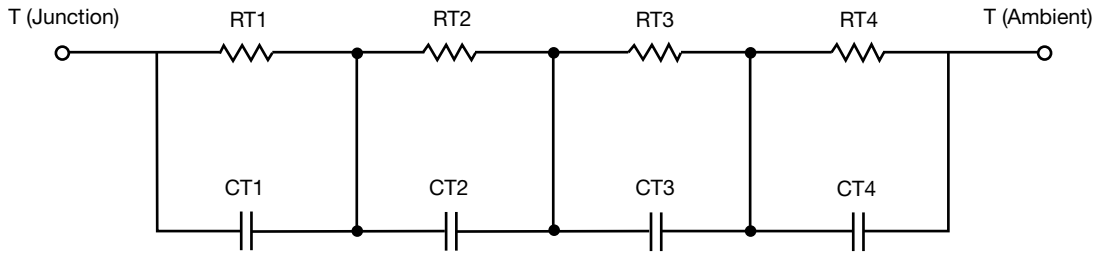
R-C Thermal Model Parameters

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



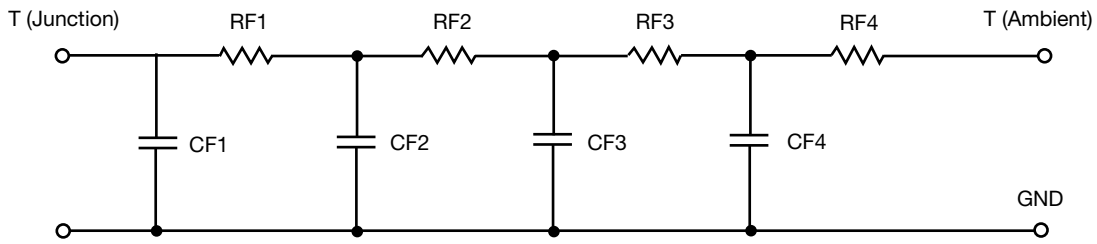
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	2.1571	2.0492	n/a
RT2	14.6877	1.1013	n/a
RT3	7.3221	809.3000m	n/a
RT4	45.8331	1.5402	n/a
THERMAL CAPACITANE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	699.7634u	5.3249m	n/a
CT2	167.2529m	200.4927m	n/a
CT3	18.8902m	1.3656m	n/a
CT4	1.4455	988.8568u	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	4.4645	2.8329	n/a
RF2	10.6528	1.7698	n/a
RF3	14.6143	612.4986m	n/a
RF4	40.2684	284.8014m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	2.1224m	527.0916u	n/a
CF2	31.7460m	5.8996m	n/a
CF3	236.1761m	344.0517m	n/a
CF4	1.3614	61.0050u	n/a

Note

- n/a indicates not applicable