

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	9.8813	N/A	3.6490
RT2	23.6934	N/A	11.9143
RT3	23.6779	N/A	4.4860
RT4	52.7474	N/A	18.9507
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	486.8730 u	N/A	888.0603 m
CT2	5.3010 m	N/A	2.9705 m
CT3	46.3166 m	N/A	300.5234 u
CT4	1.7073	N/A	7.0249 m

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

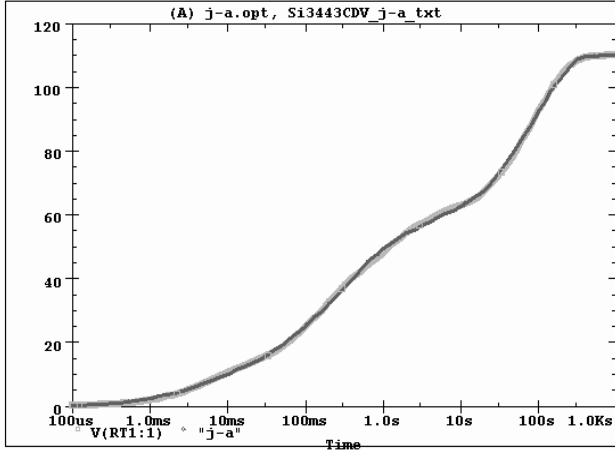
R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RF1	10.7391	N/A	5.0076
RF2	24.4336	N/A	15.0261
RF3	22.3656	N/A	15.5079
RF4	52.4617	N/A	3.4584
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	405.6348 u	N/A	277.0312 u
CF2	3.7015 m	N/A	1.3740 m
CF3	30.0485 m	N/A	5.0392 m
CF4	1.6286	N/A	745.6910 m

Note

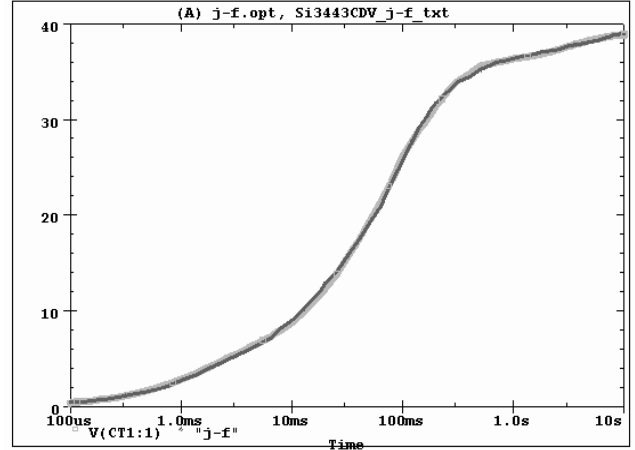
NA indicates not applicable



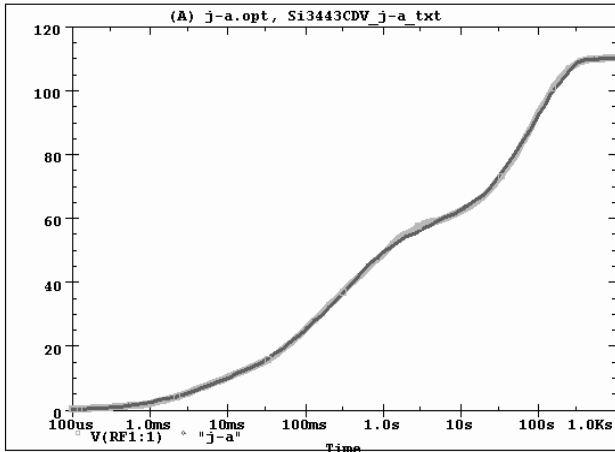
Si3443CDV Tank j-a Temperature:27.0



Si3443CDV Tank j-f Temperature:27.0



Si3443CDV Filter j-a Temperature:27.0



Si3443CDV Filter j-f Temperature:27.0

