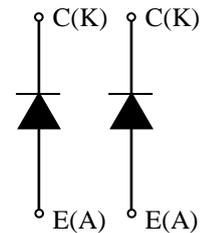


MDM500H65E2

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	t _{rr}	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.

MDM500H65E2

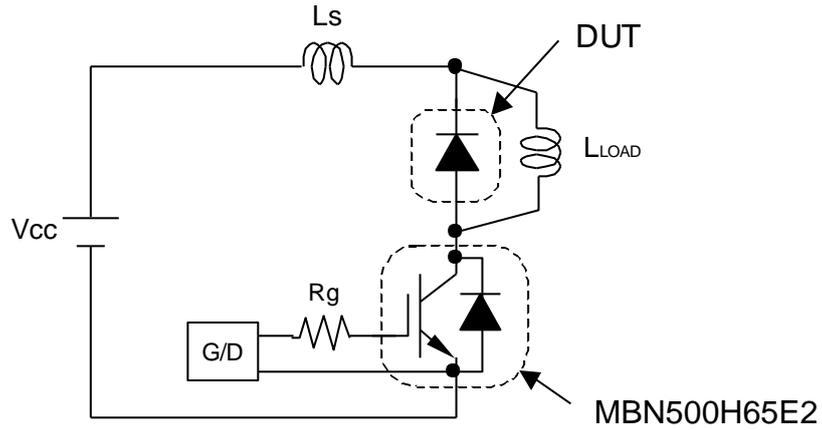


Fig.1 Switching test circuit

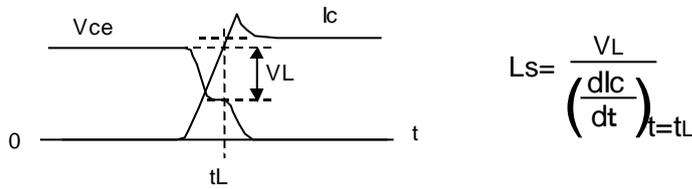
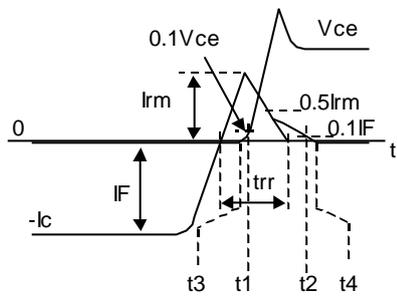


Fig.2 Definition of stray inductance



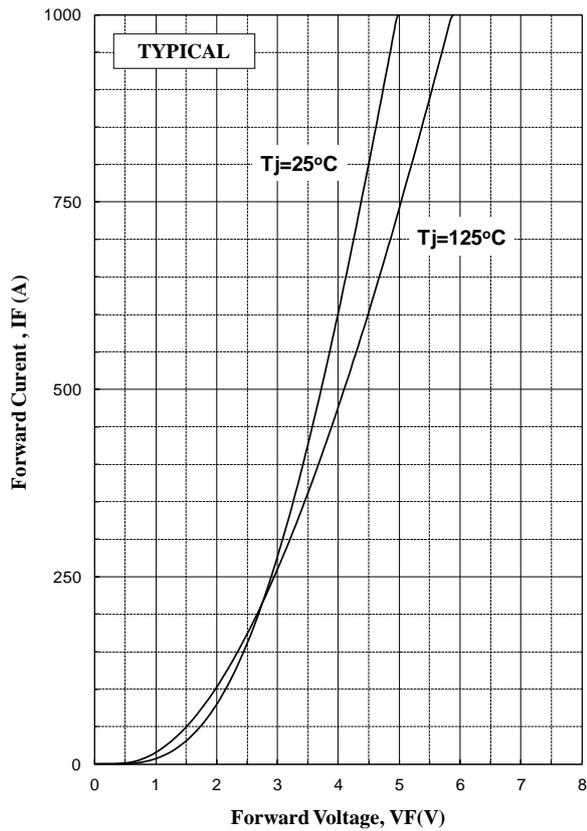
$$Err(10\%) = \int_{t1}^{t2} IF \cdot Vce dt$$

