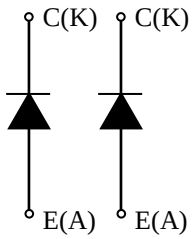
MDM750H65E2

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 (Tc=25°C)

Item			Symbol	Unit	MDM750H65E2	
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	750	
		1ms	I_{FM}		1500	
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	-	10	75	VAK=6,500V, Tj=125°C
Forward Voltage Drop	V_F	V	-	3.8	-	IF=750A, Tj=25°C
			3.75	4.15	4.65	IF=750A, Tj=125°C
Reverse Recovery Time	trr	μs	-	0.8	1.6	V_{CC}=3,600V, IF=750A, L=200nH Tj=125°C Rg=8.2Ω (3)
Reverse Recovery Loss	$E_{rr(10\%)}$	J/P	-	2.4	3.0	
	Err(full)	J/P	-	2.6	-	

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	-	-	0.017	Junction to case
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)

Notes:(3) Counter arm; MBN750H65E2 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.

MDM750H65E2

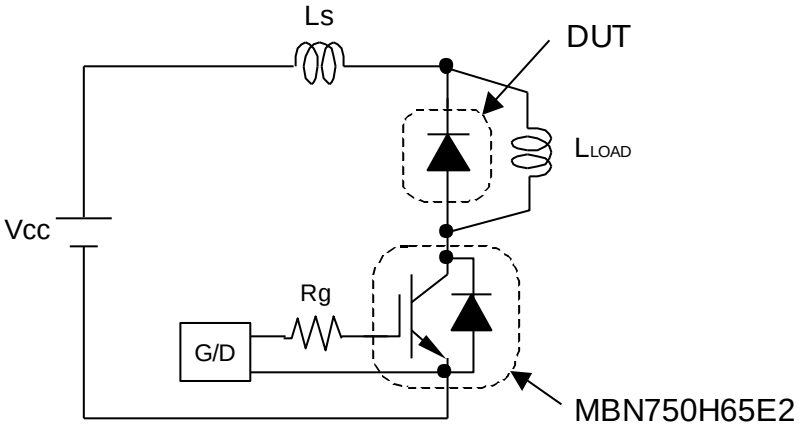
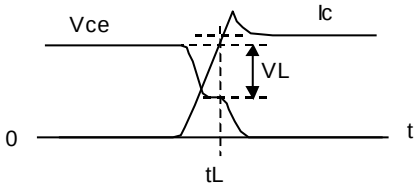
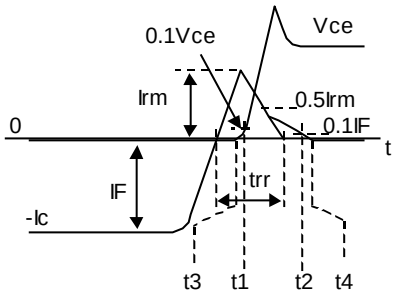


