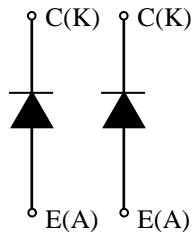


# MDM800H45E2-H

## 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 °C)

Item	Symbol	Unit	MDM800H45E2-H
Repetitive Peak Reverse Voltage	$V_{RRM}$	V	4,500
Forward Current	DC	A	800
	1ms		1,600
Junction Temperature	$T_{vj\ op}$	°C	-40 ~ +125
Storage Temperature	$T_{stg}$	°C	-50 ~ +125
Isolation Test Voltage	Terminals-base	$V_{ISO}$	8,400 (AC 1 minute)
	Terminal 1-Terminal 2		8,400 (AC 1 minute)
Screw Torque	Terminals (M8)	N·m	10 (1)
	Mounting (M6)		6 (2)

Notes: (1) Recommended Value  $9 \pm 1$ N·m (2) Recommended Value  $5.5 \pm 0.5$ N·m

## ELECTRICAL CHARACTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Repetitive Reverse Current	$I_{RRM}$	mA	-	1.4	17	$V_{AK}=4,500V, T_{vj}=125^{\circ}C$
Forward Voltage Drop	$V_F$	V	-	4.2	4.7	$I_F=800A, T_{vj}=125^{\circ}C$
Reverse Recovery Time	trr	μs	-	0.9	1.8	$V_{CC}=2,600V, I_F=800A, L_s=190nH$
Reverse Recovery Loss	$E_{rr(10\%)}$	J/P	-	1.8	2.7	$T_{vj}=125^{\circ}C, R_G=4.7\Omega(3)$

Notes:(3) Counter arm; MDM800H45E2-H  $V_{GE}=\pm 15V$

$R_G$  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 CHARACTERISTICS

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	$R_{th(j-c)}$	K/W	-	-	0.026	Junction to case (per arm)
Comparative tracking index	CTI		-	600	-	
Contact Thermal Impedance	$R_{th(c-f)}$	K/W	-	0.007	-	Case to fin ( $\lambda_{grease}=1W/(m \cdot K)$ , Heat-sink flatness $\leq 50\mu m$ )

