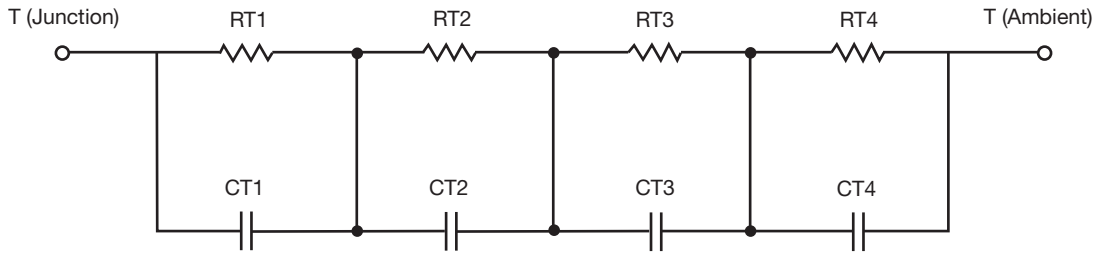
R-C Thermal Model Parameters

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



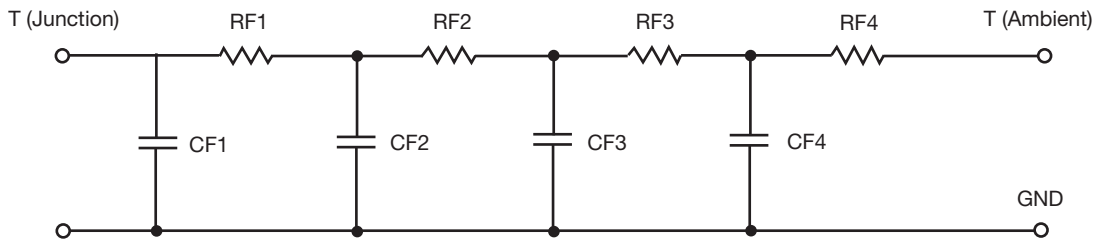
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	5.8276	n/a	17.8967
RT2	50.5217	n/a	22.2663
RT3	42.8606	n/a	7.5938
RT4	66.7901	n/a	2.2432
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	240.9998u	n/a	55.2065m
CT2	16.3270m	n/a	11.5716m
CT3	2.3277m	n/a	3.4956m
CT4	1.2310	n/a	179.1758u

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	17.8488	n/a	2.7563
RF2	52.0845	n/a	13.4348
RF3	32.3541	n/a	26.943
RF4	63.7126	n/a	6.8659
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	589.3063u	n/a	230.9813u
CF2	2.5334m	n/a	2.3470m
CF3	28.4356m	n/a	9.2698m
CF4	1.3073	n/a	172.7171m

Note

- n/a indicates not applicable