

## Product Summary

BV <sub>DSS</sub>	R <sub>DSON</sub> max	I <sub>D</sub> max T <sub>A</sub> = +25°C
30V	14mΩ @ V <sub>GS</sub> = 10V	8.6A
	20mΩ @ V <sub>GS</sub> = 4.5V	7.1A

## Description

This MOSFET is designed to minimize the on-state resistance (R<sub>DSON</sub>) and yet maintain superior switching performance, making it ideal for high-efficiency power management applications.

## Applications

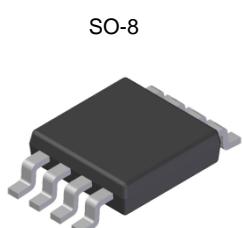
- Backlighting
- Power Management Functions
- DC-DC Converters

## Features

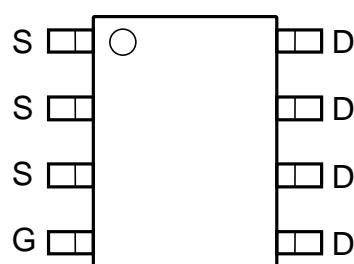
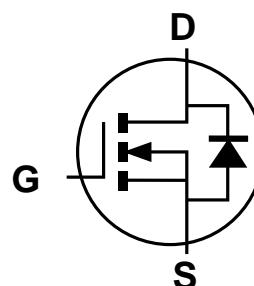
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- Qualified to AEC-Q101 Standards for High Reliability
- **PPAP Capable (Note 4)**

## Mechanical Data

- Case: SO-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
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.072g (Approximate)



Top View

Top View  
Internal Schematic

Equivalent Circuit

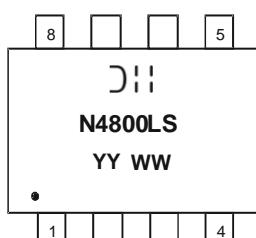
## Ordering Information (Note 5)

Part Number	Case	Packaging
DMN4800LSSQ-13	SO-8	2,500/Tape & Reel

## Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) 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 [http://www.diodes.com/product\\_compliance\\_definitions.html](http://www.diodes.com/product_compliance_definitions.html).
5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



DII = Manufacturer's Marking  
N4800LS = Product Type Marking Code  
YYWW = Date Code Marking  
YY = Year (ex: 13 = 2013)  
WW = Week (01 - 53)

**Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic			Symbol	Value	Units
Drain-Source Voltage			$V_{DSS}$	30	V
Gate-Source Voltage			$V_{GSS}$	$\pm 25$	V
Continuous Drain Current (Note 7) $V_{GS} = 10\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	$I_D$	8.6 6.3	A
	$t < 10\text{s}$	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	$I_D$	11.8 9.0	A
Maximum Body Diode Forward Current (Note 7)			$I_S$	2.4	A
Pulsed Drain Current (Note 8)			$I_{DM}$	50	A

