

## An application note for leakage current against temperature and applied voltage

### Introduction

This application note provides data on the typical leakage current against temperature as a function of  $T_{j(max)}$  and typical leakage current against applied voltage as a function of rated voltage.

### Leakage current against temperature

The leakage current,  $I_{DRM}$  and  $I_{RRM}$  against temperature will vary generally as shown in figure 1. Above the rated maximum junction temperature,  $T_{j(max)}$  the leakage current will approximately double for every 10°C rise above  $T_{j(max)}$ .

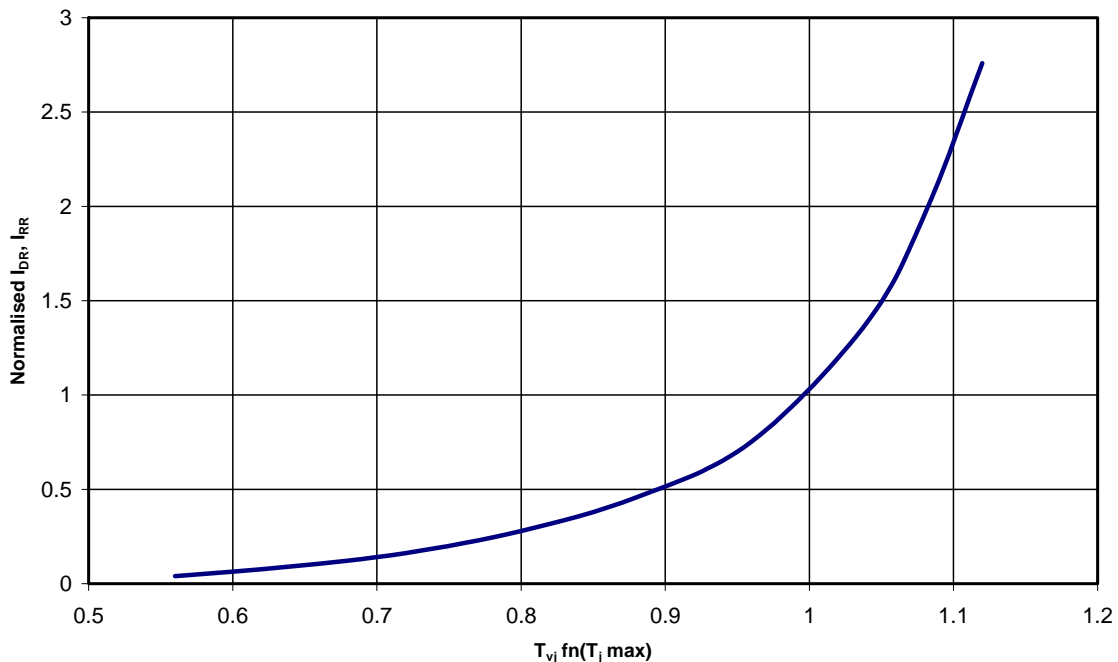


Figure 1: Normalised leakage current against temperature as a function of  $T_{j(max)}$

**Leakage current against applied voltage**

The leakage current,  $I_{DRM}$  and  $I_{RRM}$  against applied voltage will vary generally as shown in figure 2. It can be seen in figure 2 that the leakage current typically halves for a 20% drop in the applied voltage.

