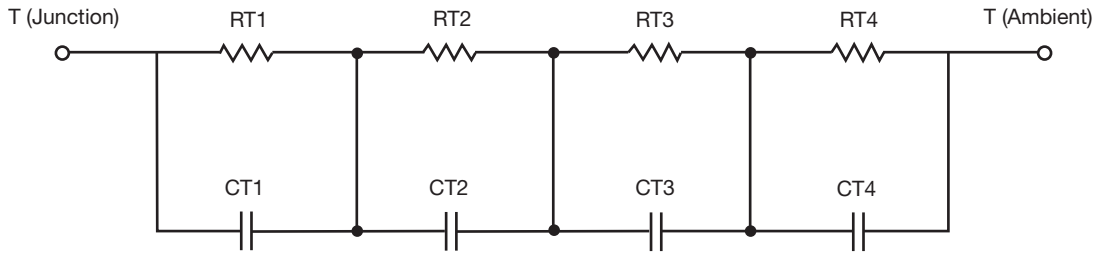
R-C Thermal Model Parameters

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



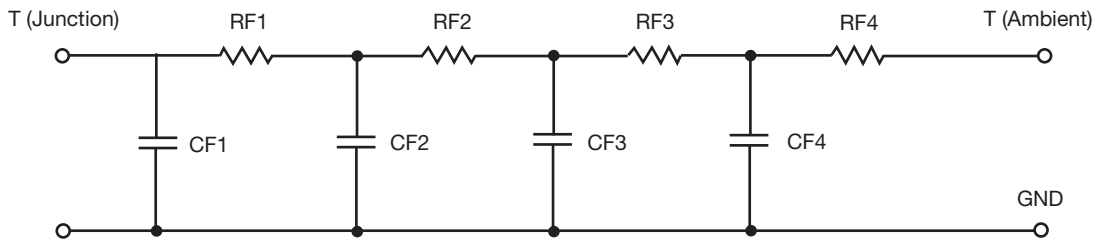
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	7.4051	n/a	17.9899
RT2	42.0055	n/a	38.8439
RT3	50.3084	n/a	7.6459
RT4	75.2810	n/a	10.5395
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	335.0695u	n/a	7.1041m
CT2	2.5523m	n/a	659.5026u
CT3	12.8048m	n/a	39.6886m
CT4	948.2742m	n/a	75.5023u

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	25.6357	n/a	15.1714
RF2	54.7634	n/a	36.9020
RF3	28.6582	n/a	12.5018
RF4	65.9427	n/a	10.4248
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	709.6420u	n/a	83.6296u
CF2	3.1476m	n/a	540.7356u
CF3	41.9364m	n/a	2.9995m
CF4	1.2586	n/a	11.8902m

Note

- n/a indicates not applicable