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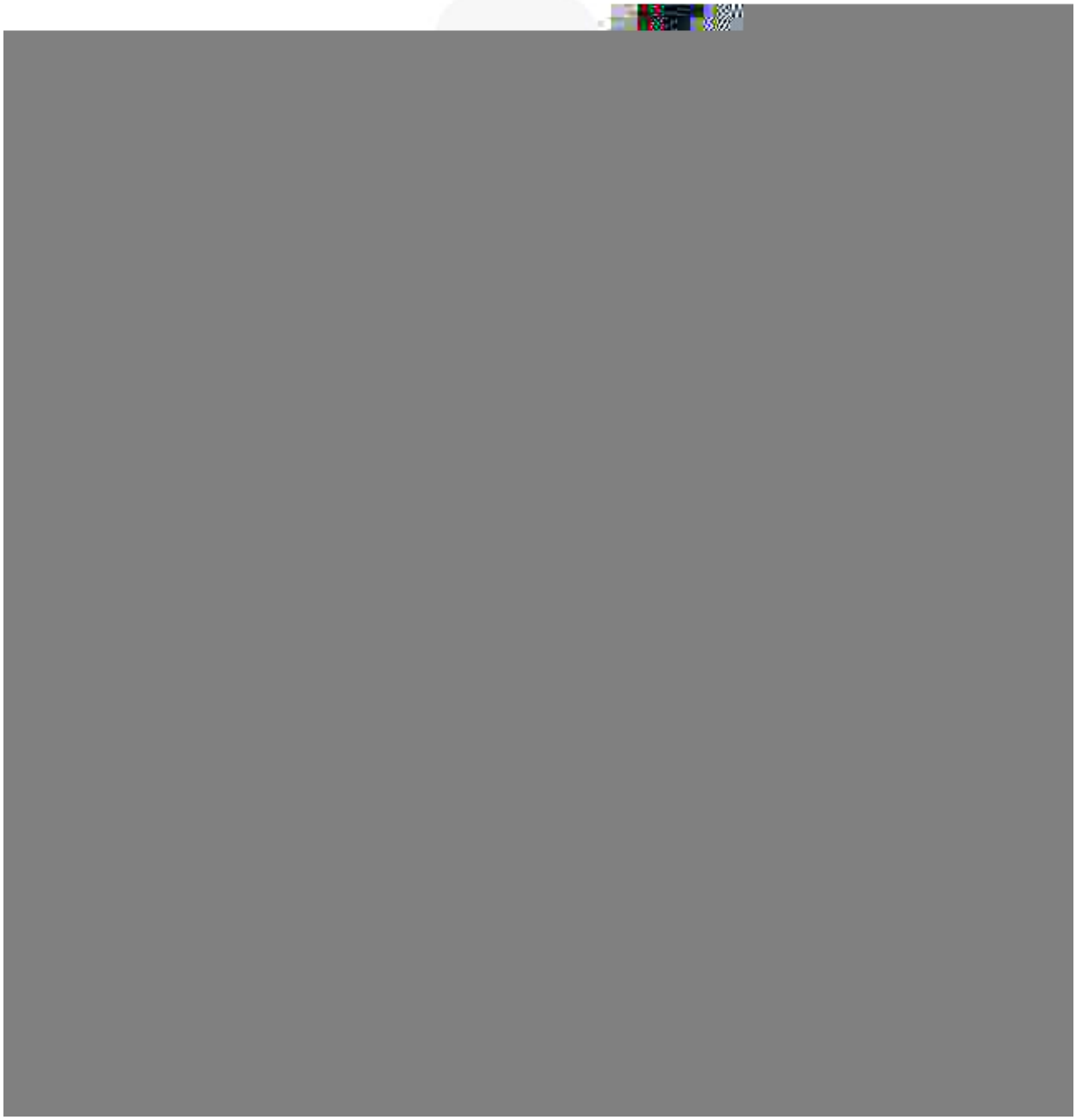
Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

July 2016

FL77944

Analog/PWM/Phase-cut Dimmable High Power LED Direct AC Driver



Pin Configuration

Figure 3. SOIC-16 EP (Top View)

Thermal Characteristics [1] [2]

Component	Package	Θ_{JA} (1S PCB)	Θ_{JA} (2S2P PCB)	Unit
FL77944MX	16-Pin Small-Outline Integrated Circuit (SOIC-EP)	102	24	°C/W

Notes:

1. Θ_{JA}

Typical Performance Characteristics

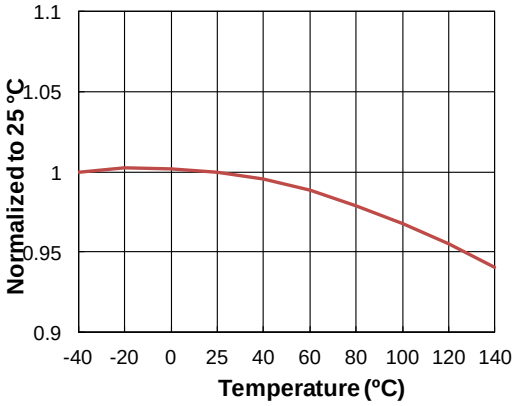


Figure 5. $I_{QUIES.VIN}$ vs. Temperature

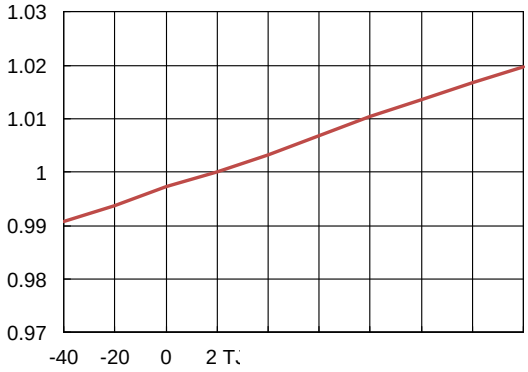


Figure 6. V_{DD} vs. Temperature

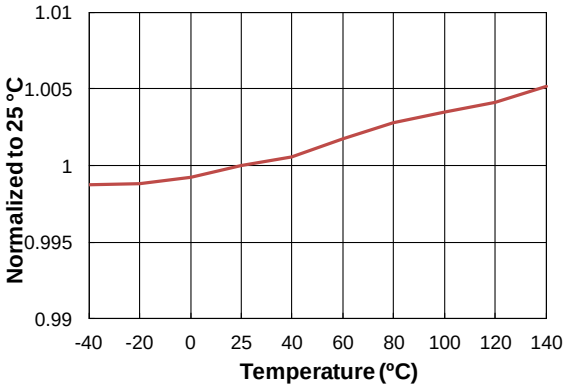


Figure 7. I_{LED1} vs. Temperature

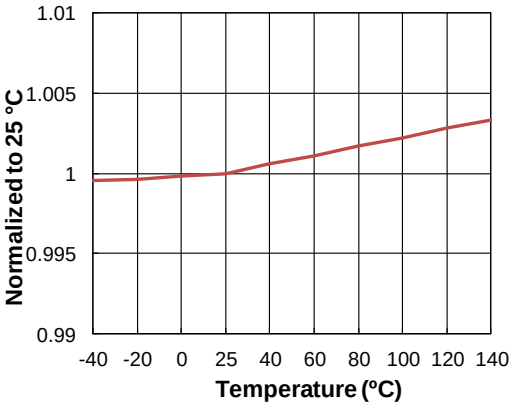


Figure 8. I_{LED2} vs. Temperature

Figure 9. I_{LED3} vs. Temperature

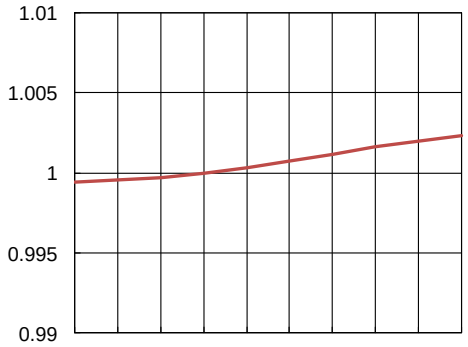


Figure 10. I_{LED4} vs. Temperature

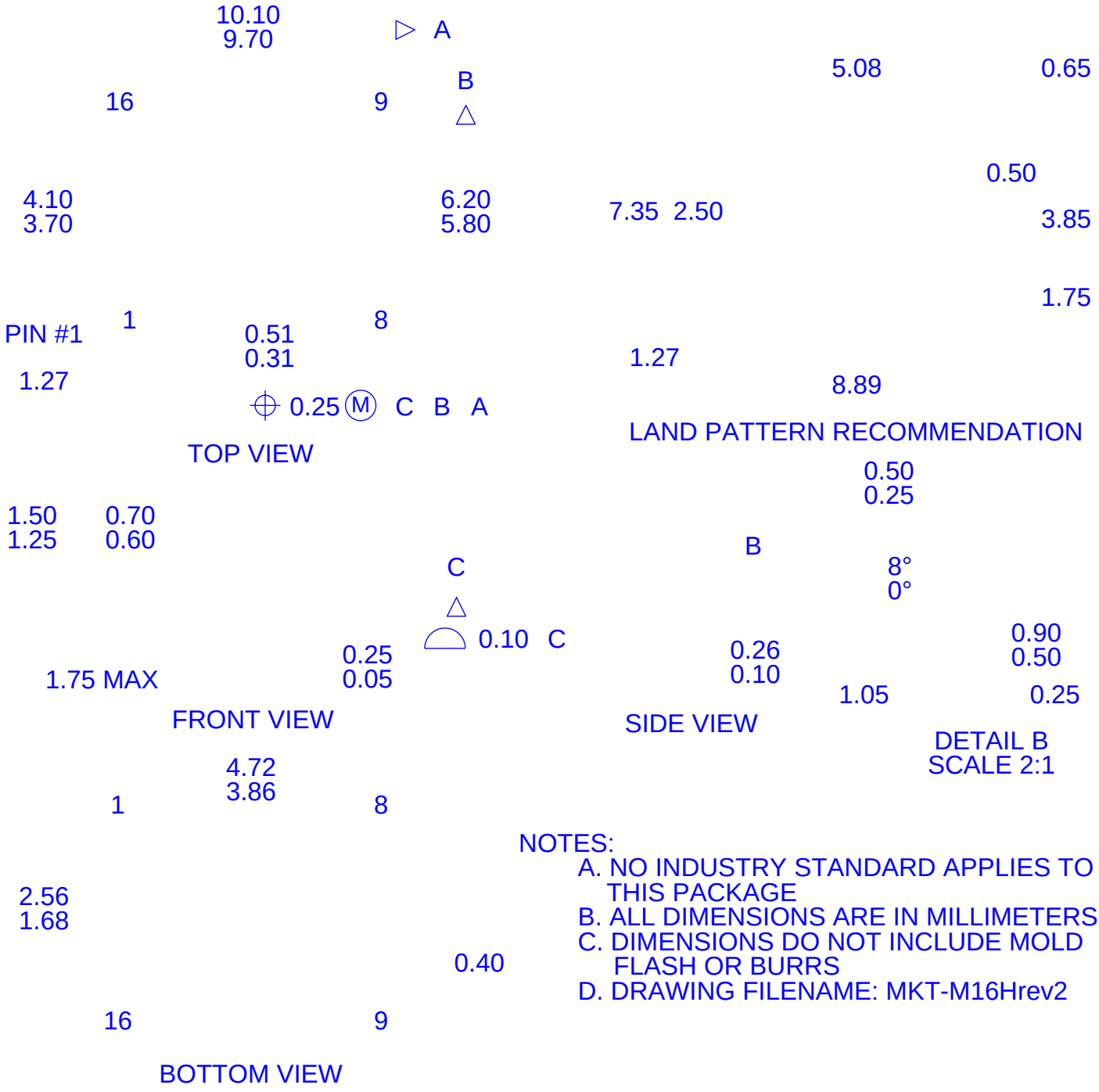
Functional Description

The FL77944 can drive LED strings attached directly to the rectified AC mains using only two external RC components (R_{CS} and C_{VDD}). With 4 integrated high voltage current sink, LED current in each string is precisely controlled with system compactness. High PF and low THD are obtained by the optimized current sink levels. Phase-cut dimming is easily obtained with wide dimming range and good dimmer compatibility. Dedicated DIM pin can be used to implement analog or digital dimming function. Flicker index in the direct AC drive topology can be improved by adopting proprietary self valley-fill solution.

Operation

When the rectified AC line voltage, V_{IN}, is higher than

A good starting point for choosing a LED configuration is to have about 260 V~280 V of the total V_F for 220 V_{AC} mains and 130 V~140 V of the total V_F for 120 V_{AC}.



NOTES:

A. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE
B. ALL DIMENSIONS ARE IN MILLIMETERS
C. DIMENSIONS DO NOT INCLUDE MOLD FLASH OR BURRS
D. DRAWING FILENAME: MKT-M16Hrev2

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
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19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
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