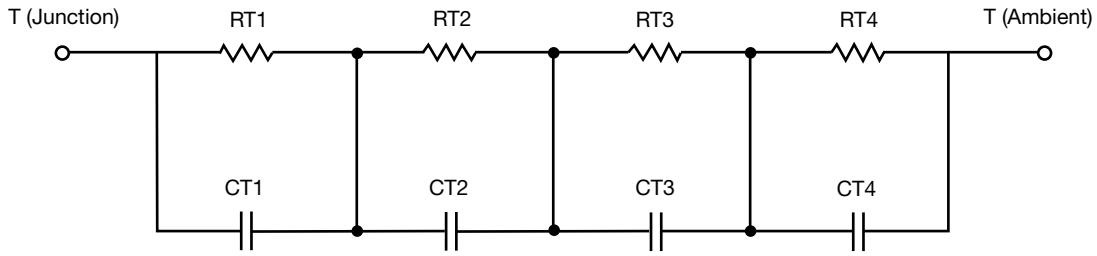
R-C Thermal Model Parameters

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



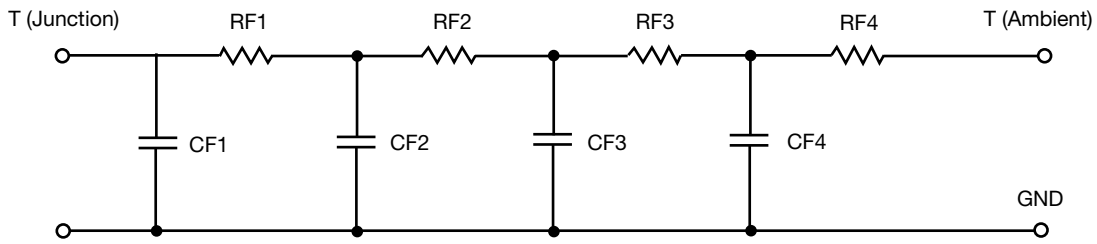
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.2520	1.3053	n/a
RT2	17.5540	445.9699m	n/a
RT3	8.2981	389.2520m	n/a
RT4	38.8959	59.4781m	n/a
THERMAL CAPACITANE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	12.1098m	28.4311m	n/a
CT2	603.1407m	127.2273m	n/a
CT3	87.3696m	6.1084m	n/a
CT4	2.9302	17.3561u	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	4.9433	258.8971m	n/a
RF2	11.2314	373.2929m	n/a
RF3	23.2269	1.2743	n/a
RF4	28.5984	293.5100m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	11.3333m	2.1362m	n/a
CF2	81.9578m	3.5300m	n/a
CF3	578.6409m	19.6610m	n/a
CF4	3.3597	290.6458u	n/a

Note

- n/a indicates not applicable