

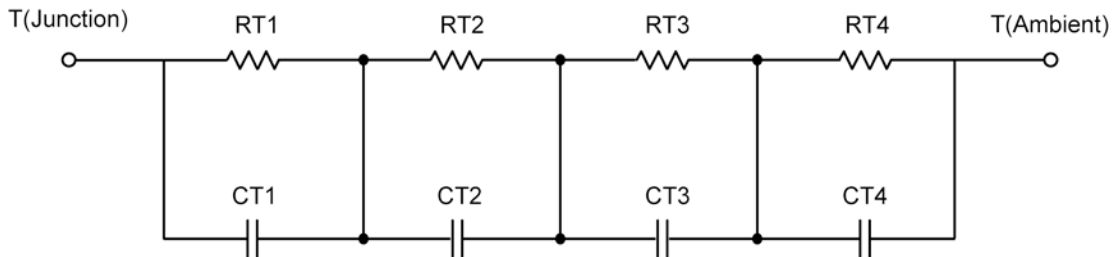
R-C Thermal Model Parameters

DESCRIPTION

The parametric values in the R-C thermal model have been derived using curve-fitting techniques. R-C values for the electrical circuit in the Foster/Tank and Cauer/Filter configurations are included. When implemented in P-Spice, these values have matching characteristic curves to the single-pulse transient thermal impedance curves for the MOSFET.

These RC values can be used in the P-SPICE simulation to evaluate the thermal behavior of the MOSFET junction temperature under a defined power profile. These techniques are described in Application Note AN609, "Thermal Simulation of Power MOSFETs on the P-Spice Platform."

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION				
Thermal Resistance (°C/W)				
Junction to	Ambient-Mosfet	Case-Mosfet	Ambient-Schottky	Case-Schottky
RT1	29.4011	17.2996	29.4011	17.2996
RT2	22.7853	12.4294	22.7853	12.4294
RT3	29.5053	753.4000 m	29.5053	753.4000 m
RT4	33.3083	9.5176	33.3083	9.5176
Thermal Capacitance (Joules/°C)				
Junction to	Ambient-Mosfet	Case-Mosfet	Ambient-Schottky	Case-Schottky
CT1	521.0398 u	180.6510 u	521.0398 u	180.6510 u
CT2	37.0029 u	527.3307 u	37.0029 u	527.3307 u
CT3	7.5157 m	72.2282 m	7.5157 m	72.2282 m
CT4	782.3250 m	36.5543 u	782.3250 m	36.5543 u

This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

R-C THERMAL MODEL FOR FILTER CONFIGURATION

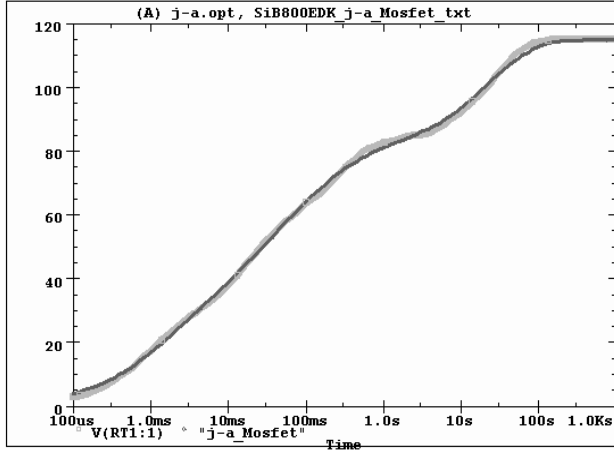
R-C VALUES FOR FILTER CONFIGURATION				
Thermal Resistance ($^{\circ}\text{C}/\text{W}$)				
Junction to	Ambient-Mosfet	Case-Mosfet	Ambient-Schottky	Case-Schottky
RF1	29.9575	14.8268	29.9575	14.8268
RF2	32.5016	19.3796	32.5016	19.3796
RF3	21.0465	5.6687	21.0465	5.6687
RF4	31.4944	124.9000 m	31.4944	124.9000 m
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)				
Junction to	Ambient-Mosfet	Case-Mosfet	Ambient-Schottky	Case-Schottky
CF1	39.3463 u	29.3109 u	39.3463 u	29.3109 u
CF2	772.6887 u	123.6870 u	772.6887 u	123.6870 u
CF3	15.1779 m	813.3045 u	15.1779 m	813.3045 u
CF4	854.3304 m	278.1963 u	854.3304 m	278.1963 u

