

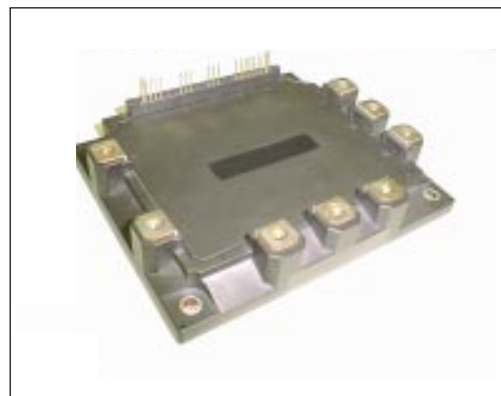
7MBP200RA060

IGBT-IPM R series

600V / 200A 7 in one-package

Features

- Temperature protection provided by directly detecting the junction temperature of the IGBTs
- Low power loss and soft switching
- High performance and high reliability IGBT with overheating protection
- Higher reliability because of a big decrease in number of parts in built-in control circuit



Maximum ratings and characteristics

- Absolute maximum ratings(at $T_c=25^\circ\text{C}$ unless otherwise specified)

Item	Symbol	Rating		Unit	
		Min.	Max.		
DC bus voltage	V_{DC}	0	450	V	
DC bus voltage (surge)	$V_{DC(surge)}$	0	500	V	
DC bus voltage (short operating)	V_{SC}	200	400	V	
Collector-Emitter voltage	V_{CES}	0	600	V	
DB Reverse voltage	V_R	-	600	V	
INV Collector current	DC	I_C	-	200	A
	1ms	I_{CP}	-	400	A
	Duty=57.8%	$-I_C$	-	200	A
Collector power dissipation	One transistor	P_C	-	735	W
DB Collector current	DC	I_C	-	75	A
	1ms	I_{CP}	-	150	A
Forward current of Diode		I_F	-	75	A
Collector power dissipation	One transistor	P_C	-	320	W
Junction temperature	T_j	-	150	$^\circ\text{C}$	
Input voltage of power supply for Pre-Driver	V_{CC*1}	0	20	V	
Input signal voltage	$V_{in} *2$	0	V_z	V	
Input signal current	I_{in}	-	1	mA	
Alarm signal voltage	V_{ALM*3}	0	V_{CC}	V	
Alarm signal current	$I_{ALM} *4$	-	15	mA	
Storage temperature	T_{stg}	-40	125	$^\circ\text{C}$	
Operating case temperature	T_{op}	-20	100	$^\circ\text{C}$	
Isolating voltage (Case-Terminal)	$V_{iso} *5$	-	AC2.5	kV	
Screw torque	Mounting (M5)	-	3.5 *6	N·m	
	Terminal (M5)	-	3.5 *6	N·m	

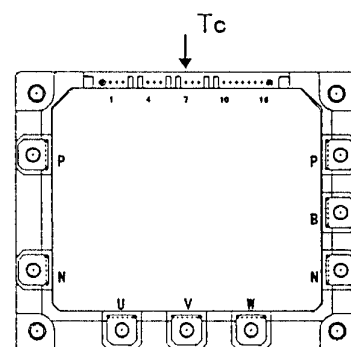


Fig.1 Measurement of case temperature

*1 Apply V_{CC} between terminal No. 3 and 1, 6 and 4, 9 and 7, 11 and 10.

*2 Apply V_{in} between terminal No. 2 and 1, 5 and 4, 8 and 7, 12,13,14,15 and 10.

*3 Apply V_{ALM} between terminal No. 16 and 10.

*4 Apply I_{ALM} to terminal No. 16.

*5 50Hz/60Hz sine wave 1 minute.

