

## 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



<b>R-C VALUES FOR TANK CONFIGURATION</b>			
<b>THERMAL RESISTANCE (°C/W)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
RT1	N/A	206.9037m	N/A
RT2	N/A	395.9929m	N/A
RT3	N/A	227.3703m	N/A
RT4	N/A	170.3629m	N/A
<b>THERMAL CAPACITANCE (Joules/°C)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
CT1	N/A	221.9978m	N/A
CT2	N/A	62.2678m	N/A
CT3	N/A	371.7813m	N/A
CT4	N/A	5.4775m	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



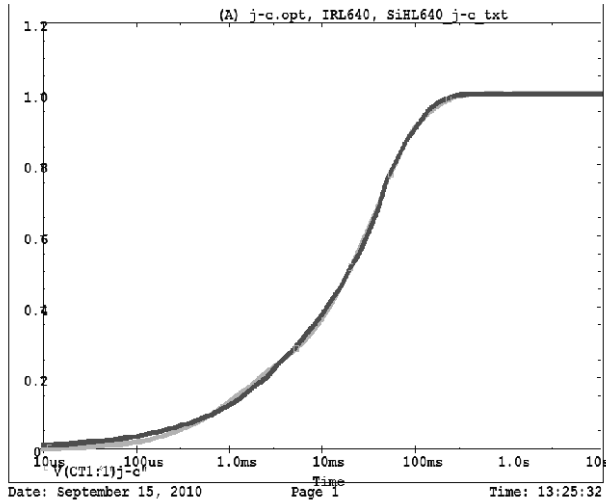
R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	Ambient	Case	Foot
RF1	N/A	216.4514m	N/A
RF2	N/A	296.1503m	N/A
RF3	N/A	285.9659m	N/A
RF4	N/A	200.8331m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	N/A	5.5720m	N/A
CF2	N/A	27.3086m	N/A
CF3	N/A	53.6821m	N/A
CF4	N/A	13.2668m	N/A

**Note**

N/A indicates not applicable



IRL640, SiHL640 Tank j-c Temperature: 27.0



IRL640, SiHL640 Filter j-c Temperature: 27.0

