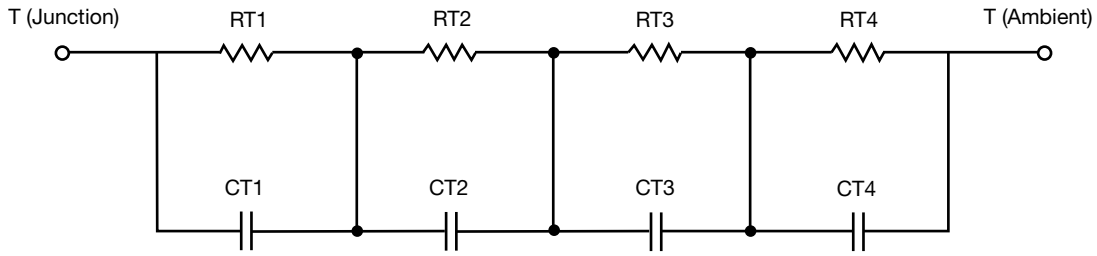
R-C Thermal Model Parameters

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



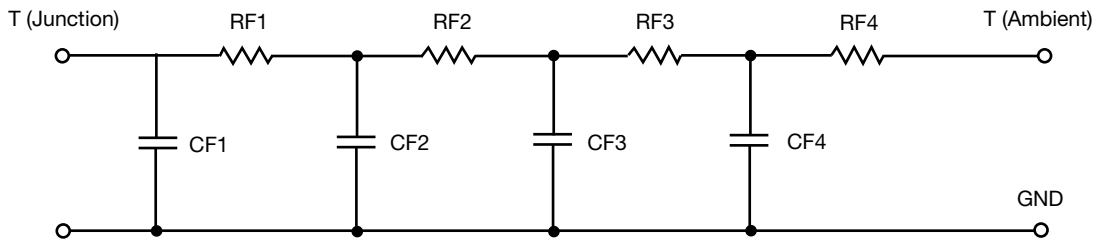
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.0112	24.3794m	n/a
RT2	9.4047	421.6937m	n/a
RT3	10.1738	513.2354m	n/a
RT4	42.3293	290.1858m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	15.5479m	1.2156	n/a
CT2	106.0095m	34.6269m	n/a
CT3	1.3395	39.5182m	n/a
CT4	1.8048	2.3422m	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	3.9723	350.1844m	n/a
RF2	10.5484	507.6911m	n/a
RF3	20.0070	232.3850m	n/a
RF4	30.4723	159.7393m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	13.6011m	1.8536m	n/a
CF2	76.4335m	16.4963m	n/a
CF3	704.6034m	24.9239u	n/a
CF4	1.2756	30.4220m	n/a

Note

- n/a indicates not applicable