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

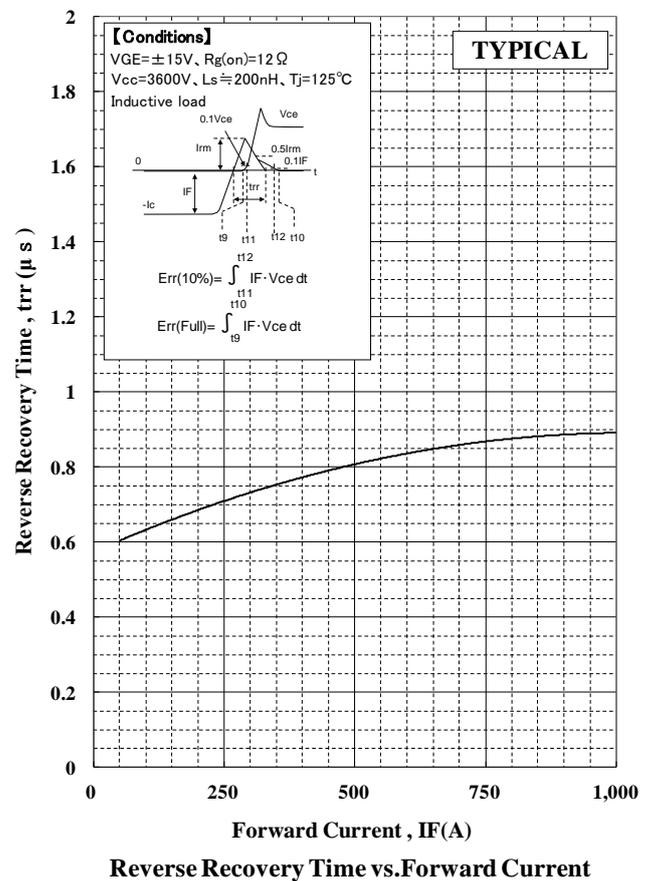
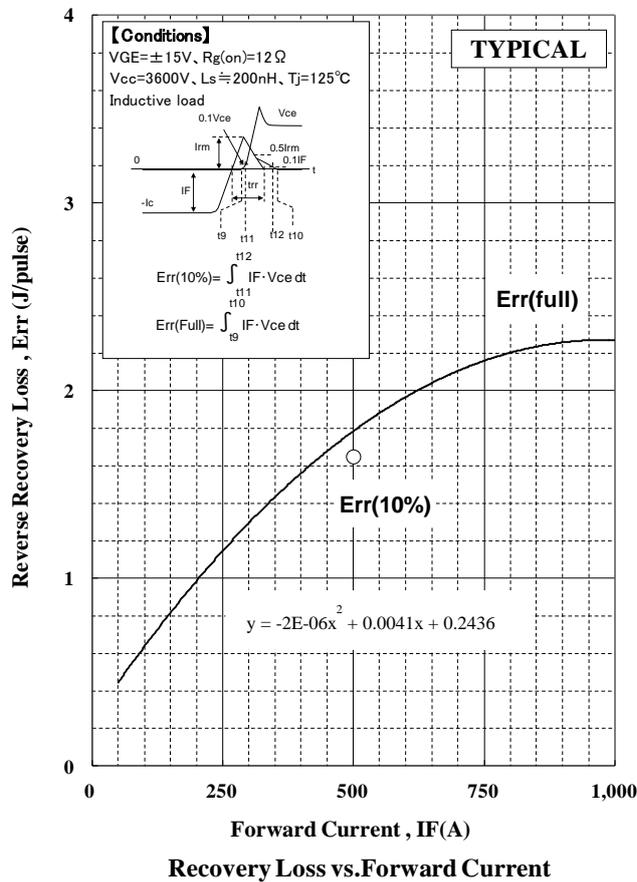
Fig.3 Definition of switching loss

