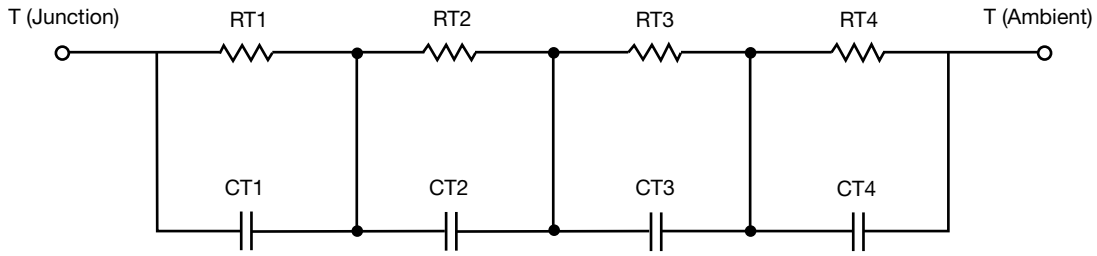
R-C Thermal Model Parameters

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



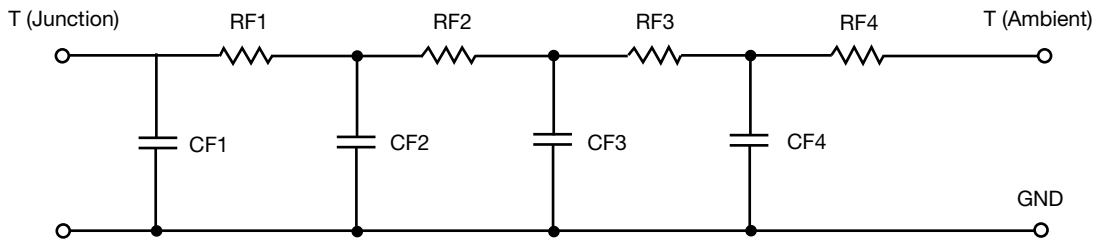
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	12.3344	824.8100m	n/a
RT2	3.9846	1.3592	n/a
RT3	52.2681	857.6900m	n/a
RT4	15.1309	1.6583	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	56.6662m	5.1563m	n/a
CT2	2.3400m	4.8344m	n/a
CT3	6.3258	169.5168u	n/a
CT4	527.5941m	934.3110u	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**	**Case**	**Foot**
RF1	3.7854	1.0376	n/a
RF2	13.9661	1.0883	n/a
RF3	16.0017	1.0178	n/a
RF4	49.7270	1.5563	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	1.8014m	127.1115u	n/a
CF2	42.0785m	355.5060u	n/a
CF3	407.0863m	309.3787u	n/a
CF4	6.1424	1.9392m	n/a

Note

- n/a indicates not applicable