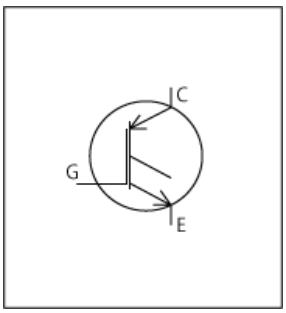
PSpice Model
Nch IGBT
SanKen
MGD623S



Model Information

Model	An original macro model based on BSIM3 and Gummel-Poon model	
Call Name	MDC_MGD623S_PS	
Pin Assign	1:G 2:C 3:E	
File List	Model Library	MDC_MGD623S_PS01.lib
	Model Report	MDC_MGD623S_PS.pdf (this file)
Verified Simulator Version		PSpice version 17.2
Note		

References

The information which was used for modeling is as follow:

[Data Sheet]

- ●Date/Version: Jul. 05, 2017 Rev.1.1
- ●Product name: MGD623S
- ●Company name: Sanken Electric Co., Ltd.
- ●Characteristics: IcVce[Vge],IcVce[Vge]2,IcVge[Temp],VcesatTemp[Ic],VthTemp[Ic],CapacitanceVce[Cname],VgeQg[Vcc],SwitchingTemp[Tname],SwitchingIcc[Tname],SwitchingRg[Tname],IfVf[Temp],VfTemp[If],TrrIf[Ir],SwitchingWaveform,TrrWaveform

Simulation Range

This table shows the range of evaluated simulation range that was not occurs any convergence problems in this area.

Item	Range			Unit
	Min.		Max.	
Collector-emitter voltage (DC)	0	to	600	V
Gate-emitter voltage (DC)	-30	to	30	V
Temperature	-55	to	150	deg C

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IGBT

○ : Implemented
× : Not Implemented
— : Not applicable

Model Functions Table

	RANK=1	
Functions	**RANK**	**Implemented**
DC Characteristics(with Temperature)	1	○
Capacitance	1	○
Gate Charge	1	○
Reverse recovery characteristics	1	○
Switching(Typ.) Inductor Load	1	○
trr	1	○

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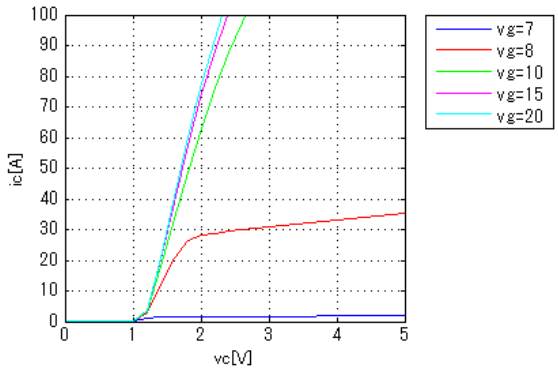
Simulation results are following.
Explanatory notes　— : simulated

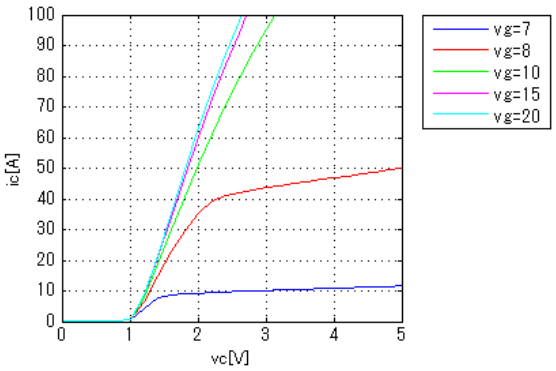
IcVce[Vge]

Temp. = 25deg C



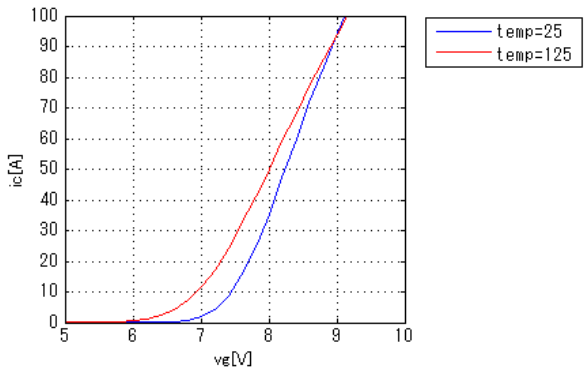
IcVce[Vge]2

Temp. = 125deg C



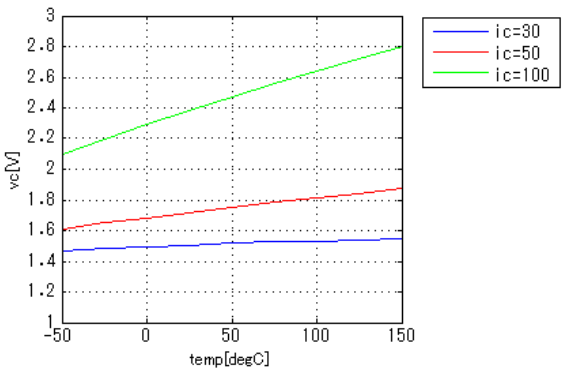
IcVge[Temp]

