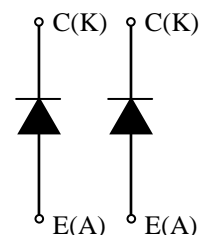


# MDM750H65E2

## FEATURES

- \* 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 (T<sub>C</sub>=25°C)

Item	Symbol	Unit	MDM750H65E2
Repetitive Peak Reverse Voltage	V <sub>RRM</sub>	V	T <sub>j</sub> =125°C
			T <sub>j</sub> =25°C
			T <sub>j</sub> =-40°C
Forward Current	I <sub>F</sub>	A	DC
			1ms
Junction Temperature	T <sub>j</sub>	°C	-40 ~ +125
Storage Temperature	T <sub>stg</sub>	°C	-50 ~ +125
Isolation Test Voltage	Terminals-base	V <sub>ISO</sub>	V <sub>RMS</sub>
	Terminal 1-Terminal 2	V <sub>ISO T-T</sub>	
Screw Torque	Terminals (M8)	-	10 (1)
	Mounting (M6)	-	6 (2)

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

## ELECTRICAL CHARACTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Repetitive Reverse Current	I <sub>RRM</sub>	mA	-	10	75	V <sub>AK</sub> =6,500V, T <sub>j</sub> =125°C
Forward Voltage Drop	V <sub>F</sub>	V	-	3.8	-	I <sub>F</sub> =750A, T <sub>j</sub> =25°C
			3.75	4.15	4.65	I <sub>F</sub> =750A, T <sub>j</sub> =125°C
Reverse Recovery Time	t <sub>rr</sub>	μs	-	0.8	1.6	V <sub>CC</sub> =3,600V, I <sub>F</sub> =750A, L=200nH T <sub>j</sub> =125°C R <sub>g</sub> =8.2Ω (3)
Reverse Recovery Loss	E <sub>rr(10%)</sub>	J/P	-	2.4	3.0	
		E <sub>rr(full)</sub>	J/P	-	2.6	-

## PACKAGE CHARACTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Terminal Resistance	R <sub>CE</sub>	mΩ	-	0.3	-	per arm
Terminal Stray Inductance	L <sub>sCE</sub>	nH	-	42	-	per arm
Thermal Impedance	R <sub>th(j-c)</sub>	K/W	-	-	0.017	Junction to case
Comparative tracking index	CTI		-	600	-	
Contact Thermal Impedance	R <sub>th(c-f)</sub>	K/W	-	0.007	-	Case to fin (λgrease=1W/(m·K), Heat-sink flatness ≤50μm)

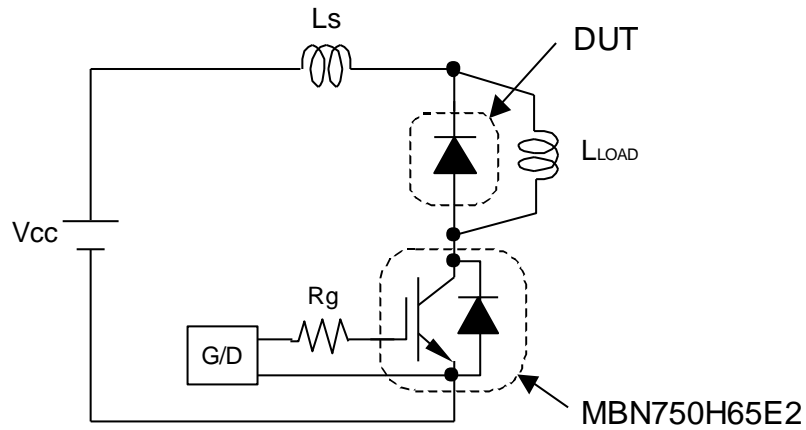
Notes:(3) Counter arm; MBN750H65E2 VGE=+/-15V

R<sub>G</sub> value is the test condition's value for evaluation of the switching times, not recommended value.

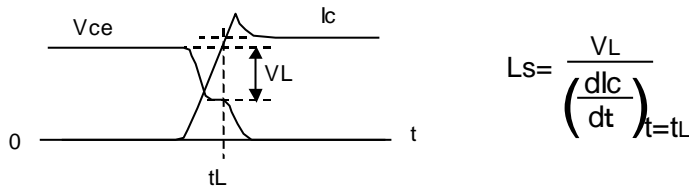
Please, determine the suitable R<sub>G</sub> value after the measurement of switching waveforms (overshoot voltage, etc.) with appliance mounted.

