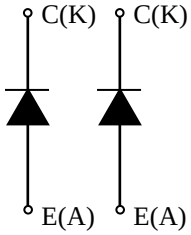
MDM800H45E2-H

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	I_F	A	800
	1ms	I_{Fpulse}		1,600
Junction Temperature		$T_{vj\ op}$	°C	-40 ～ +125
Storage Temperature		T_{stg}	°C	-50 ～ +125
Isolation Test Voltage	Terminals-base	V_{ISO}	V_{RMS}	8,400 (AC 1 minute)
	Terminal 1-Terminal 2	$V_{ISO\ T\text{-}T}$		8,400 (AC 1 minute)
Screw Torque	Terminals (M8)	-	N·m	10 (1)
	Mounting (M6)	-		6 (2)

Notes: (1) Recommended Value 9±1N·m (2) Recommended Value 5.5±0.5N·m

ELECTRICAL CHARECTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Repetitive Reverse Current	I_{RRM}	mA	-	1.4	17	VAK=4,500V, Tvj=125 °C
Forward Voltage Drop	V_F	V	-	4.2	4.7	IF=800A, Tvj=125 °C
Reverse Recovery Time	trr	μs	-	0.9	1.8	V_{CC}=2,600V, IF=800A, Ls=190nH
Reverse Recovery Loss	$E_{rr(10\%)}$	J/P	-	1.8	2.7	Tvj=125°C, RG=4.7Ω(3)

Notes:(3) Counter arm; MBN800H45E2-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	-	-	0.026	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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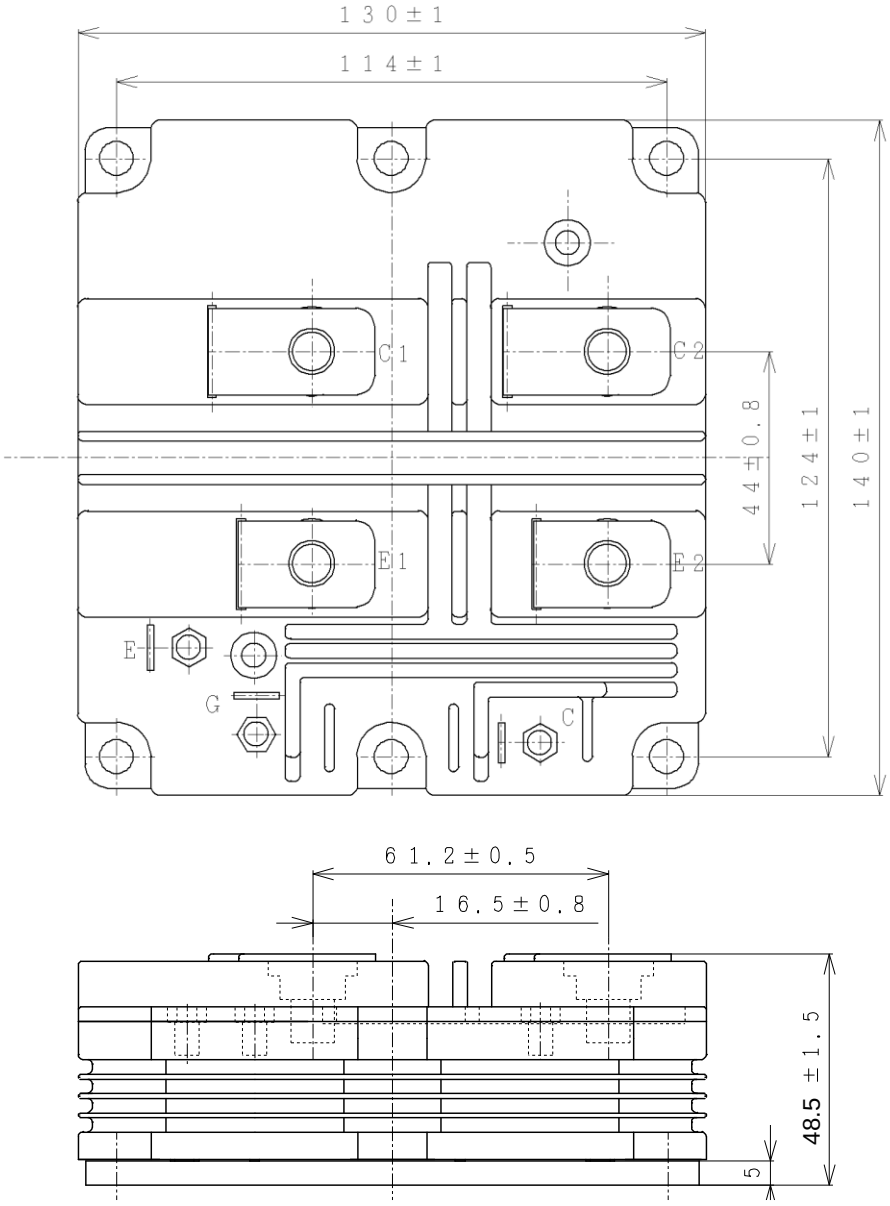
Unit in mm



