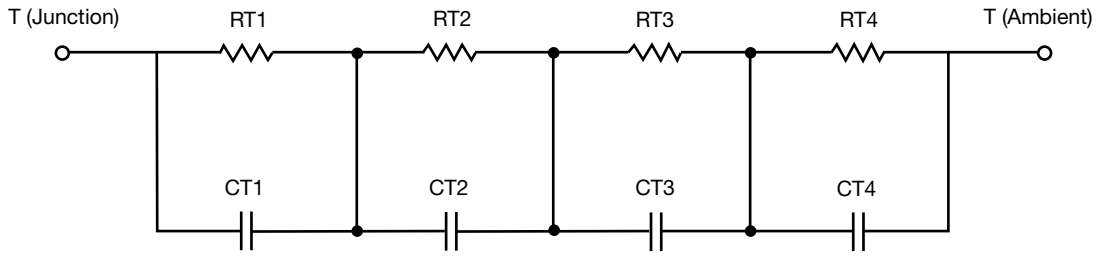
R-C Thermal Model Parameters

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



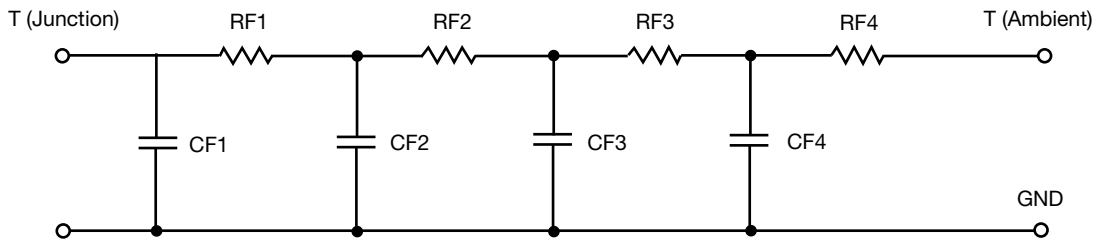
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	10.9934	187.1768m	n/a
RT2	20.2758	5.1737	n/a
RT3	18.0671	15.3922m	n/a
RT4	30.6637	2.6433	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	257.4576u	49.2787m	n/a
CT2	9.9208m	217.4666u	n/a
CT3	714.4510m	192.0199m	n/a
CT4	3.4114	74.0780u	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	11.7271	4.3719	n/a
RF2	19.0098	3.5022	n/a
RF3	20.9255	172.0566m	n/a
RF4	28.3376	3.7595m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	261.9571u	55.3592u	n/a
CF2	9.2011m	232.5279u	n/a
CF3	437.5955m	135.0816m	n/a
CF4	2.7191	72.2070m	n/a

Note

- n/a indicates not applicable