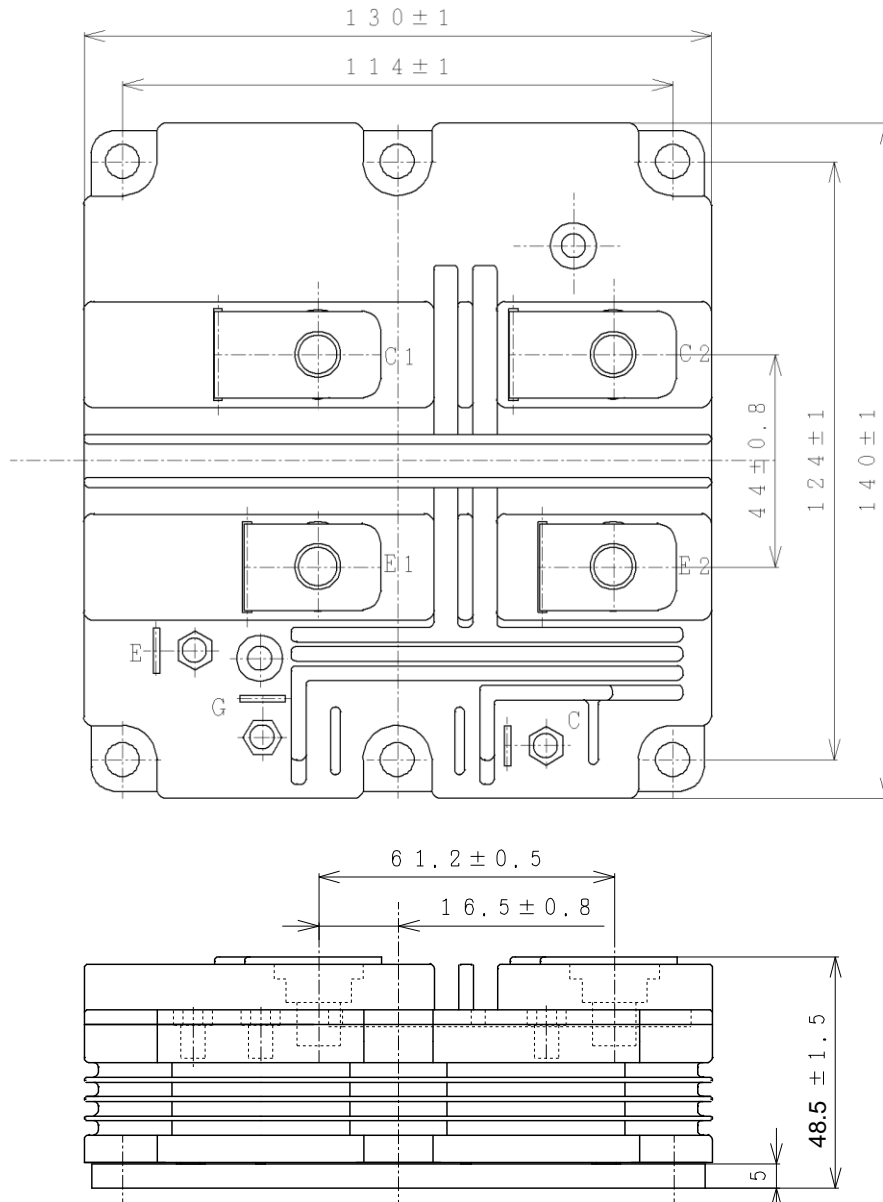
\* Please contact our representatives at order.

\* For improvement, specifications are subject to change without notice.

\* For actual application, please confirm this spec sheet is the newest revision.

# MDM800H45E2-H

Unit in mm



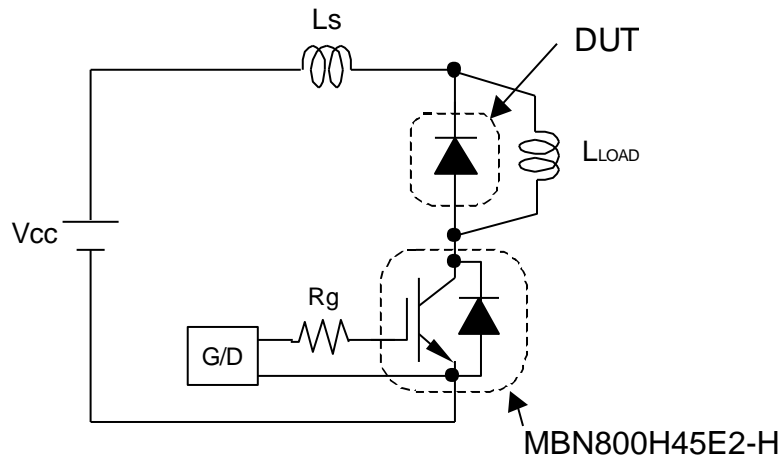
Weight: 1050(g)

### Material declaration

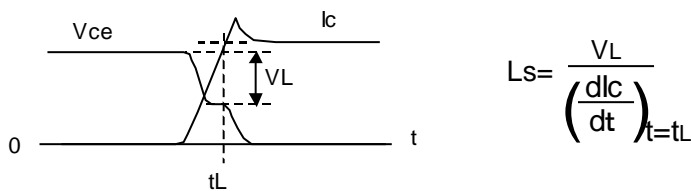
Please note the following materials are contained in the product in order to keep product characteristic and reliability level.

