

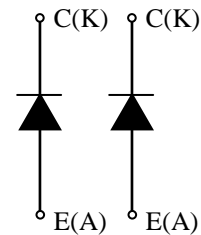
MDM500H65E2

Preliminary Specification

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_C=25°C)

Item		Symbol	Unit	MDM500H65E2
Repetitive Peak Reverse Voltage	T _j =125°C	V _{RRM}	V	6,500
	T _j =25°C			6,500
	T _j =-40°C			6,000
Forward Current	DC	I _F	A	500
	1ms	I _{FM}		1,000
Junction Temperature		T _j	°C	-40 ~ +125
Storage Temperature		T _{stg}	°C	-50 ~ +125
Isolation Test Voltage	Terminals-base	V _{ISO}	V _{RMS}	10,200 (AC 1 minute)
	Terminal 1-Terminal 2	V _{ISO T-T}		10,200 (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 CHARACTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Repetitive Reverse Current	I _{RRM}	mA	-	7	50	V _{AK} =6,500V, T _j =125°C
Forward Voltage Drop	V _F	V	-	3.7	-	I _F =500A, T _j =25°C
			3.7	4.1	4.6	I _F =500A, T _j =125°C
Reverse Recovery Time	trr	μs	-	0.8	-	V _{CC} =3,600V, I _F =500A, L=200nH T _j =125°C R _G =12Ω(3)
Reverse Recovery Loss	E _{rr(10%)}	J/P	-	1.65	2.1	
		Err(full)	J/P	-	1.8	-

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
Comparative tracking index	CTI		-	600	-	
Contact Thermal Impedance	R _{th(c-f)}	K/W	-	0.007	-	Case to f fin (λgrease=1W/(m·K), Heat-sink flatness ≤50μm)

Notes:(3) Counter arm; MDM500H65E2 V_{GE}=±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.

- * 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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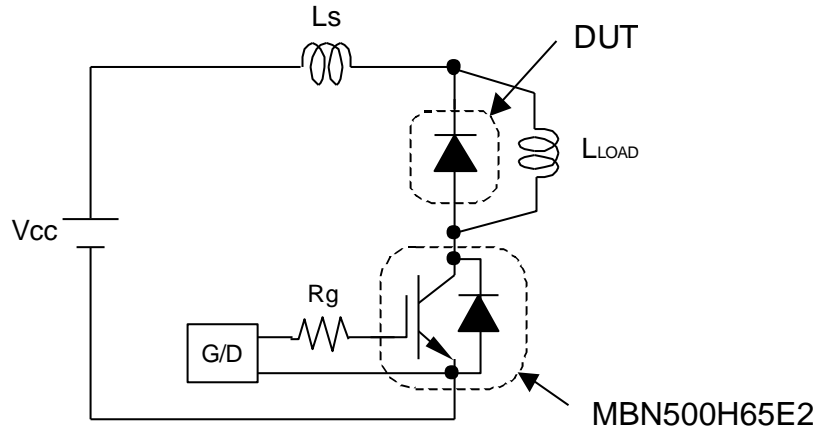


Fig.1 Switching test circuit

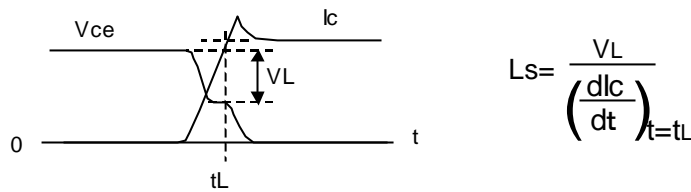
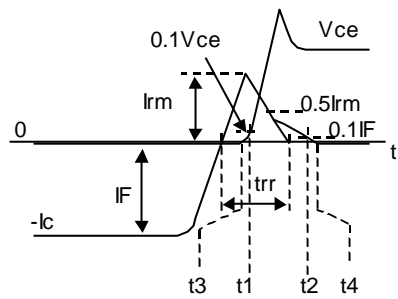