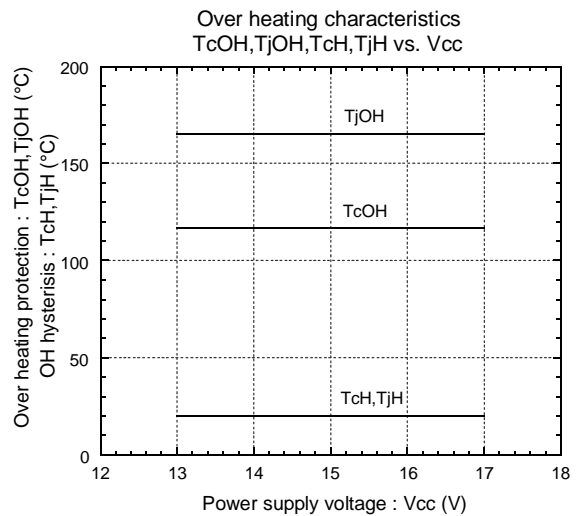
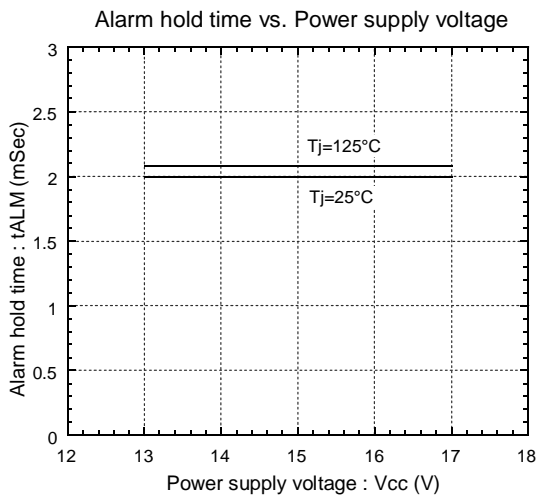
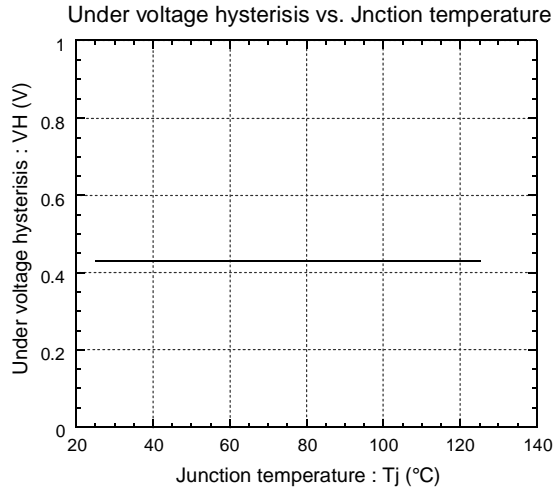
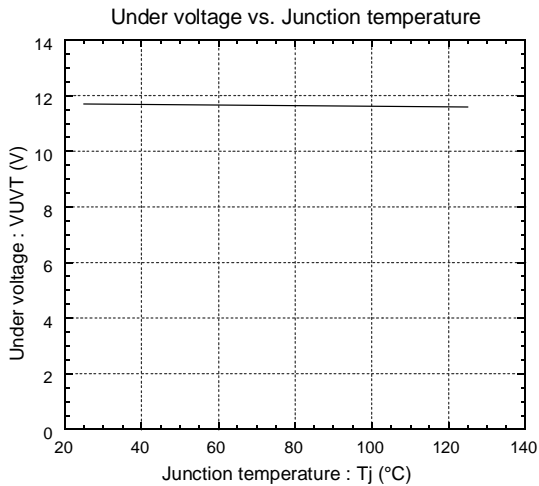
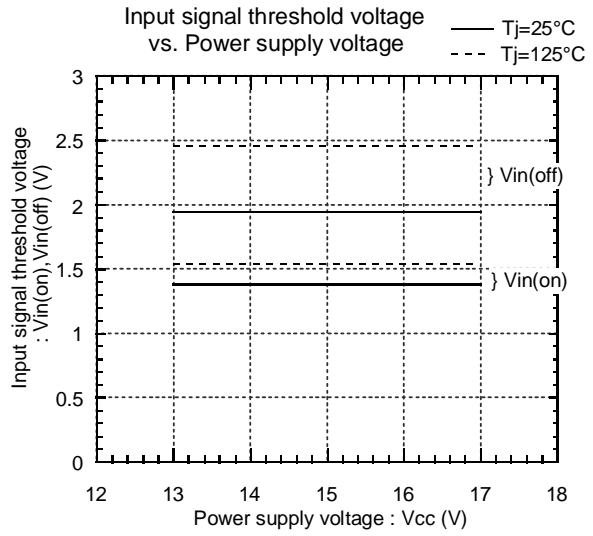
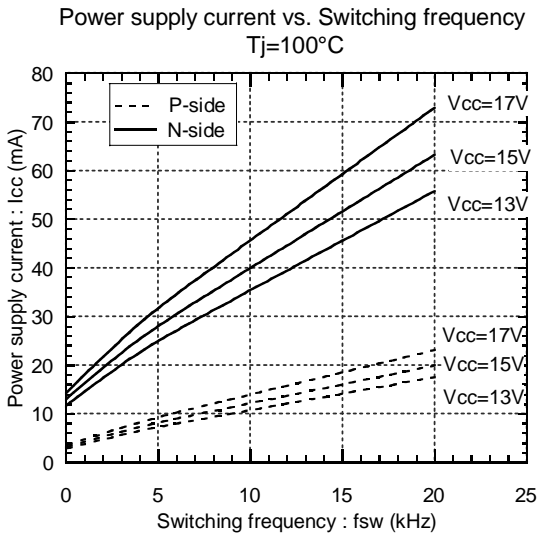
*6 Recommendable Value : 2.5 to 3.0 N·m

