

Product Summary

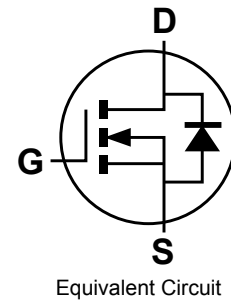
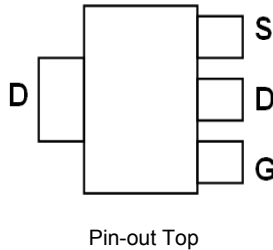
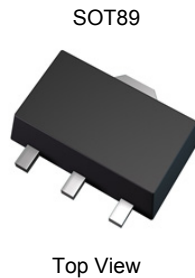
$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D $T_A = +25^\circ\text{C}$
300V	14Ω @ $V_{GS} = 10\text{V}$	0.21A
	20Ω @ $V_{GS} = 4.5\text{V}$	0.17A

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

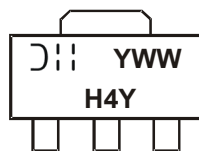
- Case: SOT89
- Case Material: Molded Plastic, "Green" Molding Compound
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Finish annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208③
- Weight: 0.052 grams (approximate)

Ordering Information (Note 4)

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

- 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 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. 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



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

Maximum Ratings (@T_A = +25°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} = 10V	Steady State	T _A = +25°C	I _D	0.21	A
		T _A = +70°C		0.16	
Pulsed Drain Current (10µs pulse, duty cycle ≤1%)			I _{DM}	1	A
Maximum Body Diode Continuous Current (Note 6)			I _S	2	A

