

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D $T_A = +25^\circ C$
300V	14Ω @ $V_{GS} = 10V$	0.21A
	20Ω @ $V_{GS} = 4.5V$	0.17A

Description

This new generation 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

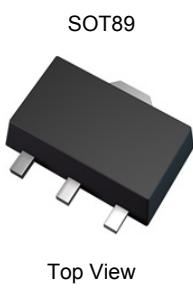
- Power management functions
- Battery Operated Systems and Solid-State Relays
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc

Features

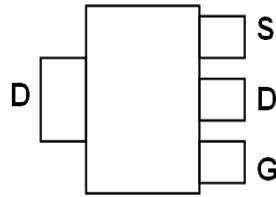
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

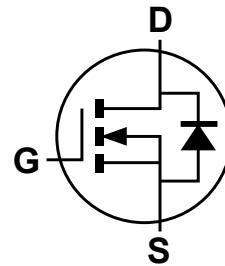
- Case: SOT89
- Case Material: Molded Plastic, "Green" Molding Compound
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Finish annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208^(e3)
- Weight: 0.052 grams (approximate)



Top View



Pin-out Top



Equivalent Circuit

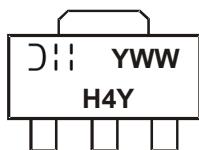
Ordering Information (Note 4)

Part Number	Compliance	Case	Quantity per reel
DMN30H14DLY-13	Standard	SOT89	2,500

Notes:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- See 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.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_grade_definitions/.

Marking Information



DII = Manufacturer's Marking
 H4Y = Marking Code
 YWW = Date Code Marking
 Y = Year (ex: 4 = 2014)
 WW = Week (01 - 53)

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

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	300	V
Gate-Source Voltage			V_{GSS}	± 20	V
Continuous Drain Current (Note 6) $V_{GS} = 10\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	0.21 0.16	A
Pulsed Drain Current (10 μs pulse, duty cycle $\leq 1\%$)			I_{DM}	1	A
Maximum Body Diode Continuous Current (Note 6)			I_S	2	A

Thermal Characteristics

Characteristic		Symbol	Value	Units
Total Power Dissipation	(Note 5)	P_D	0.9	W
	(Note 6)		2.2	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	132	°C/W
	(Note 6)		55	
Thermal Resistance, Junction to Case	(Note 6)	$R_{\theta JC}$	9.6	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	300	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	$V_{DS} = 240\text{V}, V_{GS} = 0\text{V}$
Gate-Body Leakage	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(\text{th})}$	1	—	3	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	—	6	14	Ω	$V_{GS} = 10\text{V}, I_D = 0.3\text{A}$
		—	6	20		$V_{GS} = 4.5\text{V}, I_D = 0.2\text{A}$
Diode Forward Voltage	V_{SD}	—	0.7	1.2	V	$V_{GS} = 0\text{V}, I_S = 0.3\text{A}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	96	—	pF	$V_{DS} = 25\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Output Capacitance	C_{oss}	—	5.8	—		
Reverse Transfer Capacitance	C_{rss}	—	3.2	—		
Gate Resistance	R_G	—	12	—	Ω	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Total Gate Charge	Q_g	—	4	—		
Gate-Source Charge	Q_{gs}	—	0.3	—		
Gate-Drain Charge	Q_{gd}	—	1.9	—	nC	$V_{DS} = 192\text{V}, V_{GS} = 10\text{V}, I_D = 0.5\text{A}$
Turn-On Delay Time	$t_{D(\text{on})}$	—	3.3	—		
Turn-On Rise Time	t_r	—	8.6	—		
Turn-Off Delay Time	$t_{D(\text{off})}$	—	22	—	nS	$V_{DS} = 60\text{V}, R_L = 200\Omega$ $V_{GS} = 10\text{V}, R_G = 25\Omega$
Turn-Off Fall Time	t_f	—	12	—		
Reverse Recovery Time	t_{rr}	—	43	—		
Reverse Recovery Charge	Q_{rr}	—	47	—	nC	$V_R = 100\text{V}, I_F = 1.0\text{A}, dI/dt = 100\text{A}/\mu\text{s}$

Notes:

5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
6. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate
7. Short duration pulse test used to minimize self-heating effect
8. Guaranteed by design. Not subject to production testing