- \* 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.

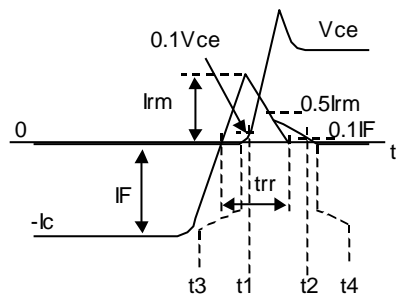
# MDM750H65E2



**Fig.1 Switching test circuit**



**Fig.2 Definition of stray inductance**



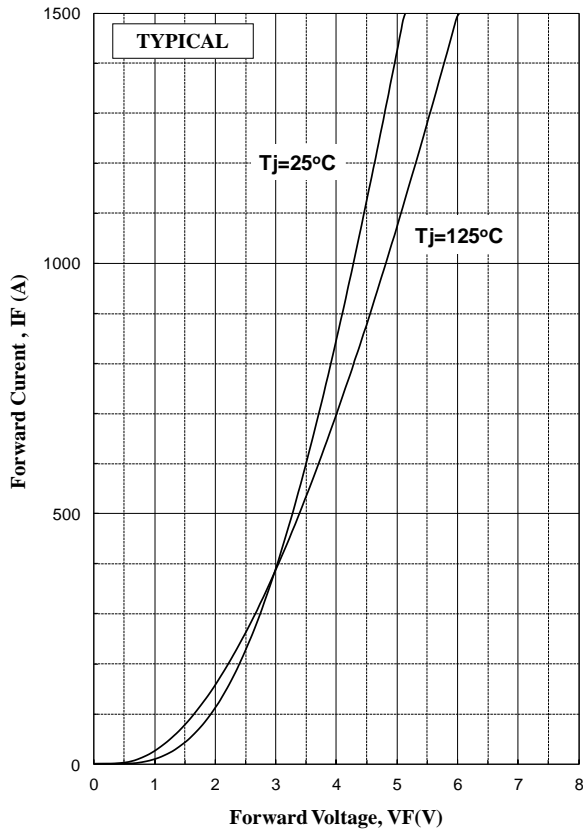
$$\text{Err}(10\%) = \int_{t1}^{t2} IF \cdot Vce \, dt$$

