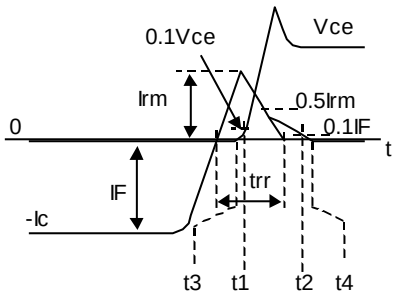


Fig.2 Definition of stray inductance



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

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

Fig.3 Definition of switching loss

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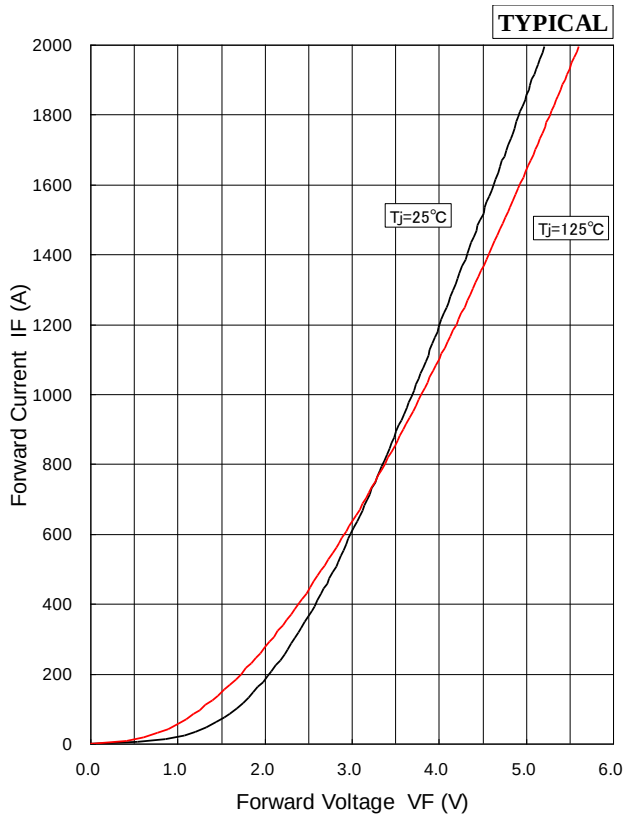
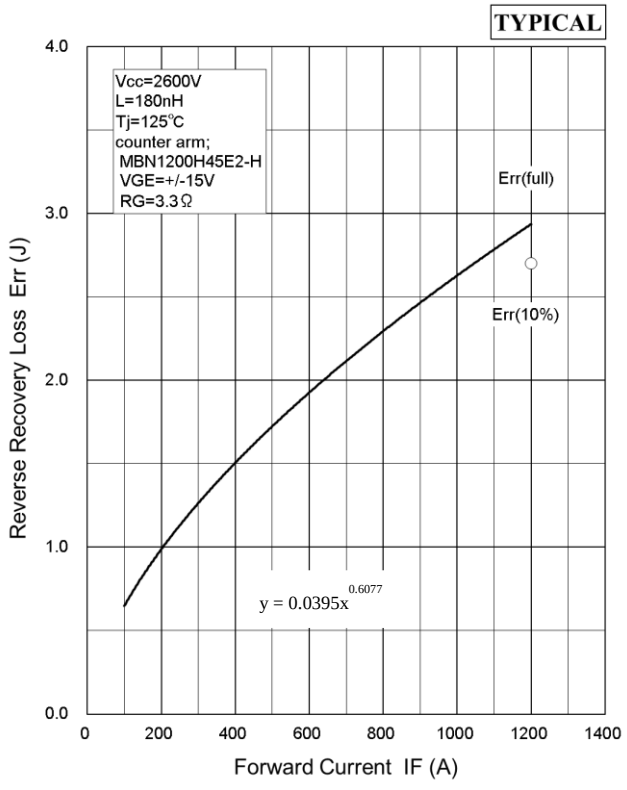
STATIC CHARACTERISTICS

