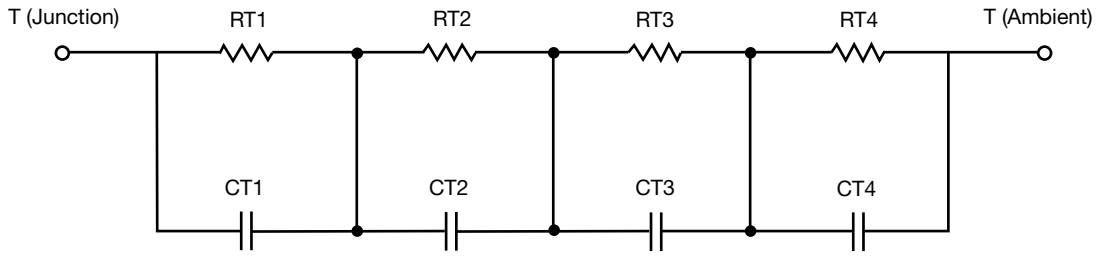
R-C Thermal Model Parameters

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



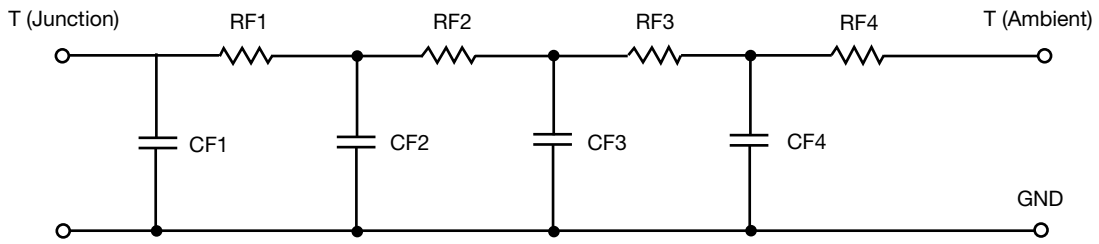
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.8357	519.3236m	n/a
RT2	57.0234	1.2136	n/a
RT3	9.9529	1.3233	n/a
RT4	14.1880	43.7141m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	3.7603m	1.4786m	n/a
CT2	1.3053	9.8252m	n/a
CT3	19.4915m	9.0062m	n/a
CT4	179.4541m	5.4127	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



255.8682m

R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	1.4305	817.5896m	n/a
RF2	12.3712	927.4186m	n/a
RF3	16.6569	555.8224m	n/a
RF4	54.5413	799.1694m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	352.9879u	1.1256m	n/a
CF2	8.7604m	3.5533m	n/a
CF3	114.1706m	236.4382u	n/a
CF4	1.2043	3.3929m	n/a

Note

- n/a indicates not applicable