



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	37.2184	N/A	9.5071
RT2	15.4374	N/A	12.5436
RT3	45.6441	N/A	1.9498
RT4	11.8372	N/A	6.0664
THERMAL CAPACITANCE (JOULES/°C)			
Junction to	Ambient	Case	Foot
CT1	2.0380	N/A	16.8835m
CT2	2.0888	N/A	3.7176m
CT3	9.9497m	N/A	612.4866u
CT4	1.9025m	N/A	57.4731m

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	16.4494	N/A	1.6722
RF2	40.8020	N/A	15.4981
RF3	9.5822	N/A	10.6977
RF4	43.1176	N/A	2.0630
THERMAL CAPACITANCE (JOULES/°C)			
Junction to	Ambient	Case	Foot
CF1	1.6655m	N/A	203.9406u
CF2	8.4887m	N/A	2.2083m
CF3	536.1100m	N/A	9.1850m
CF4	870.8691m	N/A	149.4512m

Note

- n/a indicates not applicable

