MDM900E17D

FEATURES

* Low noise due to ultra soft fast recovery diode.
* High reliability, high durability diodes.
* Isolated heat sink (terminal to base).

ABSOLUTE MAXIMUM RATINGS (T_C=25°C)

Item		Symbol	Unit	MDM900E17D
Repetitive Peak Reverse Voltage		V_{RRM}	V	1,700
Forward Current	DC	I_F	A	900
	1ms	I_{FM}		1,800
Junction Temperature		$T_{vj\ op}$	°C	-40 ~ +125
Storage Temperature		T_{stg}	°C	-40 ~ +125
Isolation Test Voltage	Terminals-base	V_{ISO}	V_{RMS}	4,000(AC 1 minute)
	Terminal 1-Terminal 2	$V_{ISO\ T\text{-}T}$		4,000(AC 1 minute)
Screw Torque	Terminals (M8)	-	N·m	15 (1)
	Mounting (M6)	-		6 (2)

Notes: (1) Recommended Value 15^{+0}_{-3}N·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	-	1.0	10.0	VAK=1,700V, V_{GE}=0V, T_{vj}=125°C
Forward Voltage Drop	V_F	V	1.5	2.0	2.5	I_F=1200A, T_{vj}=125°C
Reverse Recovery Time	t_{rr}	μs	-	0.7	1.4	V_{CC}=900V, I_F=900A, Ls=180nH
Reverse Recovery Loss	$E_{rr(10\%)}$	J/P	-	0.4	0.7	R_G=1.5Ω, T_{vj}=125°C (3)

Notes: (3) Counter arm: MBN1200E17D VGE= ±15V
R_G are the test condition's value to define the switching characteristics not recommended value.
Please, determine the suitable R_G value after the measurement of switching waveforms
(overshoot voltage, etc.) with appliance mounted.

PACKAGE CHARACTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Terminal Resistance	RCE	mΩ	-	0.4	-	Tc=25°C, per arm
Stray inductance module	L_{SCE}	nH	-	35	-	per arm
Thermal Impedance	$R_{th(j\text{-}c)}$	K/W	-	-	0.045	Junction to case (par arm)
Contact Thermal Impedance	$R_{th(c\text{-}f)}$	K/W	-	0.008	-	Case to fin (par module)

* 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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DEFINITION OF TEST CIRCUIT

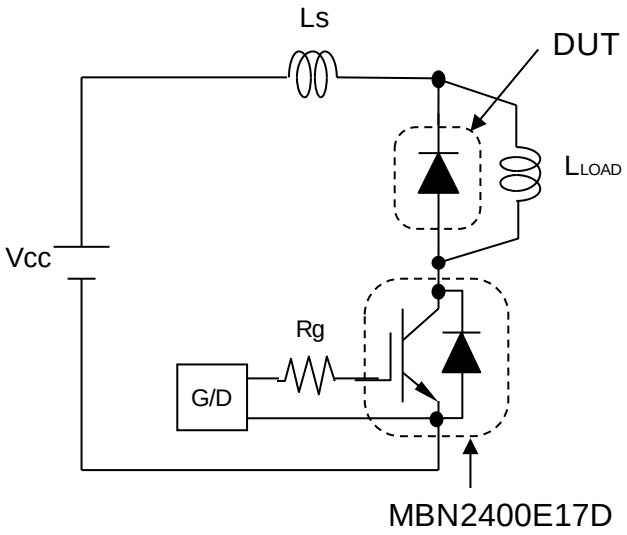
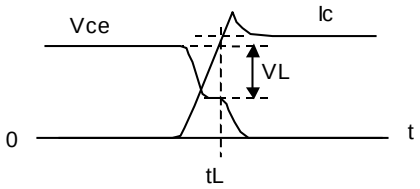
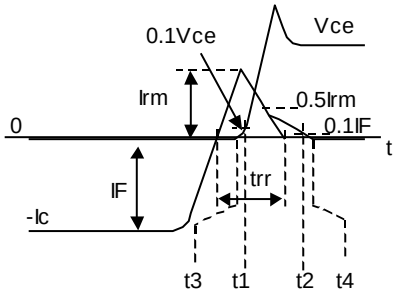


