

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	13.4893	957.2237m	n/a
RT2	8.0413	1.1397	n/a
RT3	3.1557	550.1366m	n/a
RT4	45.3137	652.9400m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	228.1477m	6.0215m	n/a
CT2	29.4833m	7.1342m	n/a
CT3	1.5619m	631.7646u	n/a
CT4	1.5065	16.7389m	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	4.0894	1.2865	n/a
RF2	11.2307	1.5505	n/a
RF3	15.7183	461.3930m	n/a
RF4	38.9616	1.6000m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	1.7183m	708.0338u	n/a
CF2	31.9038m	3.6826m	n/a
CF3	269.4175m	1.5594m	n/a
CF4	1.4232	1.3903	n/a

Note

- n/a indicates not applicable