Fig.1 Switching test circuit



$$Ls = \frac{VL}{\left(\frac{dIc}{dt}\right)_{t=tL}}$$

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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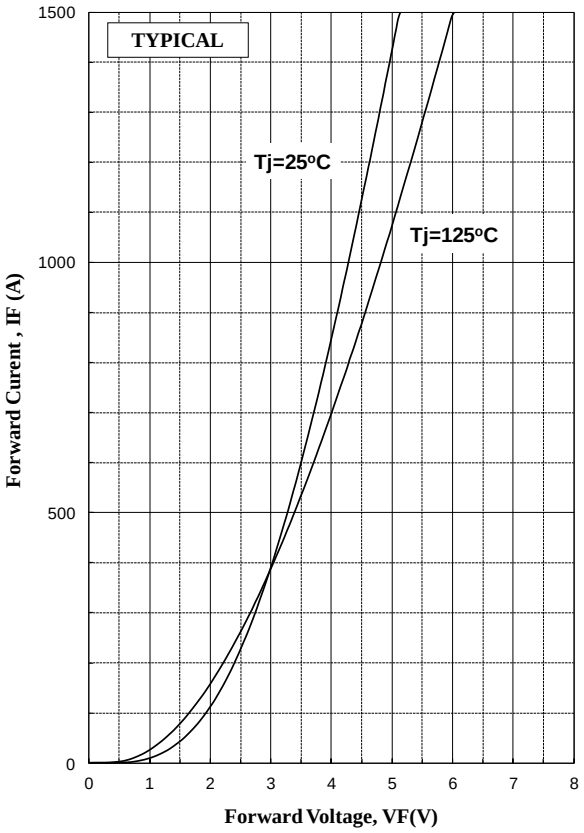
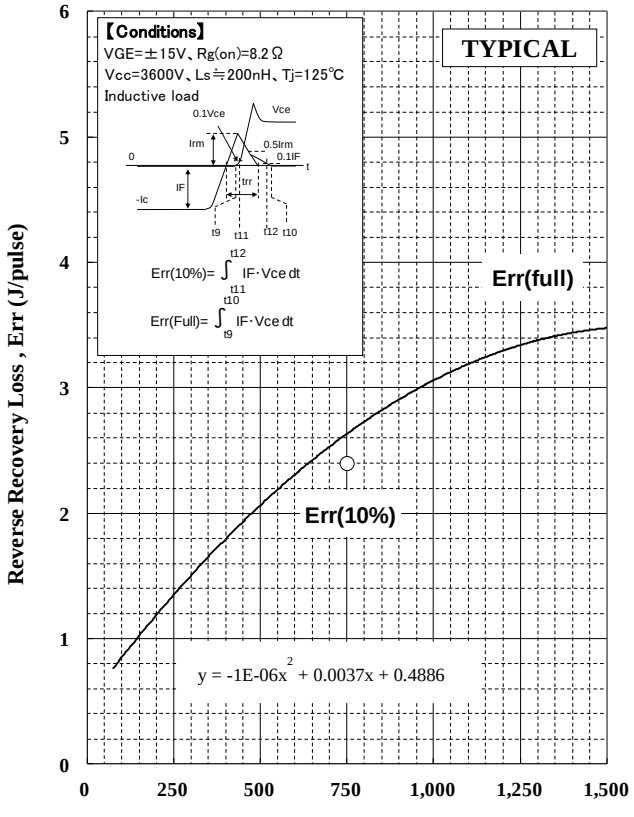
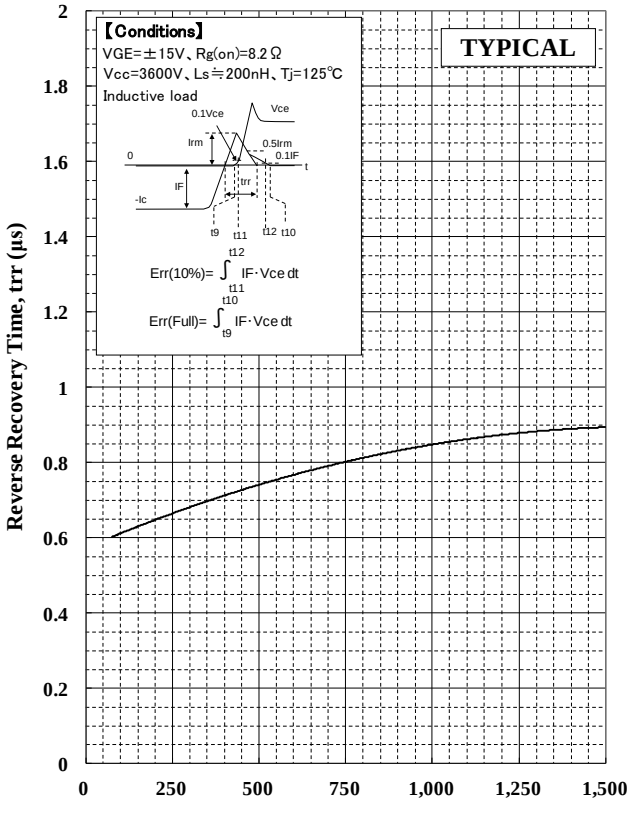
STATIC CHARACTERISTICS