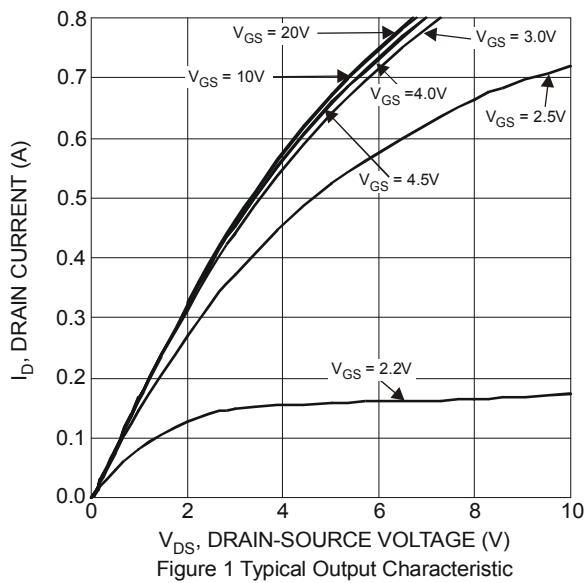


Figure 1 Typical Output Characteristic

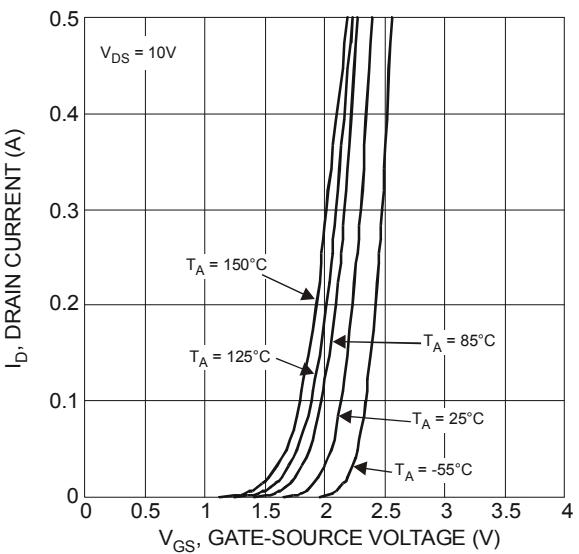


Figure 2 Typical Transfer Characteristics

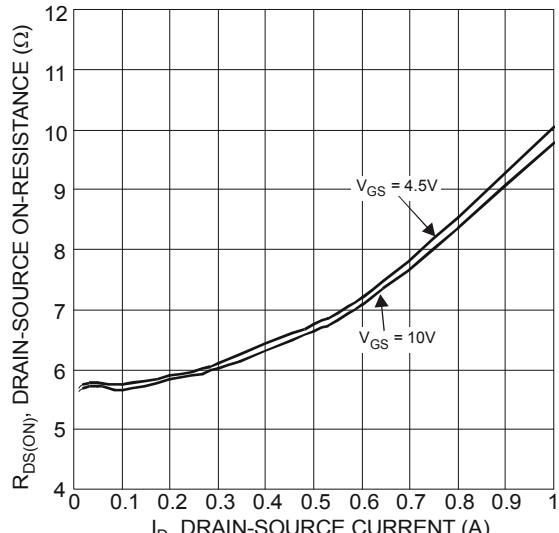


Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

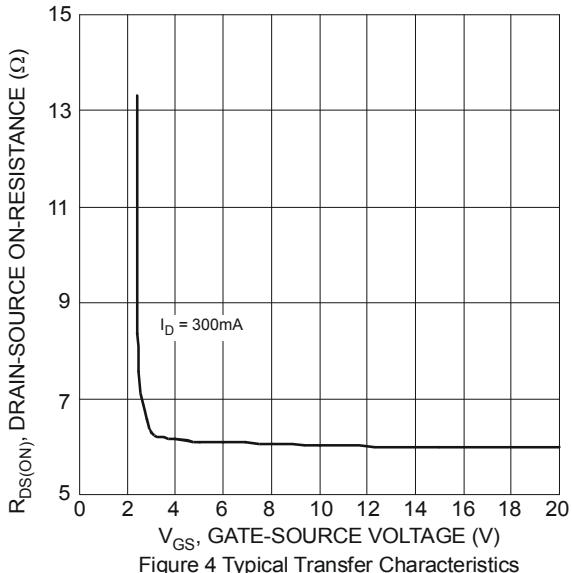


Figure 4 Typical Transfer Characteristics

