

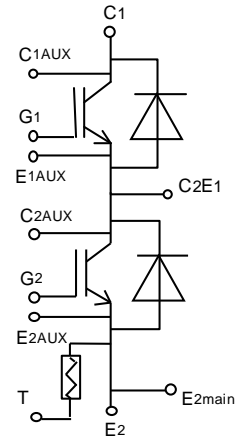
MBM900FS17G

Preliminary Specification

Silicon N-channel IGBT 1700V G version

FEATURES

- * High current density package
- * Low stray inductance & low Rth(j-c)
- * Half-bridge (2in1)
- * Built in temperature sensor
- * Scalable large current easily handled by paralleling
- * Equipped with current sensing terminals



Circuit diagram

ABSOLUTE MAXIMUM RATINGS (T_c=25°C)

Item	Symbol	Unit	MBM900FS17G
Collector Emitter Voltage	V _{CEs}	V	1,700
Gate Emitter Voltage	V _{GES}	V	±20
Collector Current	DC	I _c	900
	1ms	I _{CM}	1,800
Forward Current	DC	I _F	900
	1ms	I _{FM}	1,800
Junction Temperature	T _{vj op}	°C	-50 ~ +150
Storage Temperature	T _{stg}	°C	-55 ~ +150
Isolation Voltage	V _{ISO}	V _{RMS}	4,000(AC 1 minute)
Screw Torque	Terminals (M3/M8)	M	0.8/15
	Mounting (M6)	M	6.0 (1)

Notes: (1) Recommended Value 5.5±0.5N·m

ELECTRICAL CHARACTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Collector Emitter Cut-Off Current	I _{CEs}	mA	-	1	20	V _{CE} =1,700V, V _{GE} =0V, T _{vj} =25°C
Gate Emitter Leakage Current	I _{GES}	nA	-500	-	+500	V _{CE} =1,700V, V _{GE} =0V, T _{vj} =150°C
Collector Emitter Saturation Voltage	V _{CEsat}	V	1.5	1.95	2.4	I _c =900A, V _{GE} =15V, T _{vj} =150°C
Gate Emitter Threshold Voltage	V _{GE(th)}	V	5.5	6.5	7.5	V _{CE} =10V, I _c =900mA, T _{vj} =25°C
Input Capacitance	C _{ies}	nF	-	76	-	V _{CE} =10V, V _{GE} =0V, f=100kHz, T _{vj} =25°C
Internal Gate Resistance	R _{g(int)}	Ω	-	2.1	-	V _{CE} =10V, V _{GE} =0V, f=100kHz, T _{vj} =25°C
Switching Times	Rise Time	t _r	-	0.86	-	V _{CC} =900V, I _c =900A
	Turn On Time	t _{on}	-	1.27	-	L _s =40nH
	Fall Time	t _f	-	0.80	-	R _G (on/off)=2.7Ω/10Ω (2)
	Turn Off Time	t _{off}	-	1.94	-	V _{GE} =±15V, T _{vj} =150°C
Forward Voltage Drop	V _F	V	1.3	1.75	2.2	I _F =900A, V _{GE} =0V, T _{vj} =150°C
Reverse Recovery Time	t _{rr}	μs	-	0.47	-	V _{CC} =900V, I _F =900A, L _s =40nH T _{vj} =150°C
Turn-on Loss per Pulse	E _{on}	J/P	-	0.34	-	V _{CC} =900V, I _c =900A, L _s =40nH
Turn-off Loss per Pulse	E _{off}	J/P	-	0.34	-	R _G (on/off)=2.7Ω/10Ω (2)
Reverse Recovery Loss per Pulse	E _{rr}	J/P	-	0.34	-	V _{GE} =±15V, T _{vj} =150°C
Stray Inductance Module	L _{SCE}	nH	-	10	-	Between C1(main) and E2(main)
NTC-Thermistor	Resistance	R ₂₅	kΩ	5	-	T _c =25°C
	Deviation	ΔR/R	%	-5	5	T _c =25°C
Thermal Impedance	IGBT	Rth(j-c)	K/W	-	0.032	Junction to case
	FWD	Rth(j-c)	K/W	-	0.053	Junction to case
Contact Thermal Impedance	Rth(c-f)	K/W	-	0.02	-	Case to fin (per 1 arm)