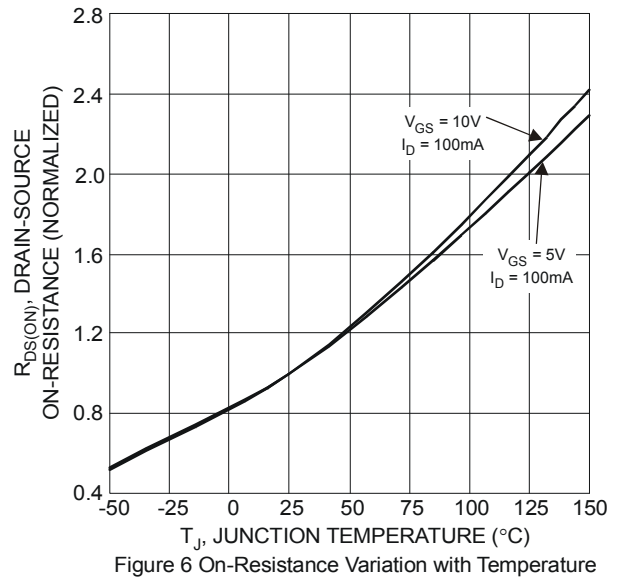
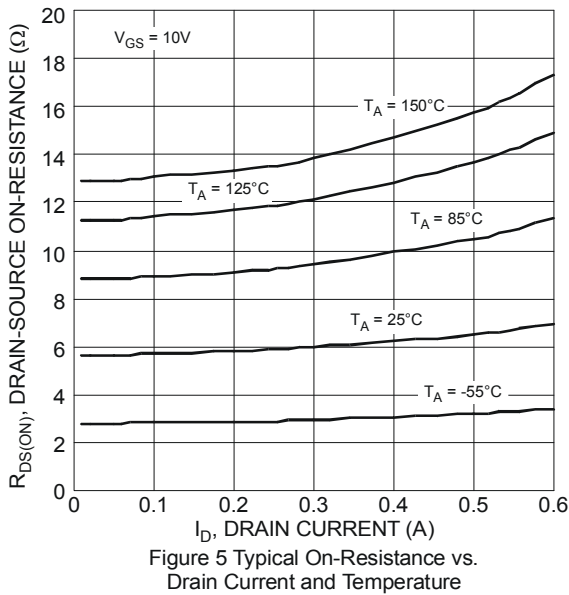
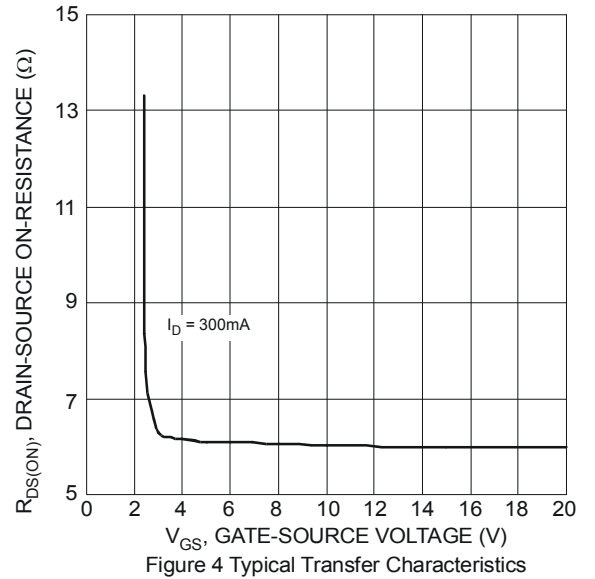
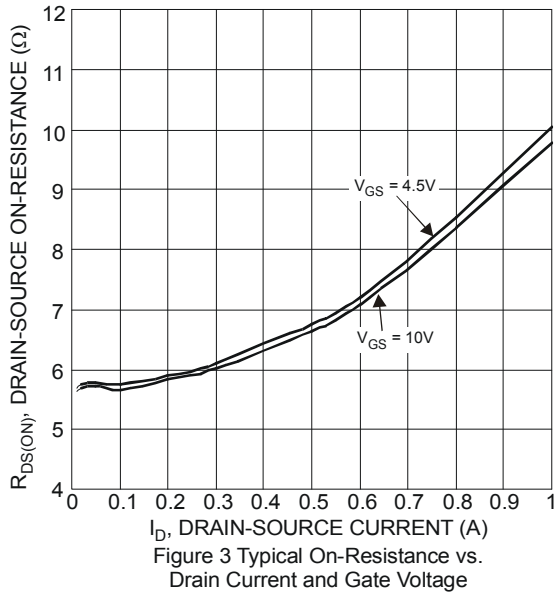
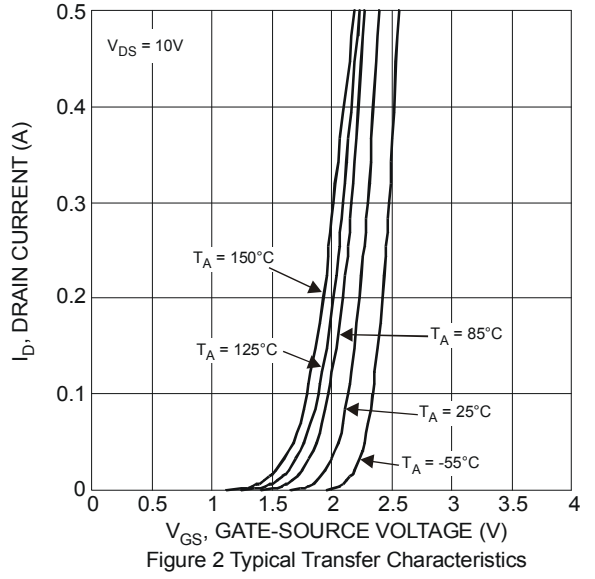
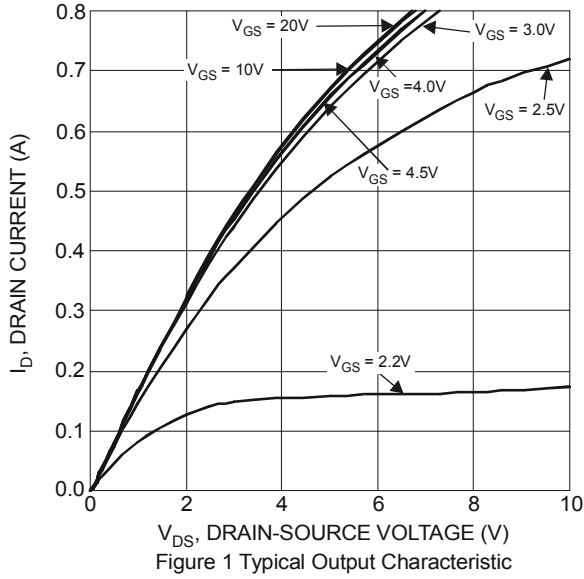
Thermal Characteristics

