

## 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 P-SPICE, 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 P-SPICE 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 P-SPICE Platform".

### R-C THERMAL MODEL FOR TANK CONFIGURATION

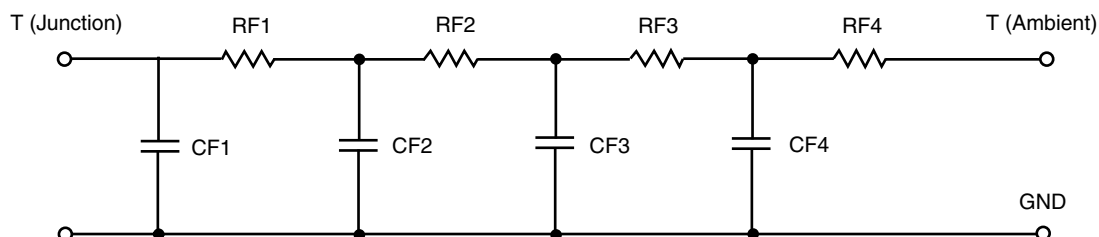


R-C VALUES FOR TANK CONFIGURATION				
THERMAL RESISTANCE (°C/W)				
Junction to	Ambient Ch1	Ambient Ch2	Case Ch1	Case Ch2
RT1	8.6344	4.7502	495.3846 m	248.7834 m
RT2	13.1755	11.2875	1.0008	301.8957 m
RT3	16.3188	14.9637	731.4497 m	375.4785 m
RT4	28.8713	33.9986	2.3605	1.6731
THERMAL CAPACITANCE (Joules/°C)				
Junction to	Ambient Ch1	Ambient Ch2	Case Ch1	Case Ch2
CT1	2.6472 m	4.8311 m	399.8426 u	858.3894 u
CT2	38.2589 m	46.5697 m	19.0079 m	23.0627 u
CT3	1.0464	877.8354 m	814.4707 u	93.2346 m
CT4	3.5889	2.7226	2.2103 m	4.2214 m

#### 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 Ch1	Ambient Ch2	Case Ch1	Case Ch2
RF1	11.7228	6.2717	1.2180	464.7417 m
RF2	14.2441	11.4800	1.6822	1.0902
RF3	22.1937	23.9727	1.6749	1.0355
RF4	18.8394	23.2756	9.5314 m	1.4547 m
THERMAL CAPACITANCE (Joules/°C)				
Junction to	Ambient Ch1	Ambient Ch2	Case Ch1	Case Ch2
CF1	2.9313 m	4.8817 m	226.7384 u	68.7025 u
CF2	64.2807 m	44.6360 m	1.1010 m	2.4769 m
CF3	1.0010	658.5431 m	3.8734 m	8.9990 m
CF4	3.7390	3.2186	315.4823 u	3.0213 m

**Note**

N/A indicates not applicable