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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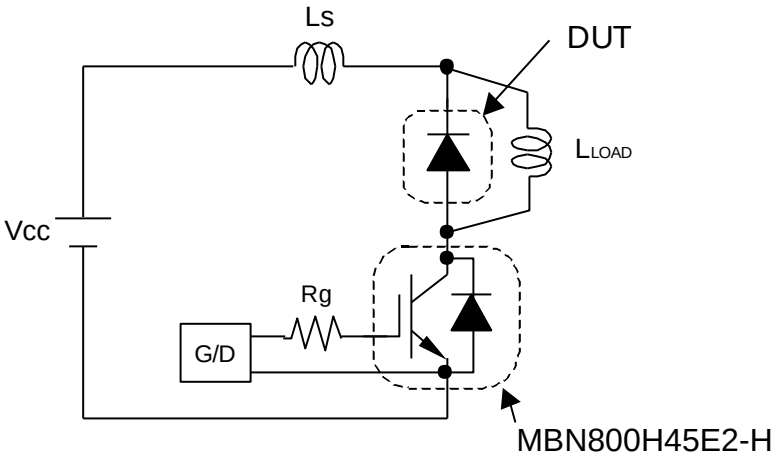
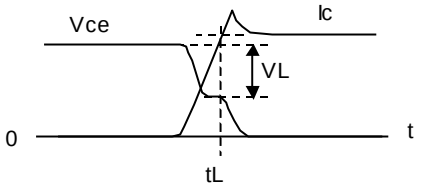
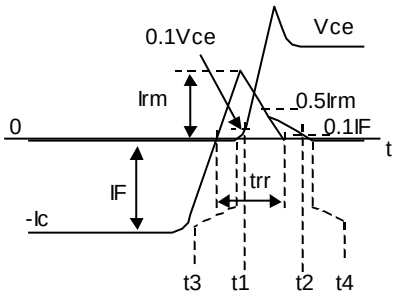


