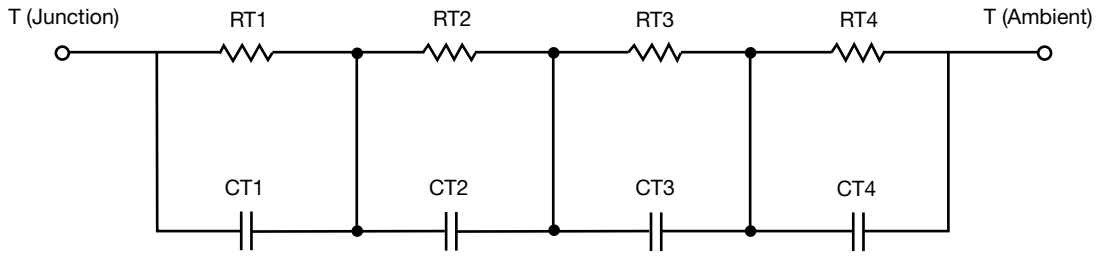
R-C Thermal Model Parameters

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



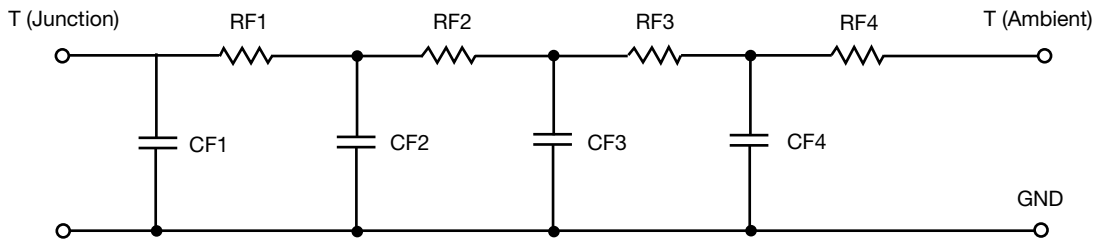
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	24.2206	n/a	7.2671
RT2	26.4461	n/a	8.9990
RT3	7.3307	n/a	7.9987
RT4	27.0026	n/a	735.2000m
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	52.9533m	n/a	301.0445m
CT2	1.7074	n/a	68.1408m
CT3	5.9533m	n/a	5.8517m
CT4	4.0665	n/a	660.2611u

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	6.9592	n/a	1.9958
RF2	24.7026	n/a	8.7491
RF3	21.9342	n/a	10.2968
RF4	31.4040	n/a	3.9583
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	3.7966m	n/a	1.1655m
CF2	37.9194m	n/a	5.4277m
CF3	799.3426m	n/a	57.8976m
CF4	1.4838	n/a	364.3063m

Note

- n/a indicates not applicable