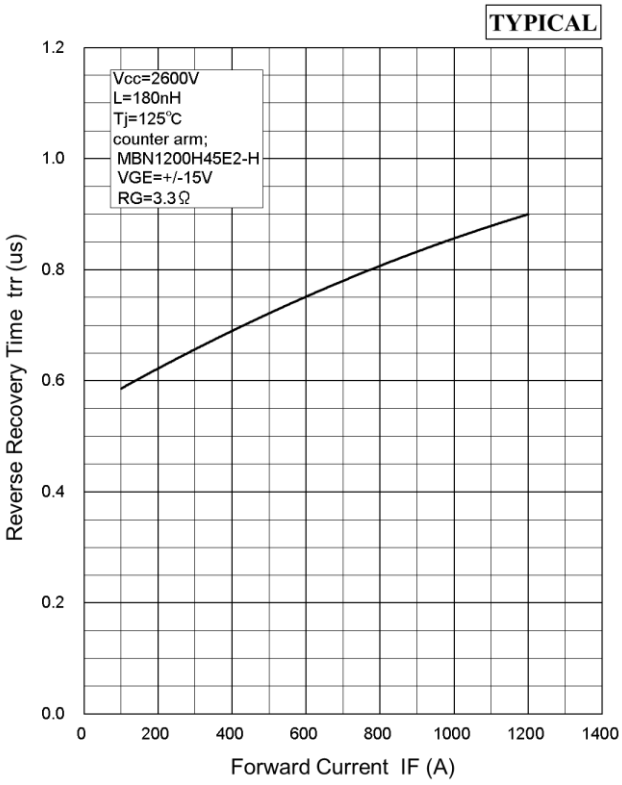


Forward Voltage of diode

DYNAMIC CHARACTERISTICS



Recovery Loss vs. Forward Current



Recovery Time vs. Forward Current

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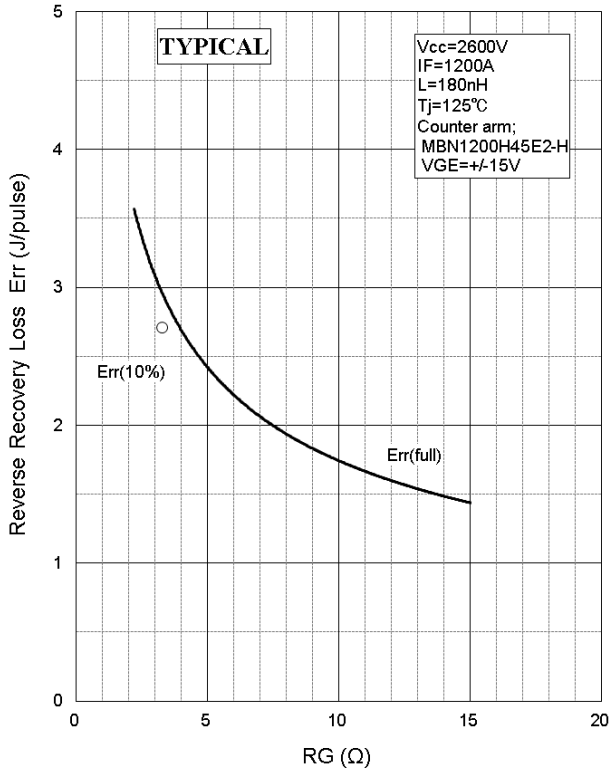
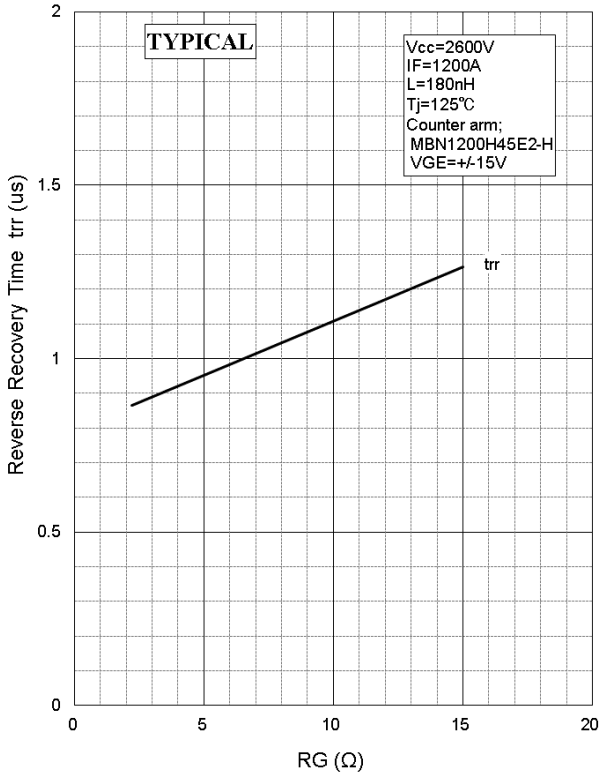


