

## Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)} \text{ max}$	$I_D \text{ max}$ $T_A = 25^\circ\text{C}$
-30V	45m $\Omega$ @ $V_{GS} = -10\text{V}$	-4.8A
	80m $\Omega$ @ $V_{GS} = -4.5\text{V}$	-3.5A

## Description

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


## Applications

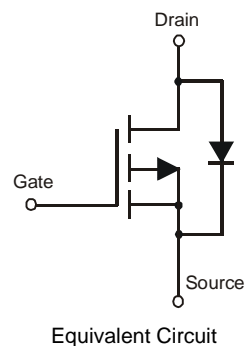
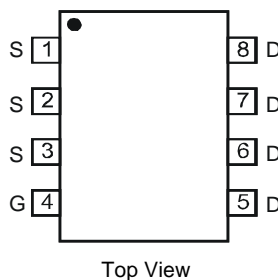
- Backlighting
- Power Management Functions
- DC-DC Converters

## Features

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- **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**

## 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
- Terminal Connections Indicator: See diagram
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 
- Weight: 0.008 grams (approximate)

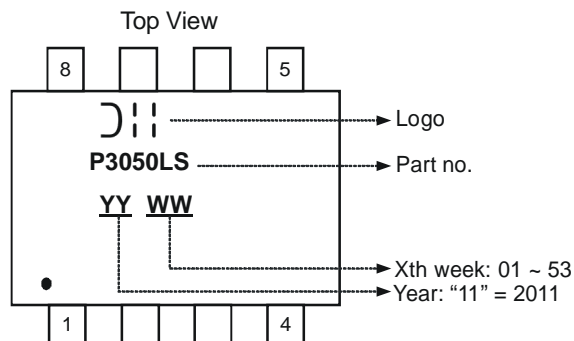


## Ordering Information (Note 4)

Part Number	Case	Packaging
DMP3050LSS-13	SO-8	2500/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> 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. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V <sub>DSS</sub>	-30	V
Gate-Source Voltage (Note 4)			V <sub>GSS</sub>	±25	V
Continuous Drain Current (Note 5) V <sub>GS</sub> = -10V	Steady State	T <sub>A</sub> = 25°C T <sub>A</sub> = 70°C	I <sub>D</sub>	-4.8 -3.8	A
	t < 10s	T <sub>A</sub> = 25°C T <sub>A</sub> = 70°C	I <sub>D</sub>	-6.3 -4.9	A
Maximum Continuous Body Diode Forward Current (Note 6)			I <sub>S</sub>	-3.0	A
Pulsed Drain Current (10μs pulse, duty cycle = 1%)			I <sub>DM</sub>	-30	A

