



# 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
	Channel 1	Channel 2	Channel 1	Channel 2	
RT1	5.0048	3.8357	2.4695	519.3236m	n/a
RT2	55.9050	57.0234	1.5529	1.2136	n/a
RT3	9.6645	9.9529	994.3377m	1.3233	n/a
RT4	14.4257	14.1880	483.2620m	43.7141m	n/a
THERMAL CAPACITANCE (Joules/°C)					
Junction to	Ambient		Case		Foot
	Channel 1	Channel 2	Channel 1	Channel 2	
CT1	963.2070u	3.7603m	593.7025u	1.4786m	n/a
CT2	1.3351	1.3053	6.2277m	9.8252m	n/a
CT3	16.7655m	19.4915m	63.6577m	9.0062m	n/a
CT4	191.9248m	179.4541m	1.3875	5.4127	n/a

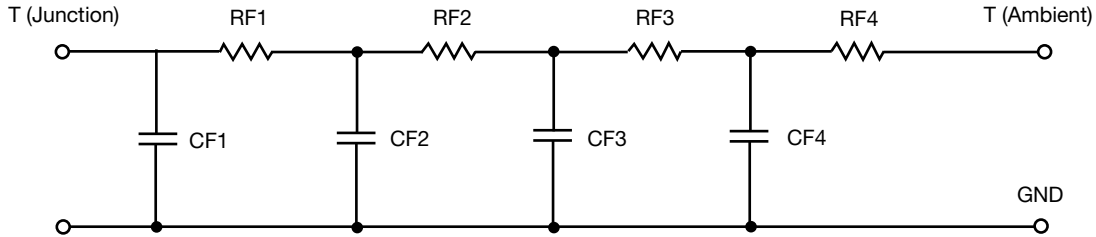
### Note

- 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
	Channel 1	Channel 2	Channel 1	Channel 2	
RF1	3.9429	1.4305	2.2903	817.5896m	n/a
RF2	10.9272	12.3712	1.6006	927.4186m	n/a
RF3	17.6711	16.6569	977.3862m	555.8224m	n/a
RF4	52.4588	54.5413	631.7140m	799.1694m	n/a
THERMAL CAPACITANCE (Joules/°C)					
Junction to	Ambient		Case		Foot
	Channel 1	Channel 2	Channel 1	Channel 2	
CF1	611.9812u	352.9879u	481.8238u	1.1256m	n/a
CF2	8.8253m	8.7604m	2.0362m	3.5533m	n/a
CF3	135.8399m	114.1706m	29.6475m	236.4382u	n/a
CF4	1.2717	1.2043	559.2166m	3.3929m	n/a

Note

- n/a indicates not applicable

