

R-C Thermal Model Parameters

DESCRIPTION

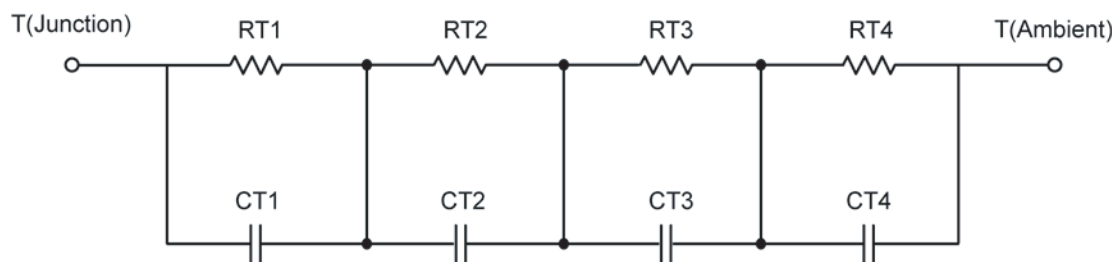
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse Transient Thermal Impedance curves for the MOSFET.

R-C values for the electrical circuit in the Foster/Tank and Cauer/Filter configurations are included.

Note:

For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

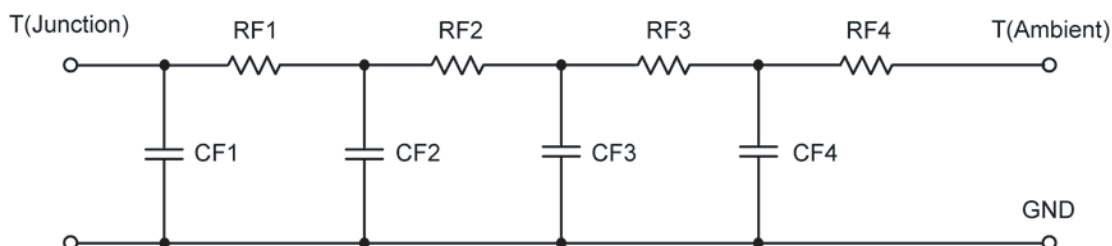
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION

Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	2.0964	18.1348 μ	N/A
RT2	9.0489	713.7923 m	N/A
RT3	8.0177	1.3126	N/A
RT4	50.6167	1.1896	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	24.2346 m	81.2397 μ	N/A
CT2	558.4598 m	673.3554 μ	N/A
CT3	70.7118 m	15.6345 m	N/A
CT4	1.4427	6.7185 m	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	6.2277	164.8787 m	N/A
RF2	7.9322	888.8177 m	N/A
RF3	7.6428	1.2671	N/A
RF4	47.9015	1.0331	N/A
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	16.9231 m	166.0609 μ	N/A
CF2	156.4465 m	357.5156 μ	N/A
CF3	2.8690 m	4.6473 m	N/A
CF4	1.2888	304.1798 μ	N/A

Note: NA indicates not applicable

Reference:

[1] "A Simple Method of Generating Thermal Models for a Power MOSFET" by Wharton McDaniel and Kandarp Pandya. IEEE / SEMITHERM 2002