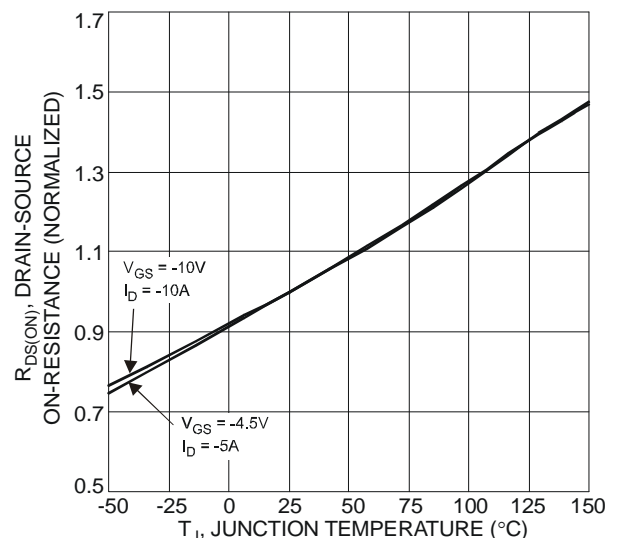
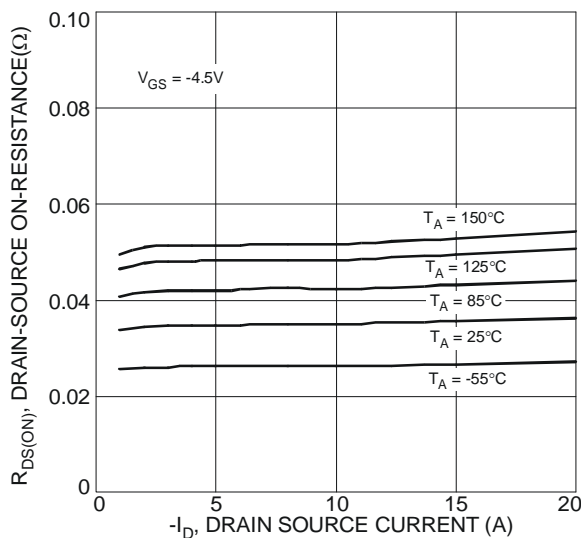
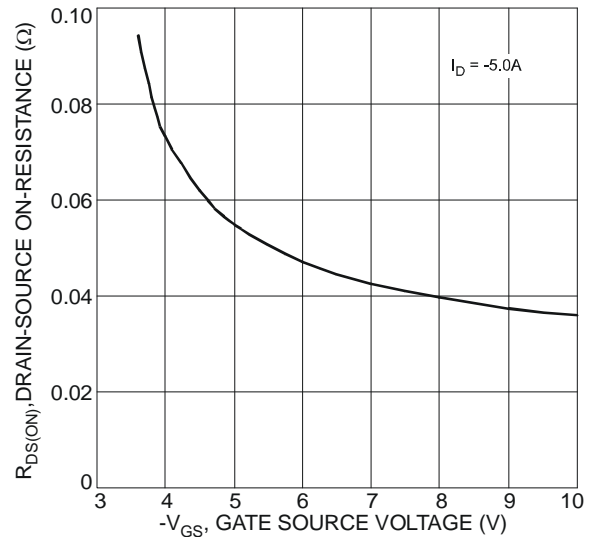
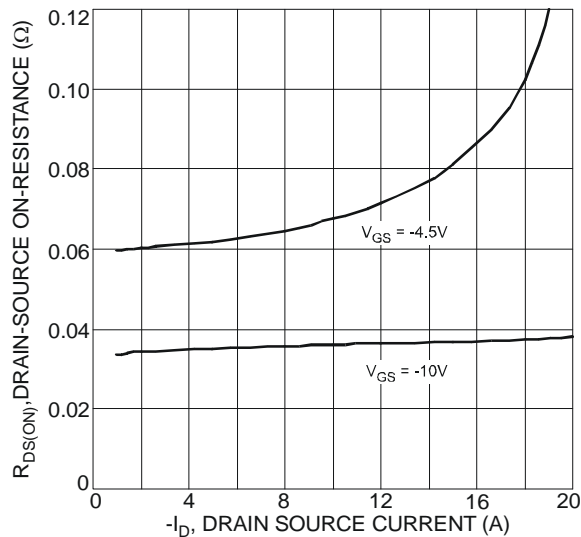
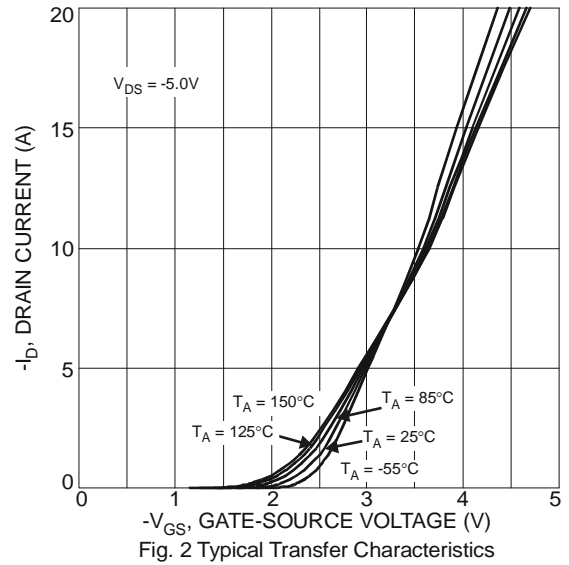
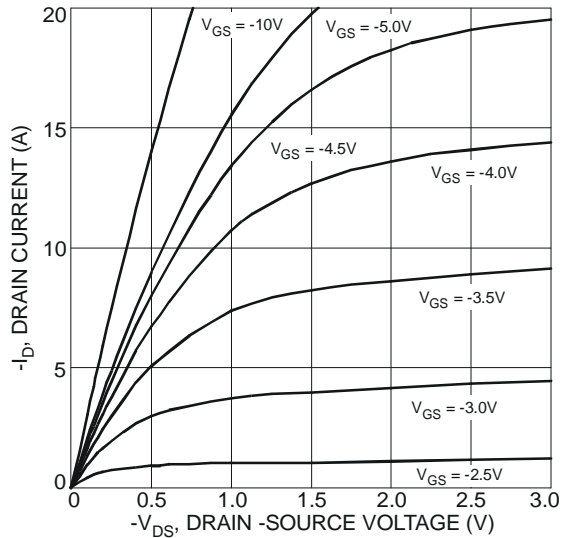
**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 5)	T <sub>A</sub> = 25°C	P <sub>D</sub>	1.7	W
	T <sub>A</sub> = 70°C		1.1	
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	R <sub>θJA</sub>	73	°C/W
	t < 10s		37	
Operating and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55 to 150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 6)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-30	-	-	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	-	-	-1	μA	V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±25V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 6)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	-1.0	-	-2.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	-	36	45	mΩ	V <sub>GS</sub> = -10V, I <sub>D</sub> = -6A
		-	61	80		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -5A
Forward Transfer Admittance	Y <sub>fs</sub>	-	4.8	-	S	V <sub>DS</sub> = -10V, I <sub>D</sub> = -5.3A