**Thermal Characteristics**

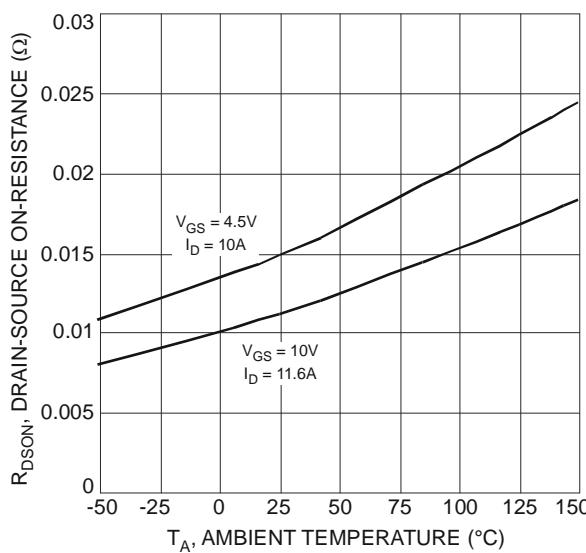
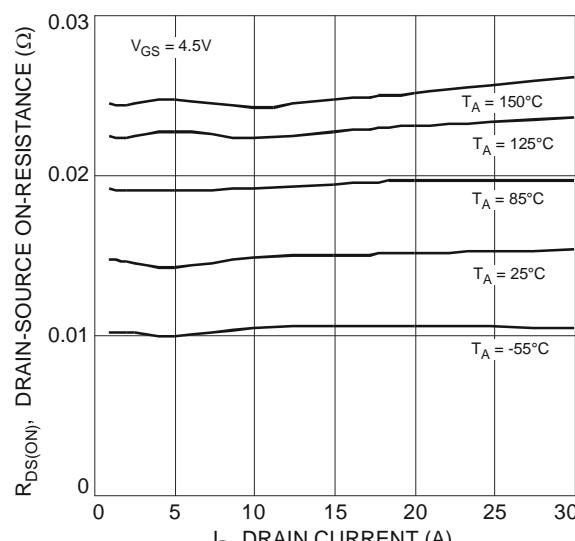
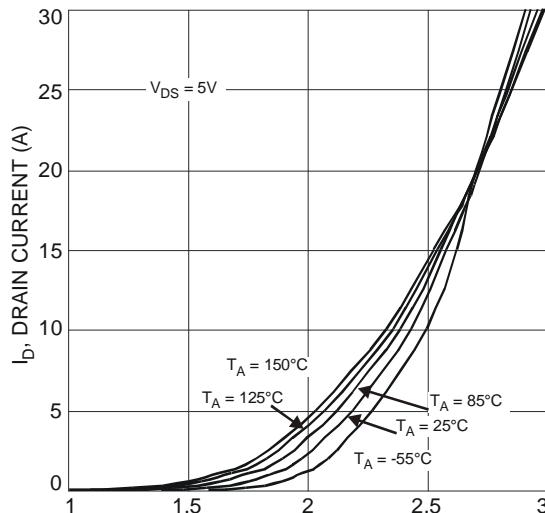
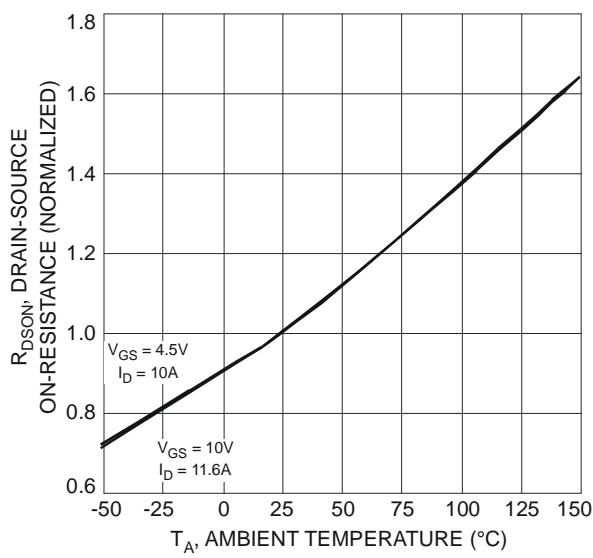
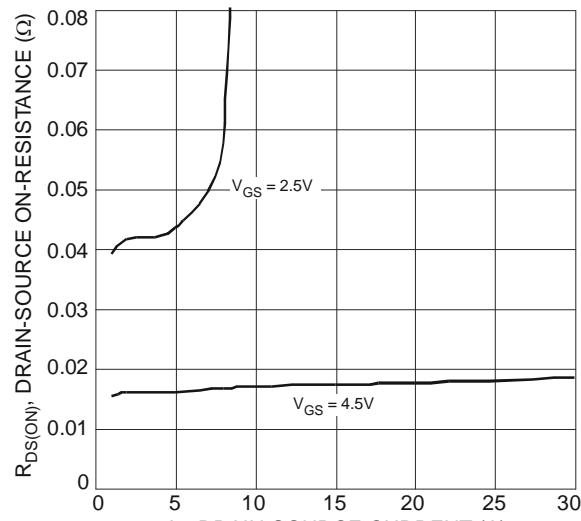
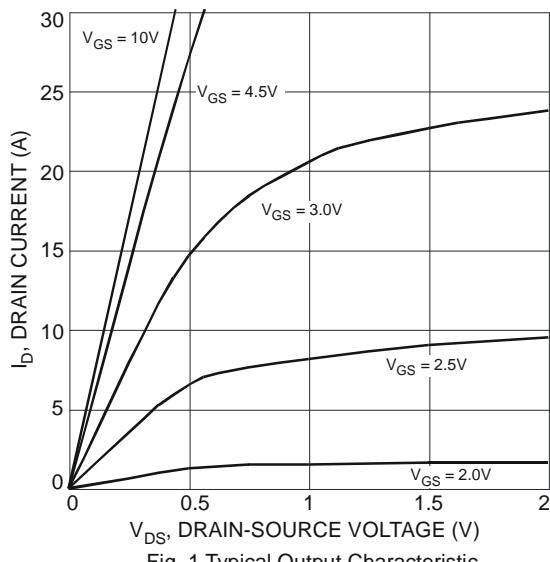
Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 6)	$T_A = +25^\circ\text{C}$	$P_D$	1.46	W
	$T_A = +70^\circ\text{C}$		0.9	
Thermal Resistance, Junction to Ambient (Note 6)	Steady state	$R_{\theta JA}$	86	$^\circ\text{C}/\text{W}$
	$t < 10\text{s}$		46	
Total Power Dissipation (Note 7)	$T_A = +25^\circ\text{C}$	$P_D$	1.7	W
	$T_A = +70^\circ\text{C}$		1.0	
Thermal Resistance, Junction to Ambient (Note 7)	Steady state	$R_{\theta JA}$	75	$^\circ\text{C}/\text{W}$
	$t < 10\text{s}$		40	
Thermal Resistance, Junction to Case (Note 7)		$R_{\theta JC}$	15	
Operating and Storage Temperature Range		$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 9)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	30	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 100$	nA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
<b>ON CHARACTERISTICS (Note 9)</b>						
