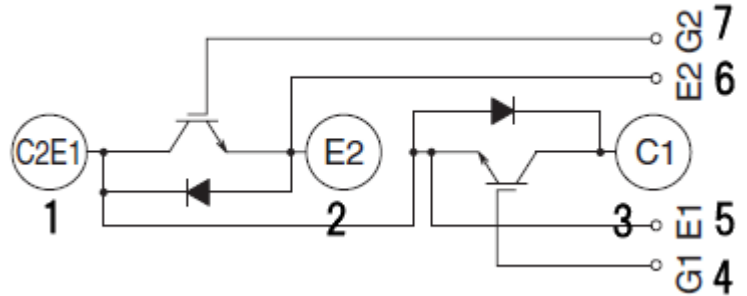


## LTspice Model Nch IGBT Mitsubishi CM300DY-24NF



### Model Information

**Model** An original macro model based on BSIM3 and Gummel-Poon model  
**Call Name** MDC\_CM300DY-24NF\_LT  
**Pin Assign** 1:C2E1 2:E2 3:C1 4:G1 5:E1 6:E2 7:G2  
**File List** Model Library MDC\_CM300DY-24NF\_LT01.lib  
 Model Report MDC\_CM300DY-24NF\_LT.pdf (this file)

**Verified Simulator Version** LTspice version XVII  
**Note**

### References

The information which was used for modeling is as follow:

[Data Sheet]

- Date/Version Feb. 2009
- Product name CM300DY-24NF
- Company name Mitsubishi Electric Corporation
- Characteristics  $I_c V_{ce}[V_{ge}], V_{ce}(sat) I_c[TEMP], V_{ce}(sat) V_{ge}[I_c], I_{fv}[Temp], C_a$   
 $pacitance V_{ce}[Cname], Switching I_{cc}[Tname], T_{rr} I_f, V_{ge} Q_g[V_{cc}]$   
 $, Switching Waveform, T_{rr} Waveform$

### 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	1,200	V
Gate-emitter voltage (DC)	-20	to	20	V
Temperature	-40	to	125	deg C