- Electrical characteristics of power circuit (at $T_c=T_j=25^\circ\text{C}$, $V_{CC}=15\text{V}$)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	
INV	Collector current at off signal input	I_{CES}	$V_{CE}=600\text{V}$ input terminal open	-	-	1.0	mA
	Collector-Emitter saturation voltage	$V_{CE(sat)}$	$I_C=200\text{A}$	-	-	2.8	V
	Forward voltage of FWD	V_F	$-I_C=200\text{A}$	-	-	3.0	V
DB	Collector current at off signal input	I_{CES}	$V_{CE}=600\text{V}$ input terminal open	-	-	1.0	mA
	Collector-Emitter saturation voltage	$V_{CE(sat)}$	$I_C=75\text{A}$	-	-	2.8	V
	Forward voltage of Diode	V_F	$-I_C=75\text{A}$	-	-	3.3	V

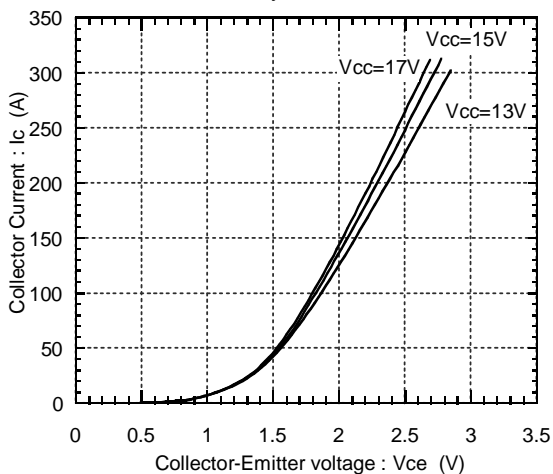
Characteristics (Representative)

