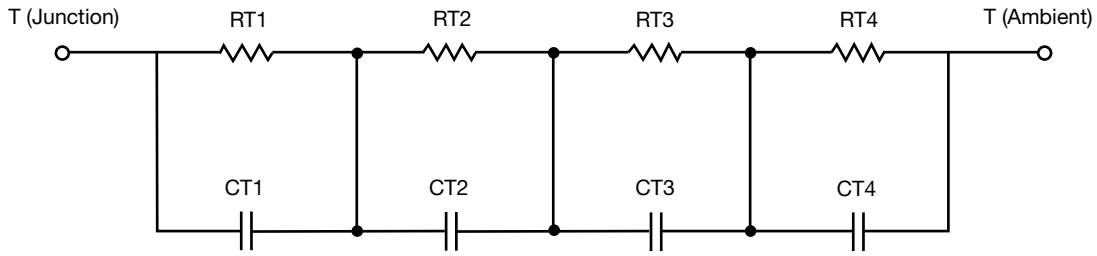
R-C Thermal Model Parameters

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



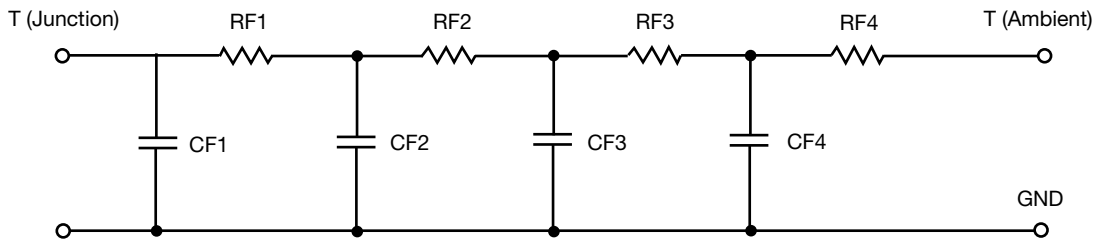
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	4.6765	1.6232	n/a
RT2	18.5704	4.8543	n/a
RT3	11.7671	20.4076m	n/a
RT4	44.9860	22.3810m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	347.9533u	210.9020u	n/a
CT2	5.7803m	627.9231u	n/a
CT3	209.2600m	10.8618	n/a
CT4	1.7947	4.5993	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	8.1631	1.8742	n/a
RF2	16.8724	1.8302	n/a
RF3	12.5416	2.6078	n/a
RF4	42.4229	187.8000m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	617.0298u	139.6184u	n/a
CF2	7.7623m	224.6613u	n/a
CF3	201.7364m	605.4763u	n/a
CF4	1.6592	11.9911m	n/a

Note

- n/a indicates not applicable