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

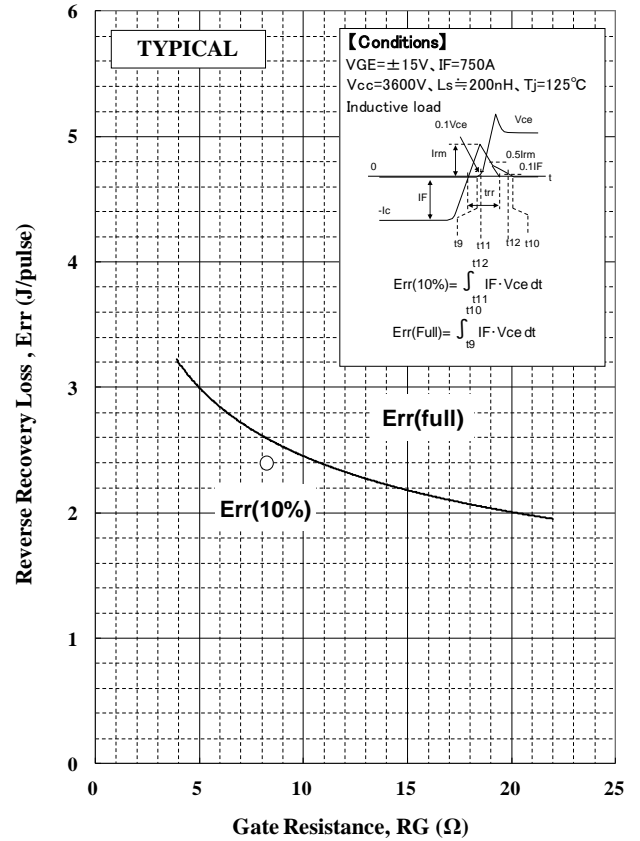
**Fig.3 Definition of switching loss**

# MDM750H65E2

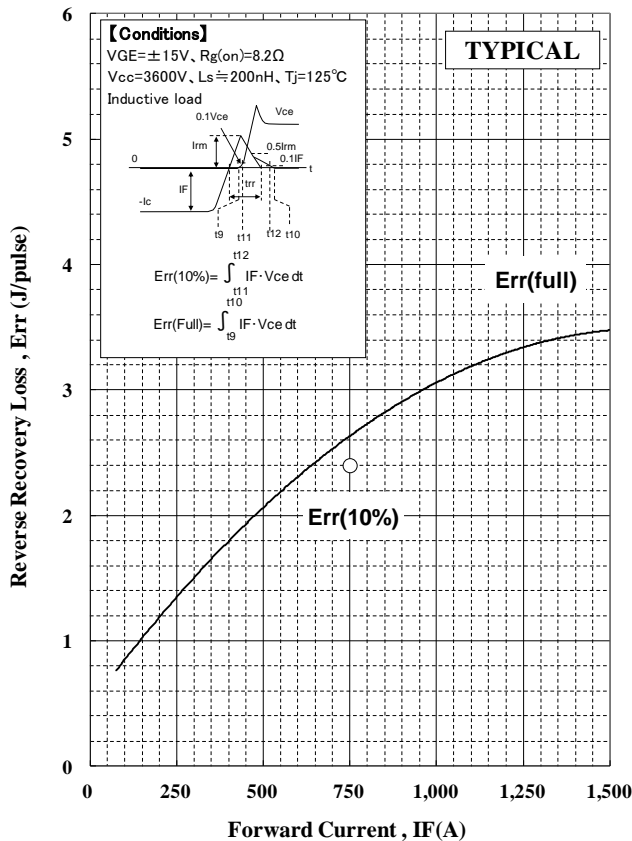
## STATIC CHARACTERISTICS



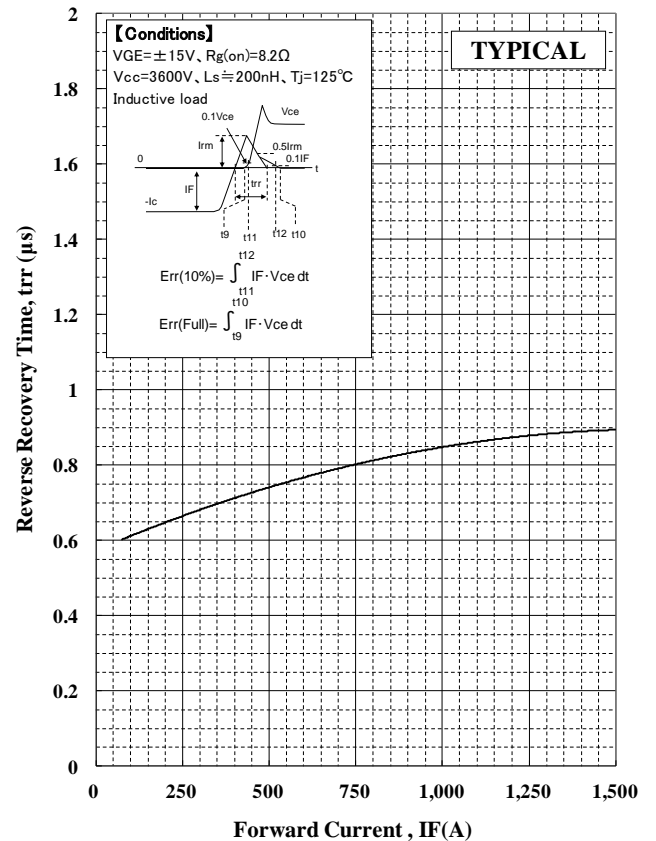