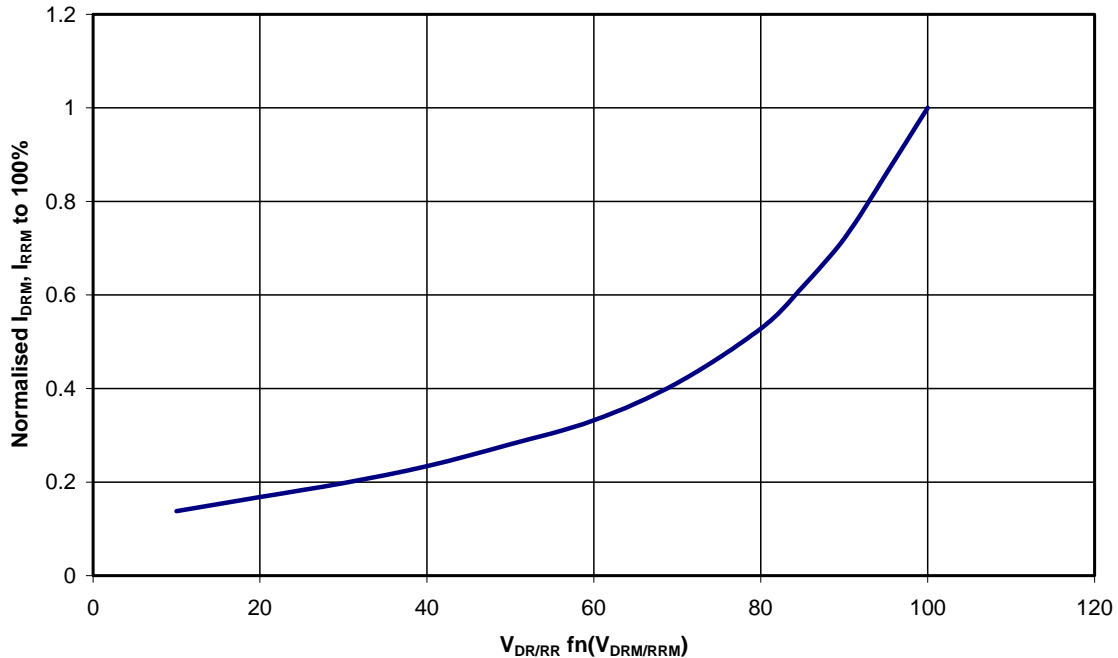


Figure 2: Normalised leakage current against voltage as a function of rated voltage

**Disclaimer**

The guidance given herein is provided for information only and Westcode in no way implies any warranty for devices operated outside of the maximum ratings as specified in the data sheet. Any application of devices beyond maximum ratings should be thoroughly qualified and validated on an individual basis.

**IXYS Semiconductor GmbH**  
 Edisonstraße 15  
 D-68623 Lampertheim  
 Tel: +49 6206 503-0  
 Fax: +49 6206 503-627  
 E-mail: [marcom@ixys.de](mailto:marcom@ixys.de)

**WESTCODE**  
 An IXYS Company

**Westcode Semiconductors Ltd**  
 Langley Park Way, Langley Park,  
 Chippenham, Wiltshire, SN15 1GE.  
 Tel: +44 (0)1249 444524  
 Fax: +44 (0)1249 659448  
 E-mail: [WSL.sales@westcode.com](mailto:WSL.sales@westcode.com)

**IXYS Corporation**  
 1590 Buckeye Drive  
 Milpitas CA 95035-7418 USA  
 Tel: +1 (408) 457 9000  
 Fax: +1 (408) 496 0670  
 E-mail: [sales@ixys.net](mailto:sales@ixys.net)

[www.westcode.com](http://www.westcode.com)

[www.ixys.com](http://www.ixys.com)

**IXYS Long Beach**  
 2500 Mira Mar Avenue  
 Long Beach CA 90815 USA  
 Tel: +1 (562) 296 6584  
 Fax: +1 (562) 296 6585  
 E-mail: [WSI.sales@westcode.com](mailto:WSI.sales@westcode.com)

The information contained herein is protected by Copyright. And may not be used, copied, stored or disclosed except with the written permission of and in the manner permitted by the proprietors Westcode Semiconductors Ltd.

© Westcode Semiconductors Ltd.

In the interest of product improvement, Westcode reserves the right to change specifications or application notes at any time without prior notice.

**Important Notice:**

This document is provided by Littelfuse, Inc. ("Littelfuse") for informational and guideline purposes only. Littelfuse assumes no liability for errors or omissions in this document or for any of the information contained herein. Information is provided on an "as is" and "with all faults" basis for evaluation purposes only. Applications described are for illustrative purposes only and Littelfuse makes no representation that such applications will be suitable for the customer's specific use without further testing or modification. Littelfuse expressly disclaims all warranties, whether express, implied or statutory, including but not limited to the implied warranties of merchantability and fitness for a particular purpose, and non-infringement. It is the customer's sole responsibility to determine suitability for a particular system or use based on their own performance criteria, conditions, specific application, compatibility with other components, and environmental conditions. Customers must independently provide appropriate design and operating safeguards to minimize any risks associated with their applications and products.

LITTELFUSE PRODUCTS ARE NOT DESIGNED FOR, AND SHALL NOT BE USED FOR, ANY PURPOSE (INCLUDING, WITHOUT LIMITATION, AUTOMOTIVE, MILITARY, AEROSPACE, MEDICAL, LIFE-SAVING, LIFE-SUSTAINING OR NUCLEAR FACILITY APPLICATIONS, DEVICES INTENDED FOR SURGICAL IMPLANT INTO THE BODY, OR ANY OTHER APPLICATION IN WHICH THE FAILURE OR LACK OF DESIRED OPERATION OF THE PRODUCT MAY RESULT IN PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE) OTHER THAN THOSE EXPRESSLY SET FORTH IN APPLICABLE LITTELFUSE PRODUCT DOCUMENTATION. WARRANTIES GRANTED BY LITTELFUSE SHALL BE DEEMED VOID FOR PRODUCTS USED FOR ANY PURPOSE NOT EXPRESSLY SET FORTH IN APPLICABLE LITTELFUSE DOCUMENTATION. LITTELFUSE SHALL NOT BE LIABLE FOR ANY CLAIMS OR DAMAGES ARISING OUT OF PRODUCTS USED IN APPLICATIONS NOT EXPRESSLY INTENDED BY LITTELFUSE AS SET FORTH IN APPLICABLE LITTELFUSE DOCUMENTATION.