DYNAMIC CHARACTERISTICS



Recovery Loss vs.Forward Current



Reverse Recovery Time vs.Forward Current

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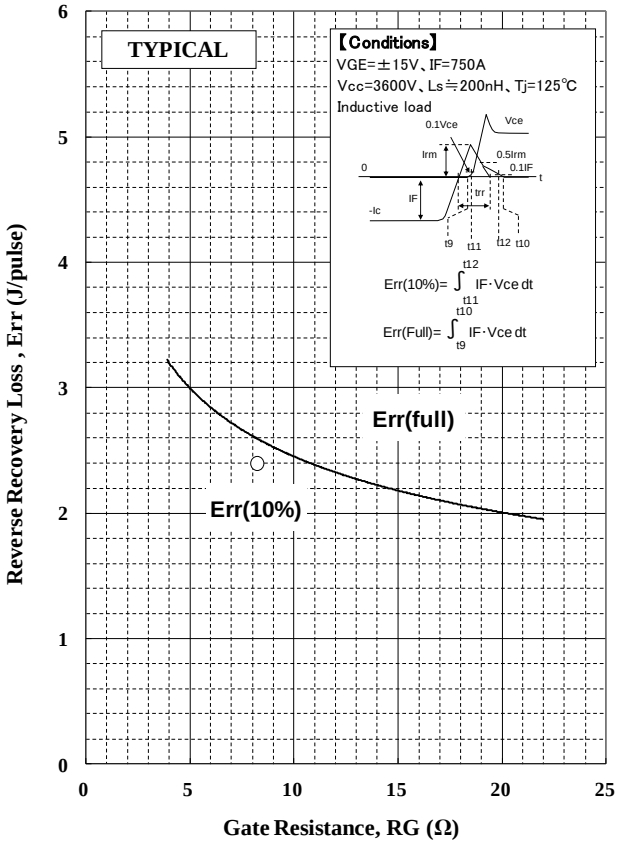
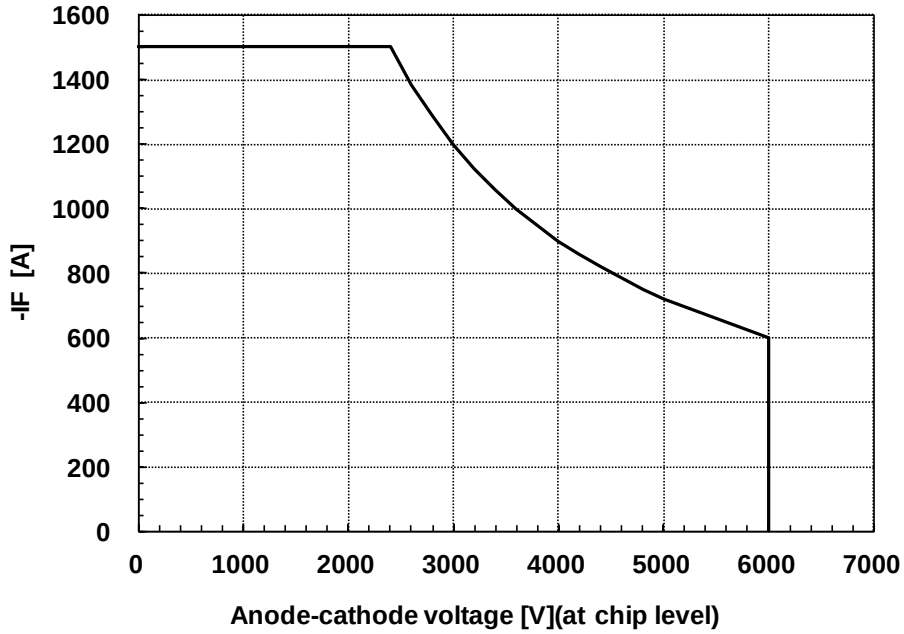


Recovery Loss vs.Gate Resistance

RecSOA

Conditions:
Ls≤200nH, Vcc≤4400V, IF≤1500A, VGE=-15V,
Rg(on) of across IGBT ≥8.2Ω, VGE of across IGBT =±15V,
-40°C≤Tc≤125°C, Conduction pulse width of diode ≥30μs



RecSOA

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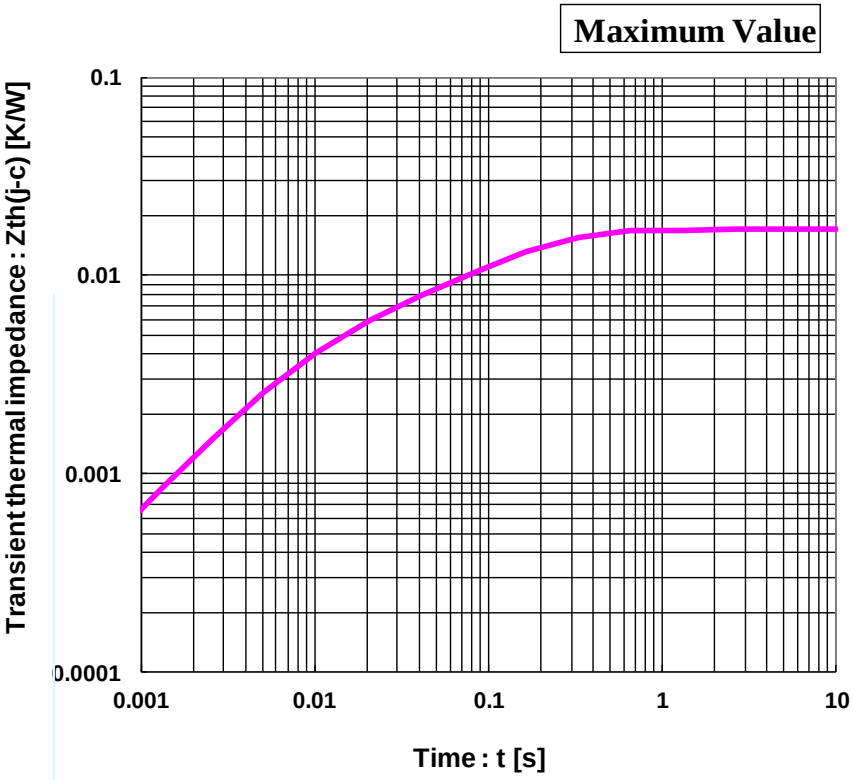
TRANSIENT THERMAL IMPEDANCE