## DYNAMIC CHARACTERISTICS



Recovery Loss vs. Gate Resistance



Recovery Loss vs. Forward Current



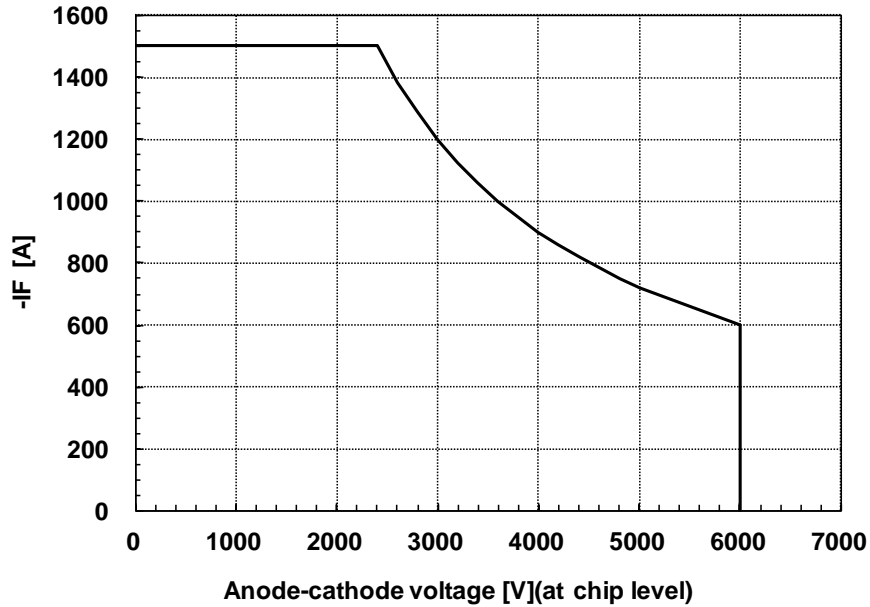
Reverse Recovery Time vs. Forward Current

# MDM750H65E2

RecSOA

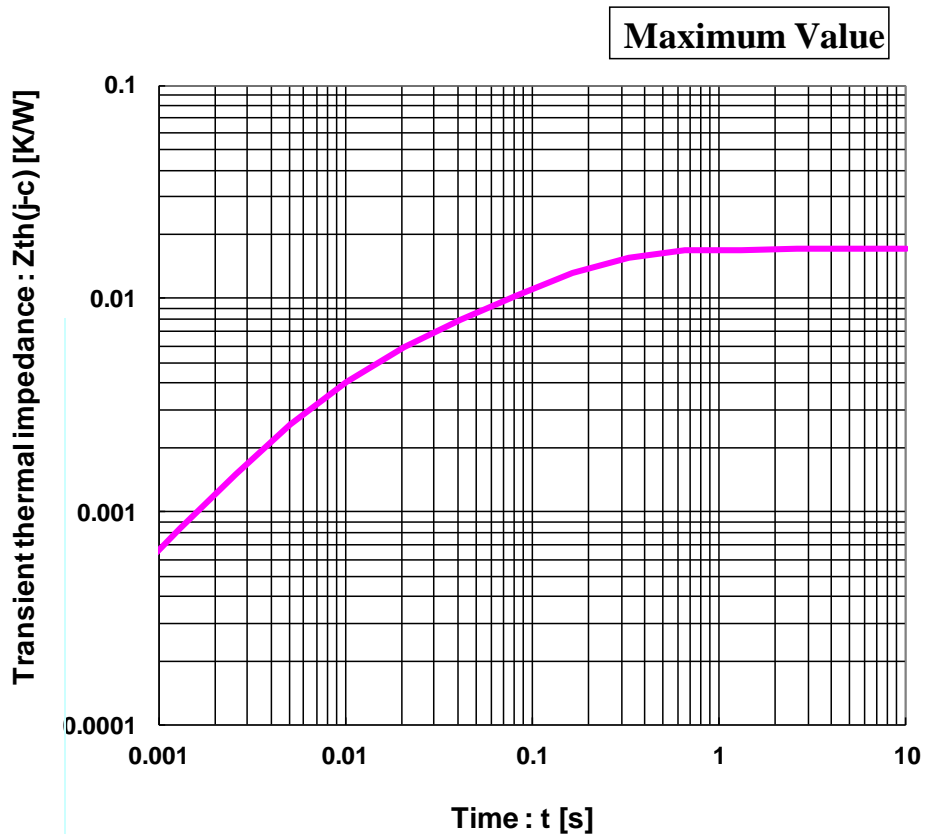
Conditions:

