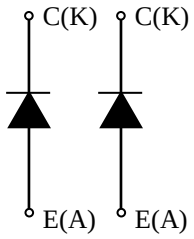
MDM250H65E2

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 (Tc=25°C)

Item		Symbol	Unit	MDM250H65E2
Repetitive Peak Reverse Voltage	Tj=125°C	V_{RRM}	V	6,500
	Tj=25°C			6,500
	Tj=-40°C			6,000
Forward Current	DC	I_F	A	250
	1ms	I_{FM}		500
Junction Temperature		Tj	°C	-40 ～ +125
Storage Temperature		Tstg	°C	-50 ～ +125
Isolation Test Voltage	Terminals-base	V_{ISO}	V_{RMS}	10,200 (AC 1 minute)
	Terminal 1-Terminal 2	$V_{ISO\ T\text{-}T}$		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 CHARECTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Repetitive Reverse Current	I_{RRM}	mA	-	3.5	25	VR=6,500V, Tj=125°C
Forward Voltage Drop	V_F	V	-	3.7	-	IF=250A, Tj=25°C
			3.7	4.1	4.6	IF=250A, Tj=125°C
Reverse Recovery Time	trr	μs	-	0.6	-	V_{CC}=3,600V, IF=250A, L=200nH Tj=125°C Rg=12Ω (3)
Reverse Recovery Loss	$E_{rr(10\%)}$	J/P	-	0.85	-	
	Err(full)	J/P	-	0.9	-	

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	-	-	0.051	Junction to case per arm
Comparative tracking index	CTI		-	600	-	
Contact Thermal Impedance	Rth(c-f)	K/W	-	0.024	-	Case to fin (λgrease=1W/(m·K), Heat-sink flatness ≤50um) per arm

Notes:(3) Counter arm; MBN500H65E2 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.

* 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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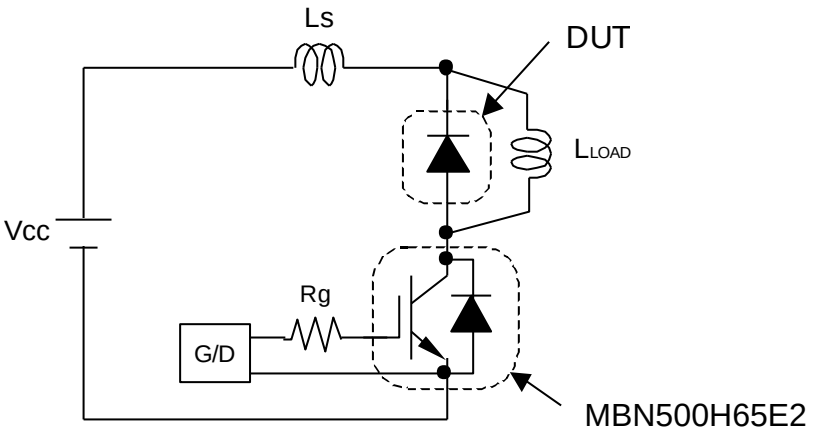


Fig.1 Switching test circuit

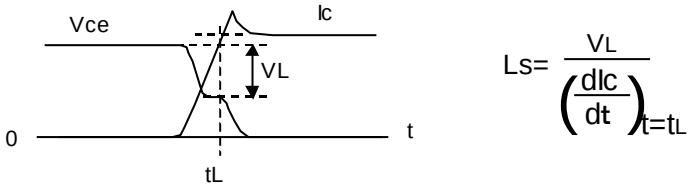
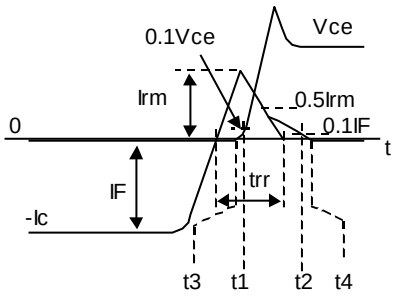


