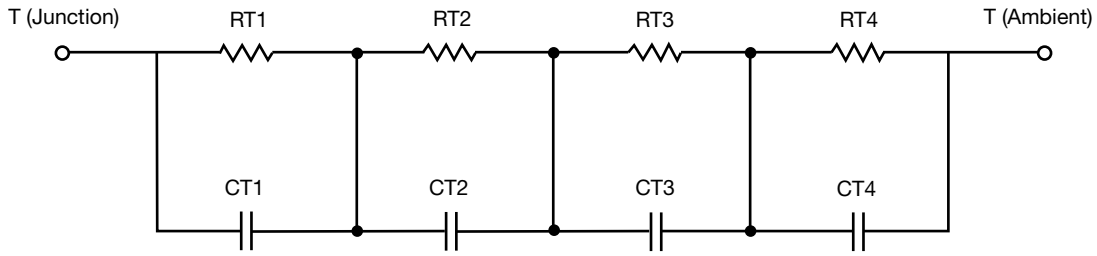
R-C Thermal Model Parameters

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



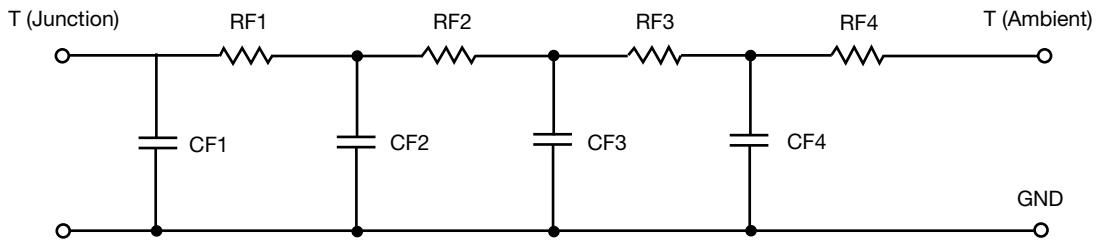
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	55.0785	n/a	53.0155
RT2	75.5433	n/a	12.7938
RT3	73.0029	n/a	9.3466
RT4	14.7307	n/a	25.6788
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	1.1520	n/a	569.9042u
CT2	7.0474m	n/a	40.2491u
CT3	566.3419u	n/a	325.1096m
CT4	41.1207u	n/a	3.7765m

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	20.1213	n/a	16.3363
RF2	80.4140	n/a	38.5595
RF3	64.1511	n/a	33.2018
RF4	53.7991	n/a	11.4292
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	52.0026u	n/a	47.7274u
CF2	522.7694u	n/a	469.7665u
CF3	7.8700m	n/a	262.1969u
CF4	1.1885	n/a	94.8327m

Note

- n/a indicates not applicable