Material	Contained part
Lead (Pb) and its compounds	Solder

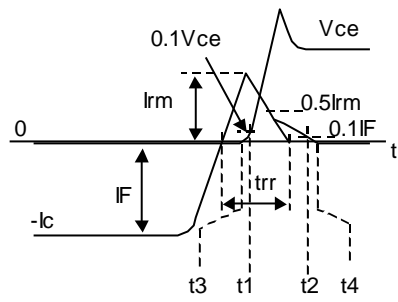
# MDM800H45E2-H



**Fig.1 Switching test circuit**



**Fig.2 Definition of stray inductance**

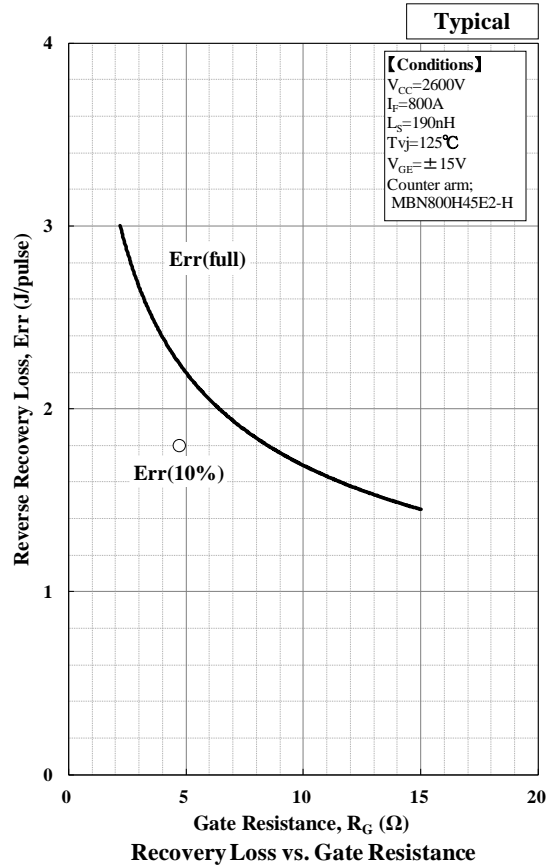
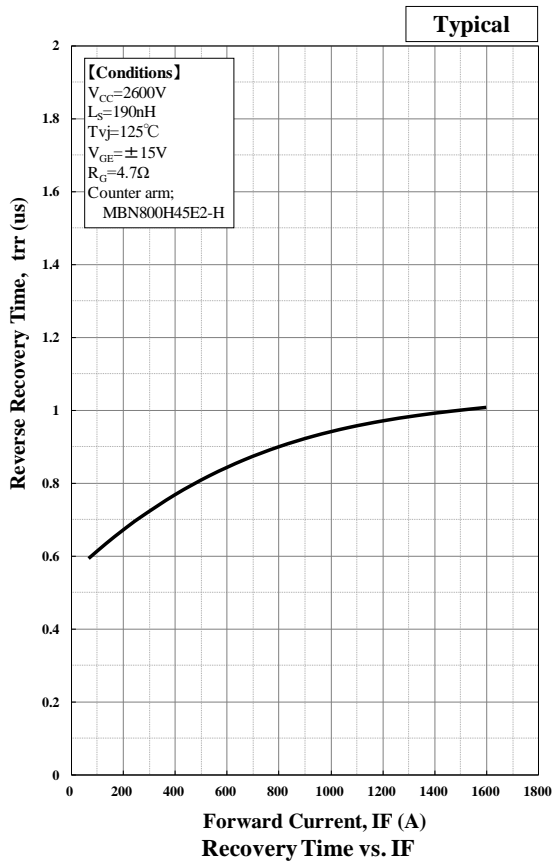
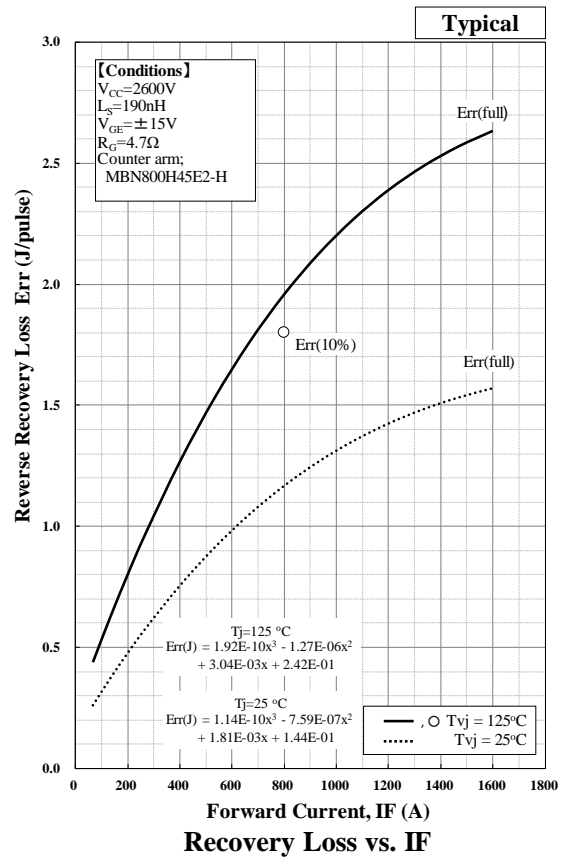
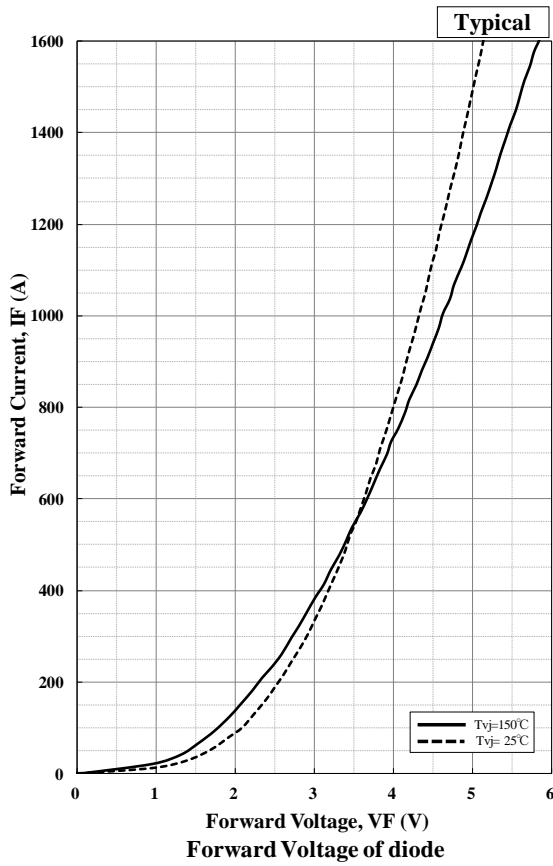


