



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	8.8393	n/a	11.0831
RT2	30.3634	n/a	3.8285
RT3	23.2871	n/a	11.4483
RT4	47.5102	n/a	8.6401
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	539.9560u	n/a	28.8823m
CT2	5.4322m	n/a	311.3524u
CT3	46.6671m	n/a	4.1477m
CT4	1.5257	n/a	6.9441m

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	8.7204	n/a	5.3220
RF2	31.9634	n/a	19.4480
RF3	22.1660	n/a	3.8642
RF4	47.1502	n/a	6.3658
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	387.6127u	n/a	309.0180u
CF2	3.6304m	n/a	2.1366m
CF3	29.8055m	n/a	5.7175m
CF4	1.4645	n/a	52.6932m

Note

- n/a indicates not applicable

