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TAM-GDM-00016





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- Introducing the line-up of gate drivers for All-SiC power modules



### **Tamura Corporation Gate Driver Product Overview**





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## Outline of specifications

Gate Driver Module 2DMB series



Gate Driver Unit 2DUx series



		MODEL								
		2DMB51507CC	2DMB51008CC	2DMB50506CC *	2DMB50406CC *	2DMB80407CC	2DMB80206CC			
Dutput	Output voltage(+)	+15V	+15V	+15V	+15V	+18V	+18V			
	Output voltage(-)	-15V	-10V	-5V	-4V	-4V	-2V			
	Output power/1ch	3.3W	3.8W	3.2W	3.0W	3.5W	3.2W			
	Number of output	2								
	Peak output current	±43A								
input	Input voltage	DC13~28V								
	Logic input voltage	DC3.3~5V								
insulation .	Withstand voltage	Primary to secondary AC5KV Secondary to secondary AC4KV								
	Partial discharge extinction voltage	1768V peak								
unction	Mode select	Direct mode / Half bridge mode								
	DESAT protection	Yes								
	Soft turn off	Yes								
	Active clamp	Yes (Option)								
	Miller clamp	Yes								

Features of All-SiC Power Module

Feature 1 Short circuit tolerance is lower than Si

Feature<sup>2</sup> Low threshold voltage VGS (th) (1V~3V)

Feature③ VGS(+) :On resistance does not decrease at 15V VGS(-) :Low tolerance (Less than -5V)

Feature dV/dt can be set high

Feature<sup>5</sup> High frequency operation is possible





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Feature<sup>2</sup> Low threshold voltage VGS (th) (1V~3V)

IGBT is \_\_\_\_ Beware of malfunctions 6V~7V from IGBT

Support with a gate driver ··· Reduction of parasitic capacitance and Miller clamp circuit



Feature③ VGS(+) :On resistance does not decrease at 15V VGS(-) :Low tolerance (Less than -5V)

IGBT's Gate driver cannot be used

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#### Support with a gate driver ··· Constant voltage control of VGS



Feature dV/dt can be set high ----- Turn-on: Recovery current is small Turn-off: No tail current

**Support with a gate driver** ··· Ability to suppress surge voltage with high dV/dt (Soft turn-off, active clamp)



Feature<sup>(5)</sup> High frequency operation is possible

---- Drive power needs to be increased

Support with a gate driver ··· Output capacity considering SiC power module







	1 <sup>st</sup> Generation		2 <sup>nd</sup> Generation			
_	1200V		1200V/1700V			
ALL-SiC Power Module part No.	Gate Driver			A CONTRACT OF A		
	Module	Gate Driver Unit	DC/DC converter	Gate Driver Module	Gate Driver Unit	
BSM080D12P2C008	2DM180506CM	2DU180506MR03	2001804070	2DMB80407CC	-	
BSM120D12P2C005		2DU180506MR01	2001001070	201100010700	-	
BSM180D12P3C007	2DM180206CM	2DU180206MR01	2DD180206C	2DMB80206CC	-	
BSM180D12P2E002		2DU180506MR04	2DD180407C	2DMB80407CC	2EG000BxN13N	
BSM300D12P2E001	2DM180506CM	2DU180506MR02			2EG000BxN13N	
BSM300D12P3E005	2DM180206CM	2DU180206MR02	2DD180206C	2DMB80206CC	2EG000BxN14N	
BSM250D17P2E004	-	-		2DMB80407CC	2EG000B×N13N	
BSM400D12P2G003	2DM180506CM	2DU180506MR02	2DD180407C		2EG000BxN13N	
BSM400D12P3G002		2DU180206MR02			2EG000BxN14N	
BSM600D12P3G001	2DM180206CM	2DU180206MR04	2DD180206C	2DMB80206CC	2EG000BxN14N	

**x**: Signal input voltage selectable " C " =>  $3.3 \sim 15V$  " D " => 15V

#### Extensive line-up of SiC and IGBT gate drivers



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