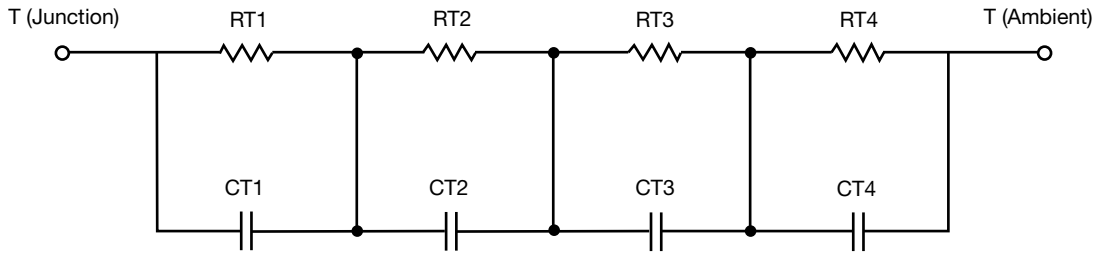
R-C Thermal Model Parameters

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



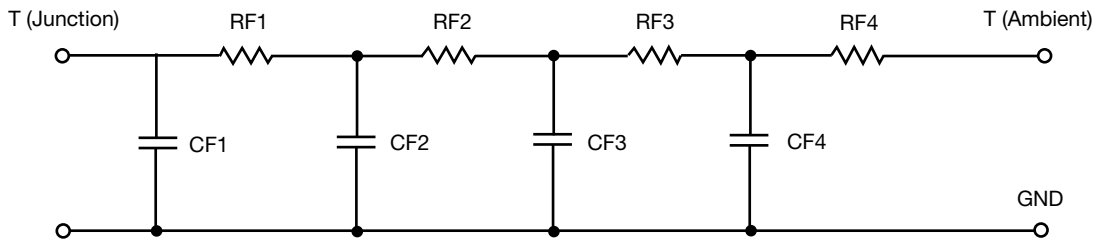
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	2.1571	341.6000m	n/a
RT2	14.6877	1.2107	n/a
RT3	7.3221	432.2000m	n/a
RT4	45.8331	1.1155	n/a
THERMAL CAPACITANE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	699.7634u	21.2654m	n/a
CT2	167.2529m	13.4628m	n/a
CT3	18.8902m	1.4221m	n/a
CT4	1.4455	8.4905m	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	770.0032m	n/a
RF2	10.6528	999.5380m	n/a
RF3	14.6143	999.3869m	n/a
RF4	40.2684	331.0719m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	2.1224m	1.0790m	n/a
CF2	31.7460m	3.2461m	n/a
CF3	236.1761m	2.0841m	n/a
CF4	1.3614	595.7667u	n/a

Note

- n/a indicates not applicable