Control circuit

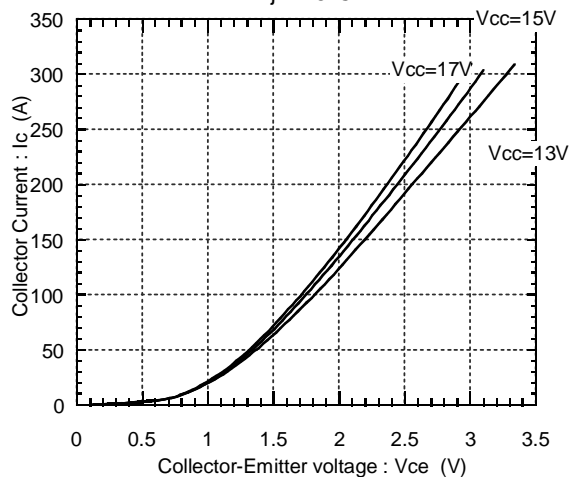


● Inverter

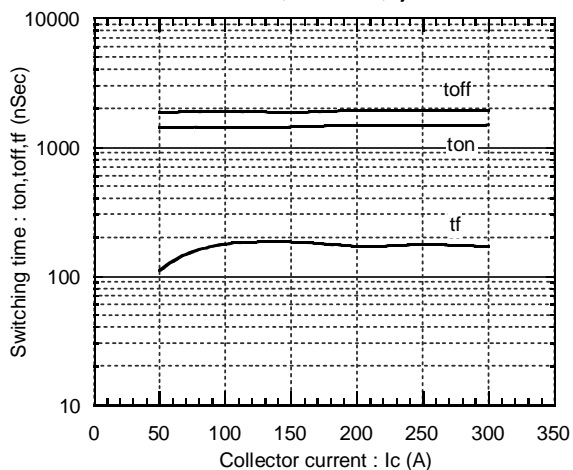
Collector current vs. Collector-Emmitter voltage
T_j=25°C



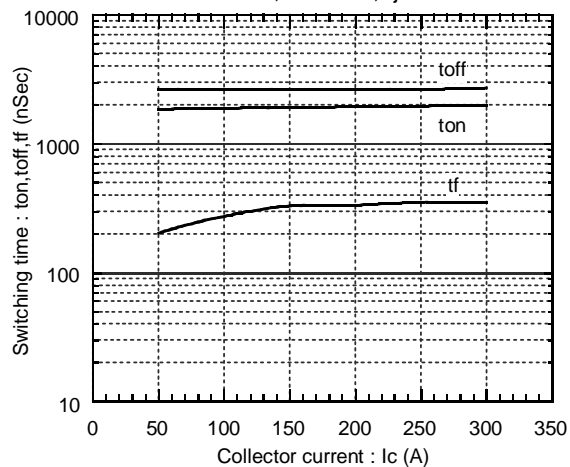
Collector current vs. Collector-Emmitter voltage
T_j=125°C



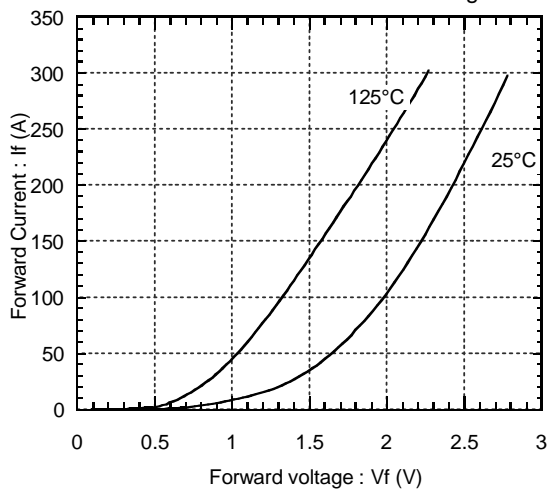
Switching time vs. Collector current
E_{dc}=300V, V_{cc}=15V, T_j=25°C



