

## 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

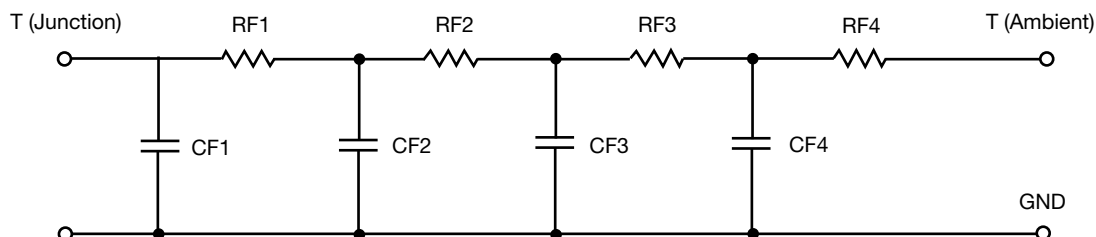


R-C VALUES FOR TANK CONFIGURATION						
THERMAL RESISTANCE (°C/W)						
Junction to	Ambient		Case		Foot	
	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2
RT1	8.7823	9.4266	N/A	N/A	11.7480	11.7480
RT2	28.3936	28.1482	N/A	N/A	16.9770	16.9767
RT3	23.2185	35.2447	N/A	N/A	5.4028	5.4029
RT4	48.4884	31.6234	N/A	N/A	10.7746	10.7750
THERMAL CAPACITANCE (Joules/°C)						
Junction to	Ambient		Case		Foot	
	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2
CT1	489.3897u	1.6034m	N/A	N/A	3.4909m	3.4901m
CT2	8.6678m	16.5151m	N/A	N/A	15.3618m	15.3958m
CT3	125.3511m	122.6193m	N/A	N/A	213.1447u	213.1316u
CT4	1.6270	2.7795	N/A	N/A	154.6826m	154.5902m

#### 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**

<b>R-C VALUES FOR FILTER CONFIGURATION</b>						
<b>THERMAL RESISTANCE (°C/W)</b>						
Junction to	Ambient		Case		Foot	
	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2
RF1	11.3114	8.0498	N/A	N/A	6.8078	6.8076
RF2	29.2913	29.6528	N/A	N/A	21.0085	21.0078
RF3	23.7083	36.8146	N/A	N/A	8.5140	8.5138
RF4	44.5261	29.7964	N/A	N/A	8.2912	8.2908
<b>THERMAL CAPACITANCE (Joules/°C)</b>						
Junction to	Ambient		Case		Foot	
	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2
CF1	571.9884u	1.0559m	N/A	N/A	220.6694u	220.6578u
CF2	8.3572m	8.8707m	N/A	N/A	3.2564m	3.2563m
CF3	110.7112m	81.8064m	N/A	N/A	44.9781m	44.9757m
CF4	1.6665	2.7262	N/A	N/A	12.9728u	12.9721u

**Note**

N/A indicates not applicable