Recovery Loss vs. RG



Recovery Time vs. RG

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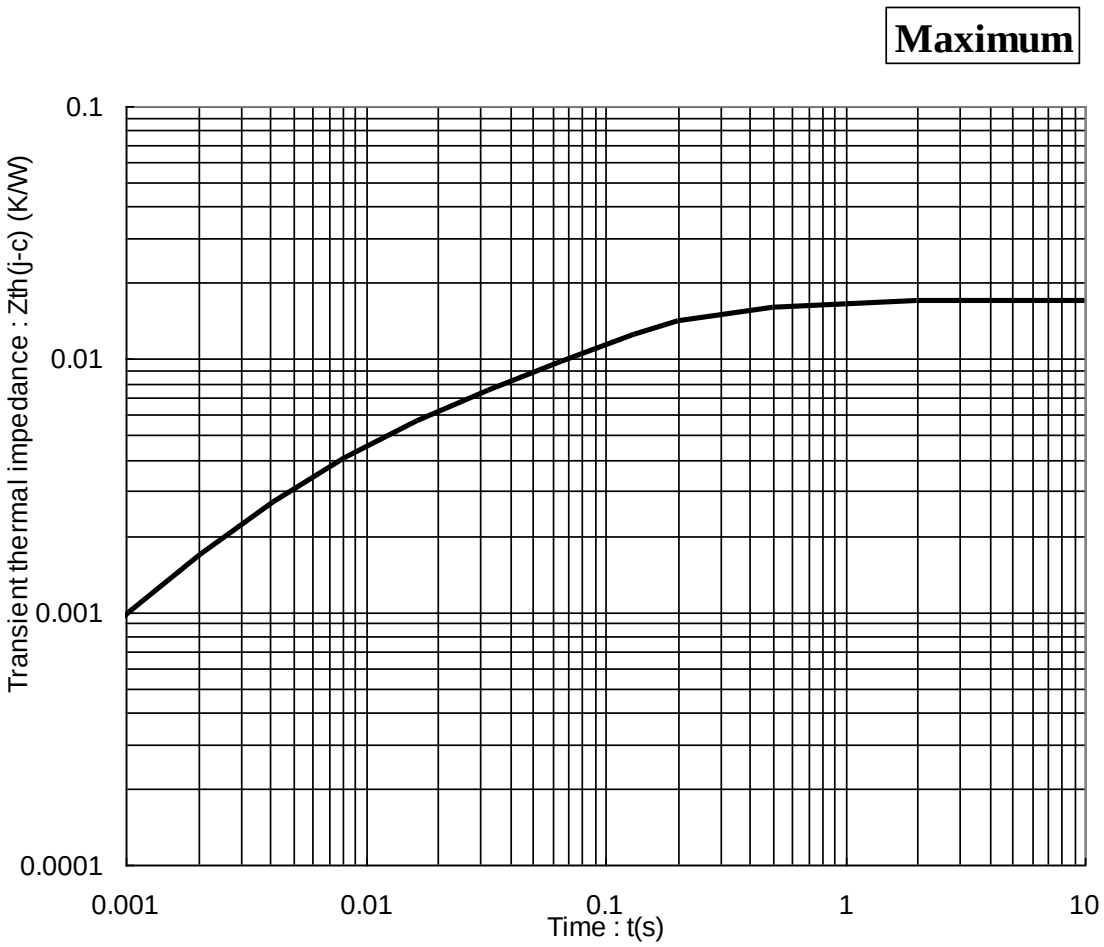
TRANSIENT THERMAL IMPEDANCE



