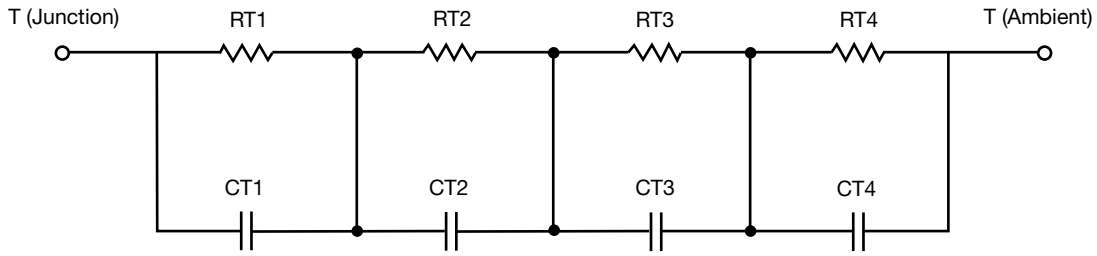
R-C Thermal Model Parameters

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



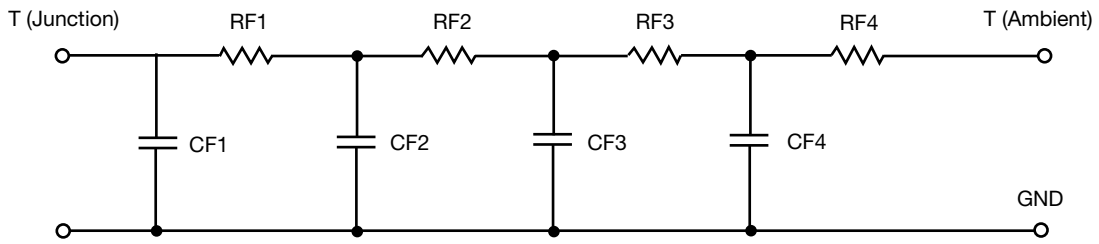
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.7927	1.3751	n/a
RT2	59.8777	1.3345	n/a
RT3	9.5883	1.1445	n/a
RT4	11.7413	445.9000m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	2.5548m	2.4387m	n/a
CT2	1.0473	22.7412m	n/a
CT3	24.0368m	937.7999u	n/a
CT4	183.2345m	12.1674	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	1.3301	2.0475	n/a
RF2	11.0836	893.0500m	n/a
RF3	15.6788	893.8328m	n/a
RF4	56.9075	439.9602m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	415.8565u	681.7853u	n/a
CF2	8.2136m	3.4329m	n/a
CF3	99.5093m	33.9391m	n/a
CF4	963.9846m	10.3484	n/a

Note

- n/a indicates not applicable