Fig.2 Definition of stray inductance



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

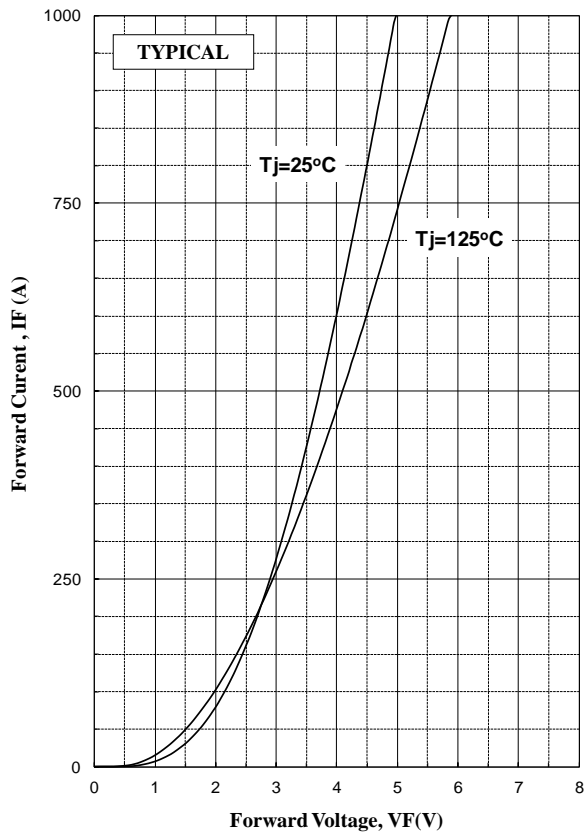
$$\text{Err}(\text{Full}) = \int_{t3}^{t4} IF \cdot Vce \, dt$$

Fig.3 Definition of switching loss

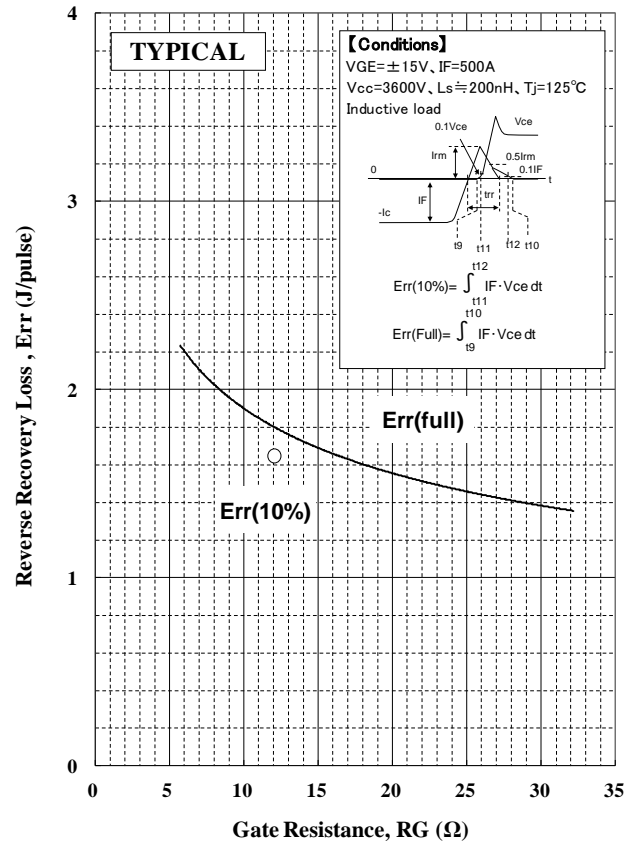
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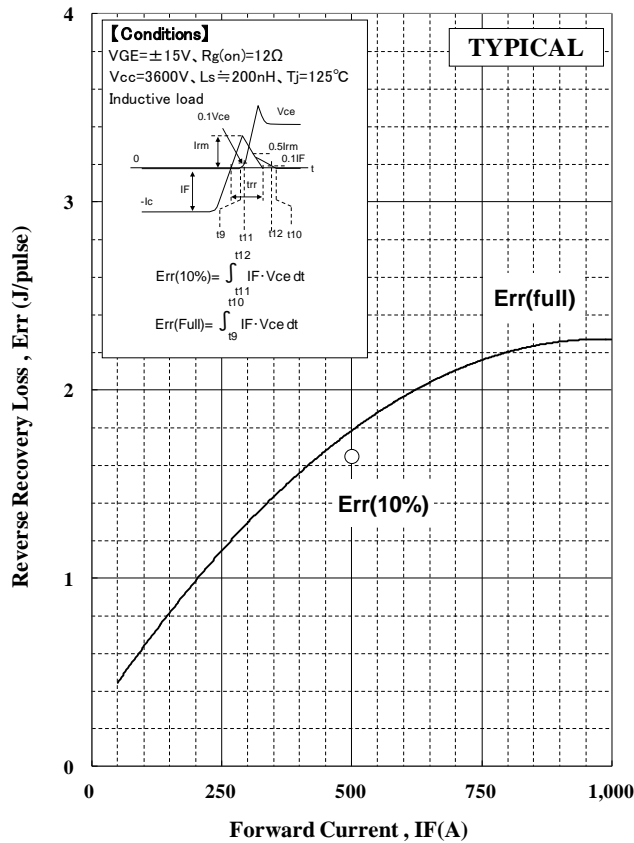
STATIC CHARACTERISTICS