Fig.1 Switching test circuit



$$Ls = \frac{V_L}{\left(\frac{dIc}{dt}\right)_{t=t_L}}$$

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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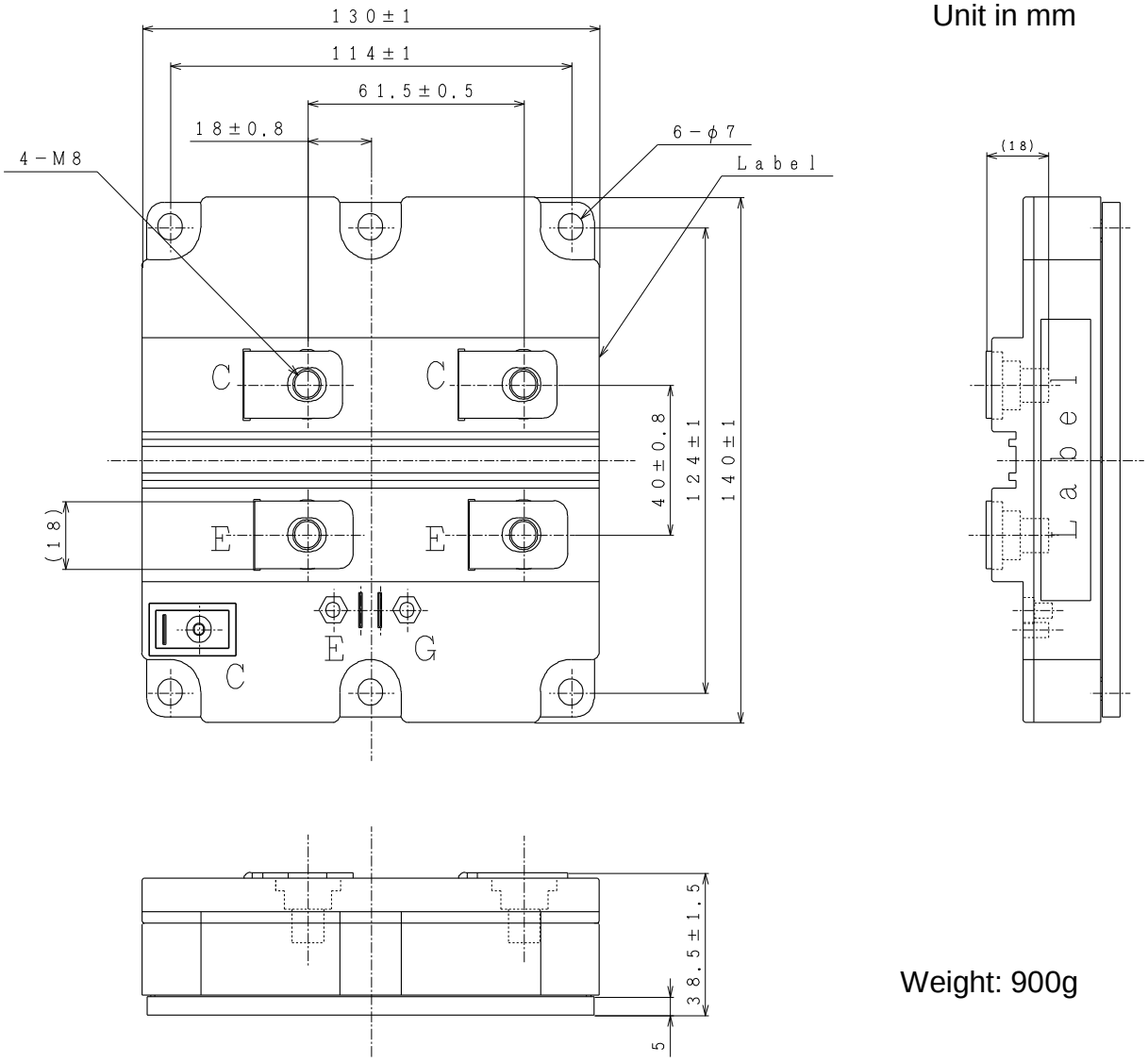
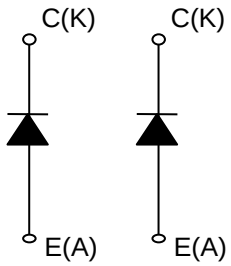
OUTLINE DRAWING

