

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	Case	Foot
RT1	28.2437	1.3523	N/A
RT2	13.6754	6.5589	N/A
RT3	25.0823	4.1019	N/A
RT4	42.9986	3.9869	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	2.2597 m	687.7697 u	N/A
CT2	103.0497 u	491.4232 u	N/A
CT3	40.8847 m	54.9615 u	N/A
CT4	1.1292	292.5428 u	N/A

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**

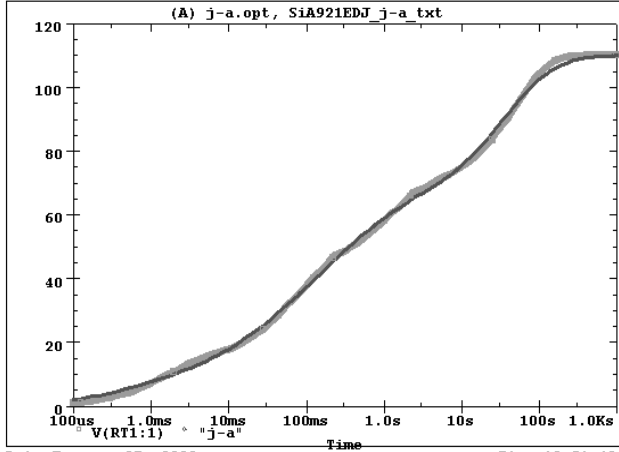
Thermal Resistance ($^{\circ}\text{C}/\text{W}$)			
Junction to	Ambient	Case	Foot
RF1	14.2316	6.6789	N/A
RF2	31.2017	4.9199	N/A
RF3	23.4768	2.7079	N/A
RF4	41.0899	1.6933	N/A
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	92.0082 u	37.0761 u	N/A
CF2	2.0230 m	118.4691 u	N/A
CF3	43.4109 m	211.8647 u	N/A
CF4	1.1315	980.4259 u	N/A

Note

NA indicates not applicable

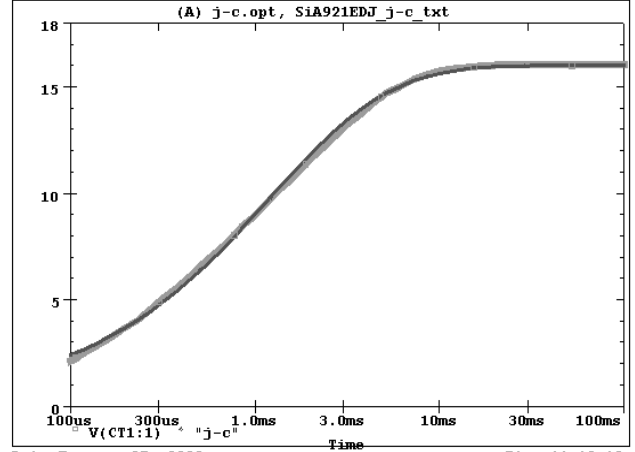


SiA921EDJ Tank j-a Temperature:27.0



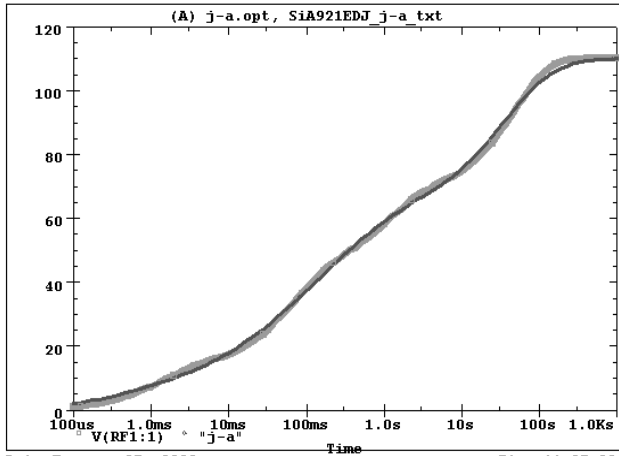
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SiA921EDJ Tank j-c Temperature:27.0



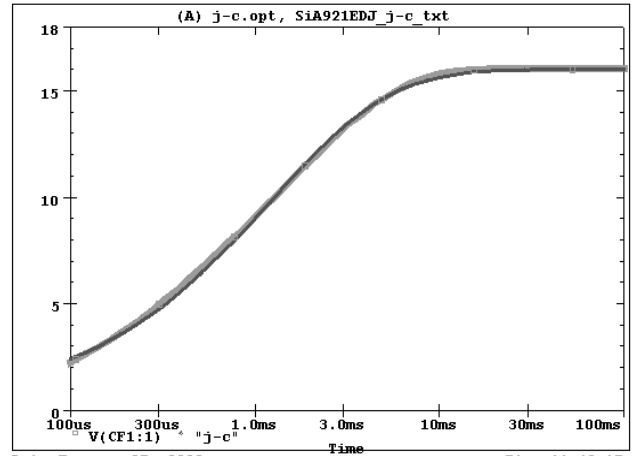
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SiA921EDJ Filter j-a Temperature:27.0



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SiA921EDJ Filter j-c Temperature:27.0



Date:January 27, 2009 Time:11:42:17