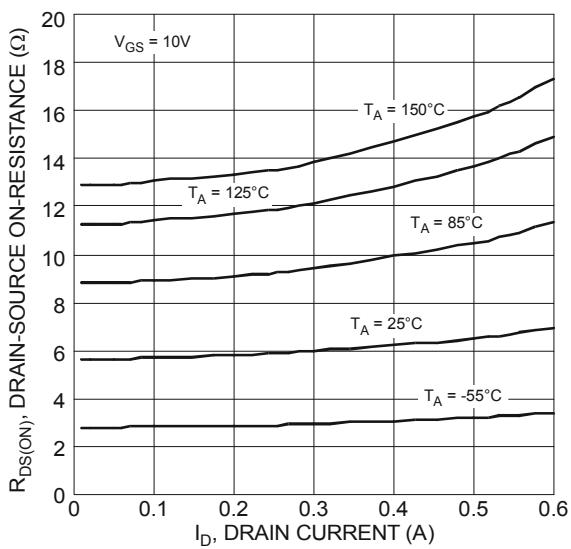


Figure 5 Typical On-Resistance vs.
Drain Current and Temperature

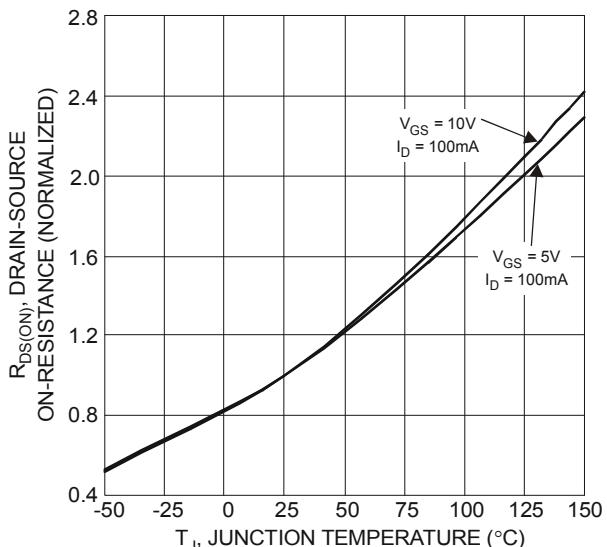


Figure 6 On-Resistance Variation with Temperature

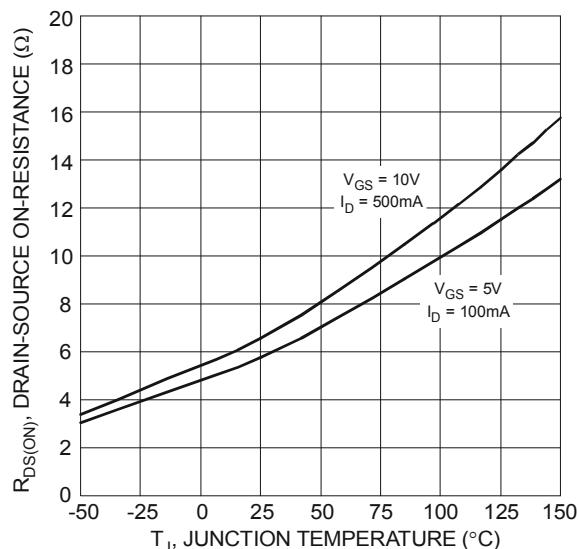


Figure 7 On-Resistance Variation with Temperature

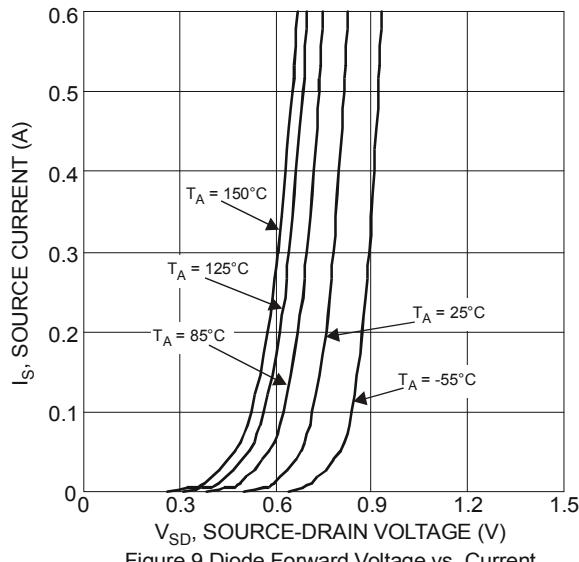