Vce = 5V



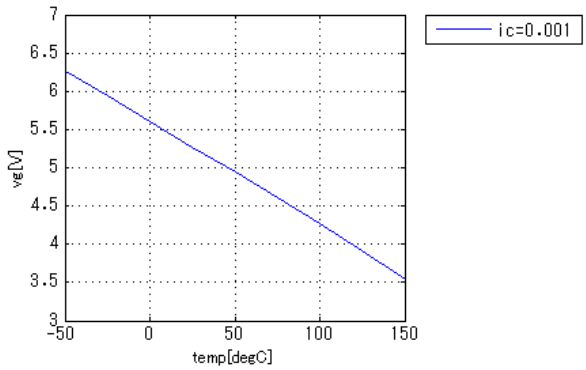
VcesatTemp[Ic]

vg = 15V



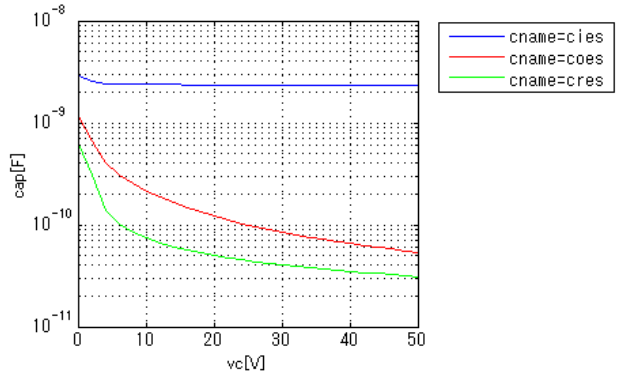
VthTemp[Ic]

Vce = 10V



CapacitanceVce[Cname]

freq = 1000000Hz



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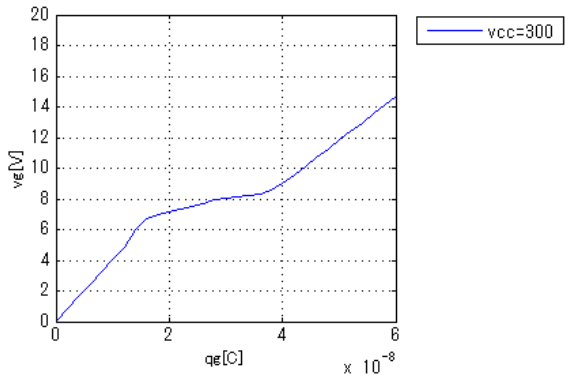
Simulation results are following.
Explanatory notes — : simulated

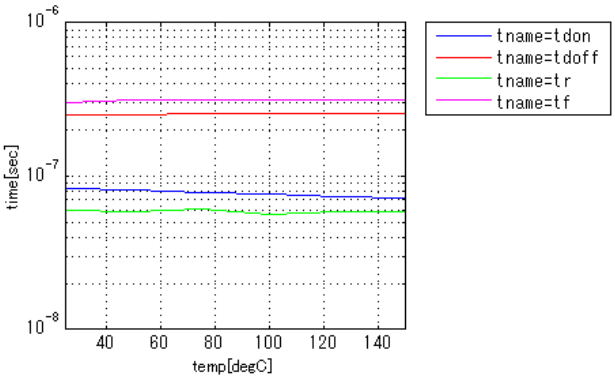
VgeQg[Vcc]

Ic = 50A



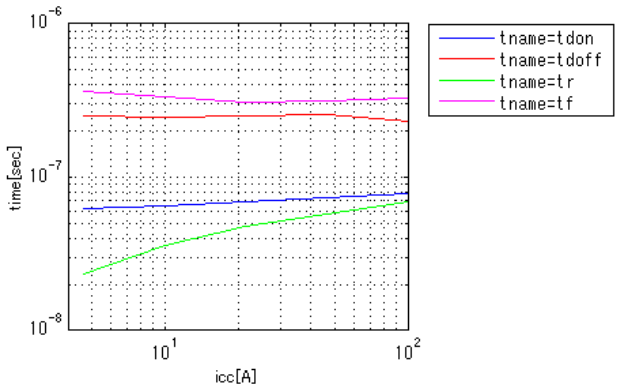
SwitchingTemp[Tname]

