MC33742DWTAD
Rev 2.0, 4/2007

System Basis Chip (SBC) with Enhanced High-Speed CAN Transceiver

33742DW
33742EG

28-PIN
SOICW

DW SUFFIX
EG SUFFIX (PB-FREE)
98ASB42345B
28-PIN SOICW

Note For package dimensions, refer to the 33742 data sheet.

Introduction

This thermal addendum is provided as a supplement to the MC33742 technical datasheet. The addendum provides thermal performance information that may be critical in the design and development of system applications. All electrical, application, and packaging information is provided in the data sheet.

Packaging and Thermal Considerations

The MC33742 is offered in a 28 pin SOICW exposed pad, single die package. There is a single heat source (P), a single junction temperature (T_J), and thermal resistance ($R_{\theta JA}$).

$$\{ T_J \} = [R_{\theta JA}] \cdot \{ P \}$$

The stated values are solely for a thermal performance comparison of one package to another in a standardized environment. This methodology is not meant to and will not predict the performance of a package in an application-specific environment. Stated values were obtained by measurement and simulation according to the standards listed below.

Standards

Table 1. Thermal Performance Comparison

Thermal Resistance	[°C/W]
$R_{\theta JA}$ (1) (2)	41
$R_{\theta JB}$ (2) (3)	10
$R_{\theta JA}$ (1) (4)	68
$R_{\theta JC}$ (5)	220

Notes:
1. Per JEDEC JESD51-2 at natural convection, still air condition.
2. 2s2p thermal test board per JEDEC JESD51-7.
3. Per JEDEC JESD51-8, with the board temperature on the center trace near the center lead.
4. Single layer thermal test board per JEDEC JESD51-3.
5. Thermal resistance between the die junction and the package top surface; cold plate attached to the package top surface and remaining surfaces insulated.

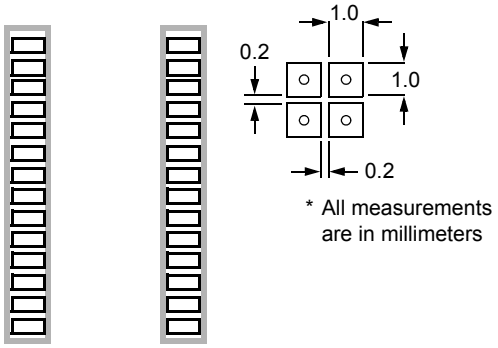

Figure 1. Surface Mount for SOIC Wide Body non-Exposed Pad

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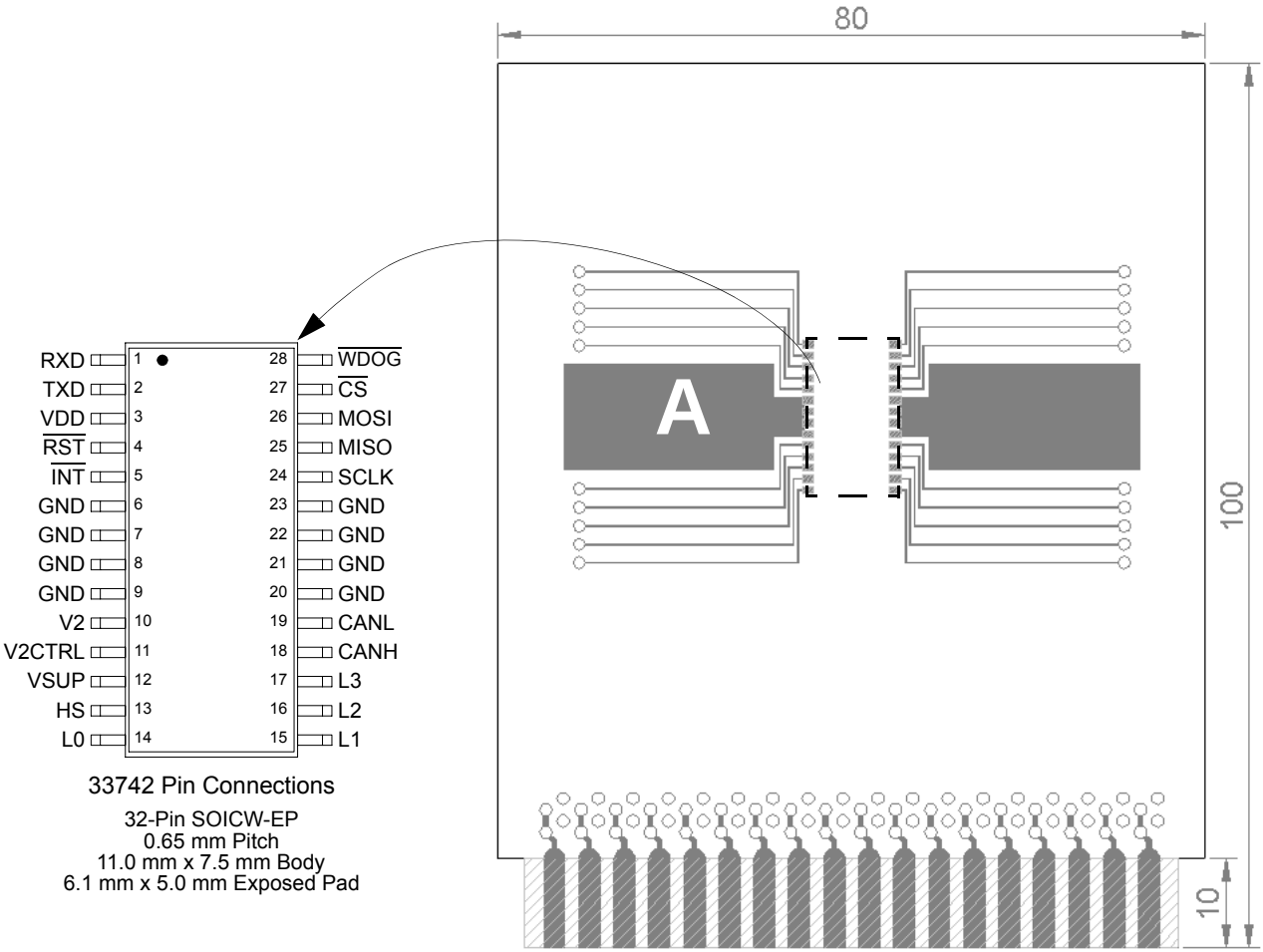

