

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	5.2396	n/a	11.3480
RT2	8.4900	n/a	2.7592
RT3	24.1357	n/a	4.8247
RT4	47.1347	n/a	5.0681
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	881.5657u	n/a	109.2872m
CT2	25.4880m	n/a	397.6958u
CT3	62.5336m	n/a	8.5741m
CT4	1.2639	n/a	22.1722m

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	6.6587	n/a	4.0462
RF2	15.7775	n/a	8.3193
RF3	18.0427	n/a	2.3924
RF4	44.5211	n/a	9.2421
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	1.0791m	n/a	520.1360u
CF2	20.5895m	n/a	7.4323m
CF3	51.6967m	n/a	23.6930m
CF4	1.2659	n/a	91.0264m

Note

- n/a indicates not applicable

