



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	12.3498	n/a	12.7452
RT2	35.6279	n/a	20.8236
RT3	41.6187	n/a	20.8313
RT4	39.5560	n/a	20.3366
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	187.7181u	n/a	65.6989u
CT2	4.0705m	n/a	653.3579u
CT3	20.6273m	n/a	4.1253m
CT4	1.7063	n/a	1.8300m

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	13.2793	n/a	16.4588
RF2	47.0412	n/a	30.2740
RF3	30.4936	n/a	23.6650
RF4	38.4116	n/a	4.7044
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	184.4415u	n/a	60.6897u
CF2	3.0973m	n/a	363.2633u
CF3	23.4614m	n/a	943.2779u
CF4	1.7535	n/a	51.2933m

Note

- n/a indicates not applicable