**IGBT**

○ : Implemented  
 × : Not Implemented  
 — : Not applicable

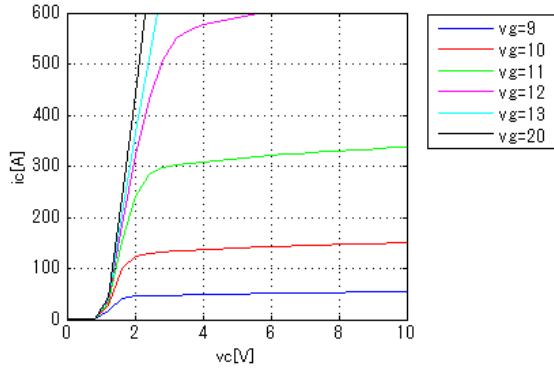
**Model Functions Table**
**RANK=1**

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

Simulation results are following.  
 Explanatory notes — : simulated

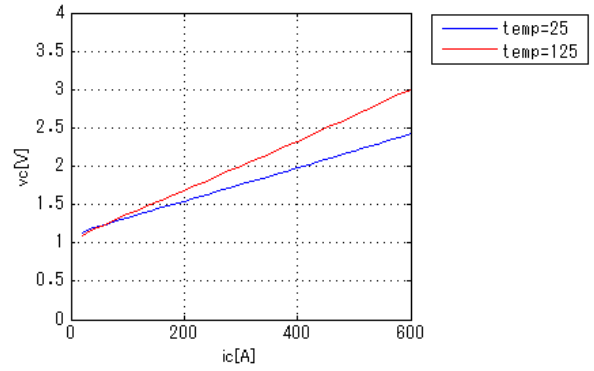
**IcVce[Vge]**

Temp. = 25deg C



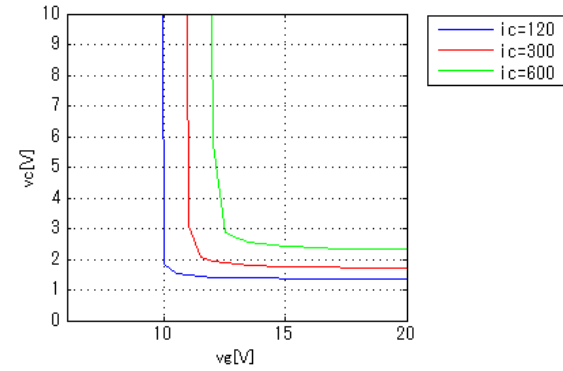
**Vce(sat)Ic[TEMP]**

Vge = 15V

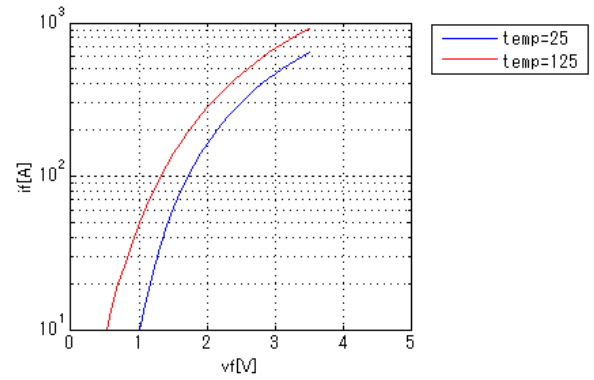


**Vce(sat)Vge[Ic]**

Temp. = 25deg C

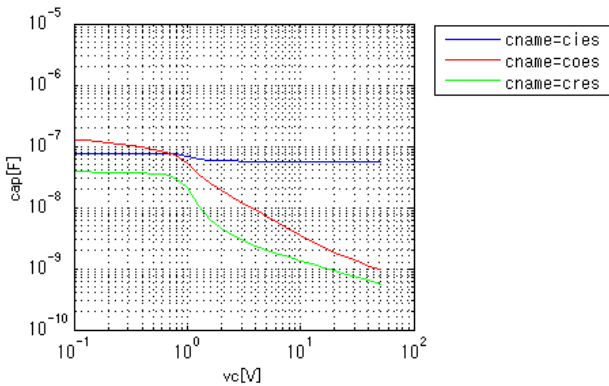


**IfVf[Temp]**



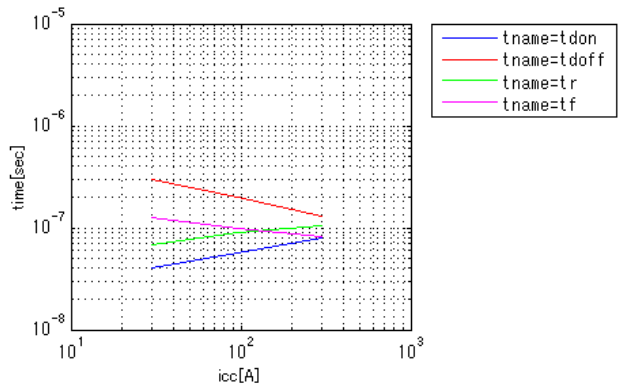
**CapacitanceVce[Cname]**

freq = 1000000Hz



**SwitchingIcc[Tname]**

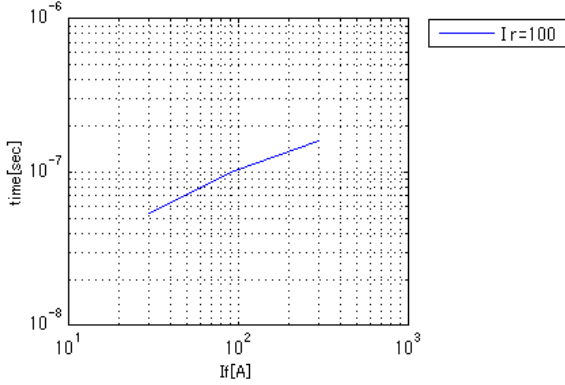
vge = 15V, vcc = 600V, RGG = 1ohm, Temp = 125degC



Simulation results are following.  
 Explanatory notes — : simulated

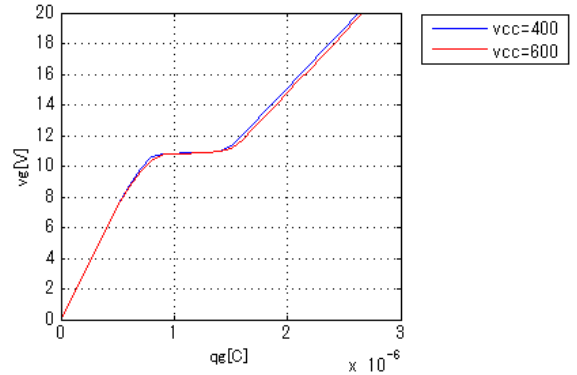
**Trrlf**

didt = 5000A/us, vcc = 600V



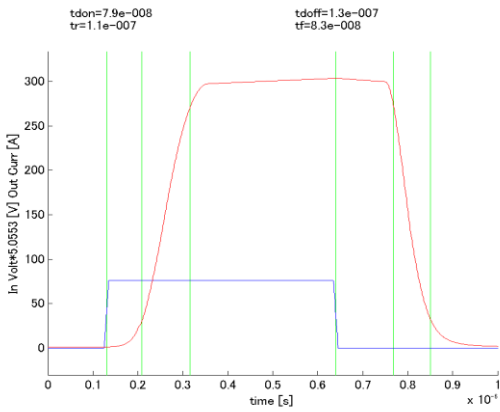
**VgeQg[Vcc]**

Ic = 300A



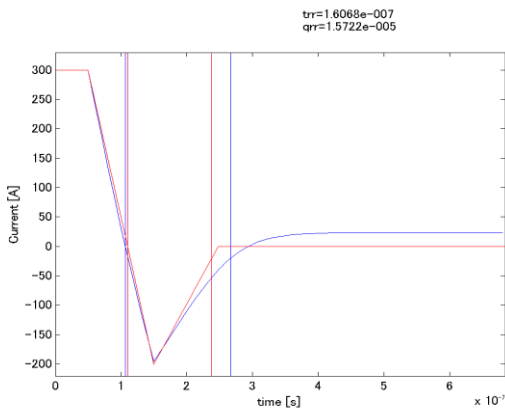
**Switching Waveform ( Blue : INPUT Red : OUTPUT )**

v<sub>gg</sub> = 15V, v<sub>cc</sub> = 600V, R<sub>GG</sub> = 1ohm, Temp = 125degC, I<sub>c</sub> = 300A



**Trr Waveform ( Red : Datasheet Blue : Simulation )**

didt = 5000A/us, vcc = 600V, if = 300A, ir = 200A



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