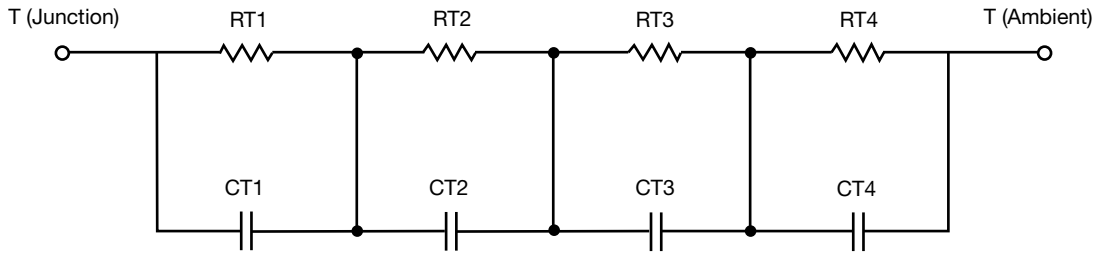
R-C Thermal Model Parameters

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



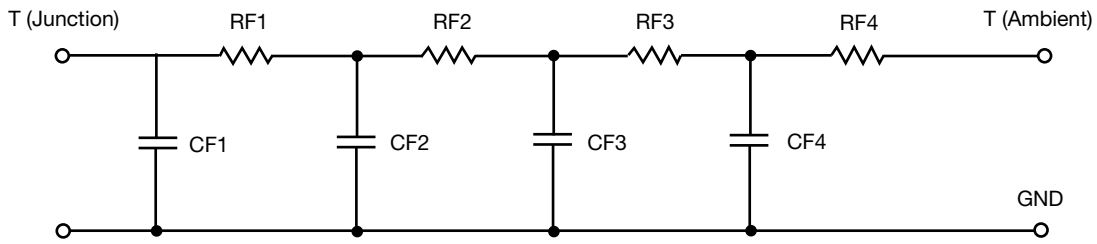
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.0152	999.4573m	n/a
RT2	13.8502	226.9093m	n/a
RT3	8.3595	724.9805m	n/a
RT4	55.7751	447.6922m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	3.0556m	14.7927m	n/a
CT2	23.3581m	1.0927m	n/a
CT3	349.0843m	18.2457m	n/a
CT4	1.2544	2.5479m	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	3.0096	397.1010m	n/a
RF2	12.4407	475.5647m	n/a
RF3	13.6084	785.3746m	n/a
RF4	51.9413	741.9597m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	2.8275m	667.3444u	n/a
CF2	11.7413m	1.2543m	n/a
CF3	168.8535m	6.1282m	n/a
CF4	1.1587	3.6387m	n/a

Note

- n/a indicates not applicable