Diode Forward Voltage	V <sub>SD</sub>	-	-0.7	-1.0	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = -1.7A
<b>DYNAMIC CHARACTERISTICS (Note 7)</b>						
Input Capacitance	C <sub>iss</sub>	-	620	-	pF	V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	-	83	-	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	-	62	-	pF	
Gate resistance	R <sub>g</sub>	-	10.8	-	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1.0MHz
Total Gate Charge (V <sub>GS</sub> = -4.5V)	Q <sub>g</sub>	-	5.1	-	nC	V <sub>DS</sub> = -15V, I <sub>D</sub> = -6A
Total Gate Charge (V <sub>GS</sub> = -10V)	Q <sub>g</sub>	-	10.5	-	nC	
Gate-Source Charge	Q <sub>gs</sub>	-	1.8	-	nC	
Gate-Drain Charge	Q <sub>gd</sub>	-	1.9	-	nC	
Turn-On Delay Time	t <sub>D(on)</sub>	-	6.8	-	ns	V <sub>DD</sub> = -15V, V <sub>GS</sub> = -10V, R <sub>G</sub> = 6Ω, I <sub>D</sub> = -1A
Turn-On Rise Time	t <sub>r</sub>	-	4.9	-	ns	
Turn-Off Delay Time	t <sub>D(off)</sub>	-	28.4	-	ns	
Turn-Off Fall Time	t <sub>f</sub>	-	12.4	-	ns	I <sub>F</sub> = 12A, di/dt = 500A/μs
Reverse Recovery Time	t <sub>rr</sub>	-	14	-	ns	
Reverse Recovery Charge	Q <sub>rr</sub>	-	11	-	nC	