Figure 9 Diode Forward Voltage vs. Current

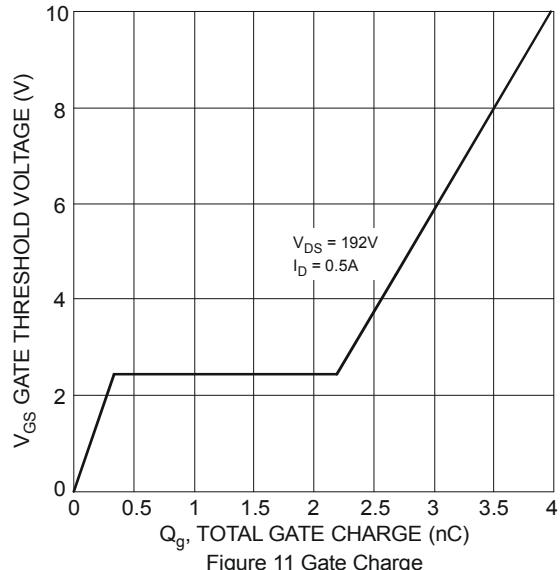


Figure 11 Gate Charge

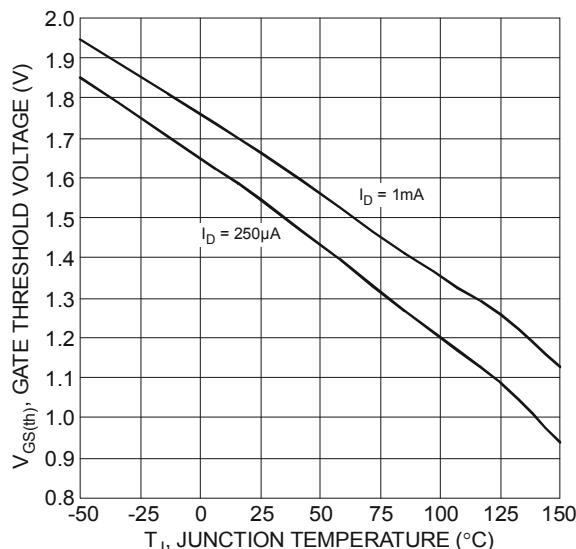


Figure 8 Gate Threshold Variation vs. Ambient Temperature

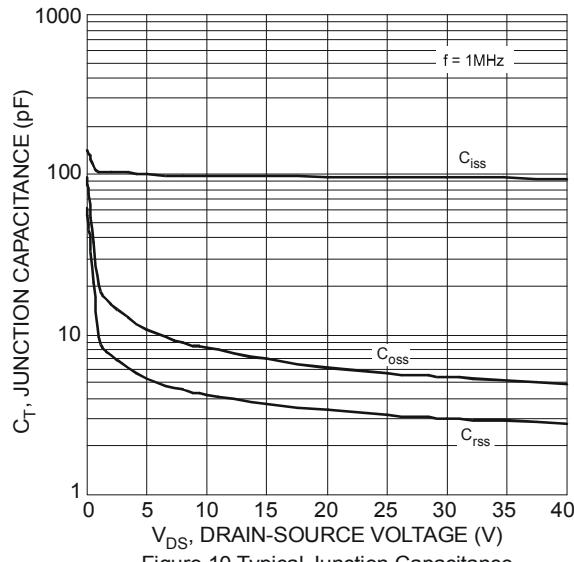


Figure 10 Typical Junction Capacitance

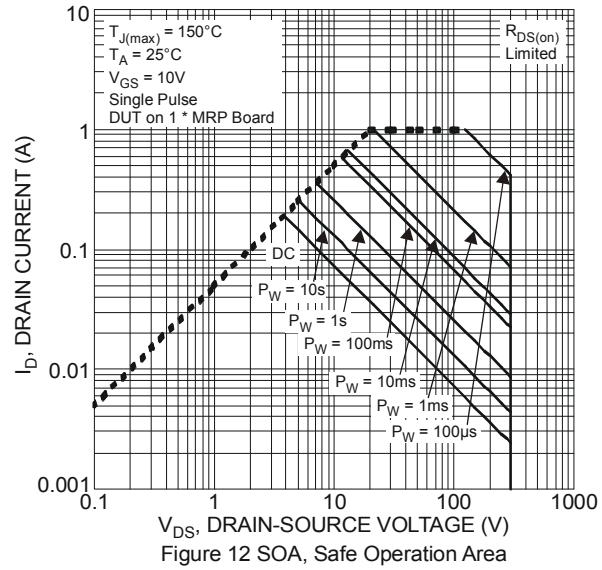
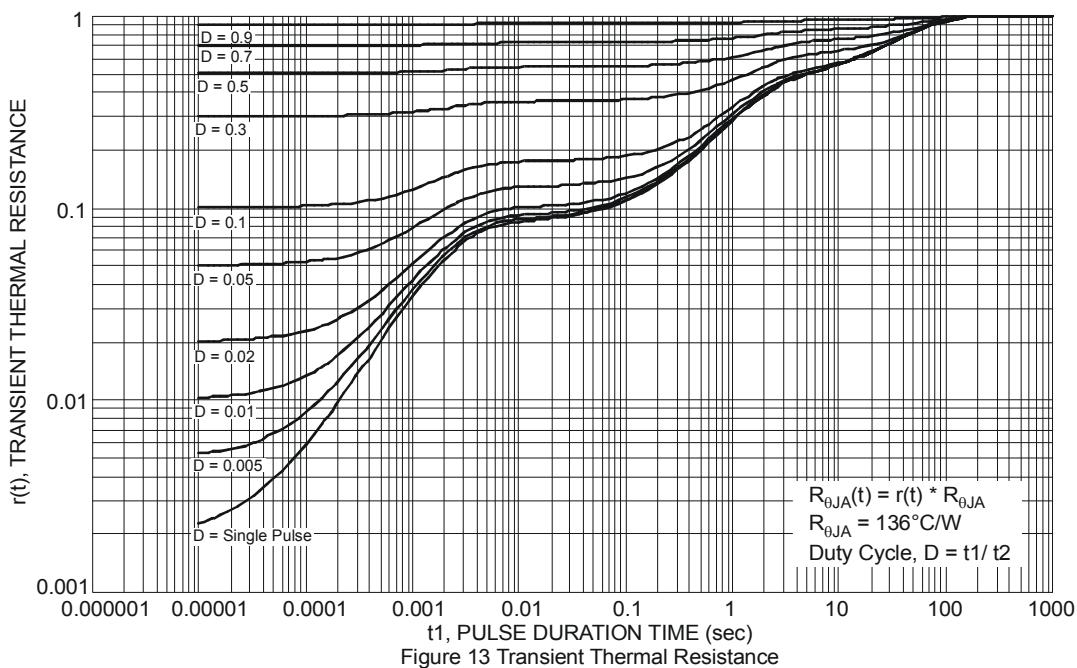