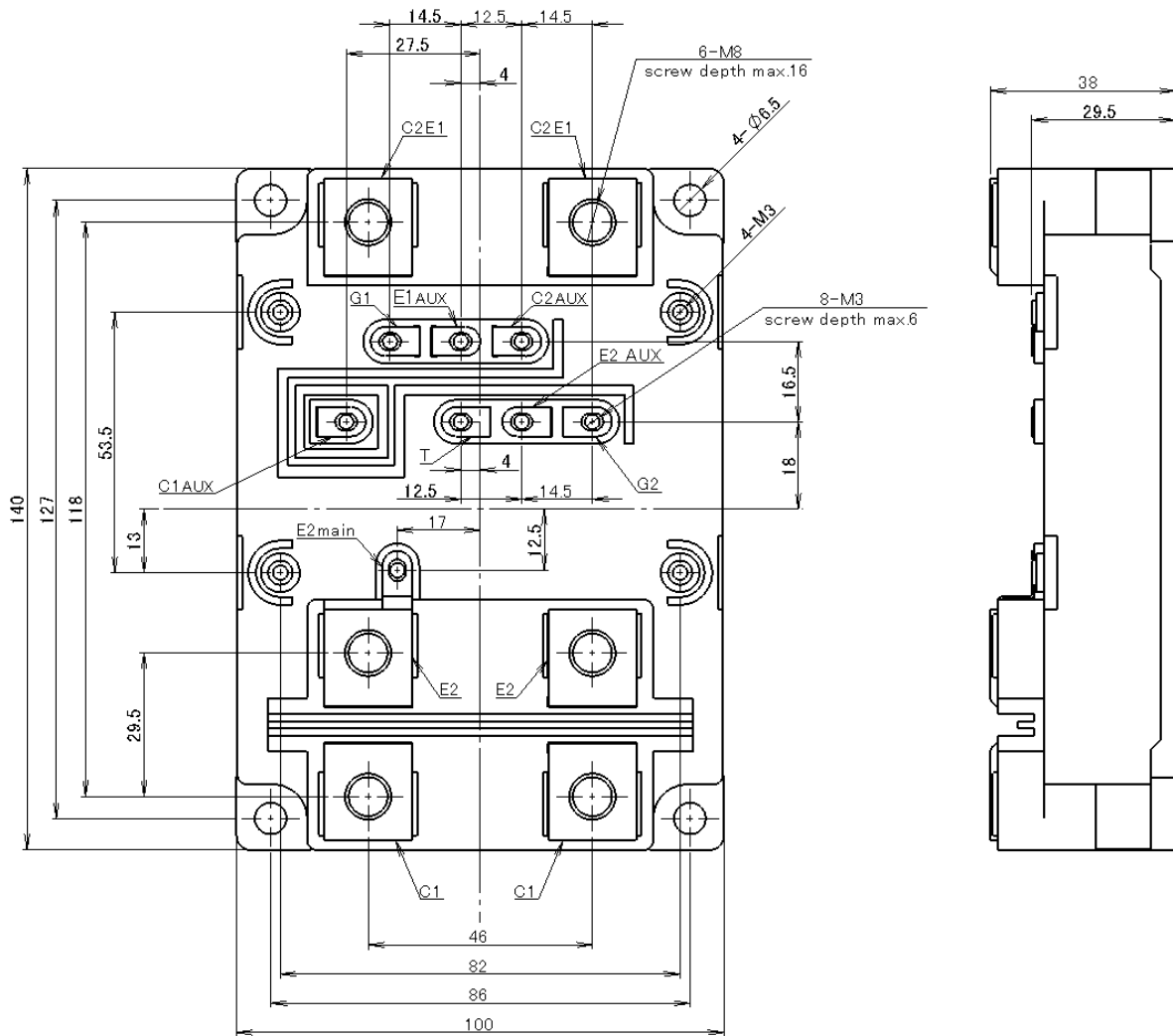
Notes: (2) R_G value is a test condition value for evaluation, not recommended value.Please determine the suitable R_G value by measuring switching behavior and checking results with the respective SOA.

