



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.

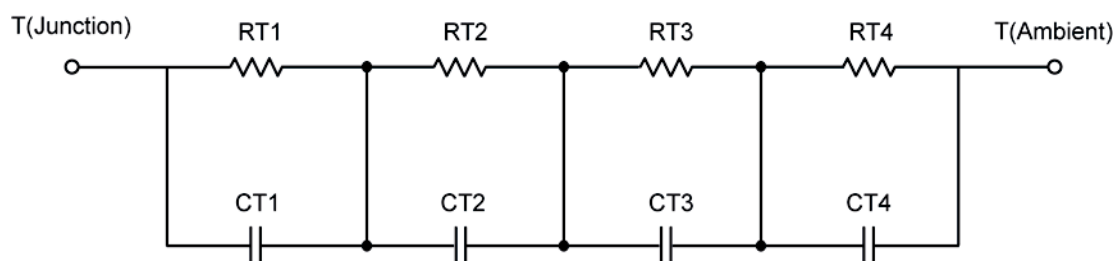
R-C values for the electrical circuit in the Foster/Tank and Cauer/Filter configurations are included.

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](#).

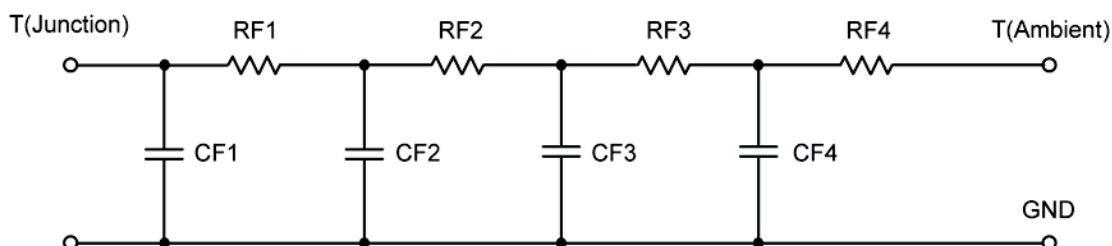
R-C THERMAL MODEL FOR TANK CONFIGURATION

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R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	22.0425	N/A	23.5742
RT2	33.2402	N/A	33.2557
RT3	11.6883	N/A	10.4624
RT4	53.0290	N/A	2.7077
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	54.9657 m	N/A	58.2147 m
CT2	23.3037 m	N/A	11.8325 m
CT3	1.6847 m	N/A	3.0211 m
CT4	1.4307	N/A	289.3372 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

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R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance ($^{\circ}\text{C}/\text{W}$)			
Junction to	Ambient	Case	Foot
RF1	12.0591	N/A	4.6749
RF2	26.1631	N/A	13.9626
RF3	31.2811	N/A	19.6217
RF4	50.4967	N/A	31.7408
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	1.3325 m	N/A	311.5387 u
CF2	11.2274 m	N/A	2.8693 m
CF3	15.0487 m	N/A	3.6756 m
CF4	1.4432	N/A	18.0470 m

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