Gate Threshold Voltage	$V_{GS(\text{th})}$	0.8	1.2	1.6	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	—	11 14	14 20	$\text{m}\Omega$	$V_{GS} = 10\text{V}, I_D = 9\text{A}$ $V_{GS} = 4.5\text{V}, I_D = 7\text{A}$
Forward Transconductance	$g_{fs}$	—	8	—	S	$V_{DS} = 10\text{V}, I_D = 9\text{A}$
Diode Forward Voltage	$V_{SD}$	—	0.72	0.94	V	$V_{GS} = 0\text{V}, I_S = 1\text{A}$
<b>DYNAMIC CHARACTERISTICS (Note 10)</b>						
Input Capacitance	$C_{iss}$	—	798	—	$\text{pF}$	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	—	128	—	$\text{pF}$	
Reverse Transfer Capacitance	$C_{rss}$	—	122	—	$\text{pF}$	
Gate Resistance	$R_G$	—	1.37	—	$\Omega$	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Total Gate Charge	$Q_g$	—	8.7	—	$\text{nC}$	$V_{GS} = 5\text{V}, V_{DS} = 15\text{V}, I_D = 9\text{A}$
Gate-Source Charge	$Q_{gs}$	—	1.7	—		
Gate-Drain Charge	$Q_{gd}$	—	2.4	—		
Turn-On Delay Time	$t_{d(\text{on})}$	—	5.03	—	$\text{ns}$	$V_{DD} = 15\text{V}, V_{GEN} = 10\text{V}, R_L = 15\Omega, R_G = 6.0\Omega, I_D = 1\text{A}$
Rise Time	$t_r$	—	4.50	—		
Turn-Off Delay Time	$t_{d(\text{off})}$	—	26.33	—		
Fall Time	$t_f$	—	8.55	—		