- * 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.
- * ELECTRICAL CHARACTERISTIC values according to IEC 60747-2 IEC 60747-9

MBM900FS17G

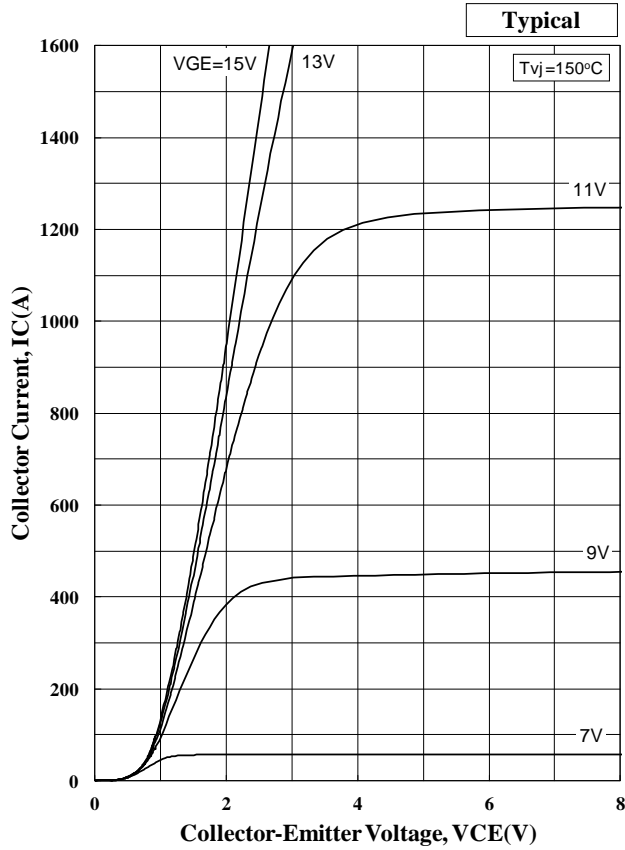