Unit in mm



Weight: 900g

CIRCUIT DIAGRAM



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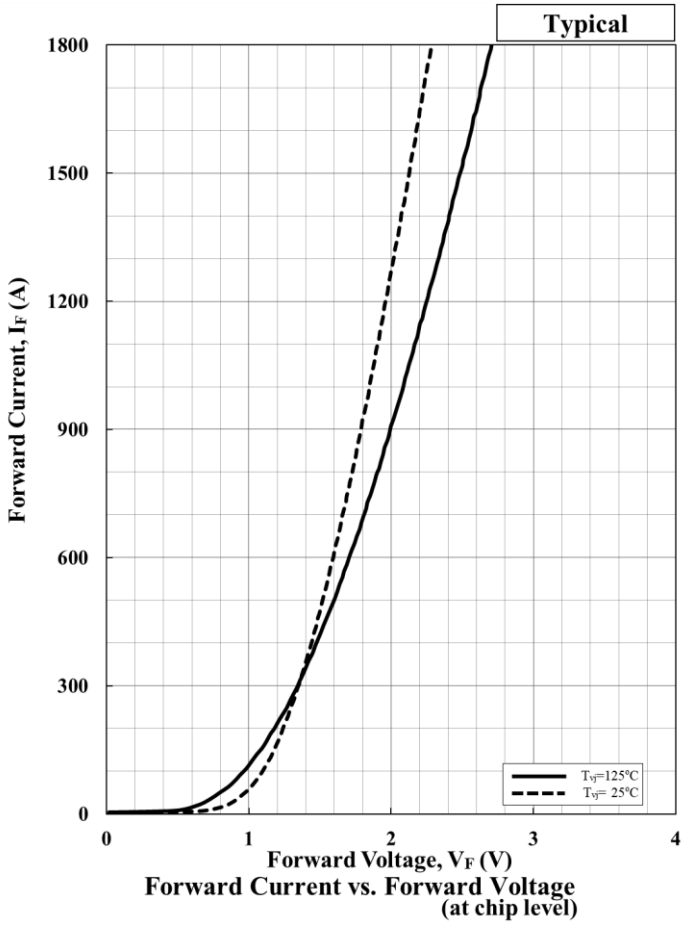
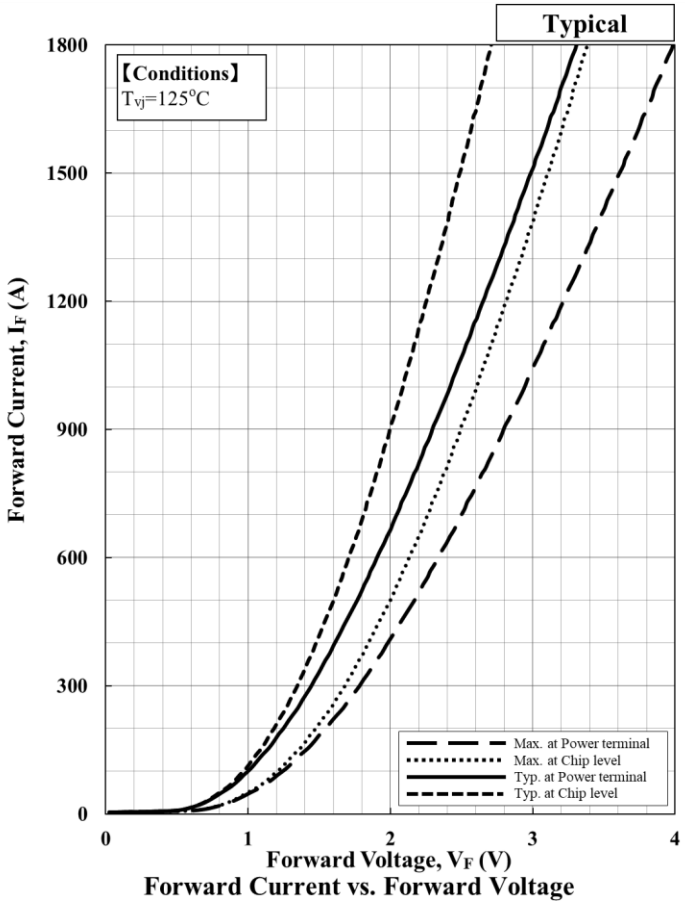
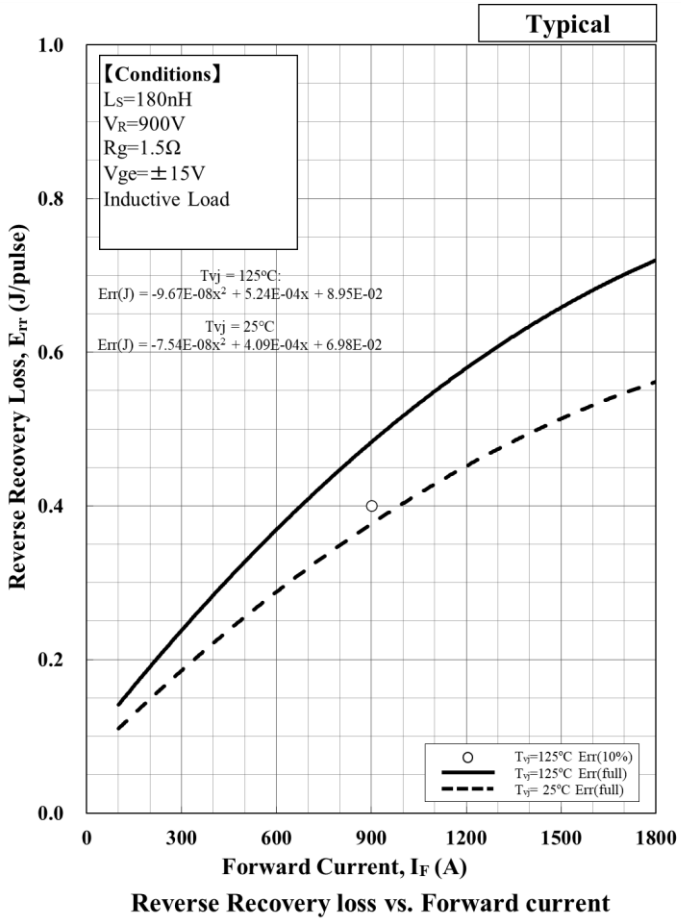


