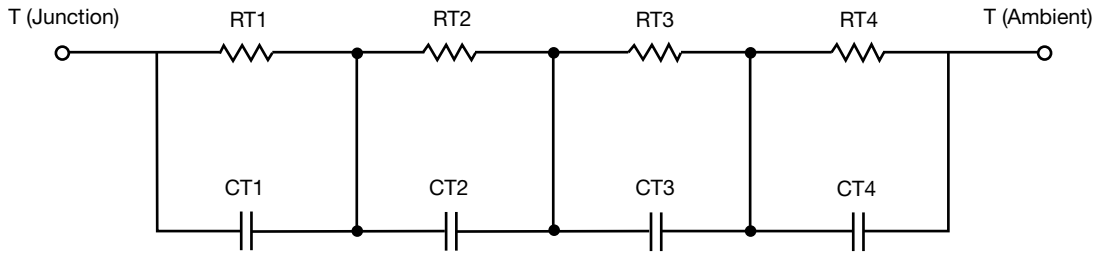
R-C Thermal Model Parameters

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



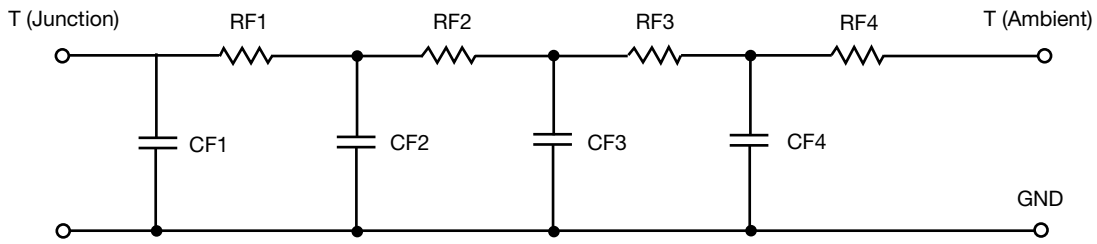
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.7081	110.5348m	n/a
RT2	13.4344	1.2073	n/a
RT3	6.3202	1.2110	n/a
RT4	46.5373	771.1650m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	1.6492m	121.8716m	n/a
CT2	156.6374m	9.8915m	n/a
CT3	39.5883m	4.9869m	n/a
CT4	1.4044	823.2540u	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	5.7437	706.0182m	n/a
RF2	13.4116	1.0145	n/a
RF3	17.5128	1.5618	n/a
RF4	33.3319	17.6819m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	2.9868m	589.9758u	n/a
CF2	50.2654m	1.1506m	n/a
CF3	511.6101m	3.2924m	n/a
CF4	1.4243	119.4107m	n/a

Note

- n/a indicates not applicable