

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	20.2075	n/a	22.1978
RT2	7.0523	n/a	9.3210
RT3	29.7666	n/a	1.2771
RT4	52.9736	n/a	5.2041
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	2.7132m	n/a	2.5615m
CT2	226.3989u	n/a	739.5556u
CT3	21.2762m	n/a	531.3633m
CT4	1.6037	n/a	108.6091u

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	18.0553	n/a	9.6782
RF2	32.9043	n/a	14.9146
RF3	30.4842	n/a	8.4268
RF4	28.5562	n/a	4.9804
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	546.9166u	n/a	102.7415u
CF2	6.9541m	n/a	1.0219m
CF3	676.1028m	n/a	1.4413m
CF4	3.1849	n/a	20.9316m

Note

- n/a indicates not applicable