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	2.75E-02	6.68E-03	7.40E-04	sec
rth[n,IGBT]	1.06E-02	3.35E-03	2.94E-03	9.33E-05	K/W

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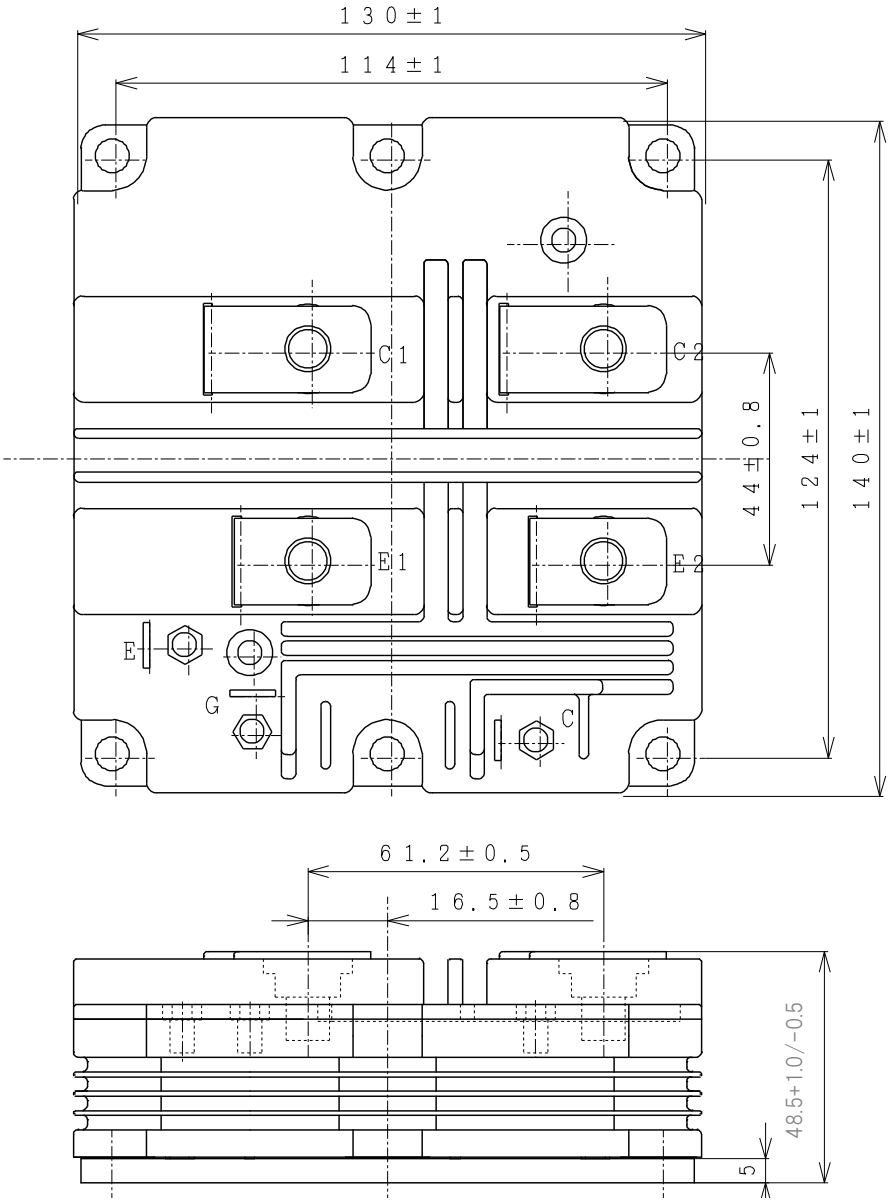
OUTLINE DRAWING

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

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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