Fig.2 Definition of stray inductance



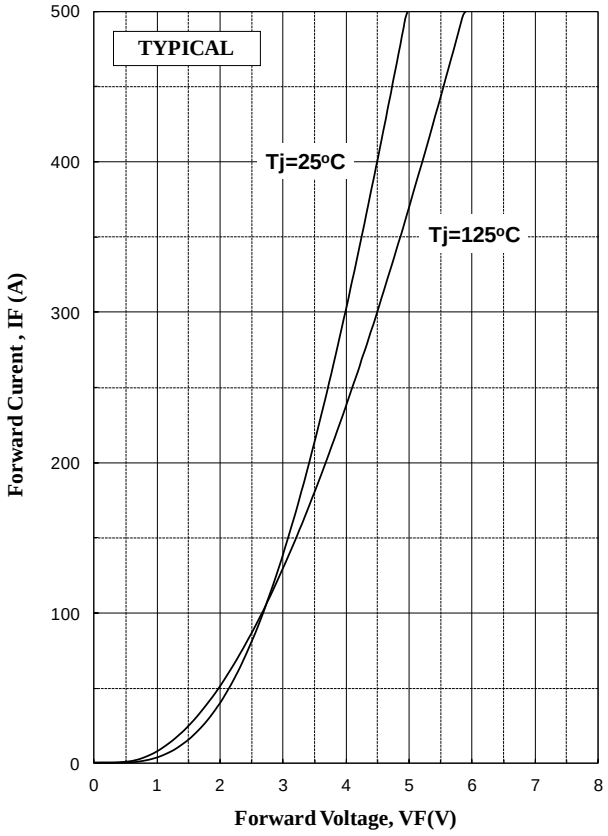
$$Err(10\%)= \int_{t1}^{t2} IF \cdot Vce\, dt$$