$L_s \leq 200\text{nH}$ ,  $V_{cc} \leq 4400\text{V}$ ,  $I_F \leq 1500\text{A}$ ,  $V_{GE} = -15\text{V}$ ,  
 $R_{g(\text{on})}$  of across IGBT  $\geq 8.2\Omega$ ,  $V_{GE}$  of across IGBT  $= \pm 15\text{V}$ ,  
 $-40^\circ\text{C} \leq T_c \leq 125^\circ\text{C}$ , Conduction pulse width of diode  $\geq 30\mu\text{s}$



RecSOA

TRANSIENT THERMAL IMPEDANCE

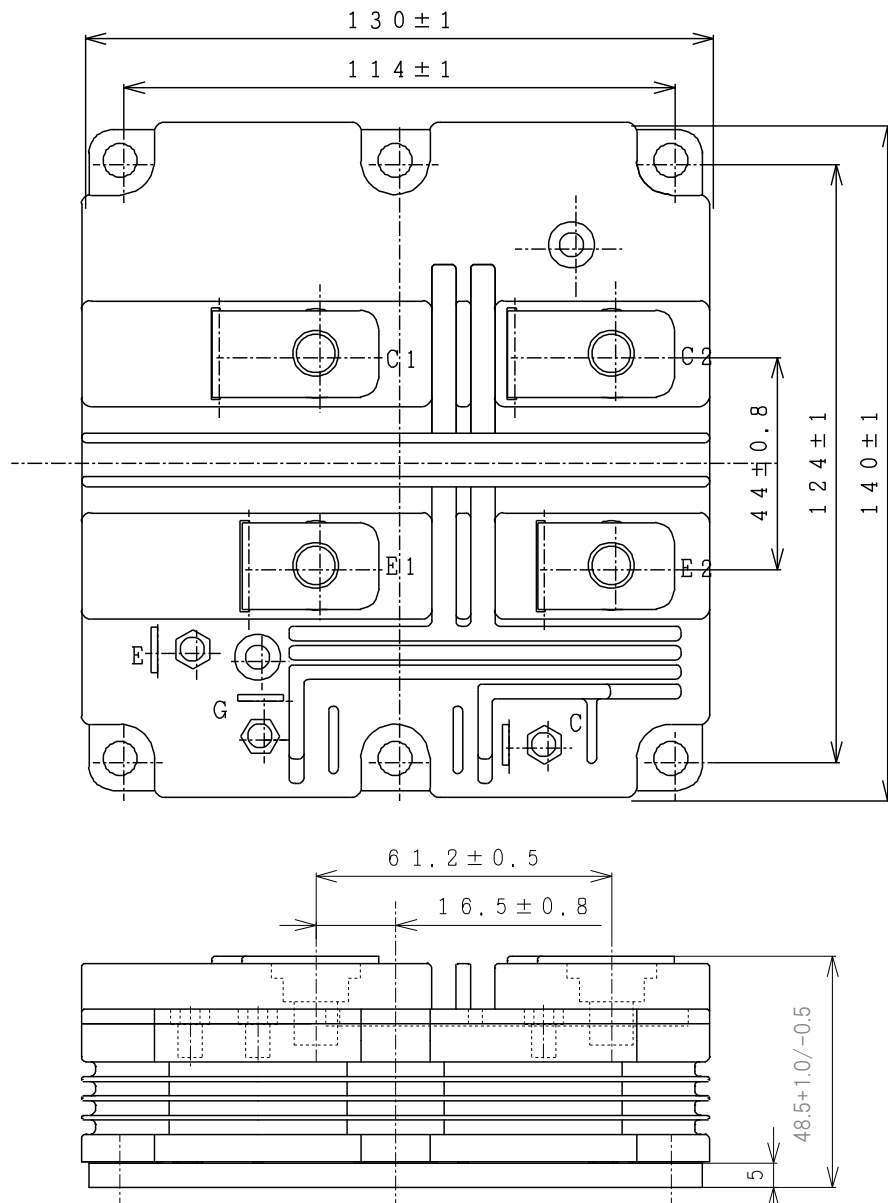


*Transient Thermal Impedance Curve*

# MDM750H65E2

**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

# MDM750H65E2

## 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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