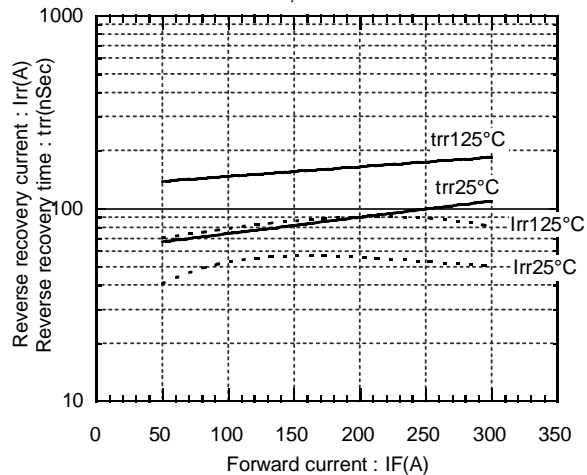
Switching time vs. Collector current
E_{dc}=300V, V_{cc}=15V, T_j=125°C

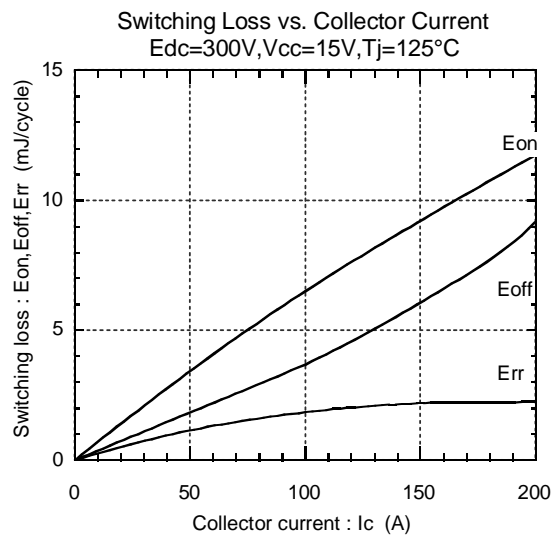
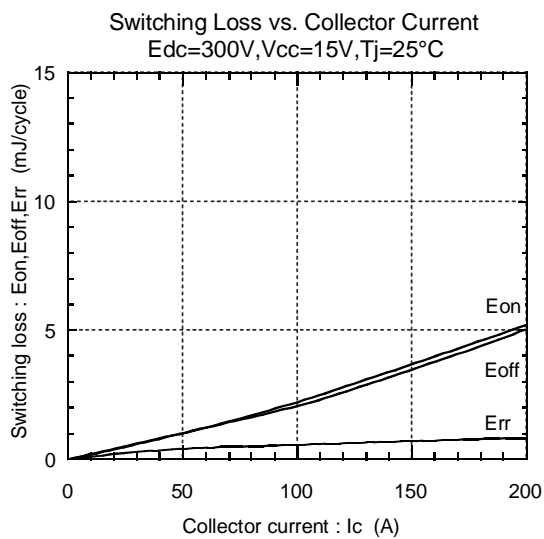
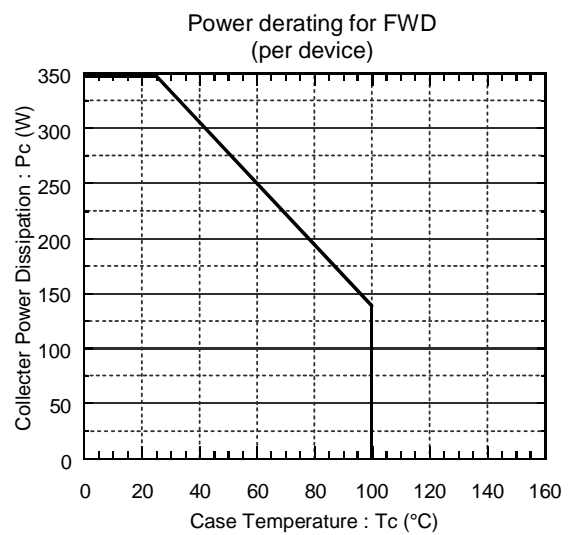
