

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _A = +25°C (Note 7)
-40V	25mΩ @ V _{GS} = -10V	- 7.2A
	45mΩ @ V _{GS} = -4.5V	- 5.4A

Description

This MOSFET has been designed to minimize the on-state resistance and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

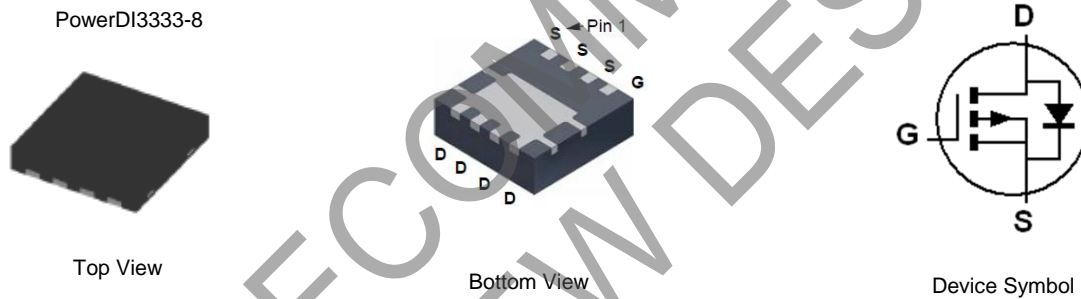
- Motor Control
- Backlighting
- DC-DC Converters
- Printer Equipment

Features

- Low R_{DS(ON)} – Minimizes Conduction Losses
- Fast Switching Speed – Minimizes Switching Losses
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Mechanical Data

- Case: PowerDI[®] 3333-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram Below
- Terminals: Finish - Matte Tin Annealed over Copper Lead Frame. Solderable per MIL-STD-202, Method 208
- Weight: 0.0172 grams (Approximate)

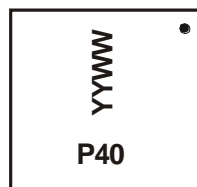


Ordering Information (Note 5)

Part Number	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DMP4025SFGQ-7	P40	7	8	2,000
DMP4025SFGQ-13	P40	13	8	3,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
 5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



P40 = Product Marking Code
YYWW = Date Code Marking
YY = Year (ex: 18 = 2018)
WW = Week (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V _{DSS}	-40	V
Gate-Source Voltage		V _{GSS}	±20	
Continuous Drain Current, V _{GS} = -10V	(Note 7)	I _D	-7.2	A
	T _A = +70°C (Note 7)		-5.77	
	(Note 6)		-4.65	
Maximum Body Diode Forward Current		I _S	-7.2	
Pulsed Drain Current		I _{DM}	-80	
Pulsed Source Current		I _{SM}	-80	

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 6)	P _D	0.81	W
Linear Derating Factor	(Note 7)		1.95	
Thermal Resistance, Junction to Ambient	(Note 6)	R _{θJA}	155	°C/W
	(Note 7)		64	
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

- Notes:
6. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
 7. For a device surface mounted on 25mm x 25mm FR-4 PCB with 2oz copper, in still air conditions.
 8. Same as note (7), except the device is pulsed with D= 0.02 and pulse width 300µs.