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

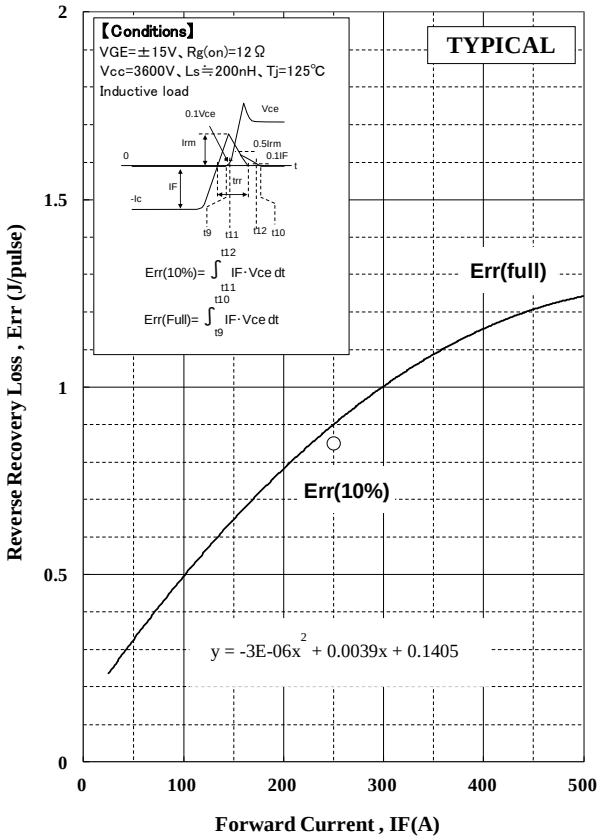
Fig.3 Definition of switching loss

MDM250H65E2

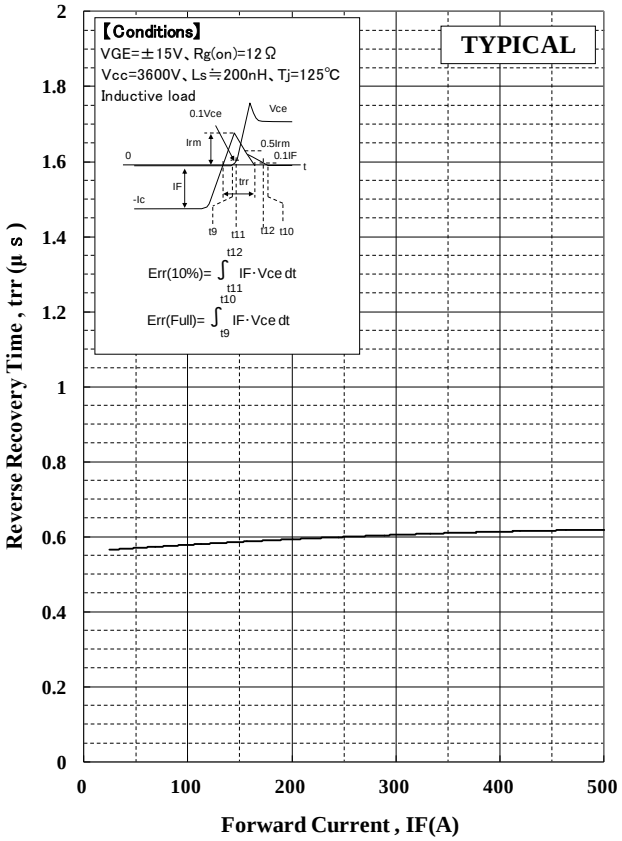
STATIC CHARACTERISTICS



DYNAMIC CHARACTERISTICS

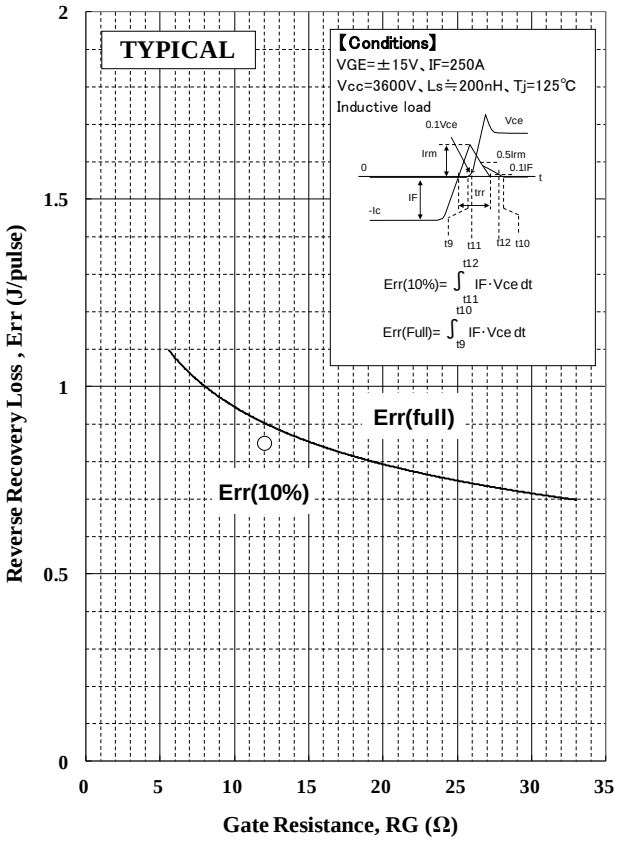


Recovery Loss vs.Forward Current



Reverse Recovery Time vs.Forward Current

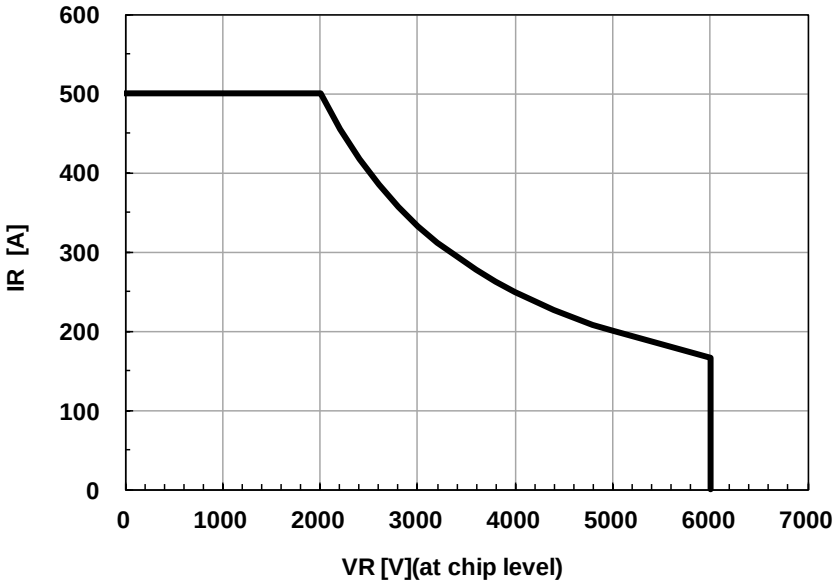
MDM250H65E2



Recovery Loss vs.Gate Resistance

Recovery SOA

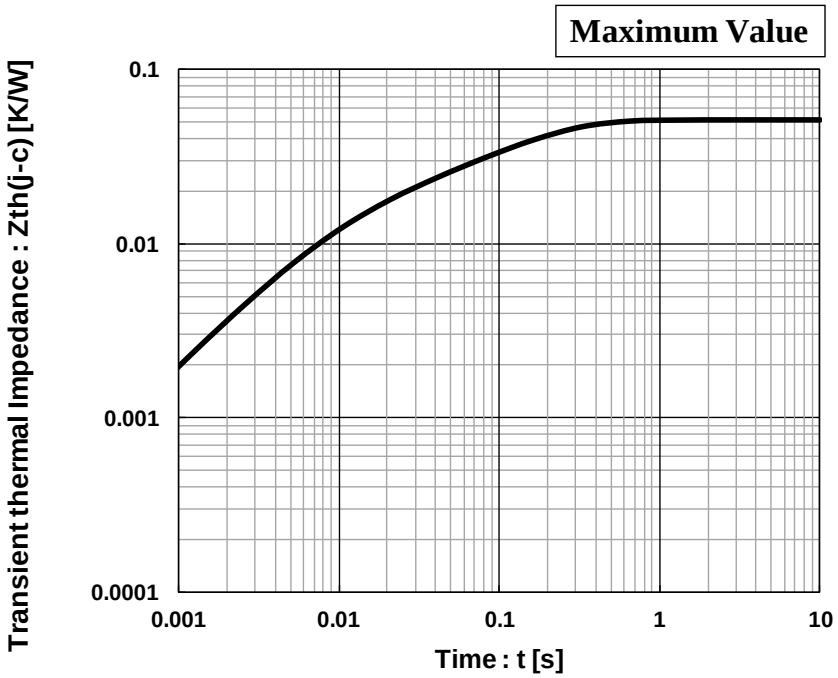
Conditions:
Ls≤200nH, Vcc≤4400V, IF≤500A, VGE=-15V,
Rg(on) of across IGBT ≥12Ω, VGE of across IGBT =±15V,
-40°C≤Tc≤125°C, Conduction pulse width of diode ≥30μs