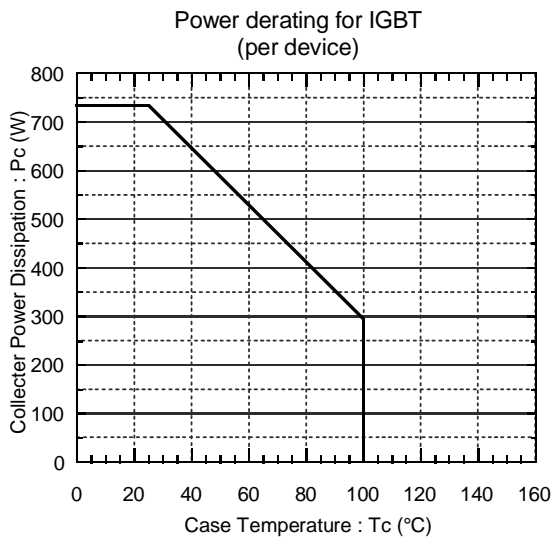
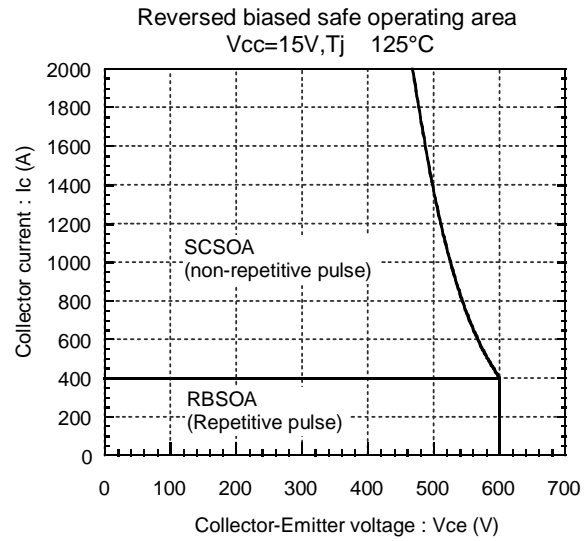
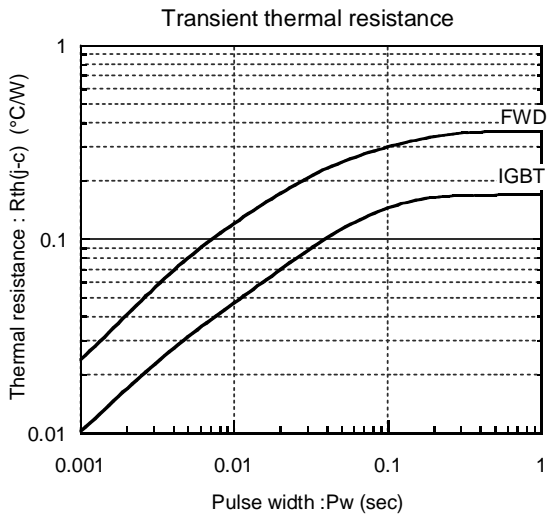


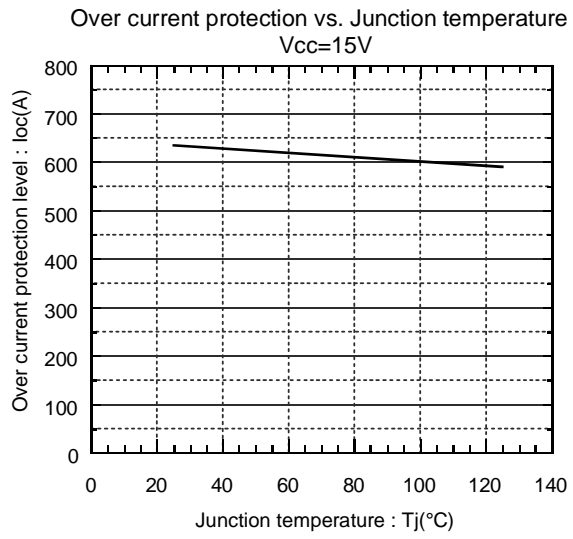
Forward current vs. Forward voltage



Reverse recovery characteristics
trr, Irr vs. IF







● Brake