- Notes: 4. AEC-Q101 V<sub>GS</sub> maximum is ±20V  
5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.  
6. Short duration pulse test used to minimize self-heating effect.  
7. Guaranteed by design. Not subject to product testing.



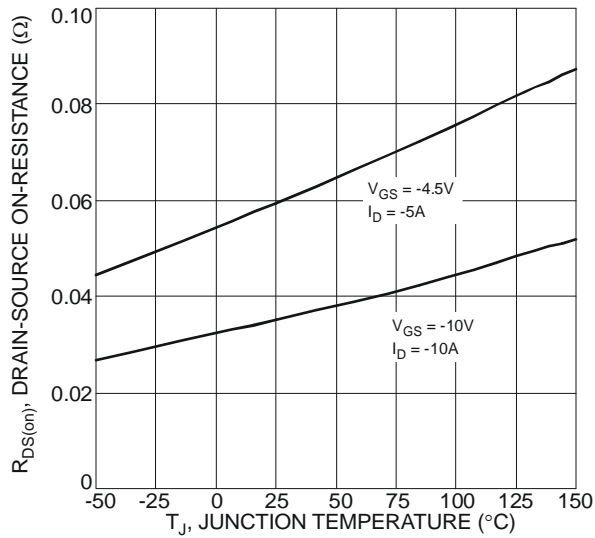


Fig. 7 On-Resistance Variation with Temperature

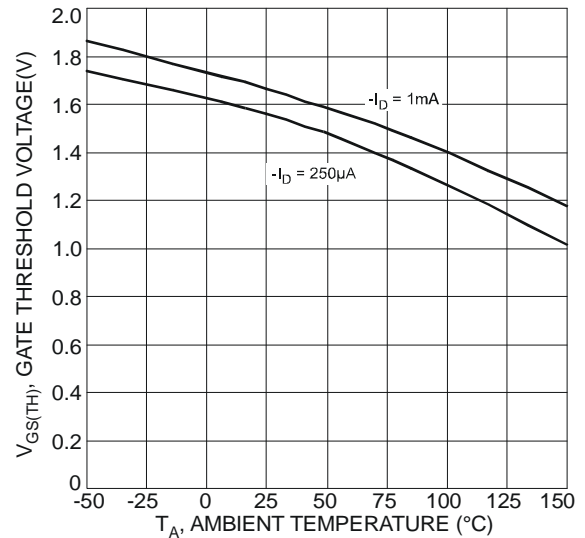


Fig. 8 Gate Threshold Variation vs. Ambient Temperature

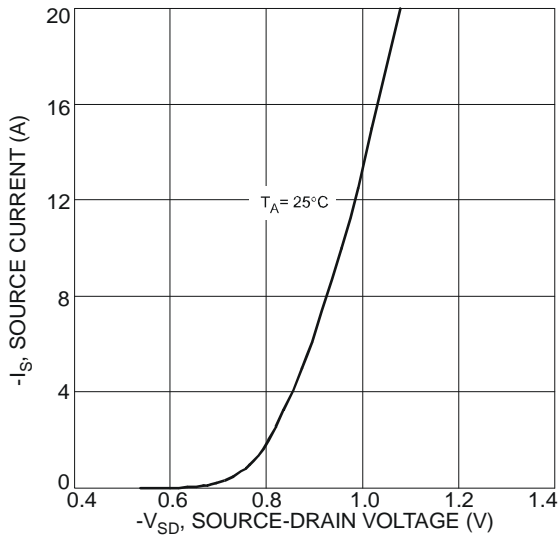