Transient Thermal Impedance Curve

Curve Approximation Model

Σ rth[n]*(1-exp(-t/τth[n]))

n	1	2	3	4	Unit
τ th[n]	3.98E-01	6.81E-02	1.32E-02	3.16E-04	sec
rth[n,Diode]	1.02E-02	3.35E-03	3.18E-03	2.87E-04	K/W

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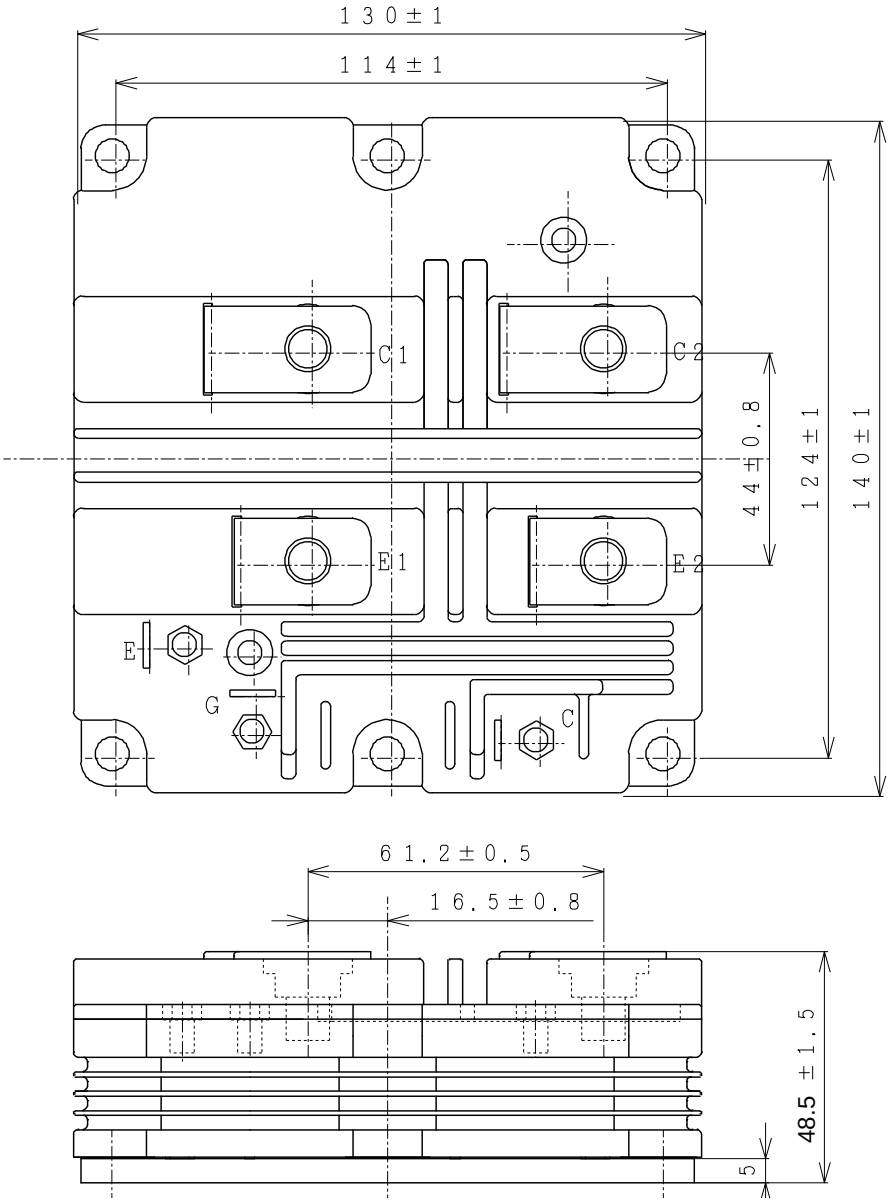
OUTLINE DRAWING

Unit in mm



Weight: 1050(g)

Material declaration

Please note the following materials are contained in the product in order to keep product 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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