vgg = 15V, vcc = 300V, RGG = 39ohm, icc = 50A



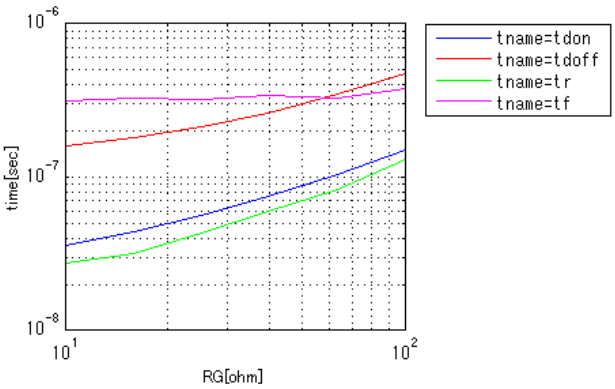
SwitchingIcc[Tname]

vgg = 15V, vcc = 300V, RGG = 39ohm, Temp = 125degC

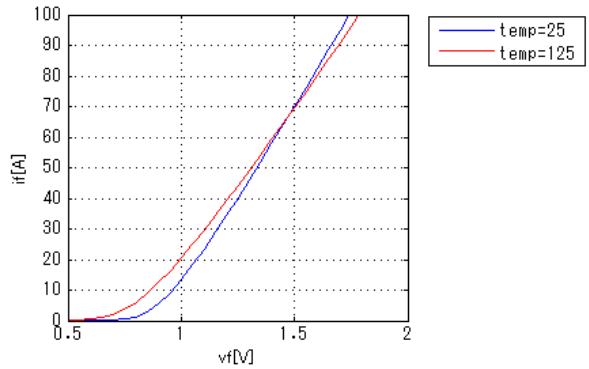


SwitchingRg[Tname]

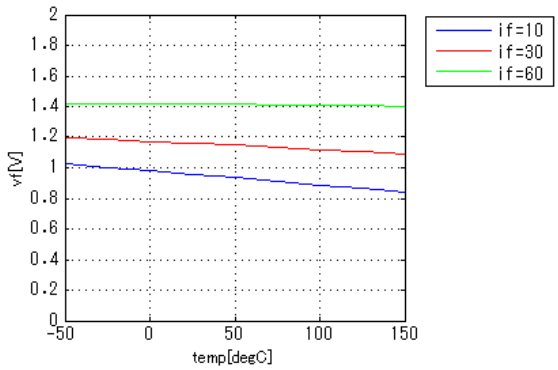
vgg = 15V, vcc = 300V, icc = 50A, Temp = 125degC



IfVf[Temp]



VfTemp[If]



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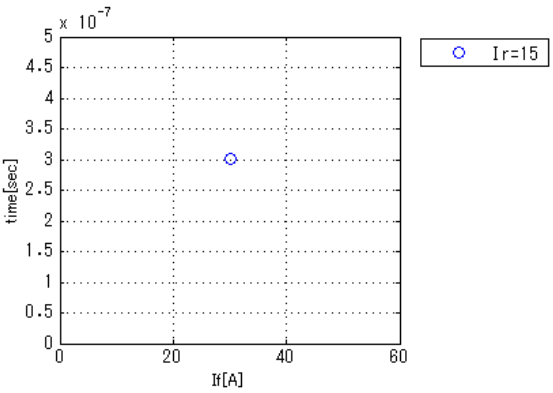
Simulation results are following.
Explanatory notes — : simulated

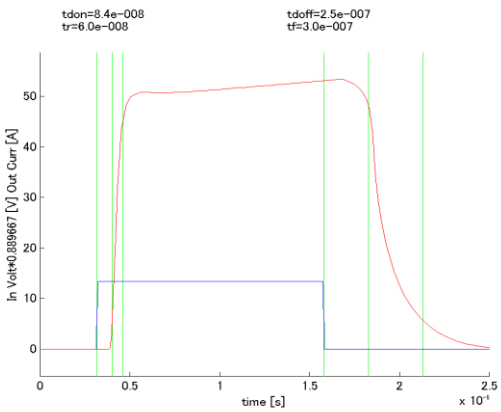
TrrIf[Ir]

irr = 1.5A, didt = 100A/us, vcc = 300V



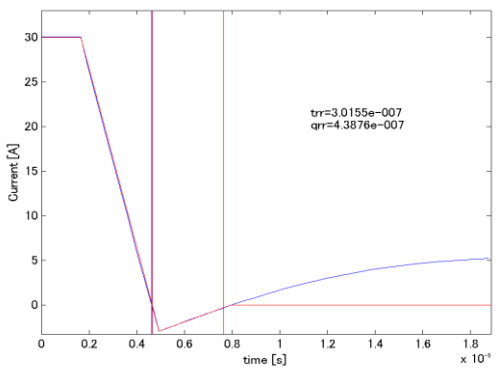
Switching Waveform (Blue : INPUT Red : OUTPUT

vgg = 15V, vcc = 300V, RGG = 39ohm, icc = 50A, Temp = 25degC



Trr Waveform (Red : Datasheet Blue : Simulation)

If – 30A, ir = 15A, irr = 1.5A, didt = 100A/us, vcc = 300V



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