Fig.1 Switching test circuit



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

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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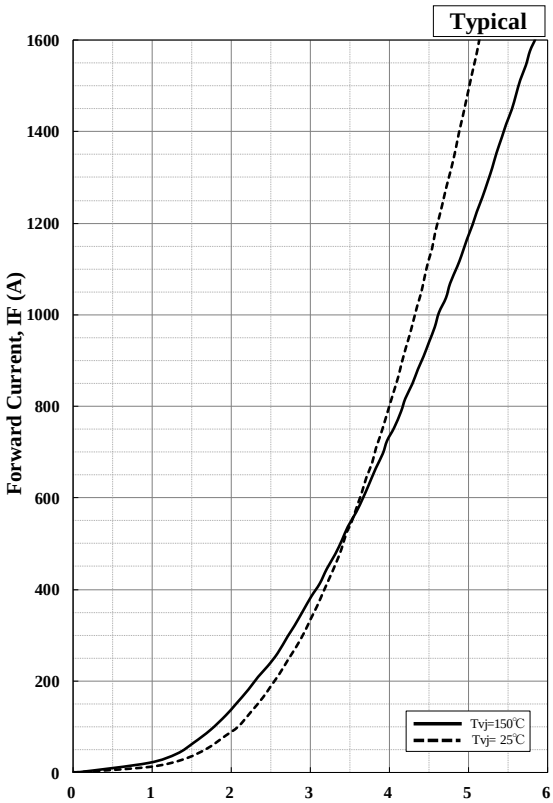
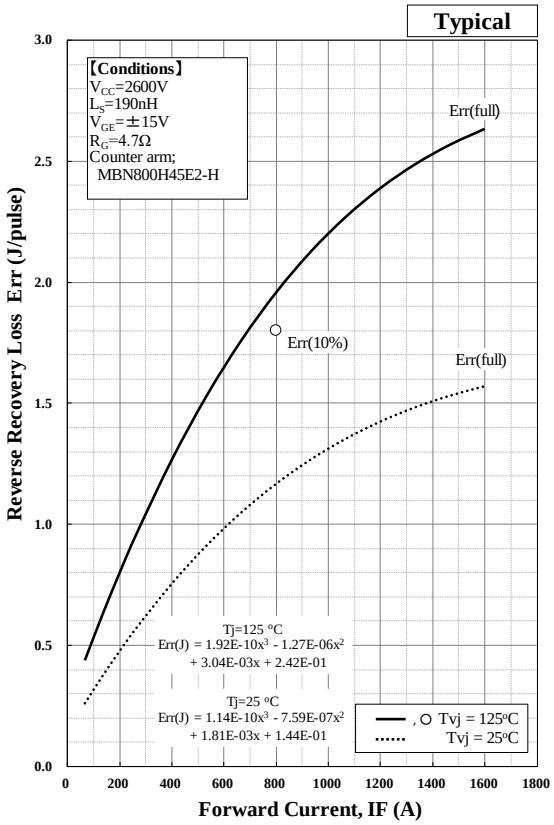
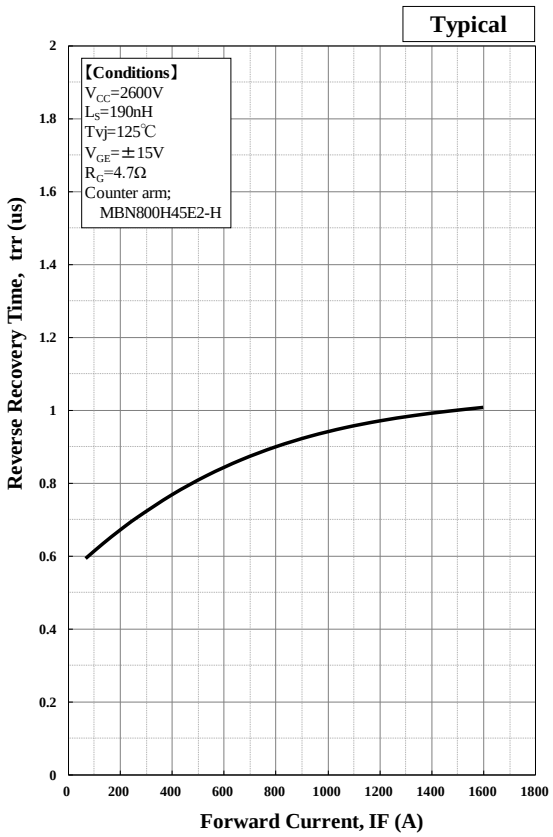


