



# 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	7.4051	n/a	17.9707
RT2	42.0055	n/a	38.7511
RT3	50.3084	n/a	7.6242
RT4	75.2810	n/a	10.6540
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	82.0308u	n/a	5.1503m
CT2	1.0563m	n/a	569.9881u
CT3	10.3013m	n/a	6.8966m
CT4	861.7277m	n/a	81.3364u

### 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	25.6357	n/a	15.1714
RF2	54.7634	n/a	36.9020
RF3	28.6582	n/a	12.5018
RF4	65.9427	n/a	10.4248
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	264.5355u	n/a	77.6461u
CF2	2.1829m	n/a	408.9299u
CF3	58.3369m	n/a	758.6027u
CF4	1.0908	n/a	4.7915m

Note

- n/a indicates not applicable