Preliminary Specification

OUTLINE DRAWING

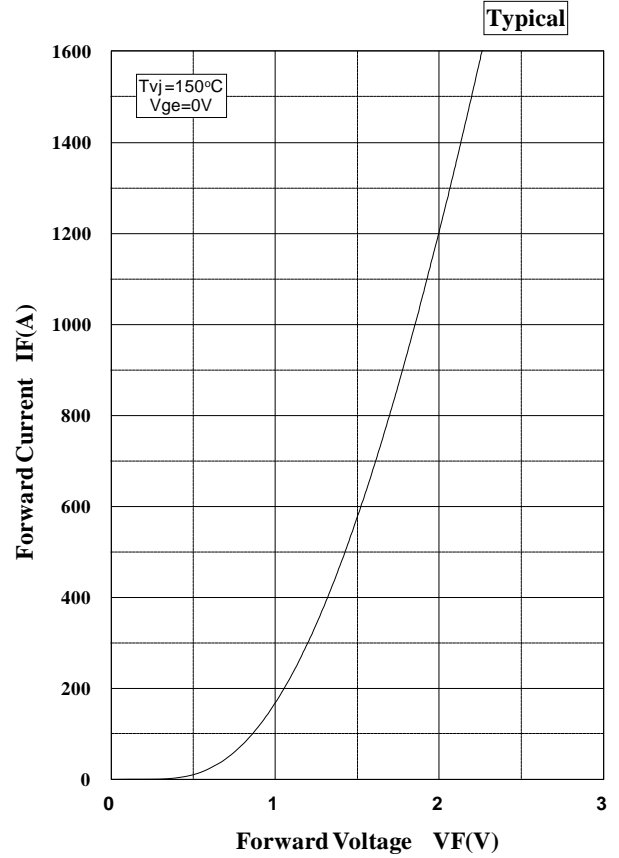


MBM900FS17G

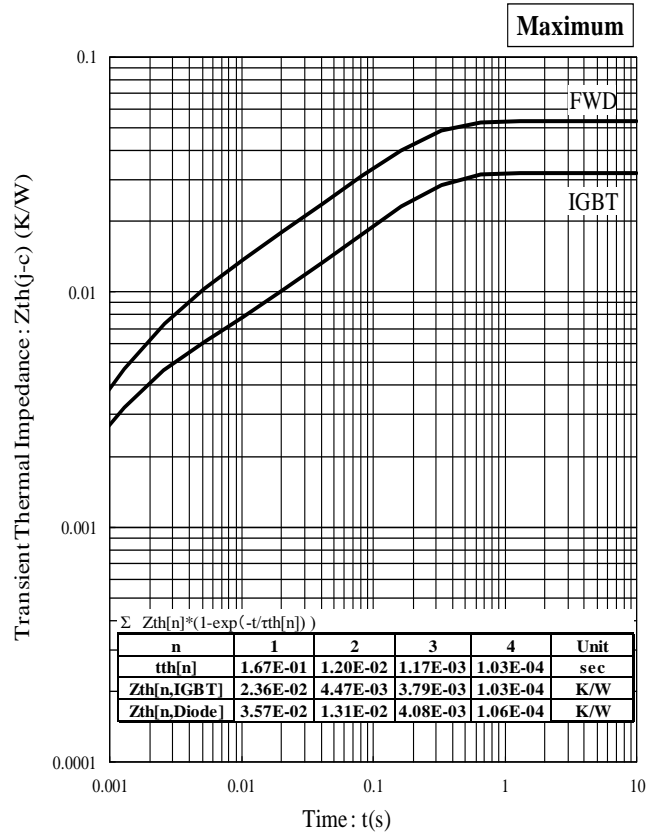
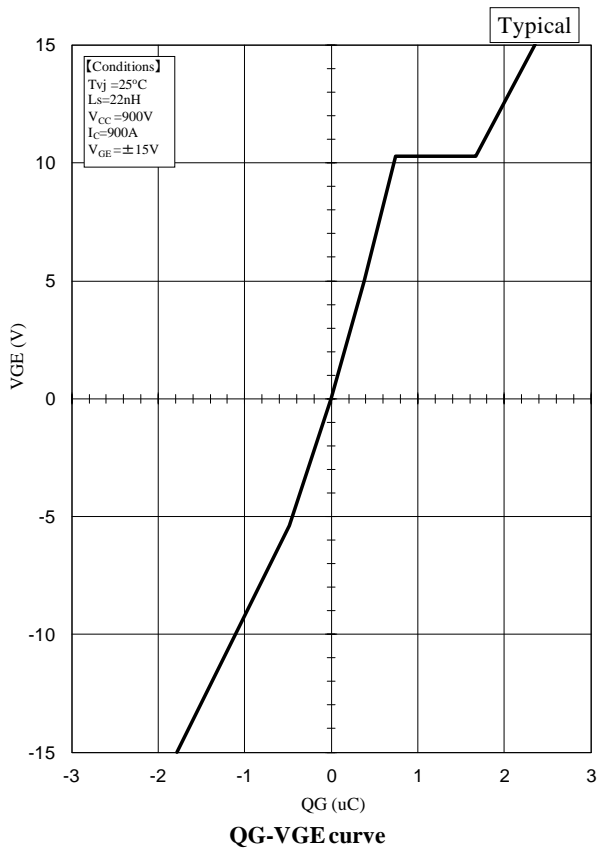
Preliminary Specification