$$\text{Err}(10\%) = \int_{t1}^{t2} IF \cdot Vce \, dt$$

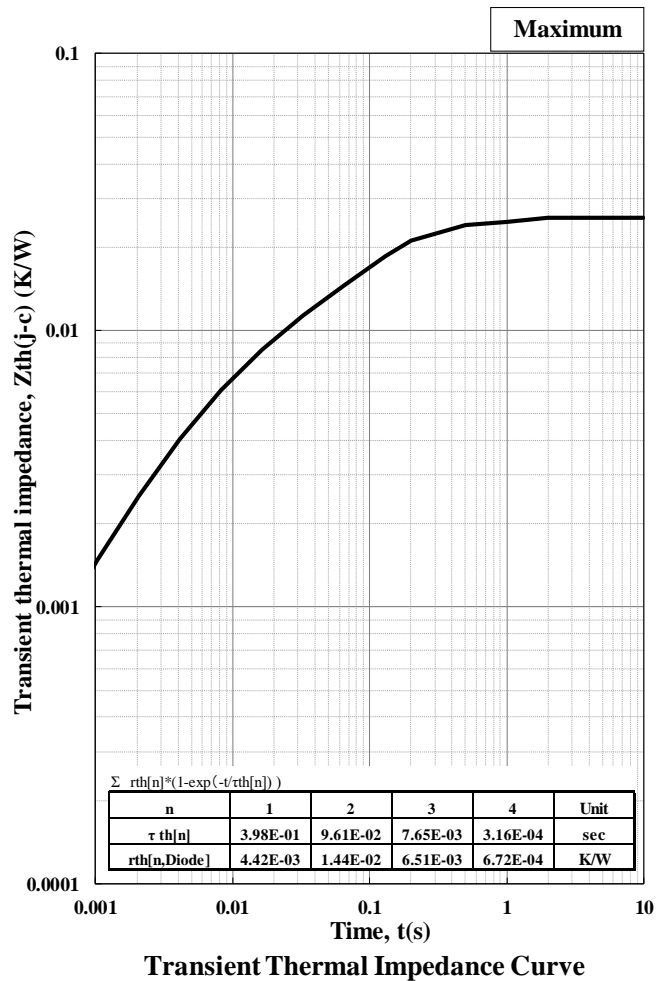
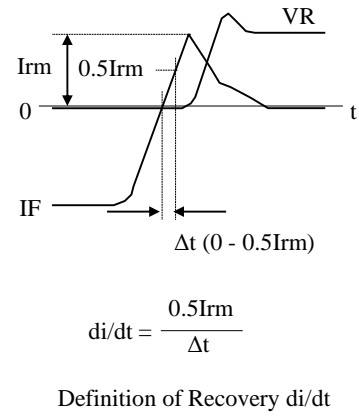
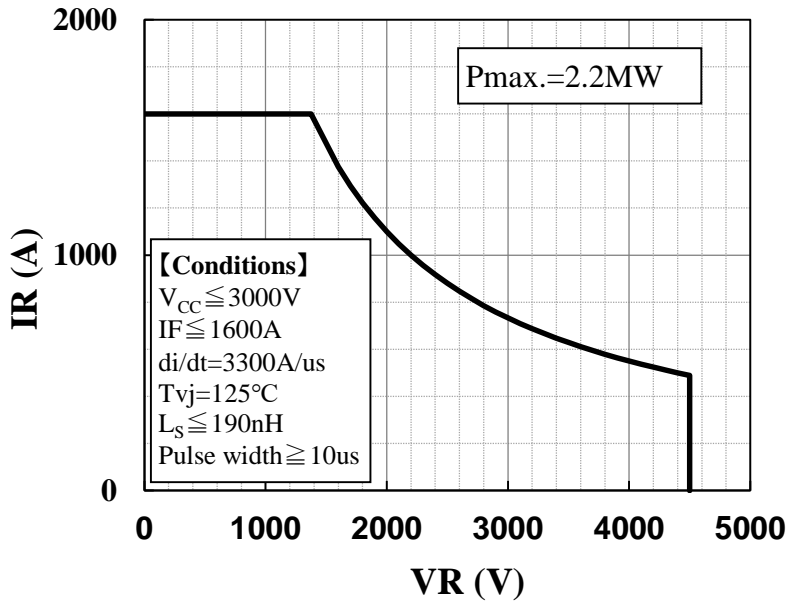
$$\text{Err}(\text{Full}) = \int_{t3}^{t4} IF \cdot Vce \, dt$$

**Fig.3 Definition of switching loss**

# MDM800H45E2-H



# MDM800H45E2-H



# MDM800H45E2-H

## HITACHI POWER SEMICONDUCTORS

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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.)
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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.

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# MDM800H45E2-H

## HITACHI POWER SEMICONDUCTORS

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