MDM500H65E2

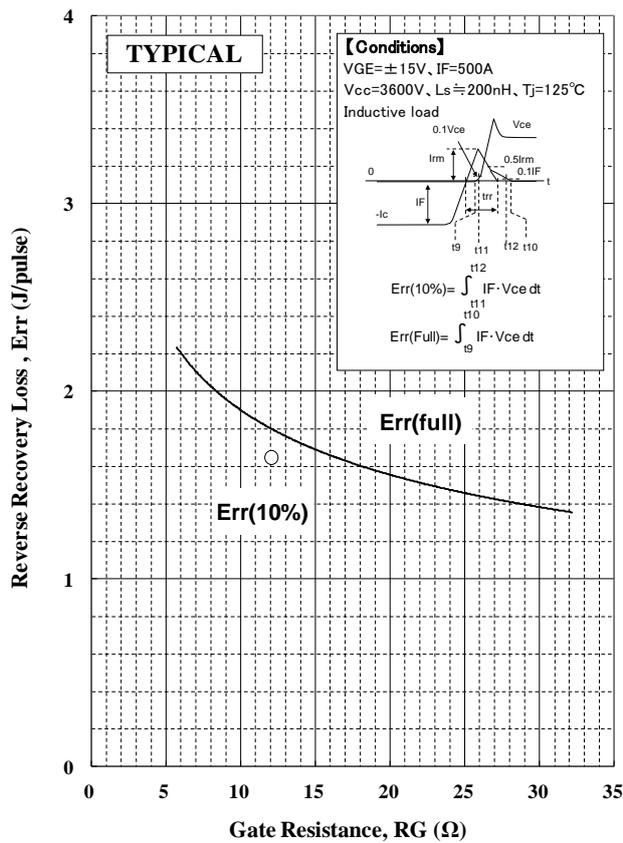
STATIC CHARACTERISTICS



DYNAMIC CHARACTERISTICS



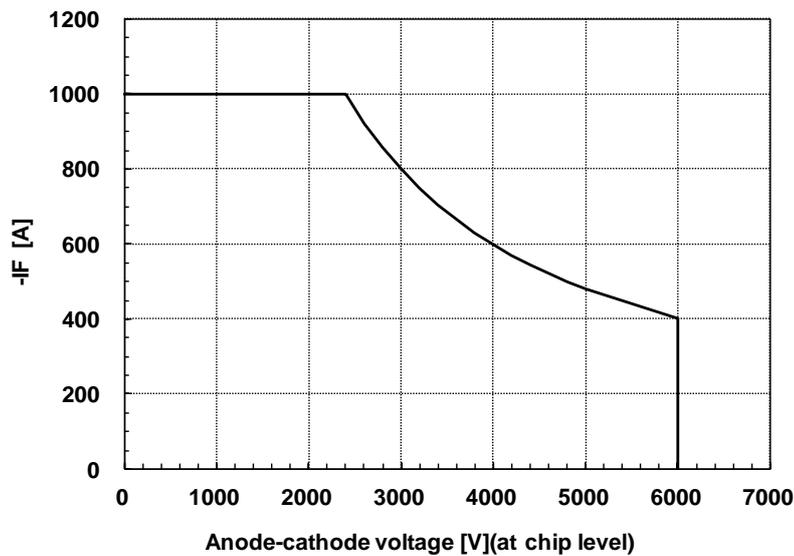
MDM500H65E2



Recovery Loss vs. Gate Resistance

RecSOA

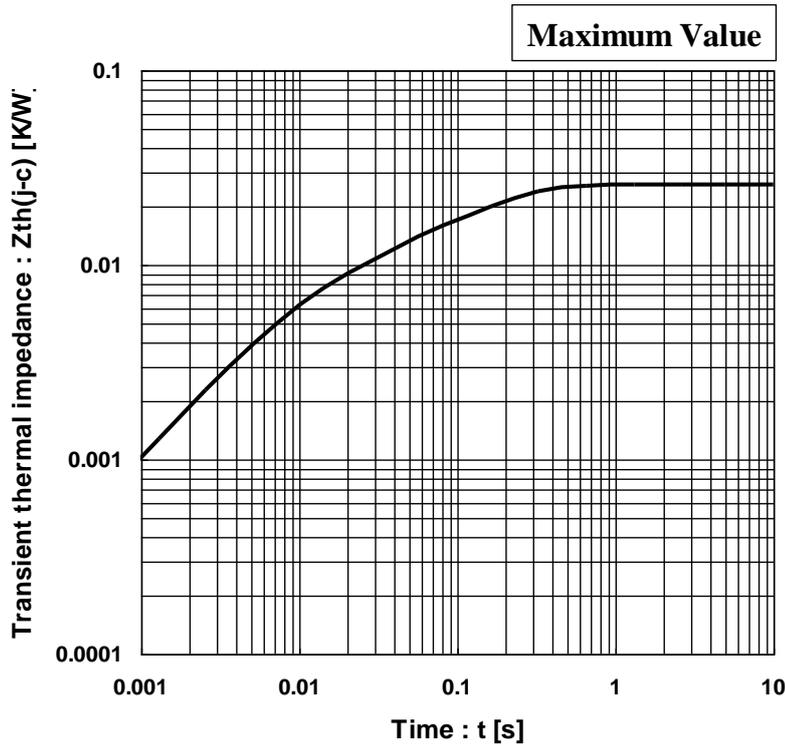
Conditions:
 Ls≤200nH, Vcc≤4400V, IF≤1000A, VGE=-15V,
 Rg(on) of across IGBT ≥12Ω, VGE of across IGBT =±15V,
 -40°C≤Tc≤125°C, Conduction pulse width of diode ≥30μs