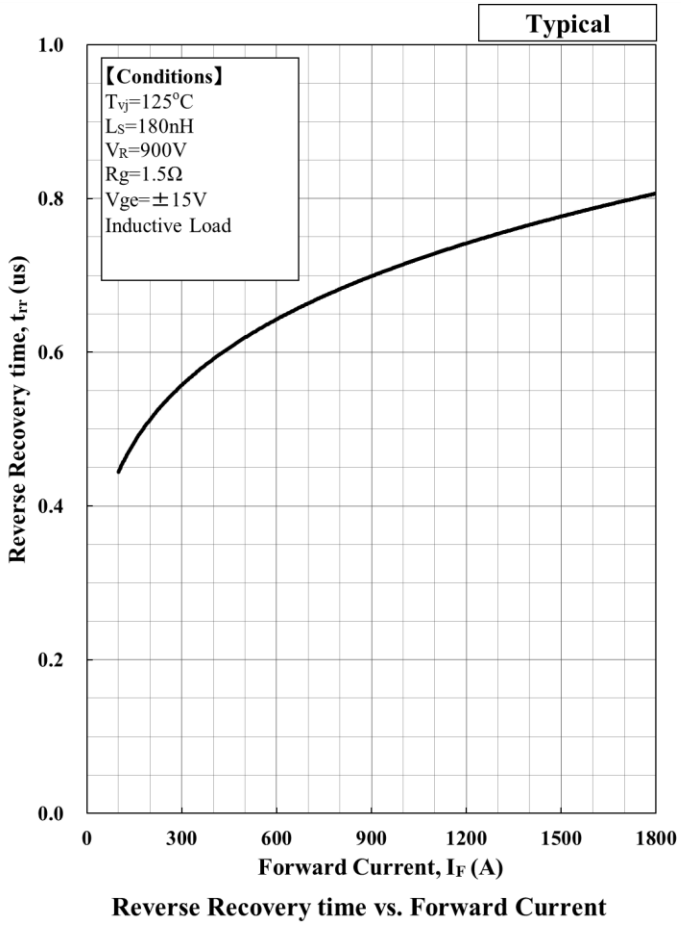
Forward Current vs. Forward Voltage
(at chip level)