NOT RECOMMENDED FOR NEW DESIGN

Thermal Characteristics

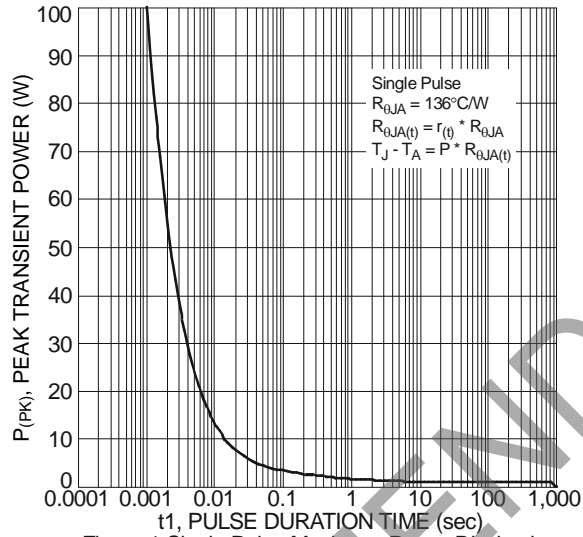


Figure 1 Single Pulse Maximum Power Dissipation

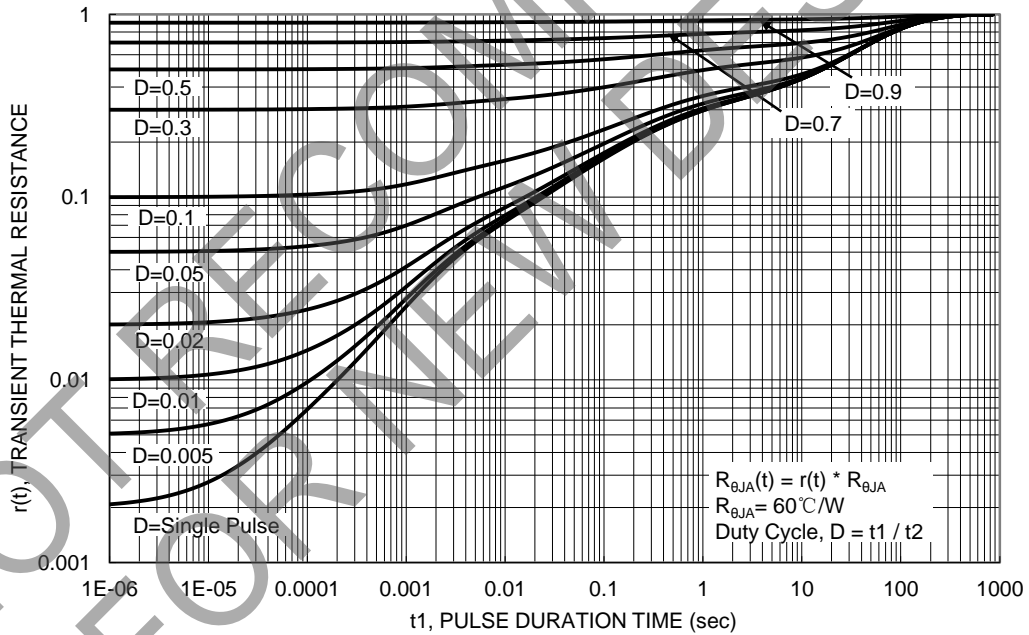


Figure 2. Transient Thermal Resistance

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	-40	—	—	V	I _D = -250μA, V _{GS} = 0V
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-1.0	μA	V _{DS} = -40V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	-0.8	-1.3	-1.8	V	I _D = -250μA, V _{DS} = V _{GS}
Static Drain-Source On-Resistance (Note 9)	R _{DS(ON)}	—	18	25	mΩ	V _{GS} = -10V, I _D = -3A
			30	45		V _{GS} = -4.5V, I _D = -3A
Forward Transconductance (Notes 9 & 10)	g _{fs}	—	16.6	—	S	V _{DS} = -5V, I _D = -3A
Diode Forward Voltage (Note 9)	V _{SD}	—	-0.7	-1.0	V	I _S = -1A, V _{GS} = 0V
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C _{iss}	—	1643	—	pF	V _{DS} = -20V, V _{GS} = 0V f = 1MHz
Output Capacitance	C _{oss}	—	179	—		
Reverse Transfer Capacitance	C _{rss}	—	128	—		
Gate Resistance	R _g	—	6.43	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge (Note 11)	Q _g	—	14.0	—	nC	V _{GS} = -4.5V V _{DS} = -20V I _D = -3A
Total Gate Charge (Note 11)	Q _g	—	33.7	—		
Gate-Source Charge (Note 11)	Q _{gs}	—	5.5	—		
Gate-Drain Charge (Note 11)	Q _{gd}	—	7.3	—		
Turn-On Delay Time (Note 11)	t _{D(ON)}	—	6.9	—	ns	V _{DD} = -20V, V _{GS} = -10V I _D = -3A
Turn-On Rise Time (Note 11)	t _R	—	14.7	—		
Turn-Off Delay Time (Note 11)	t _{D(OFF)}	—	53.7	—		
Turn-Off Fall Time (Note 11)	t _F	—	30.9	—		

Notes:
 9. Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤ 2%.
 10. For design aid only, not subject to production testing.
 11. Switching characteristics are independent of operating junction temperatures.

