

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	36.2307	241.0873m	n/a
RT2	9.0555	246.6907m	n/a
RT3	17.4242	866.9188m	n/a
RT4	5.2895	845.3031m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	3.3922	2.8903m	n/a
CT2	166.6233m	17.8393m	n/a
CT3	898.5187m	48.2288m	n/a
CT4	17.0553m	50.3044m	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	Case	Foot
RF1	5.6967	462.0999m	n/a
RF2	10.9777	525.6953m	n/a
RF3	23.4904	321.8327m	n/a
RF4	27.8351	890.3720m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	13.3852m	2.6161m	n/a
CF2	97.4027m	13.0952m	n/a
CF3	574.7087m	4.2284m	n/a
CF4	3.5674	18.0672m	n/a

Note

- n/a indicates not applicable

