

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-Full Copper	Ambient-Minimum Copper	Foot
RT1	43.2503	131.6673	n/a
RT2	40.6372	92.5026	n/a
RT3	18.5118	134.6946	n/a
RT4	32.6007	41.1355	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient-Full Copper	Ambient-Minimum Copper	Foot
CT1	231.4811u	357.8052u	n/a
CT2	1.2184	247.9256m	n/a
CT3	13.4783m	3.9343m	n/a
CT4	9.7770u	17.1144u	n/a

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-Full Copper	Ambient-Minimum Copper	Foot
RF1	35.4664	45.7400	n/a
RF2	44.8811	145.8935	n/a
RF3	16.5111	119.7150	n/a
RF4	38.1414	88.6515	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient-Full Copper	Ambient-Minimum Copper	Foot
CF1	9.4111u	16.2183u	n/a
CF2	248.2116u	309.2105u	n/a
CF3	28.2454m	3.7821m	n/a
CF4	1.3954	238.6990m	n/a

Note

- n/a indicates not applicable