Forward Current vs. Forward Voltage



Reverse Recovery loss vs. Forward current



Reverse Recovery time vs. Forward Current

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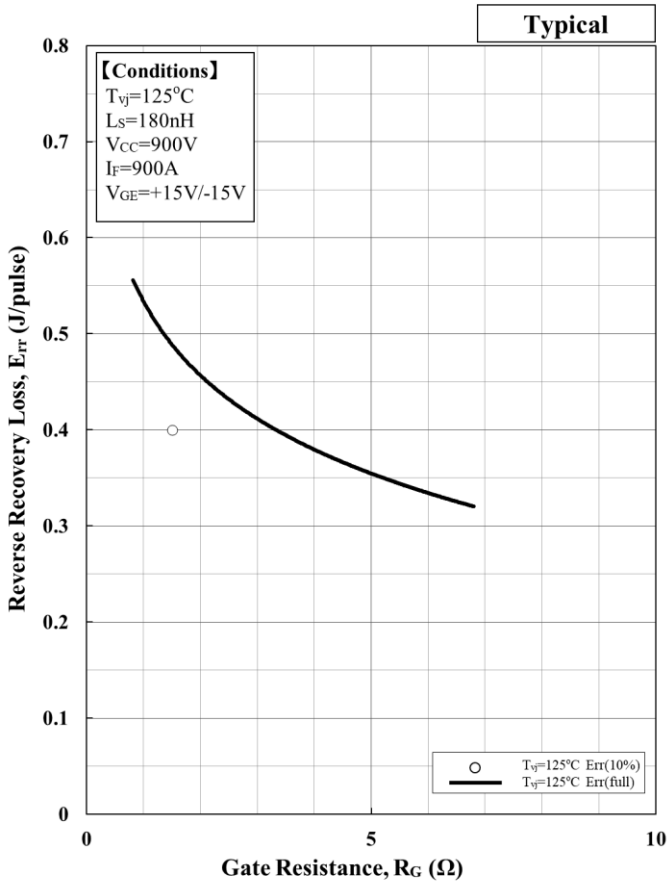
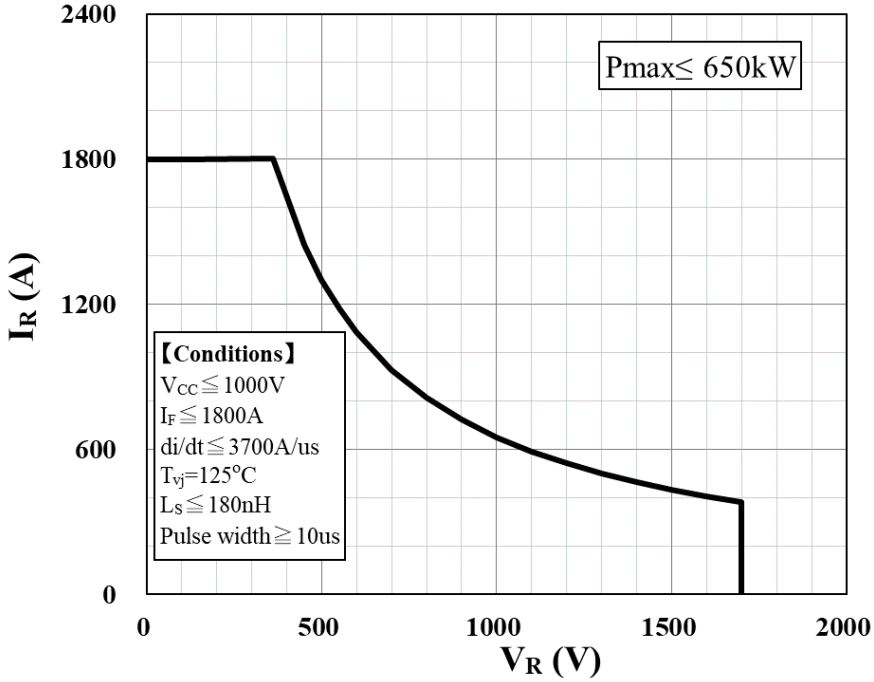
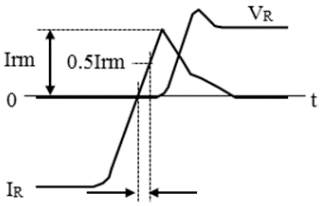