Collector Current vs. Collector to Emitter Voltage



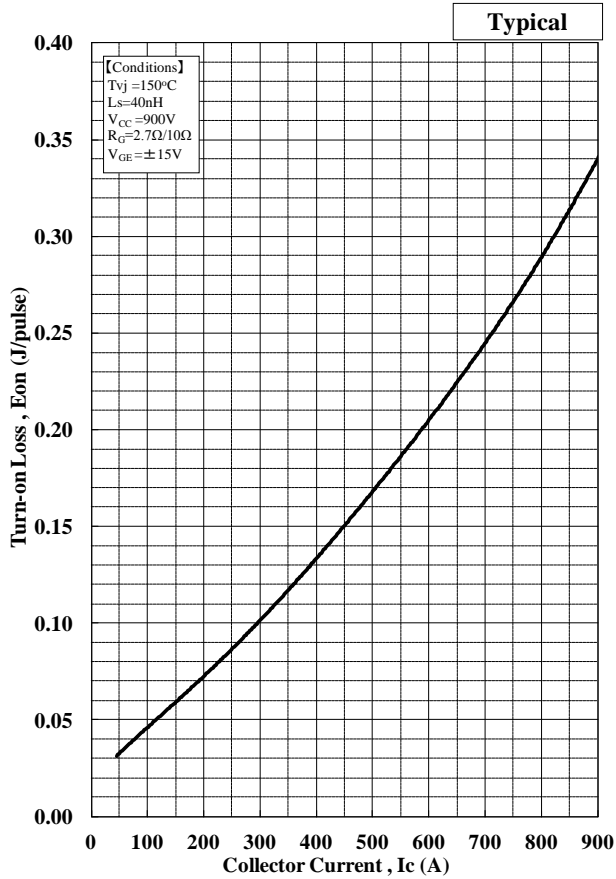
Forward Voltage of free-wheeling diode



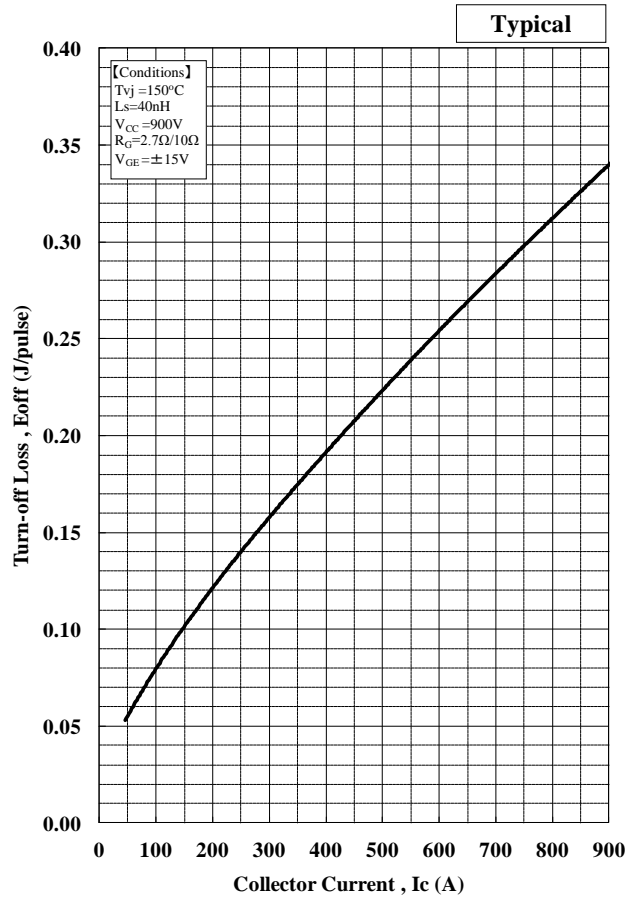
Transient Thermal Impedance Curve

MBM900FS17G

