

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		Foot		Case
	Channel 1	Channel 2	Channel 1	Channel 2	
RT1	53.8273	53.8273	48.1248	48.1248	n/a
RT2	15.7691	15.7691	12.9565	12.9565	n/a
RT3	71.3851	71.3851	8.6500	8.6500	n/a
RT4	77.6408	77.6408	30.4849	30.4849	n/a
THERMAL CAPACITANCE (Joules/°C)					
Junction to	Ambient		Foot		Case
	Channel 1	Channel 2	Channel 1	Channel 2	
CT1	1.2390	1.2390	592.9211u	592.9211u	n/a
CT2	44.6763u	44.6763u	49.6255u	49.6255u	n/a
CT3	8.7732m	8.7732m	265.2869m	265.2869m	n/a
CT4	609.7717u	609.7717u	2.9450m	2.9450m	n/a

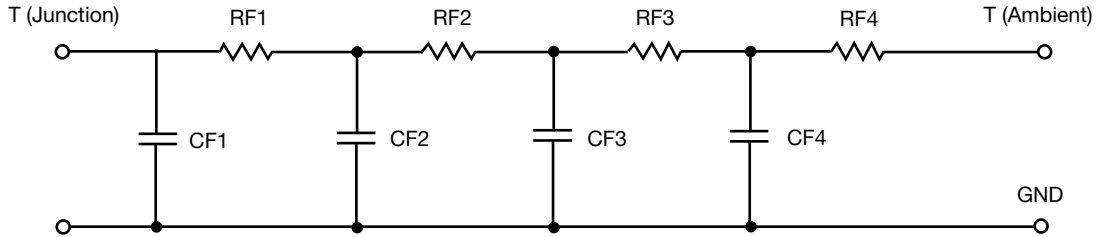
Note

- 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		Foot		Case
	Channel 1	Channel 2	Channel 1	Channel 2	
RF1	19.1328	19.1328	15.0381	15.0381	n/a
RF2	84.2059	84.2059	69.9275	69.9275	n/a
RF3	61.9466	61.9466	108.4745m	108.4745m	n/a
RF4	53.2796	53.2796	14.2637	14.2637	n/a
THERMAL CAPACITANCE (Joules/°C)					
Junction to	Ambient		Foot		Case
	Channel 1	Channel 2	Channel 1	Channel 2	
CF1	46.5958u	46.5958u	39.2131u	39.2131u	n/a
CF2	535.2194u	535.2194u	486.6221u	486.6221u	n/a
CF3	8.8692m	8.8692m	22.8263m	22.8263m	n/a
CF4	1.2326	1.2326	25.3598m	25.3598m	n/a

Note

- n/a indicates not applicable