RecSOA

MDM250H65E2

TRANSIENT THERMAL IMPEDANCE



Transient Thermal Impedance Curve

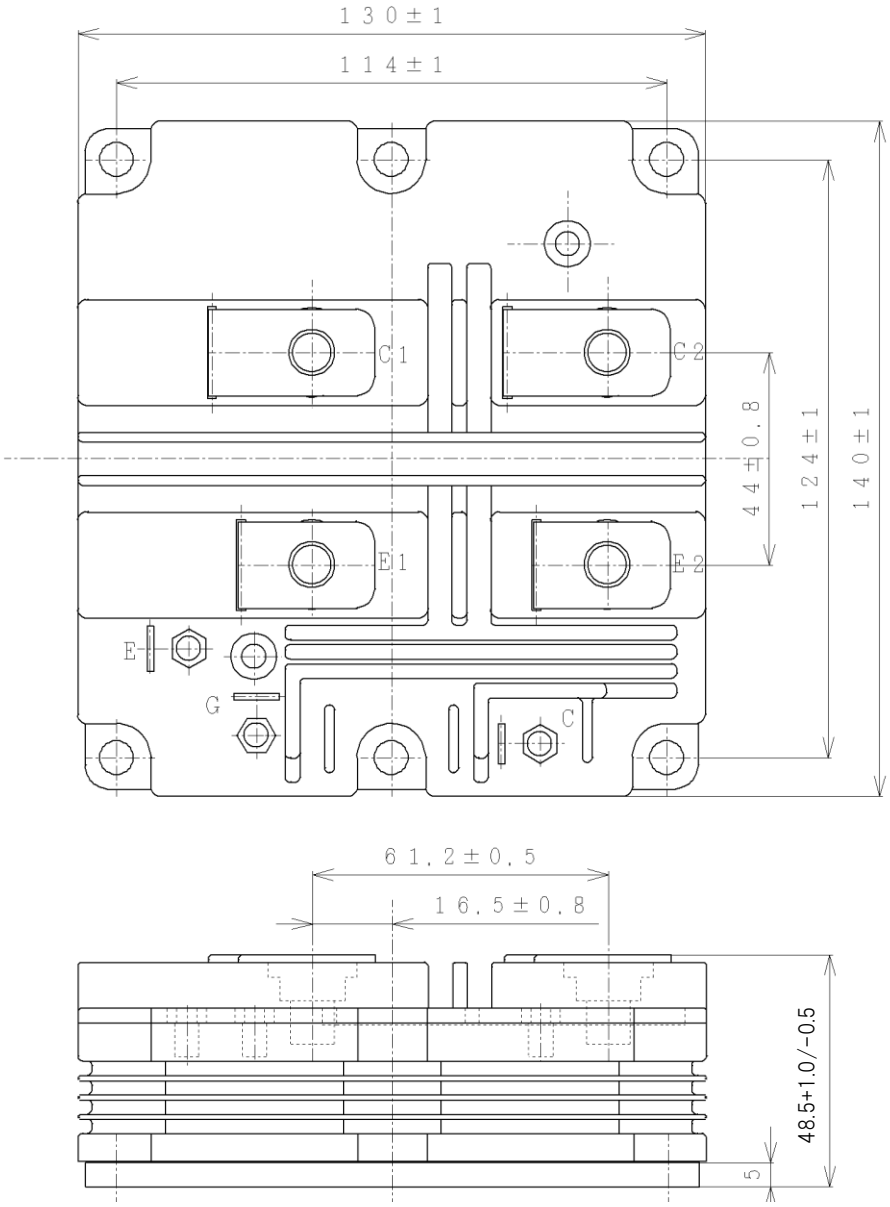
Curve approximation model
Zth = Σ rth[n]*(1-exp(-t/τth[n]))

n	1	2	3	4	Unit
τ th[n]	1.64E-01	2.88E-02	6.99E-03	9.33E-04	sec
rth[n,Diode]	3.17E-02	9.80E-03	9.10E-03	4.00E-04	K/W

MDM250H65E2

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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HITACHI POWER SEMICONDUCTORS

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