



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	3.0433	n/a	9.1408
RT2	17.5890	n/a	9.1482
RT3	32.4865	n/a	9.5796
RT4	56.8812	n/a	2.1314
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	124.7397m	n/a	22.5241m
CT2	3.7577m	n/a	7.8068m
CT3	32.8869m	n/a	189.4953m
CT4	1.1068	n/a	2.1195m

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	25.5340	n/a	4.7660
RF2	27.8529	n/a	14.5857
RF3	17.8367	n/a	1.2689
RF4	38.7764	n/a	9.3794
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	3.6752m	n/a	1.9096m
CF2	31.7841m	n/a	4.9095m
CF3	603.8849m	n/a	8.0800m
CF4	1.0485	n/a	148.1153m

Note

- n/a indicates not applicable