Note

NA indicates not applicable

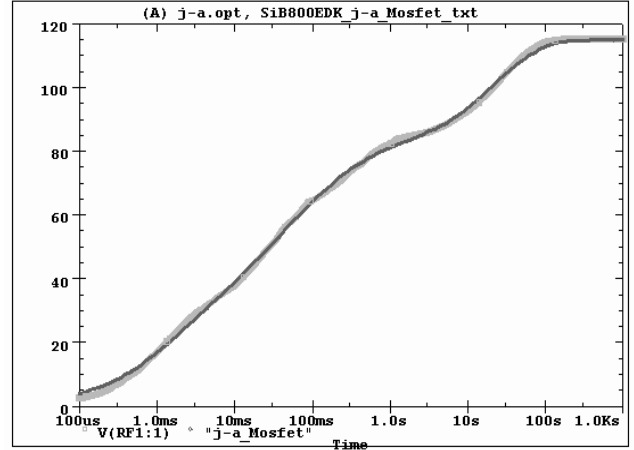


SiB800EDK Tank j-a Mosfet Temperature:27.0



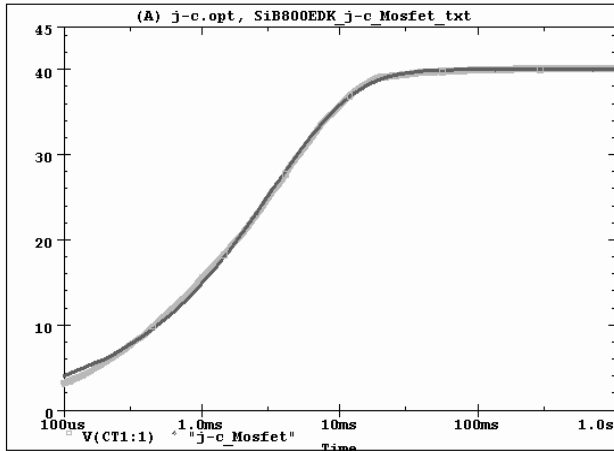
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SiB800EDK Filter j-a Mosfet Temperature:27.0



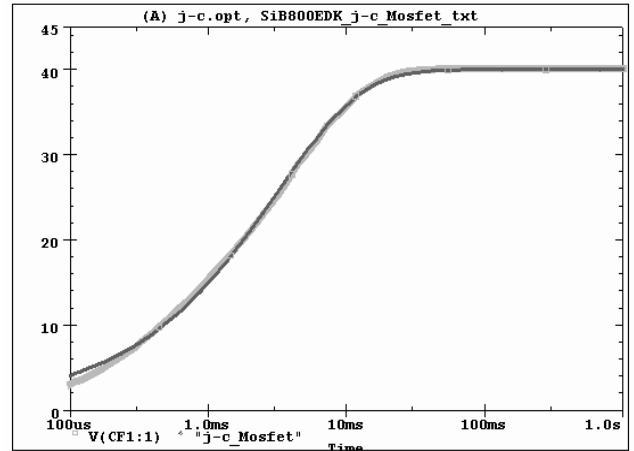
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SiB800EDK Tank j-c Mosfet Temperature:27.0



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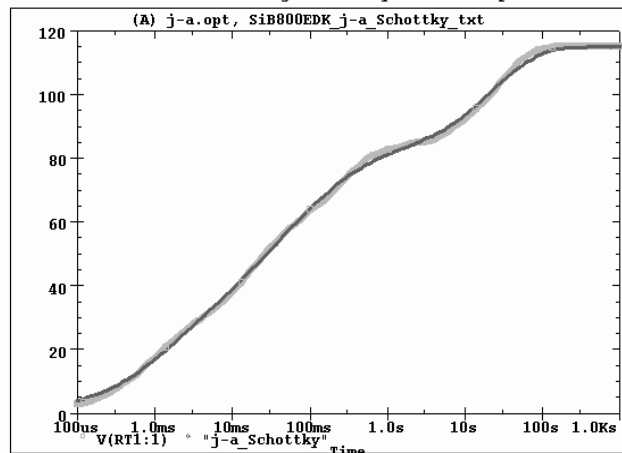
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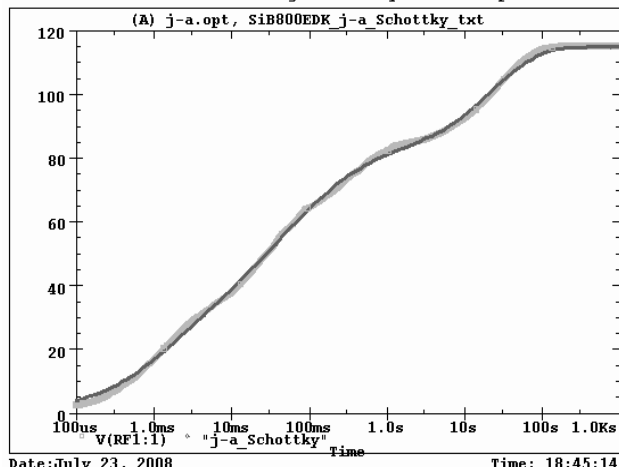
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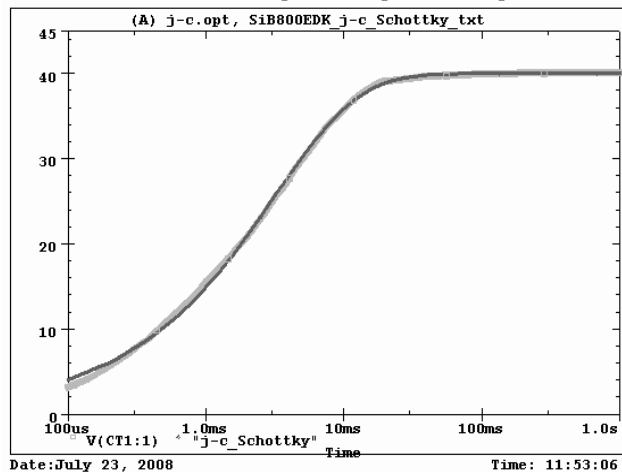
SiB800EDK Tank j-a Schottky Temperature:27.0



SiB800EDK Filter j-a Schottky Temperature:27.0



SiB800EDK Tank j-c Schottky Temperature:27.0



SiB800EDK Filter j-c Schottky Temperature:27.0