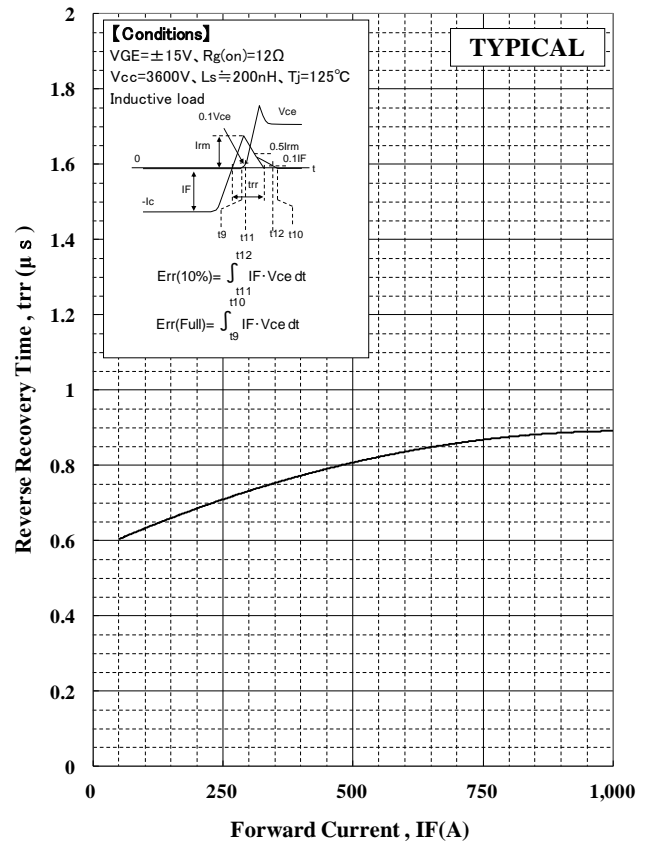
DYNAMIC CHARACTERISTICS



Recovery Loss vs. Gate Resistance



Recovery Loss vs. Forward Current



Reverse Recovery Time vs. Forward Current

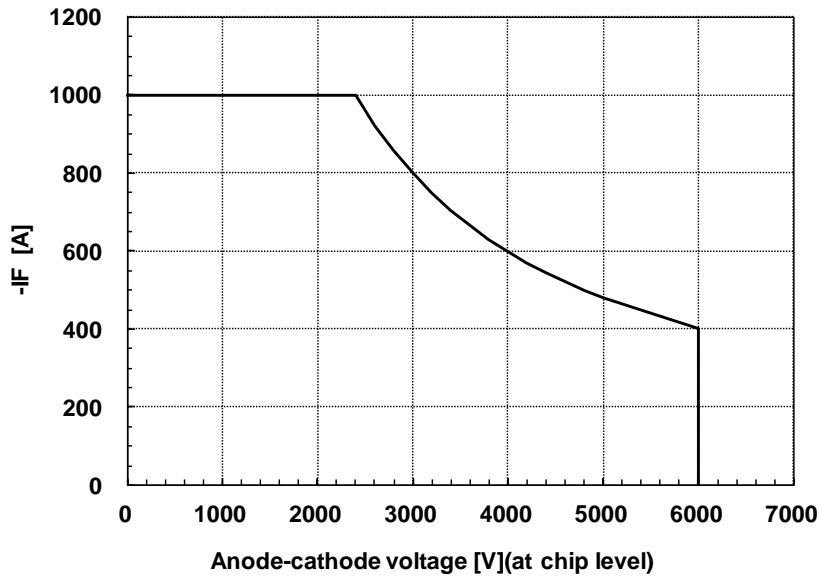
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Preliminary Specification

RecSOA

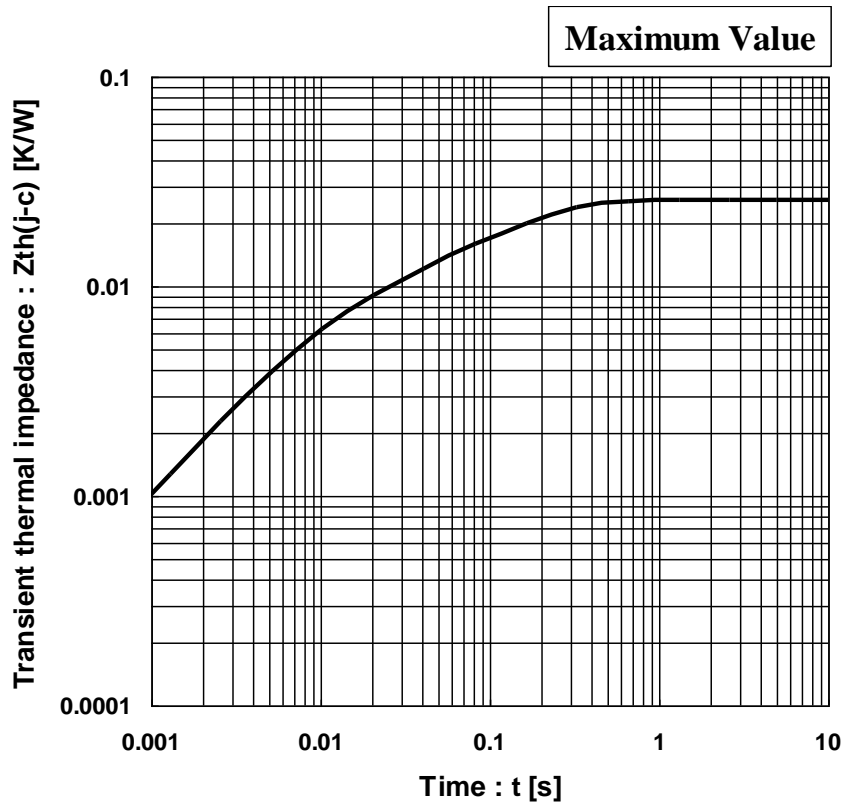
Conditions:

