

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	4.2250	1.3798	N/A
RT2	16.7287	819.4812 m	N/A
RT3	12.6248	1.4520	N/A
RT4	36.4215	548.7188 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	799.4820 u	12.5323 m	N/A
CT2	754.0803 m	283.5006 u	N/A
CT3	44.7086 m	5.1422 m	N/A
CT4	2.9220	6.1922 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	4.4913	1.1452	N/A
RF2	13.8995	2.5536	N/A
RF3	22.3017	339.5355 m	N/A
RF4	29.3075	161.6645 m	N/A
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	852.7656 u	292.5995 u	N/A
CF2	41.2387 m	2.6100 m	N/A
CF3	522.5129 m	44.5830 m	N/A
CF4	2.9472	98.1116 m	N/A

Note

NA indicates not applicable