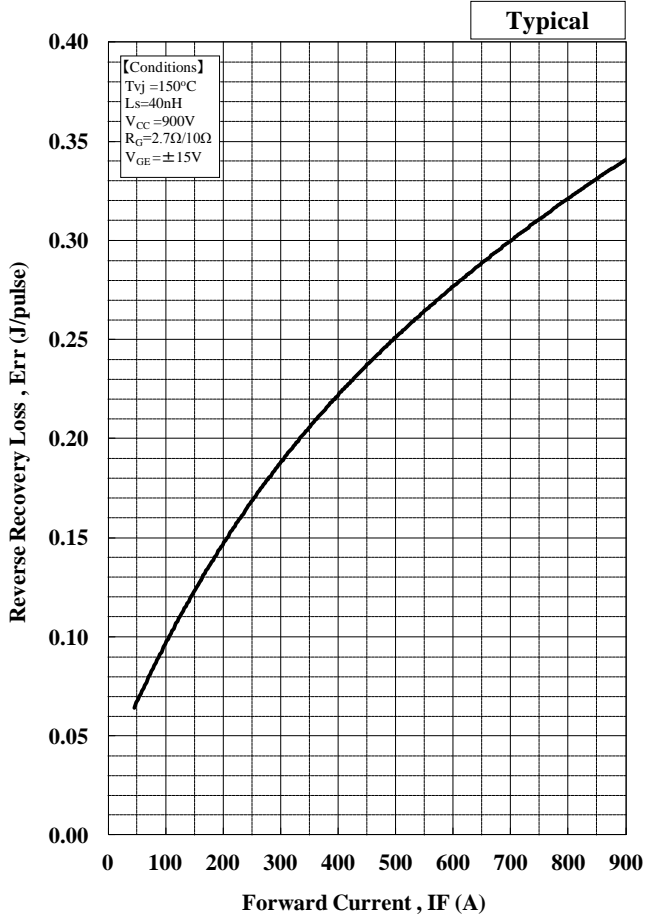
Preliminary Specification



Turn-on Loss vs. Collector Current



Turn-off Loss vs. Collector Current

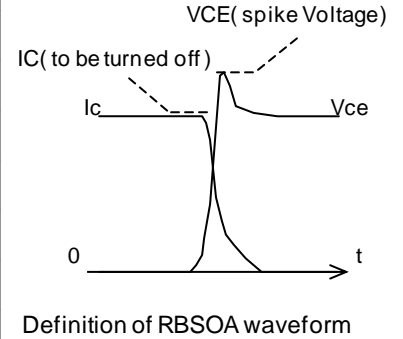
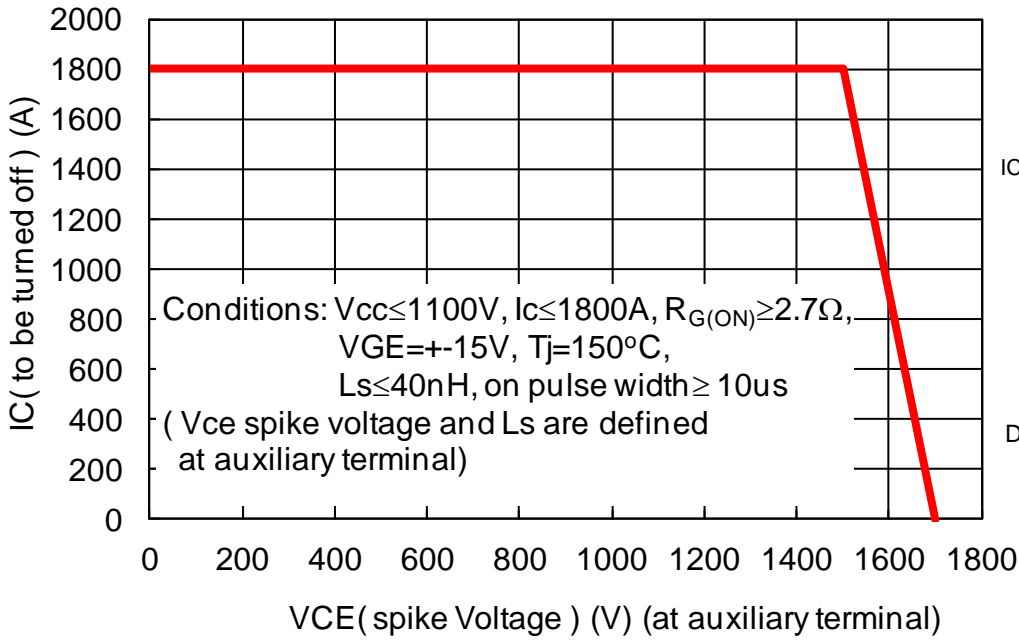