Typical Characteristics

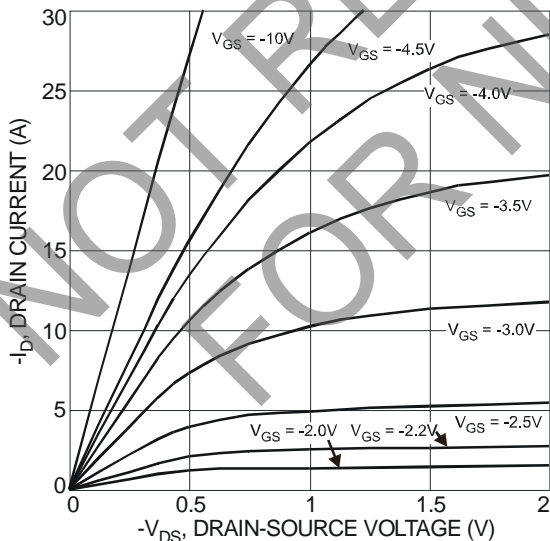


Figure 3 Typical Output Characteristic

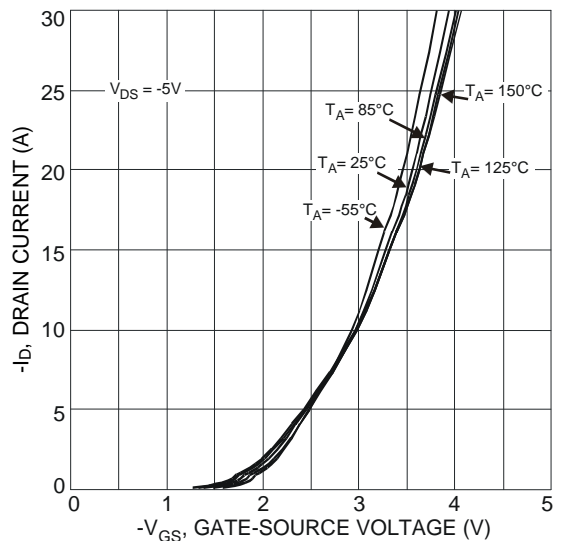


Figure 4 Typical Transfer Characteristic

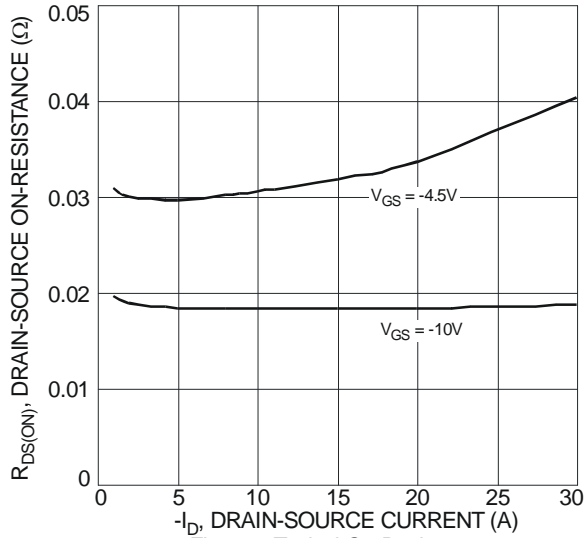


Figure 5 Typical On-Resistance vs. Drain Current and Gate Voltage

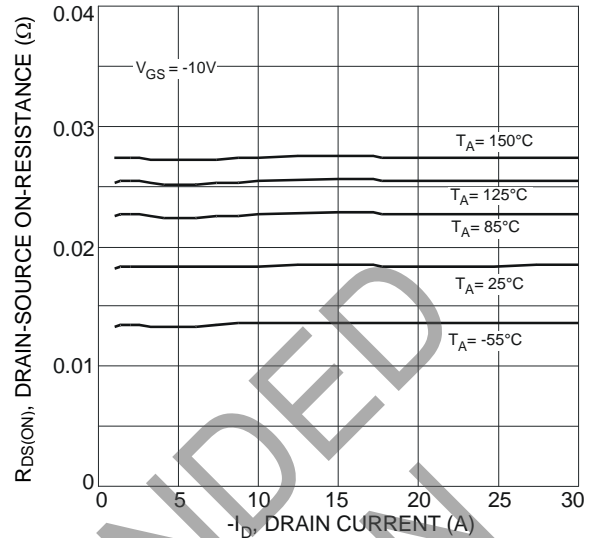


Figure 6 Typical On-Resistance vs. Drain Current and Temperature

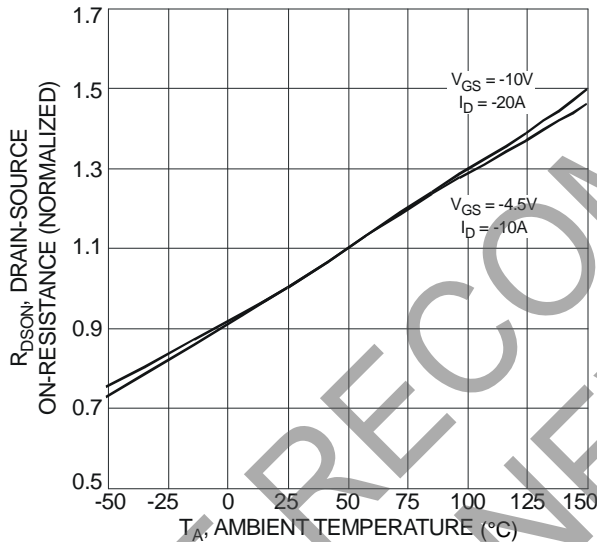


Figure 7 On-Resistance Variation with Temperature