$L_s \leq 200\text{nH}$, $V_{cc} \leq 4400\text{V}$, $I_F \leq 1000\text{A}$, $V_{GE} = -15\text{V}$,
 $R_{g(\text{on})}$ of across IGBT $\geq 12\Omega$, 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



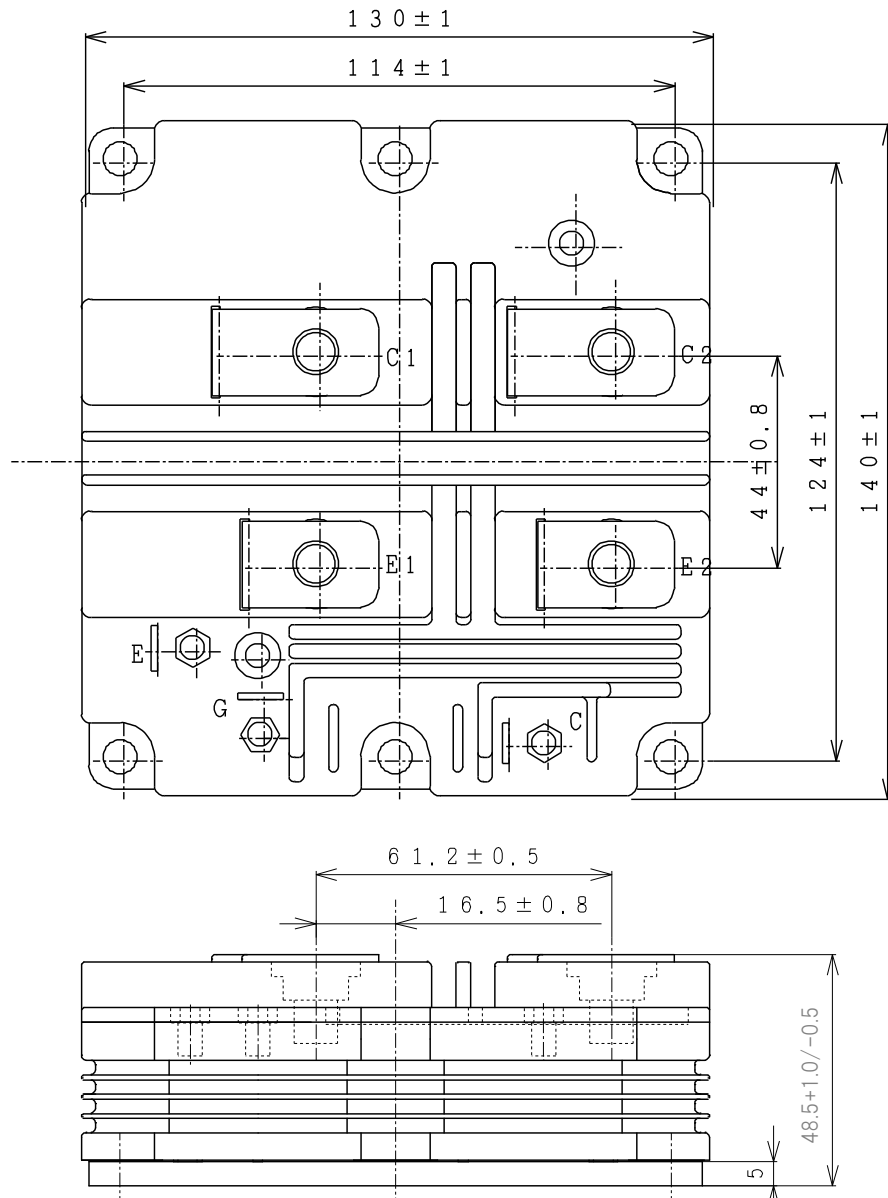
Transient Thermal Impedance Curve

MDM500H65E2

Preliminary Specification

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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Preliminary Specification

HITACHI POWER SEMICONDUCTORS

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