Notes:

6. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
7. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.
8. Repetitive rating, pulse width limited by junction temperature.
9. Short duration pulse test used to minimize self-heating effect.
10. Guaranteed by design. Not subject to product testing.



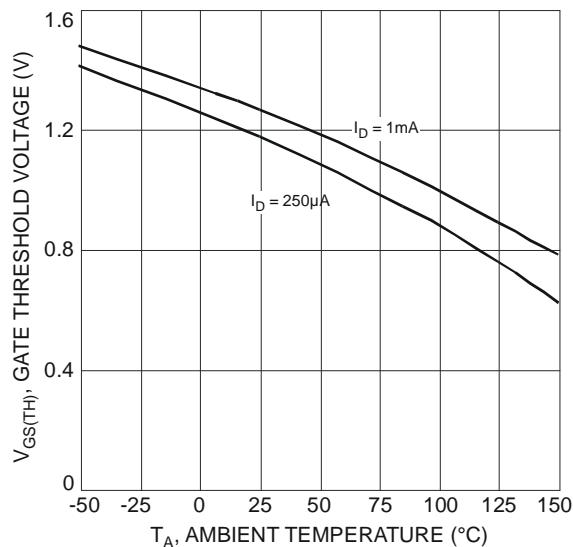


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

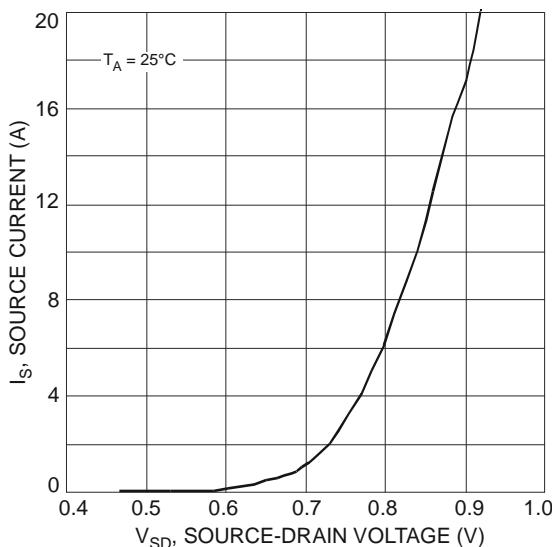


Fig. 8 Diode Forward Voltage vs. Current

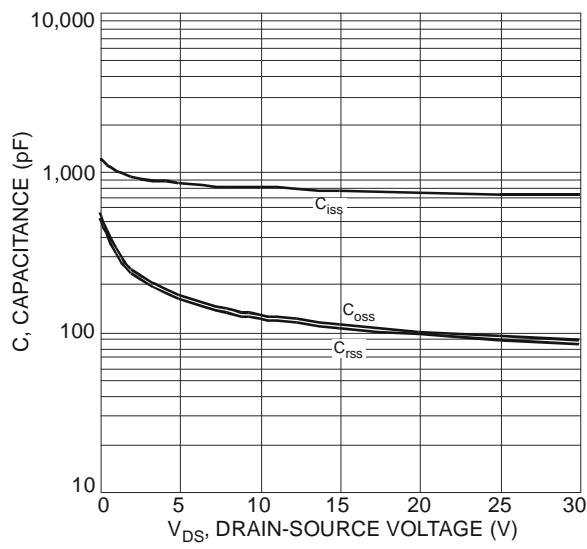


Fig. 9 Typical Total Capacitance

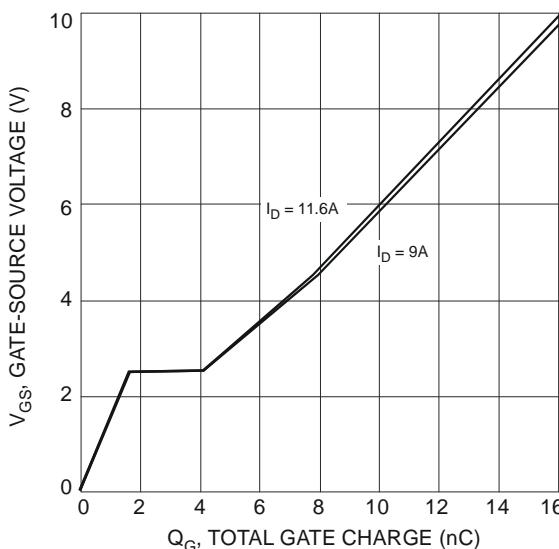


Fig. 10 Total Gate Charge

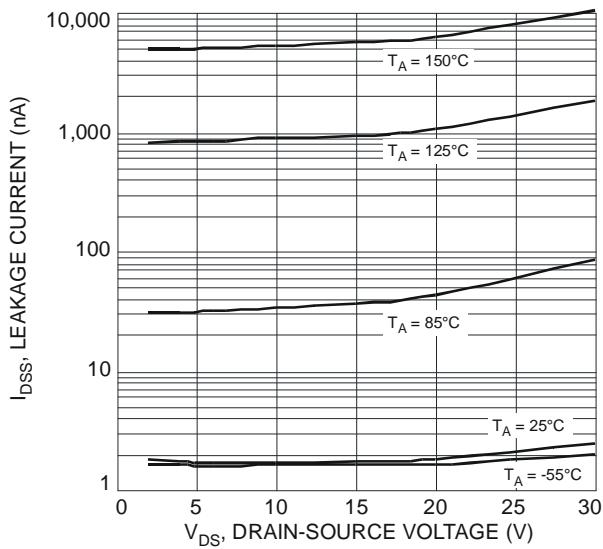


Fig. 11 Typical Leakage Current vs. Drain-Source Voltage

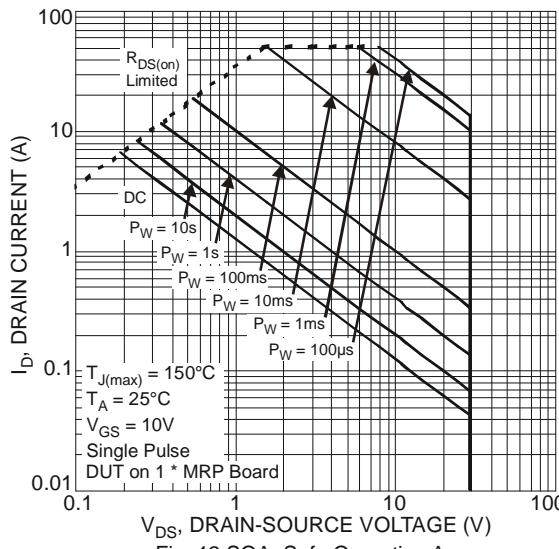