Recovery Loss vs. Forward Current

MBM900FS17G

Preliminary Specification

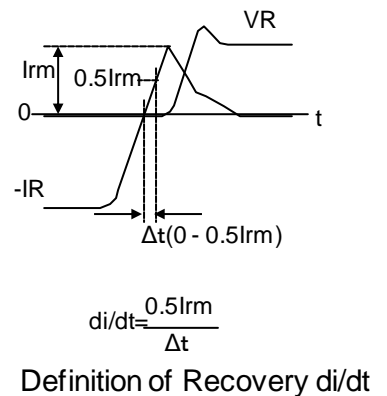
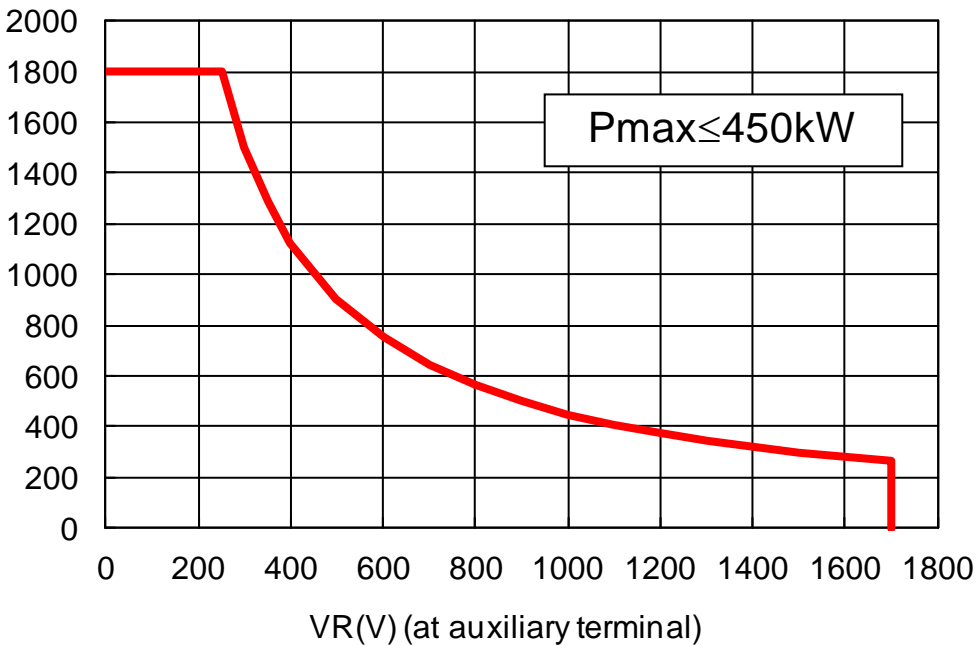
RBSOA



Reverse bias safe operation area (RBSOA)

Reverse Recovery SOA

Conditions:
 $L_s \leq 40nH$, $V_{cc} \leq 1100V$, $I_F \leq 1800A$, $di/dt \leq 8000A/\mu s$, $T_j = 150^\circ C$



Reverse Recovery SOA

MBM900FS17G

Preliminary Specification

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.
2. Please be sure to read "Precautions for Safe Use and Notices" in the individual brochure before use.
3. In cases where extremely high reliability is required (such as use in nuclear power control, aerospace and aviation, traffic equipment, life-support-related medical equipment, fuel control equipment and various kinds of safety equipment), safety should be ensured by using semiconductor devices that feature assured safety or by means of users' fail-safe precautions or other arrangement. Or consult Hitachi's sales department staff.
4. In no event shall Hitachi be liable for any damages that may result from an accident or any other cause during operation of the user's units according to this data sheets. Hitachi assumes no responsibility for any intellectual property claims or any other problems that may result from applications of information, products or circuits described in this data sheets.
5. In no event shall Hitachi be liable for any failure in a semiconductor device or any secondary damage resulting from use at a value exceeding the absolute maximum rating.
6. No license is granted by this data sheets under any patents or other rights of any third party or Hitachi Power Semiconductor Device, Ltd.
7. This data sheets may not be reproduced or duplicated, in any form, in whole or in part, without the expressed written permission of Hitachi Power Semiconductor Device, Ltd.
8. The products (technologies) described in this data sheets are not to be provided to any party whose purpose in their application will hinder maintenance of international peace and safety not are they to be applied to that purpose by their direct purchasers or any third party. When exporting these products (technologies), the necessary procedures are to be taken in accordance with related laws and regulations.

-
- For inquiries relating to the products, please contact nearest overseas representatives that is located "Inquiry" portion on the top page of a home page.
-

Hitachi power semiconductor home page address <http://www.hitachi-power-semiconductor-device.co.jp/en/>