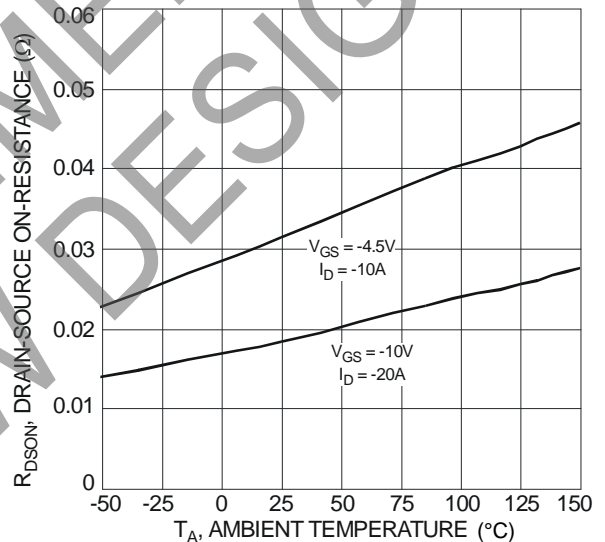


Figure 8 On-Resistance Variation with Temperature

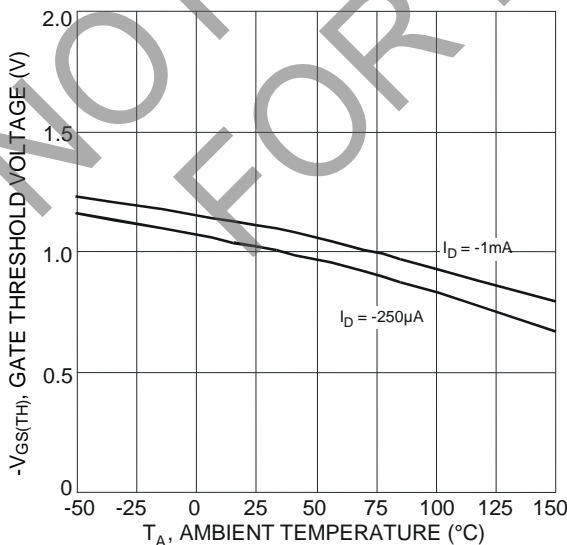


Figure 9 Gate Threshold Variation vs. Ambient Temperature

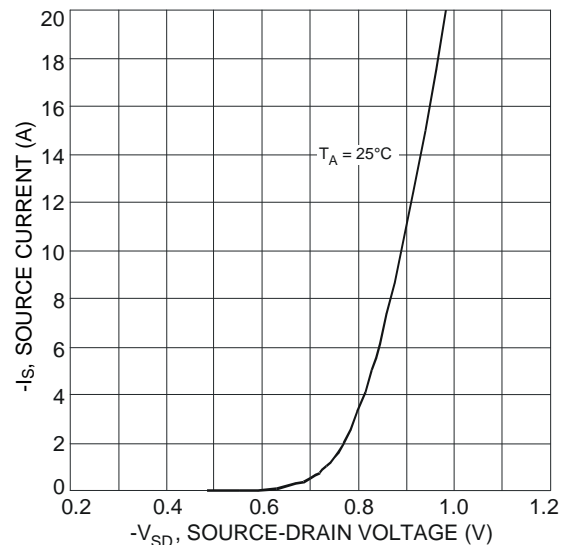


Figure 10 Diode Forward Voltage vs. Current

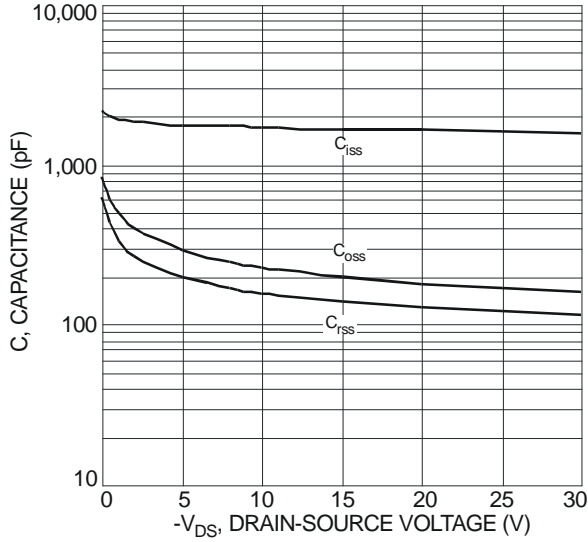


Figure 11 Typical Total Capacitance

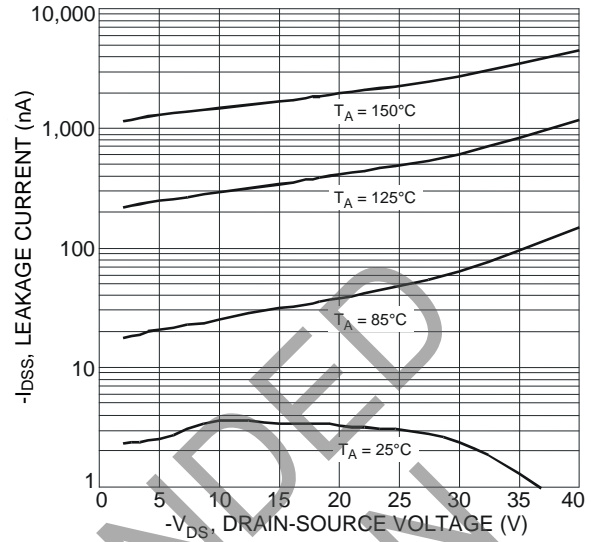


Figure 12 Typical Leakage Current vs. Drain-Source Voltage

