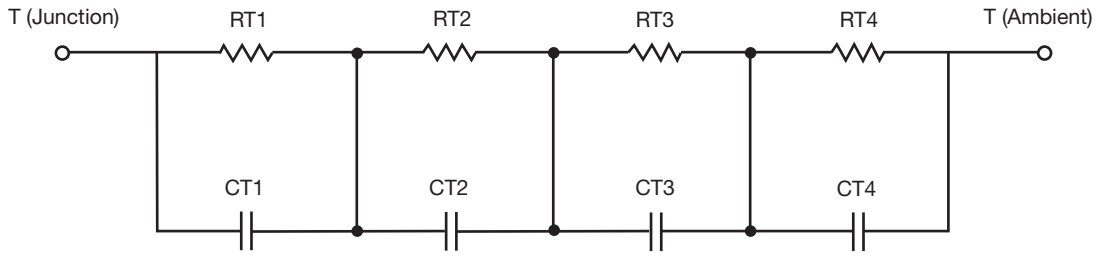
R-C Thermal Model Parameters

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



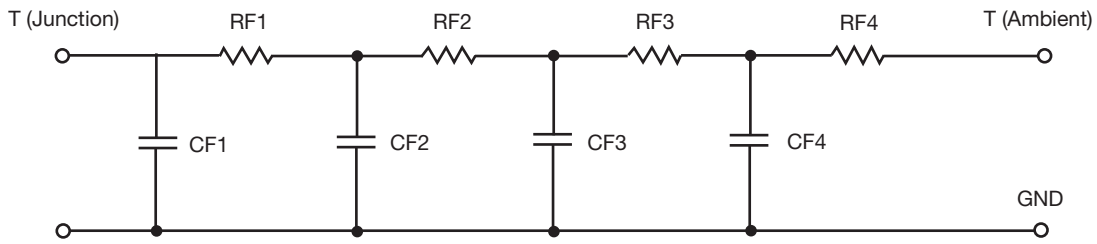
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	8.9080	2.5667	n/a
RT2	12.4350	3.5460	n/a
RT3	18.2708	791.5078m	n/a
RT4	40.3862	95.7922m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	240.4101u	362.8249u	n/a
CT2	517.0829m	1.1836m	n/a
CT3	8.9388m	153.4913u	n/a
CT4	2.3259	379.7766m	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	8.7289	2.9629	n/a
RF2	18.3678	3.3942	n/a
RF3	17.1996	546.6302m	n/a
RF4	35.7037	96.2698m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	209.7241u	119.7336u	n/a
CF2	7.4535m	673.7487u	n/a
CF3	351.8561m	886.3696u	n/a
CF4	2.2158	510.7347m	n/a

Note

- n/a indicates not applicable