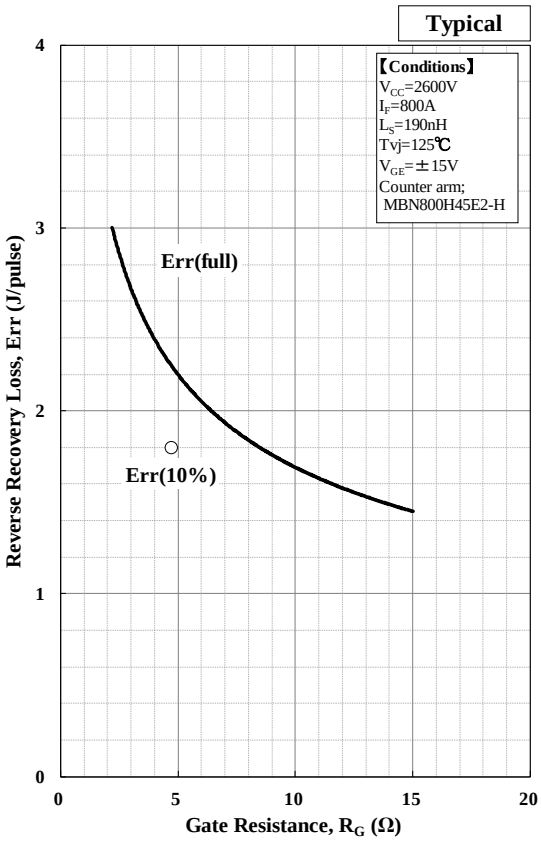
Forward Voltage of diode



Recovery Loss vs. IF



Recovery Time vs. IF



Recovery Loss vs. Gate Resistance

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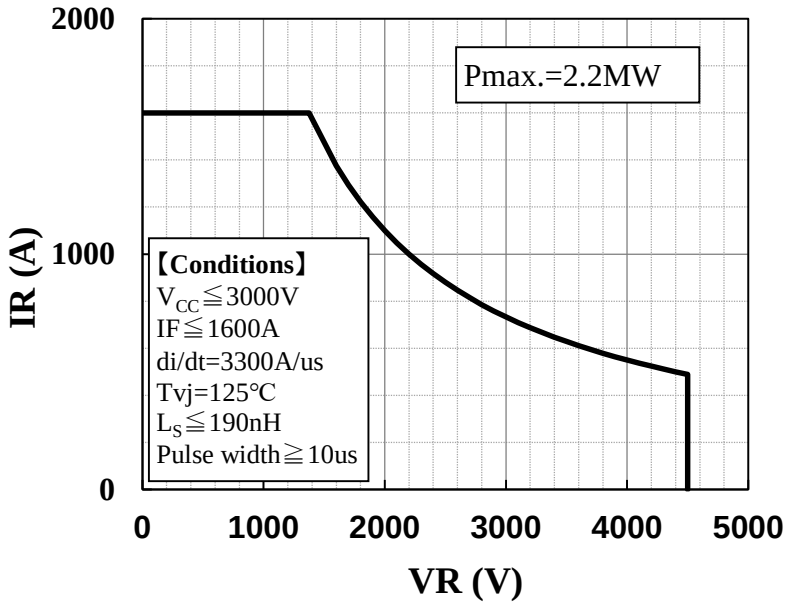
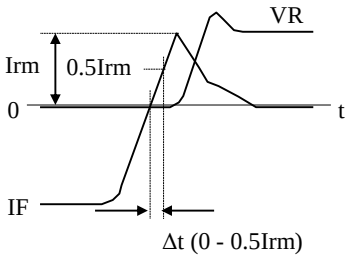
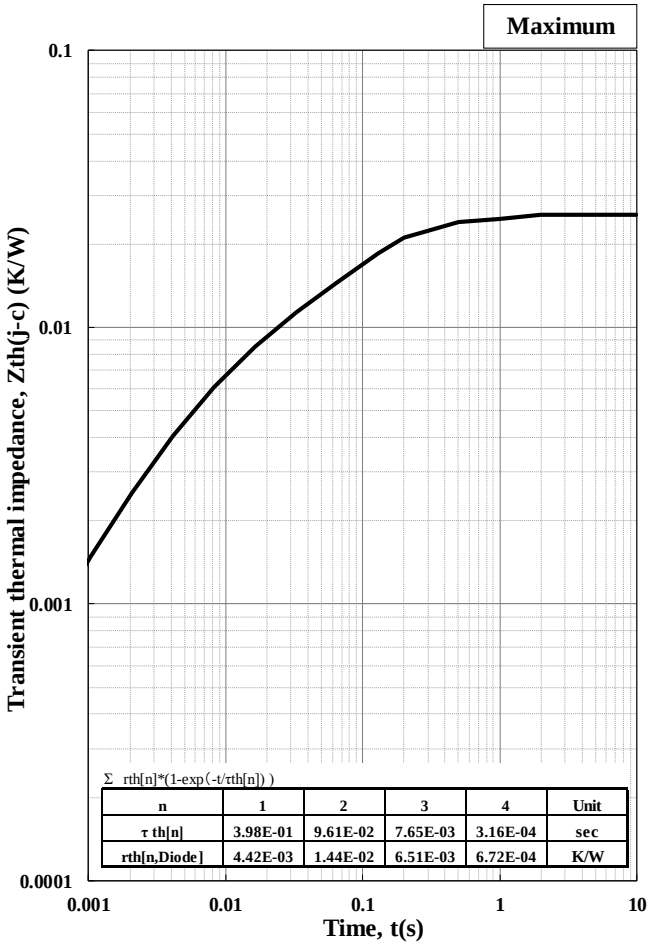




$$di/dt = \frac{0.5Irm}{\Delta t}$$

Definition of Recovery di/dt



n	1	2	3	4	Unit
τ th[n]	3.98E-01	9.61E-02	7.65E-03	3.16E-04	sec
rth[n,Diode]	4.42E-03	1.44E-02	6.51E-03	6.72E-04	K/W

Transient Thermal Impedance Curve

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Minebea POWER SEMICONDUCTORS

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