RecSOA

MDM500H65E2

TRANSIENT THERMAL IMPEDANCE



Transient Thermal Impedance Curve

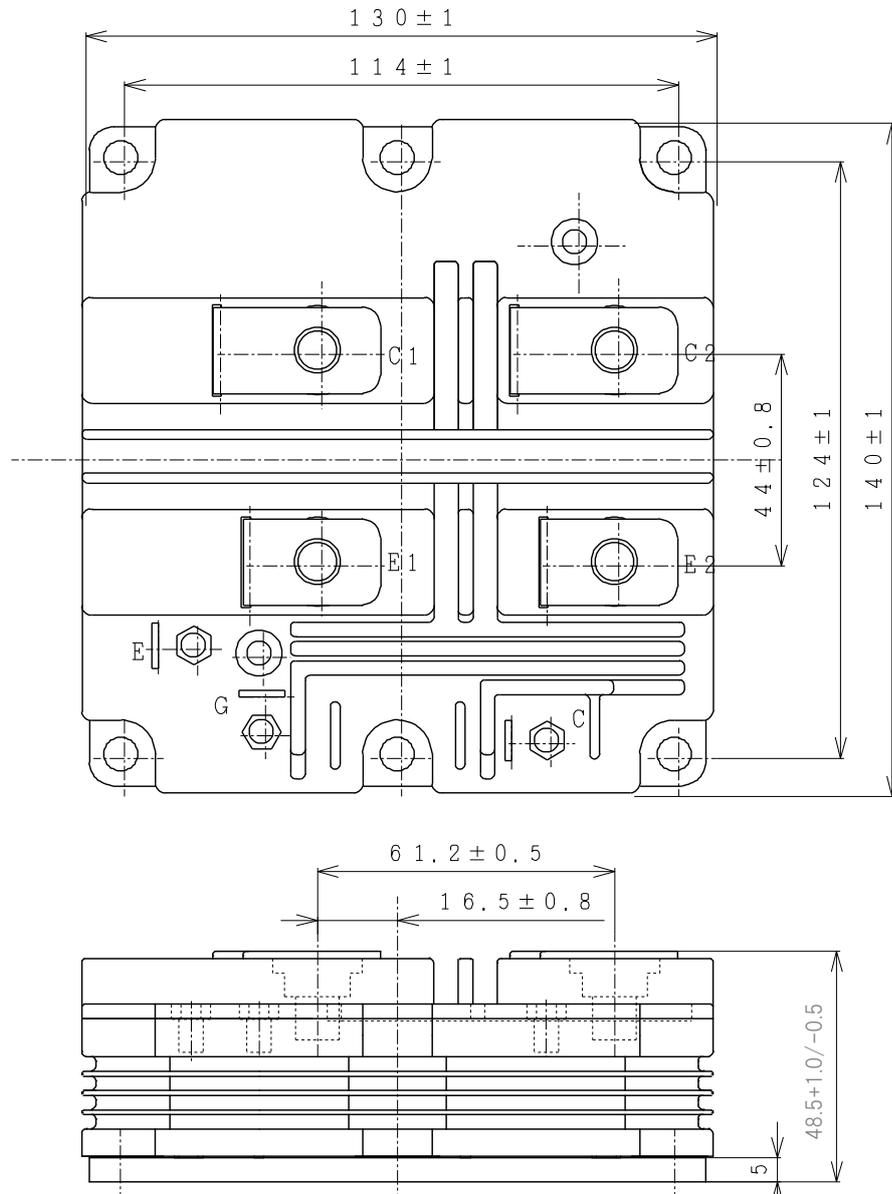
Curve approximation model
 $Z_{th} = \sum r_{th}[n] \cdot (1 - \exp(-t/r_{th}[n]))$

n	1	2	3	4	Unit
$\tau_{th}[n]$	1.64E-01	2.88E-02	6.99E-03	9.33E-04	sec
$r_{th}[n,IGBT]$	1.61E-02	5.01E-03	4.65E-03	1.98E-04	K/W

MDM500H65E2

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

MDM500H65E2

HITACHI POWER SEMICONDUCTORS

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