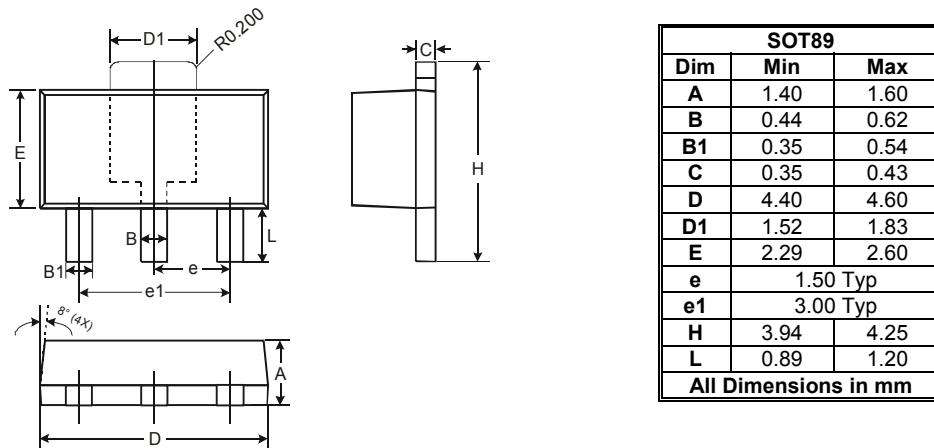


Figure 12 SOA, Safe Operation Area



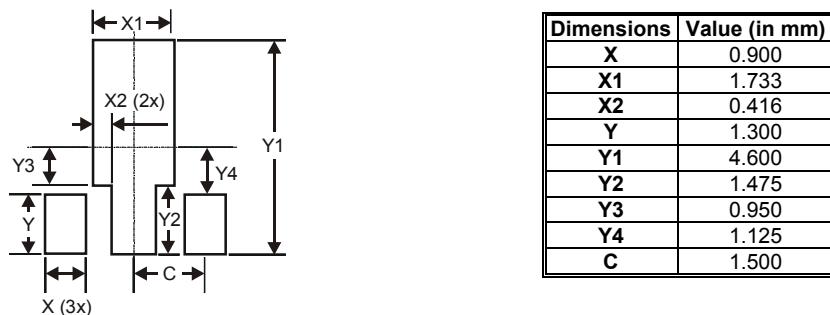
Package Outline Dimensions

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



Suggested Pad Layout

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



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