Fig. 9 Diode Forward Voltage vs. Current

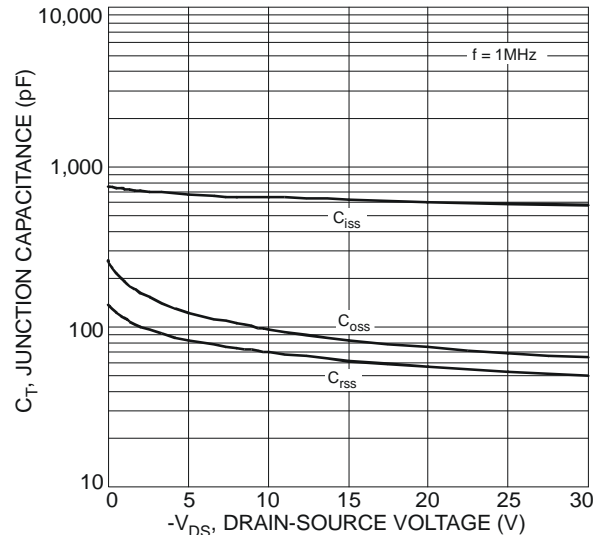


Fig. 10 Typical Junction Capacitance

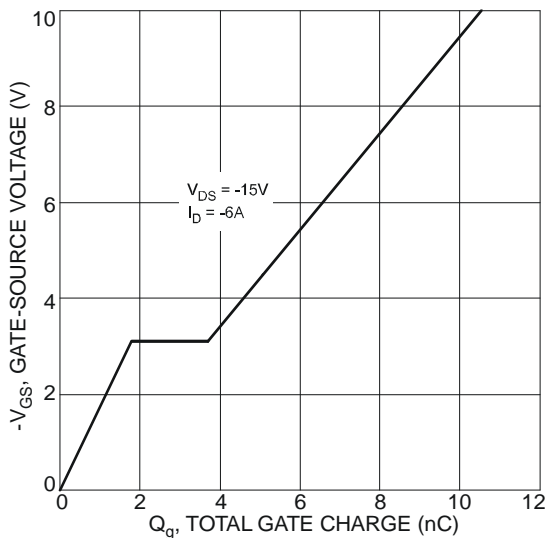


Fig. 11 Gate-Charge Characteristics

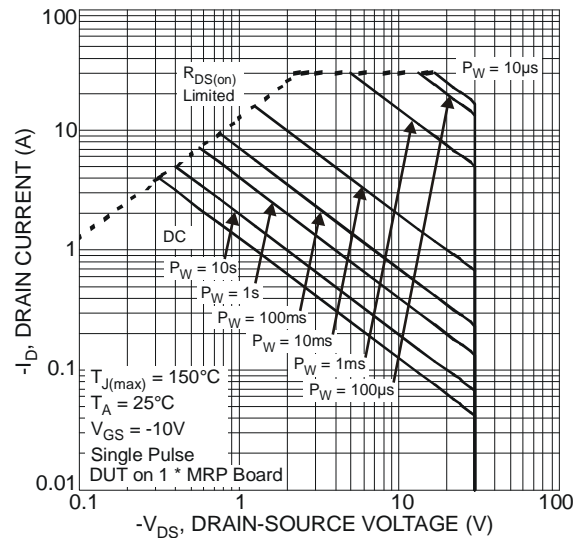
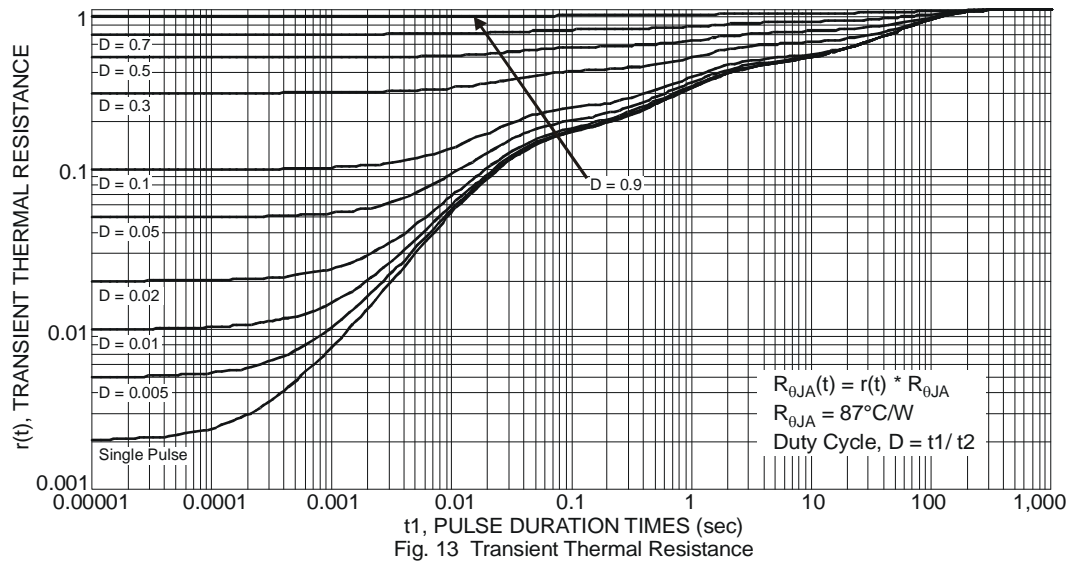
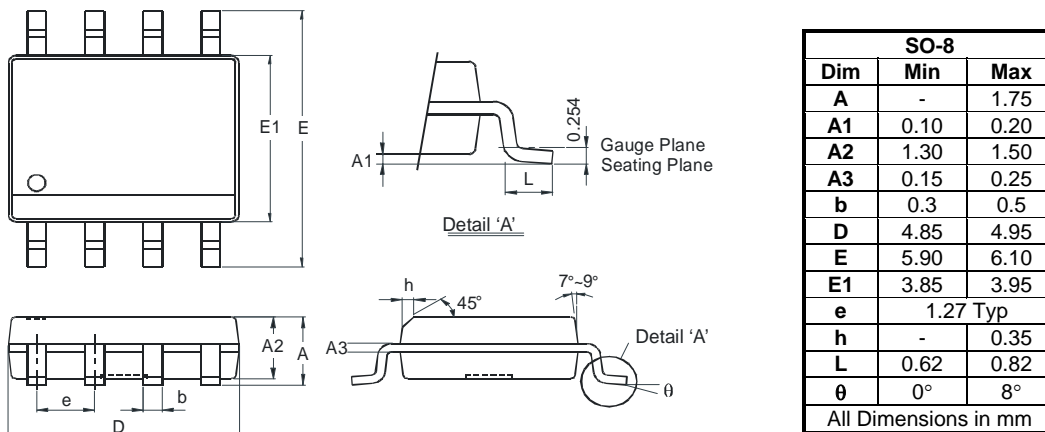


Fig. 12 SOA, Safe Operation Area



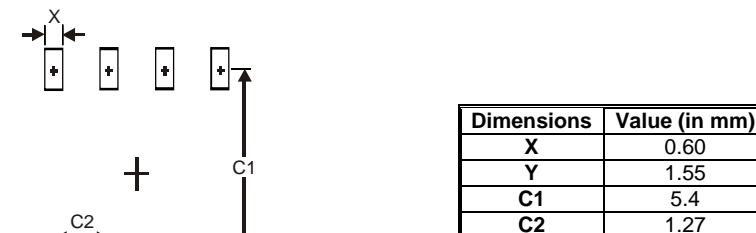
## Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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