Figure 1. Thermal Test Board

Device on Thermal Test Board

Material:	Single layer printed circuit board FR4, 1.6 mm thickness Cu traces, 0.07 mm thickness
Outline:	80 mm x 100 mm board area, including edge connector for thermal testing
Area **A**:	Cu heat-spreading areas on board surface
Ambient Conditions:	Natural convection, still air

Table 1. Thermal Resistance Performance

A [mm²]	$R_{\theta JA}$ [°C/W]
0	68
300	52
600	47

$R_{\theta JA}$ is the thermal resistance between die junction and ambient air.

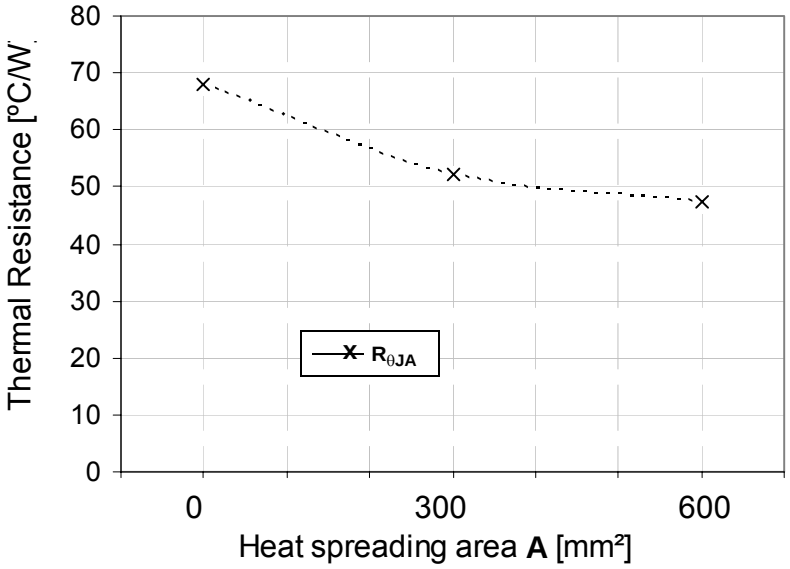

Figure 2. Device on Thermal Test Board $R_{\theta JA}$

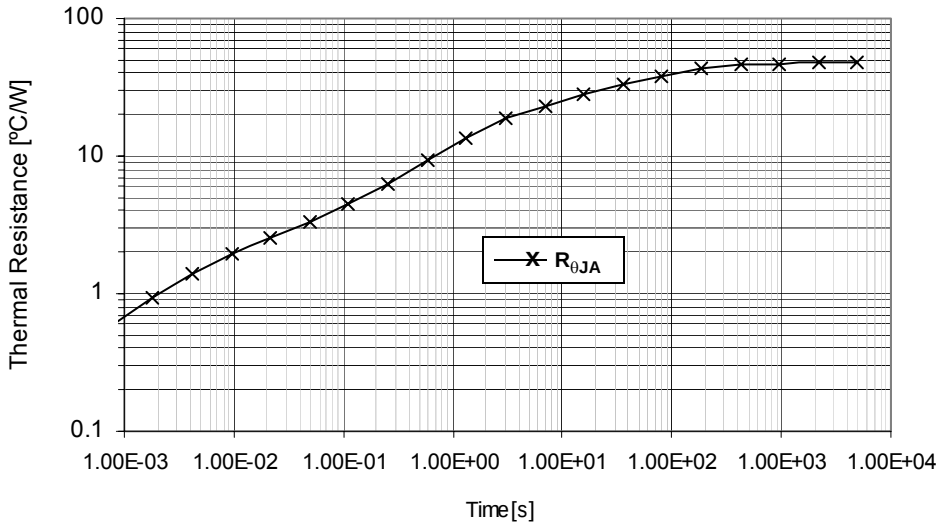

Figure 3. Transient Thermal Resistance $R_{\theta JA}$,
1 W Step response, Device on Thermal Test Board Area A = 600 (mm^2)

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USA/Europe or Locations Not Listed:
Freescale Semiconductor, Inc.
Technical Information Center, EL516
2100 East Elliot Road
Tempe, Arizona 85284
+1-800-521-6274 or +1-480-768-2130
www.freescale.com/support

Europe, Middle East, and Africa:
Freescale Halbleiter Deutschland GmbH
Technical Information Center
Schatzbogen 7
81829 Muenchen, Germany
+44 1296 380 456 (English)
+46 8 52200080 (English)
+49 89 92103 559 (German)
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www.freescale.com/support

Japan:
Freescale Semiconductor Japan Ltd.
Headquarters
ARCO Tower 15F
1-8-1, Shimo-Meguro, Meguro-ku,
Tokyo 153-0064
Japan
0120 191014 or +81 3 5437 9125
support.japan@freescale.com

Asia/Pacific:
Freescale Semiconductor Hong Kong Ltd.
Technical Information Center
2 Dai King Street
Tai Po Industrial Estate
Tai Po, N.T., Hong Kong
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