Reverse Recovery loss vs. Gate Resistance



(Defined at power terminals)

Reverse Recovery Safe Operation Area (RRSOA)



$$di/dt = \frac{0.5Irm}{\Delta t}$$

Definition of Recovery di/dt

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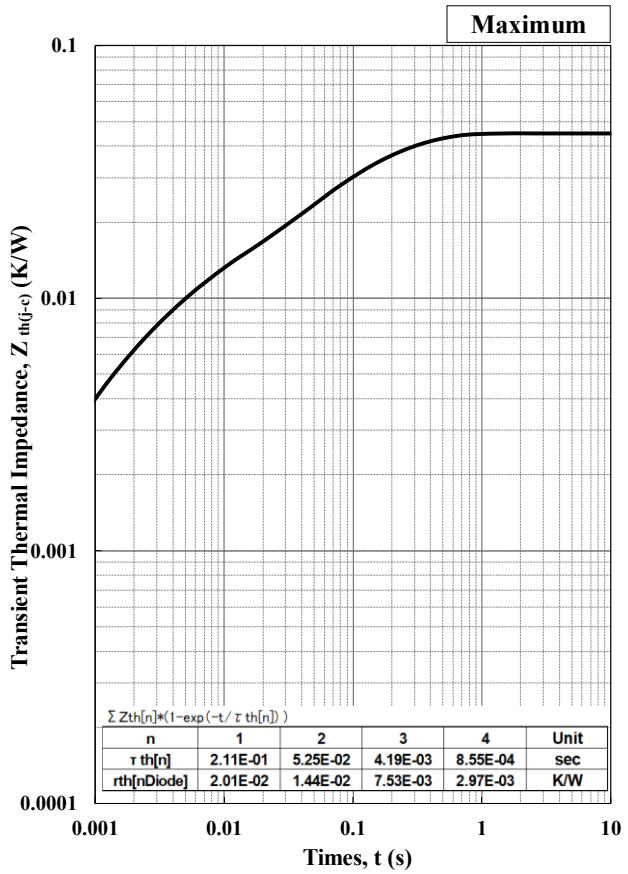

Transient Thermal Impedance Curve

Material declaration

Please note the following materials are contained in the product, in order to keep characteristic and reliability level.

Material	Contained part
Lead (Pb) and its compounds	Solder

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Minebea POWER SEMICONDUCTORS

Notices

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2. When designing an electronic circuit using semiconductor devices, please do not exceed the absolute maximum rating specified for the device under any external fluctuations. And for pulse applications, please also do not exceed the "Safe Operating Area (SOA)".
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6. This specification is a material for component selection, which describes specifications of power semiconductor devices (hereinafter referred to as products), characteristic charts, and external dimension drawings.
7. 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 with Minebea power semiconductor sales department for the latest version of this data sheets.
8. For handling other than described in this manual, follow the handling instructions (IGBT-HI-00002).

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Minebea POWER SEMICONDUCTORS

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