



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
	Channel 1	Channel 2	Channel 1	Channel 2	
RT1	6.0358	4.2689	792.2983m	545.6126m	n/a
RT2	7.4582	10.4069	567.0536m	931.5610u	n/a
RT3	8.3057	17.1411	2.5198	2.5226	n/a
RT4	52.8909	38.1831	5.1069	71.0886m	n/a
THERMAL CAPACITANCE (Joules/°C)					
Junction to	Ambient		Case		Foot
	Channel 1	Channel 2	Channel 1	Channel 2	
CT1	1.7447m	1.5546m	29.6730m	747.9319u	n/a
CT2	151.8047m	57.1003m	52.9900m	2.2454	n/a
CT3	144.0030m	870.3817m	680.0827u	3.0449m	n/a
CT4	1.2340	2.6856	17.3636m	8.6114	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	6.5336	5.0097	2.3328	1.0112	n/a
RF2	15.4331	10.8233	1.8138	1.2938	n/a
RF3	20.1120	26.6223	1.9178	698.4899m	n/a
RF4	32.8030	26.6268	2.9470	85.1254m	n/a
THERMAL CAPACITANCE (Joules/°C)					
Junction to	Ambient		Case		Foot
	Channel 1	Channel 2	Channel 1	Channel 2	
CF1	1.8364m	1.7758m	591.6938u	658.4538u	n/a
CF2	63.8351m	56.1977m	3.3482m	2.9063m	n/a
CF3	779.7944m	565.6900m	7.4999m	1.8357m	n/a
CF4	1.0282	2.8641	17.8604m	528.9576m	n/a

Note

- n/a indicates not applicable



