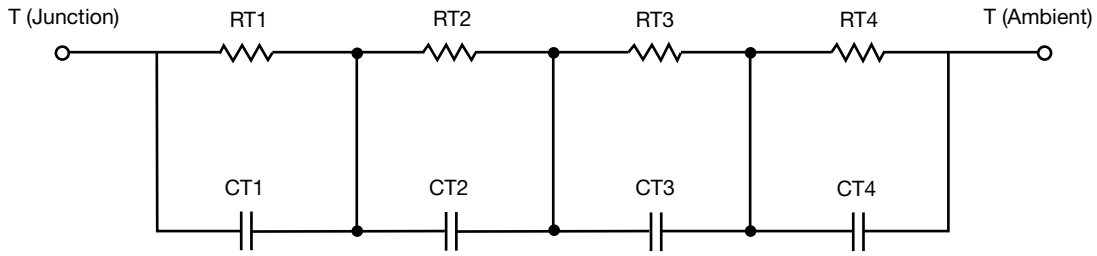
R-C Thermal Model Parameters

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



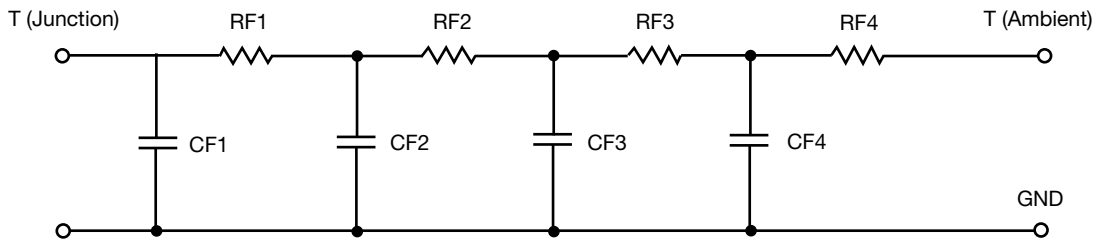
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	15.6807	1.1491	n/a
RT2	5.8027	1.2195	n/a
RT3	1.8661	1.4879	n/a
RT4	61.2402	418.9600m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	62.0366m	3.5103m	n/a
CT2	11.3128m	29.2111m	n/a
CT3	369.9158u	911.6465u	n/a
CT4	963.7252m	11.5771	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	7.4101	1.4074	n/a
RF2	14.5159	1.4341	n/a
RF3	19.2679	1.0440	n/a
RF4	43.6508	393.7988m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	3.6351m	603.0680u	n/a
CF2	38.9949m	1.1841m	n/a
CF3	495.6414m	32.3624m	n/a
CF4	808.3552m	14.1304	n/a

Note

- n/a indicates not applicable