

## 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
RT1	N/A	1.4009	N/A
RT2	N/A	413.3841m	N/A
RT3	N/A	73.8175m	N/A
RT4	N/A	1.1917	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	N/A	1.1422	N/A
CT2	N/A	28.9550m	N/A
CT3	N/A	1.5871m	N/A
CT4	N/A	171.5069m	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**

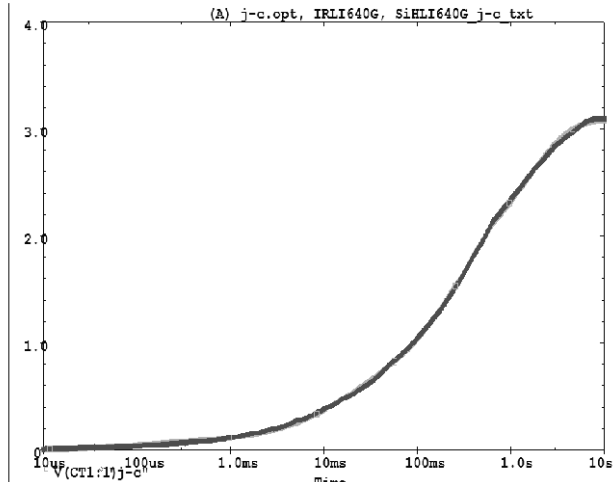
<b>R-C VALUES FOR FILTER CONFIGURATION</b>			
<b>THERMAL RESISTANCE (°C/W)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
RF1	N/A	507.3123m	N/A
RF2	N/A	1.5200	N/A
RF3	N/A	1.0547	N/A
RF4	N/A	6.1402m	N/A
<b>THERMAL CAPACITANCE (Joules/°C)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
CF1	N/A	13.4920m	N/A
CF2	N/A	126.6834m	N/A
CF3	N/A	1.4116	N/A
CF4	N/A	53.2202u	N/A

**Note**

N/A indicates not applicable

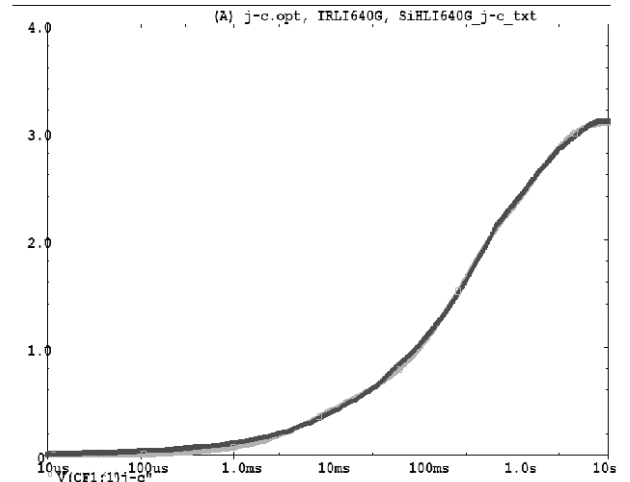


IRLI640G, SiHLI640G Tank j-c Temperature: 27.0



Date: September 18, 2010 Page 1 Time: 16:15:05

IRLI640G, SiHLI640G Filter j-c Temperature: 27.0



Date: September 18, 2010 Page 1 Time: 16:40:10