

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	N/A	681.1331 m	N/A
RT2	N/A	452.0608 m	N/A
RT3	N/A	66.7317 m	N/A
RT4	N/A	200.0744 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	N/A	19.2077 m	N/A
CT2	N/A	31.3256 m	N/A
CT3	N/A	154.6164 m	N/A
CT4	N/A	1.7777 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 (°C/W)			
Junction to	Ambient	Case	Foot
RF1	N/A	277.2733 m	N/A
RF2	N/A	451.5149 m	N/A
RF3	N/A	577.9065 m	N/A
RF4	N/A	93.3053 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	N/A	1.6173 m	N/A
CF2	N/A	9.6852 m	N/A
CF3	N/A	1.0484 m	N/A
CF4	N/A	2.6832 m	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

