



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 DrainTop	Case Source
RT1	14.8897	166.4605m	184.8016m
RT2	26.5505	420.5706m	424.2860m
RT3	10.3398	234.4857m	249.1128m
RT4	2.2200	178.9215m	541.7997m
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case DrainTop	Case Source
CT1	1.2100	3.7662m	402.7477u
CT2	3.9647	18.7474m	9.1382m
CT3	92.2732m	23.7432m	28.9831m
CT4	26.2689m	81.6240m	66.9670m

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 DrainTop	Case Source
RF1	3.5655	265.9231m	211.1036m
RF2	11.3786	152.6981m	699.9136m
RF3	22.5985	413.8846m	107.6259m
RF4	16.4574	167.4942m	381.3569m
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case DrainTop	Case Source
CF1	23.1452m	2.9640m	403.5571u
CF2	63.5942m	1.1090m	5.9697m
CF3	992.8285m	10.2340m	54.8570m
CF4	4.7202	196.2828u	338.8126u

Note

- n/a indicates not applicable



