

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

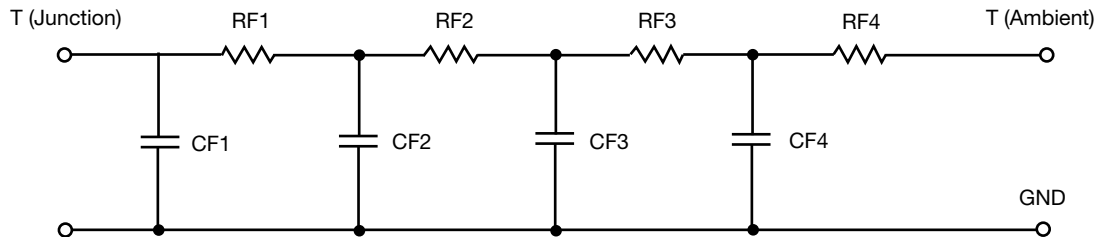


R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE ($^{\circ}\text{C}/\text{W}$)			
Junction to	Ambient	Case	Foot
RT1	27.3986	226.4103m	N/A
RT2	13.8449	3.7152	N/A
RT3	14.7742	3.4716	N/A
RT4	48.9841	2.0730	N/A
THERMAL CAPACITANCE (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CT1	4.4995m	9.9552m	N/A
CT2	250.7933u	427.5633u	N/A
CT3	317.1950m	126.9821u	N/A
CT4	1.6789	114.2547u	N/A

Note

N/A indicates not applicable

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

R-C THERMAL MODEL FOR FILTER CONFIGURATION

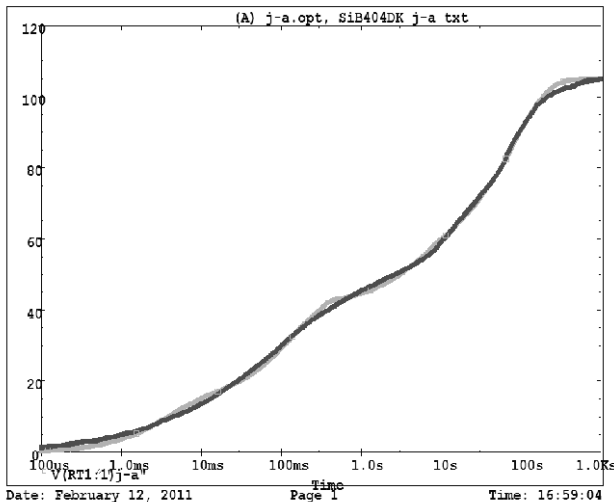
R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	Ambient	Case	Foot
RF1	13.6257	2.7405	N/A
RF2	27.5480	4.8557	N/A
RF3	20.0665	148.0019m	N/A
RF4	42.3127	1.7443	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	204.9667u	32.0110u	N/A
CF2	3.5348m	77.9058u	N/A
CF3	237.5437m	542.5505u	N/A
CF4	1.5479	15.9981u	N/A

Note

N/A indicates not applicable

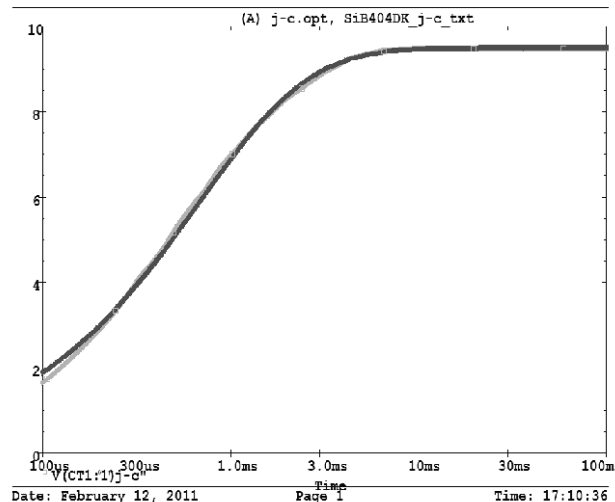


SiB404DK Tank j-a Temperature: 27.0



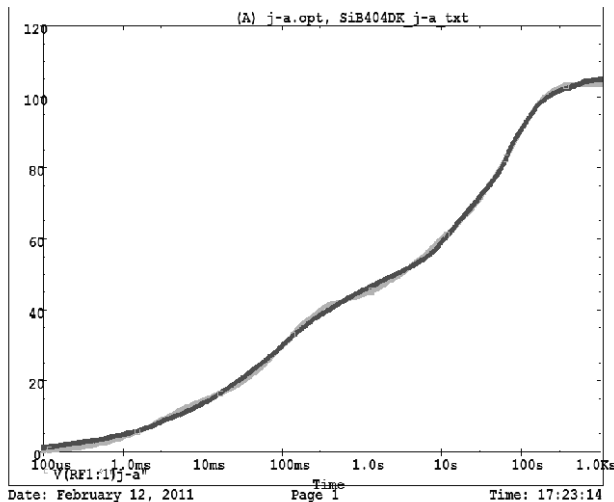
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SiB404DK Tank j-c Temperature: 27.0



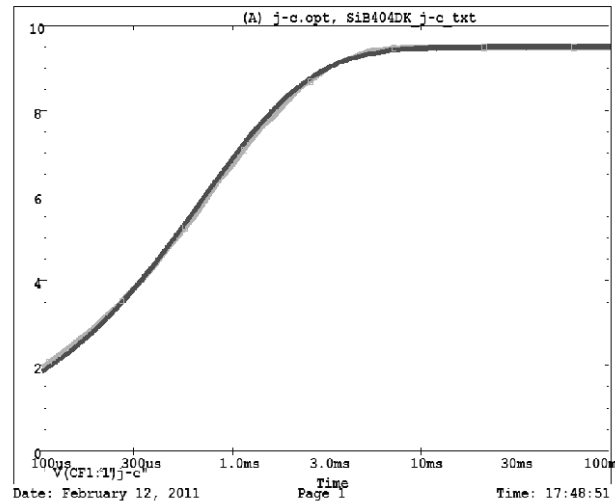
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SiB404DK Filter j-a Temperature: 27.0



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SiB404DK Filter j-c Temperature: 27.0



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