

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 PSpice, 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 PSpice 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 PSpice Platform".

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	Ambient	Case	Foot
RT1	5.0368	n/a	21.1257
RT2	45.0650	n/a	11.6291
RT3	50.7775	n/a	12.7527
RT4	65.1207	n/a	4.4925
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	50.7191u	n/a	18.7434m
CT2	2.2125m	n/a	6.7962m
CT3	17.9146m	n/a	88.5193m
CT4	1.3258	n/a	587.3119u

Note

- n/a indicates not applicable

This document is intended as a SPICE modeling guideline and does not constitute a commercial product datasheet. Designers should refer to the appropriate datasheet 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	29.6978	n/a	7.5779
RF2	54.2786	n/a	7.9415
RF3	22.9924	n/a	18.2620
RF4	59.1312	n/a	16.2186
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	866.5369u	n/a	903.4739u
CF2	4.3060m	n/a	3.2987m
CF3	111.3756m	n/a	4.8649m
CF4	1.4109	n/a	30.6443m

Note

- n/a indicates not applicable

