



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	15.5408	n/a	2.6374
RT2	3.7942	n/a	9.7520
RT3	14.5926	n/a	7.3165
RT4	50.7701	n/a	1.3008
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	180.3716m	n/a	1.1456
CT2	3.9261m	n/a	105.6798m
CT3	39.7196m	n/a	14.1638m
CT4	1.6035	n/a	1.3732m

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	4.5587	n/a	1.4426
RF2	21.1860	n/a	9.7509
RF3	14.9095	n/a	4.9325
RF4	44.3295	n/a	4.8740
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	4.2347m	n/a	1.2971m
CF2	27.3169m	n/a	11.4598m
CF3	280.0488m	n/a	92.4171m
CF4	1.5721	n/a	111.5716m

Note

- n/a indicates not applicable