Fig. 12 SOA, Safe Operation Area

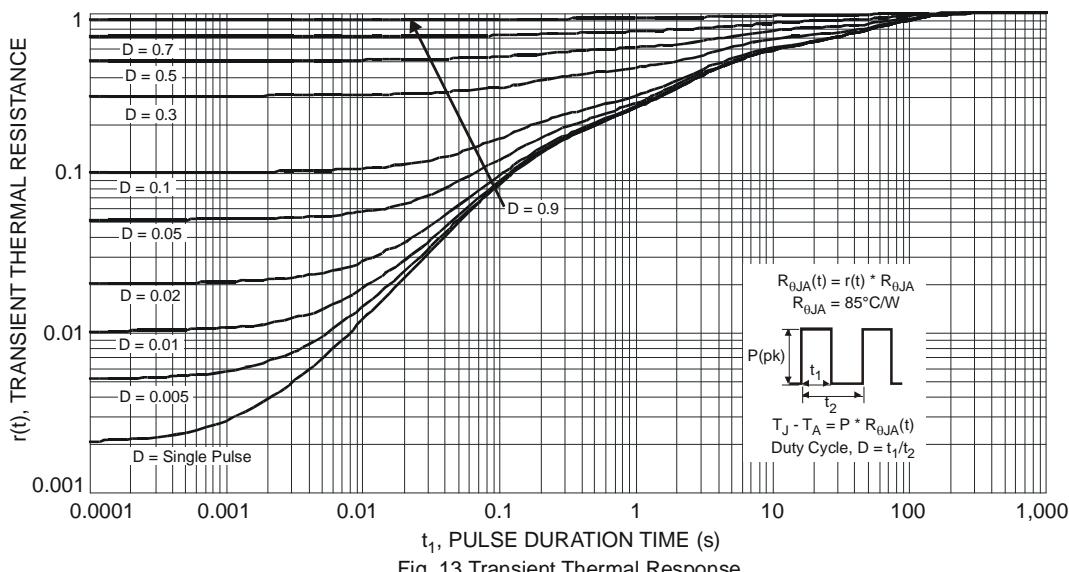
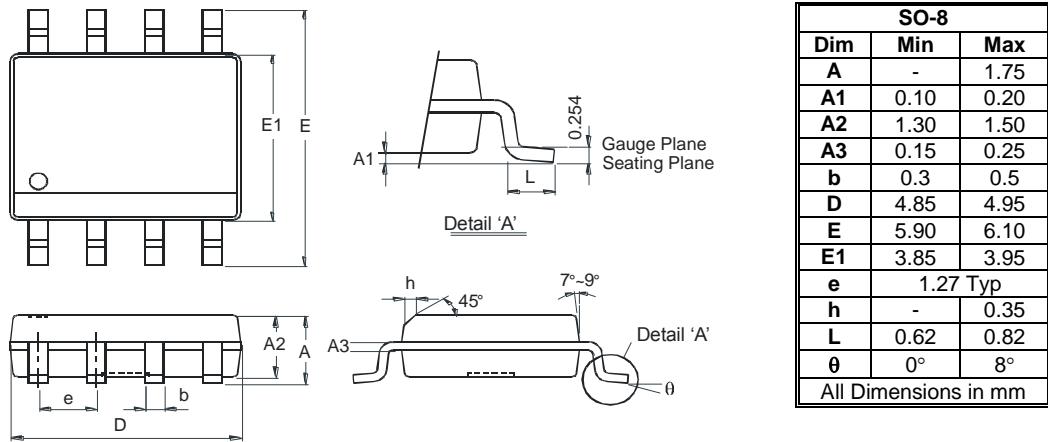


Fig. 13 Transient Thermal Response

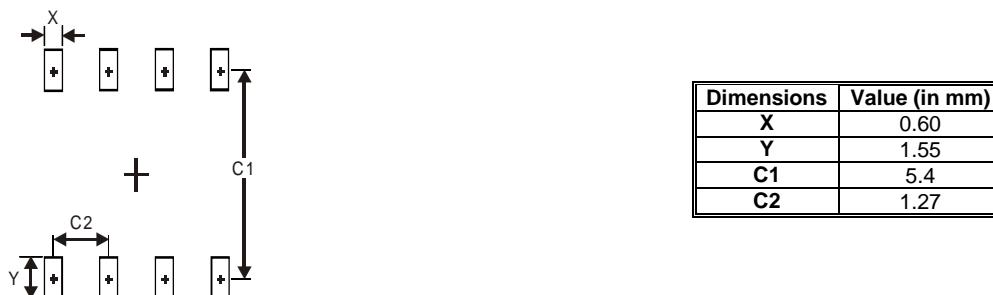
## Package Outline Dimensions

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



## Suggested Pad Layout

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



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