

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	51.0268	n/a	15.2974
RT2	9.8916	n/a	2.3823
RT3	37.4887	n/a	2.3921
RT4	11.1390	n/a	9.9805
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	1.1568	n/a	3.7989m
CT2	77.6904m	n/a	325.9957u
CT3	10.6357m	n/a	263.4102m
CT4	2.0642m	n/a	21.8626m

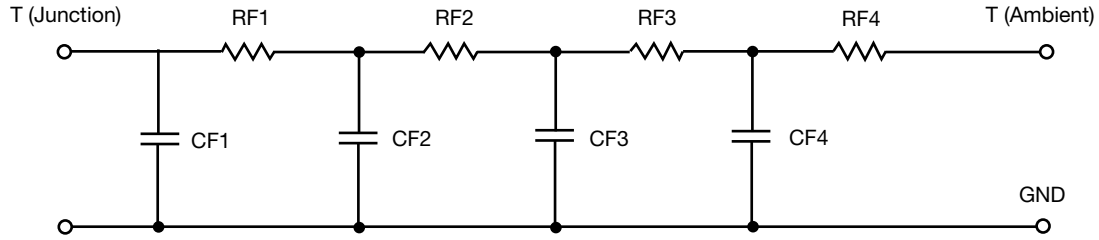
Note

- 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	14.2455	n/a	3.1767
RF2	36.4861	n/a	13.8618
RF3	10.2686	n/a	7.4336
RF4	48.7513	n/a	5.5732
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	1.4767m	n/a	457.8783u
CF2	6.9632m	n/a	2.5853m
CF3	53.5986m	n/a	2.8927m
CF4	1.2039	n/a	50.7991m

Note

- n/a indicates not applicable

