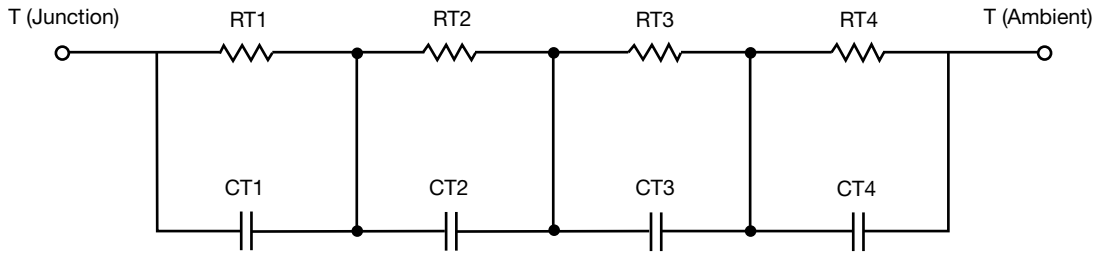
R-C Thermal Model Parameters

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



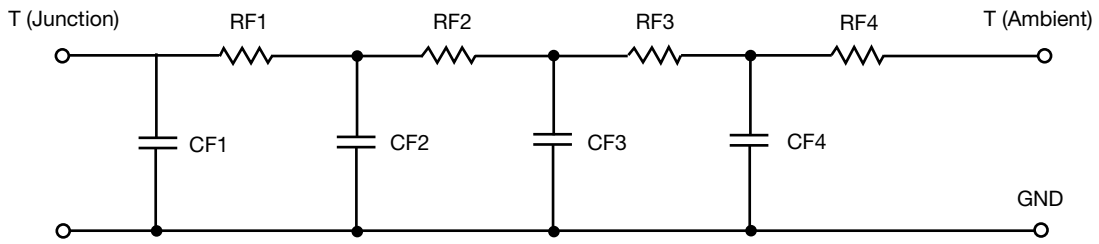
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	7.7844	533.6124m	n/a
RT2	15.5743	76.3058m	n/a
RT3	16.4249	1.0107	n/a
RT4	41.2164	779.3818m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	7.4098m	1.5764m	n/a
CT2	58.3408m	1.0809m	n/a
CT3	2.6123	11.0443m	n/a
CT4	1.9422	21.4153m	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	2.6468	667.0499m	n/a
RF2	8.9432	934.7386m	n/a
RF3	14.7605	732.5130m	n/a
RF4	54.6495	65.6985m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	3.0033m	812.8804u	n/a
CF2	8.0137m	5.3078m	n/a
CF3	68.3392m	4.8067m	n/a
CF4	1.1862	206.5000m	n/a

Note

- n/a indicates not applicable