

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 P-SPICE, 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 P-SPICE 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 P-SPICE Platform".

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	Ambient	Case-Drain Top	Case-Source
RT1	3.1362	602.0700 m	1.9579
RT2	12.0459	1.0938	1.7234
RT3	17.6497	2.5327	2.6525
RT4	35.1682	771.4300 m	666.2000 m
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case-Drain Top	Case-Source
CT1	1.9812 m	379.1138 m	49.2110 m
CT2	51.6855 m	24.6176 m	9.9046 m
CT3	1.0085	18.1494 m	195.3756 m
CT4	2.9678	1.0428 m	458.3565 u

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-Drain Top	Case-Source
RF1	3.4101	625.4239 m	946.2009 m
RF2	12.9975	1.8052	2.5715
RF3	24.3507	1.9862	2.3405
RF4	27.2417	583.1221 m	1.1233
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case-Drain Top	Case-Source
CF1	1.8387 m	643.3020 u	657.0785 u
CF2	46.3110 m	6.0499 m	9.4221 m
CF3	643.9089 m	9.3436 m	51.7180 m
CF4	2.6406	151.2776 m	545.6756 m

Note

N/A indicates not applicable