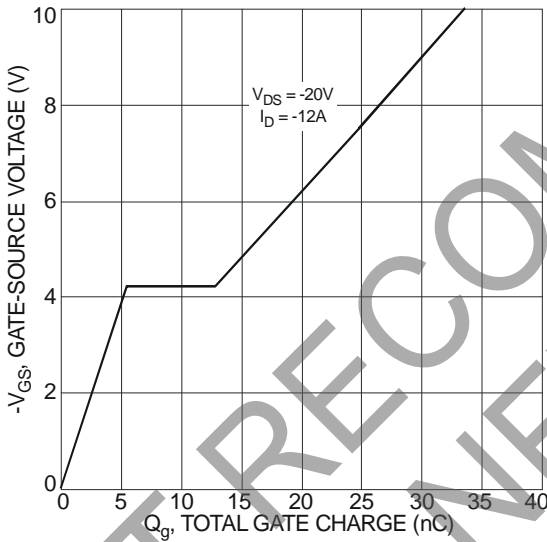


Figure 13 Gate-Charge Characteristics

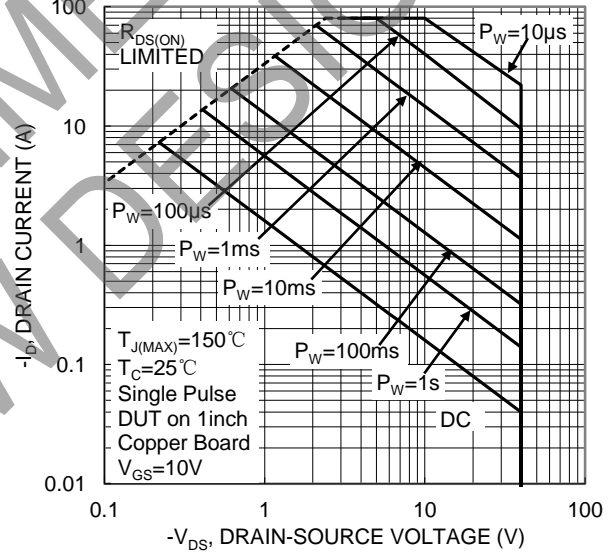
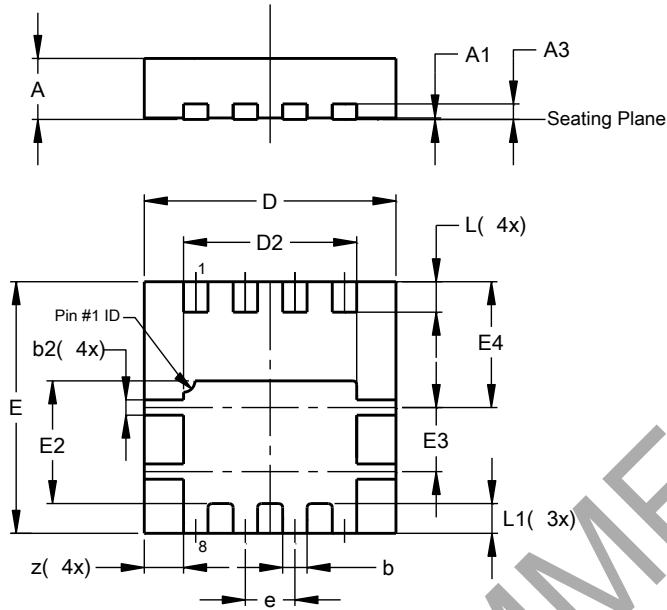


Figure 14. SOA, Safe Operation Area

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

PowerDI3333-8

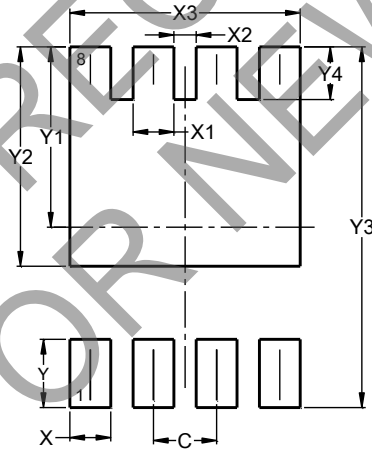


PowerDI3333-8			
Dim	Min	Max	Typ
A	0.75	0.85	0.80
A1	0.00	0.05	0.02
A3	-	-	0.203
b	0.27	0.37	0.32
b2	0.15	0.25	0.20
D	3.25	3.35	3.30
D2	2.22	2.32	2.27
E	3.25	3.35	3.30
E2	1.56	1.66	1.61
E3	0.79	0.89	0.84
E4	1.60	1.70	1.65
e	-	-	0.65
L	0.35	0.45	0.40
L1	-	-	0.39
z	-	-	0.515
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

PowerDI3333-8



Dimensions	Value (in mm)
C	0.650
X	0.420
X1	0.420
X2	0.230
X3	2.370
Y	0.700
Y1	1.850
Y2	2.250
Y3	3.700
Y4	0.540

IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or
2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2018, Diodes Incorporated

www.diodes.com

单击下面可查看定价，库存，交付和生命周期等信息

[>>Diodes Incorporated\(达尔科技\)](#)