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 _{θJA}	132	°C/W
	(Note 6)		55	
Thermal Resistance, Junction to Case	(Note 6)	R _{θJC}	9.6	
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°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} = 0V, I _D = 250µA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	µA	V _{DS} = 240V, V _{GS} = 0V
Gate-Body Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(th)}	1	—	3	V	V _{DS} = V _{GS} , I _D = 250µA
Static Drain-Source On-Resistance	R _{DS(on)}	—	6	14	Ω	V _{GS} = 10V, I _D = 0.3A
		—	6	20		V _{GS} = 4.5V, I _D = 0.2A
Diode Forward Voltage	V _{SD}	—	0.7	1.2	V	V _{GS} = 0V, I _S = 0.3A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	—	96	—	pF	V _{DS} = 25V, V _{GS} = 0V, f = 1MHz
Output Capacitance	C _{oss}	—	5.8	—		
Reverse Transfer Capacitance	C _{rss}	—	3.2	—		
Gate Resistance	R _G	—	12	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz
Total Gate Charge	Q _g	—	4	—	nC	V _{DS} = 192V, V _{GS} = 10V, I _D = 0.5A
Gate-Source Charge	Q _{gs}	—	0.3	—		
Gate-Drain Charge	Q _{gd}	—	1.9	—		
Turn-On Delay Time	t _{D(on)}	—	3.3	—	nS	V _{DS} = 60V, R _L = 200Ω, V _{GS} = 10V, R _G = 25Ω
Turn-On Rise Time	t _r	—	8.6	—		
Turn-Off Delay Time	t _{D(off)}	—	22	—		
Turn-Off Fall Time	t _f	—	12	—		
Reverse Recovery Time	t _{rr}	—	43	—	nS	V _R = 100V, I _F = 1.0A, di/dt = 100A/µs
Reverse Recovery Charge	Q _{rr}	—	47	—	nC	

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



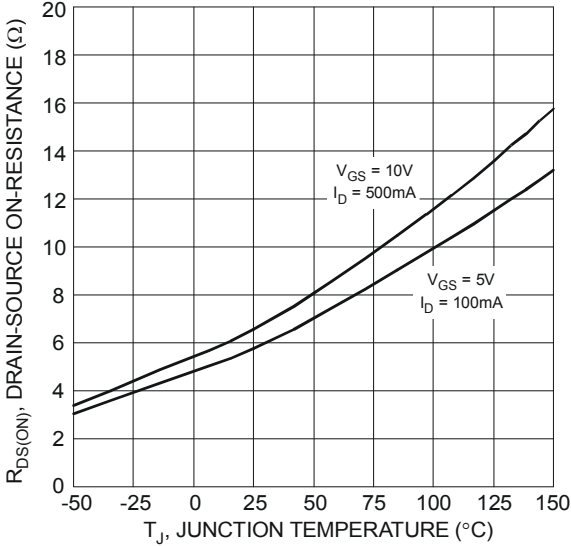


Figure 7 On-Resistance Variation with Temperature

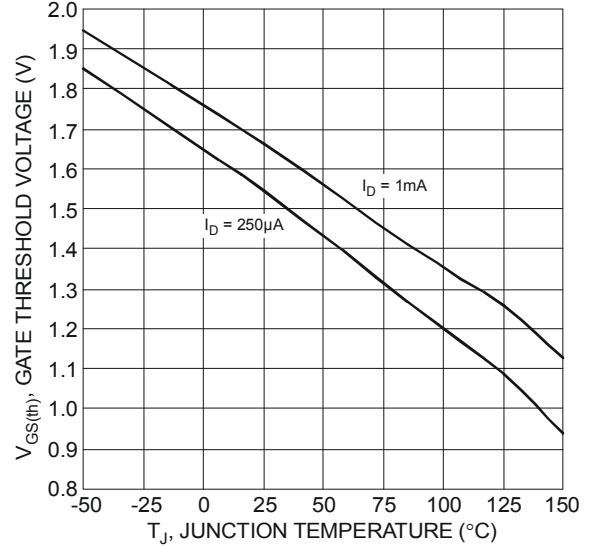


Figure 8 Gate Threshold Variation vs. Ambient Temperature

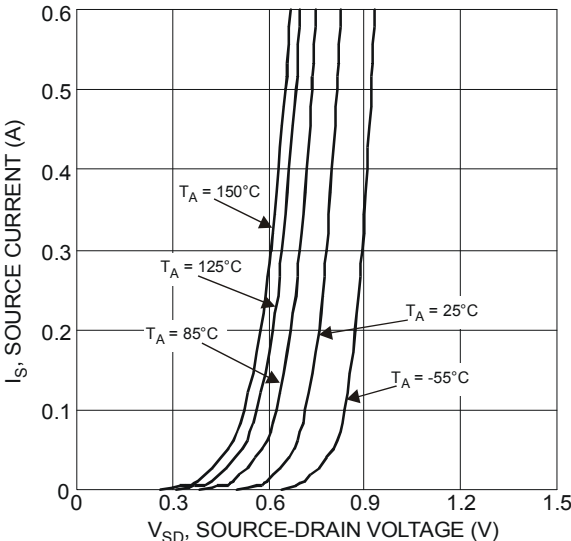


Figure 9 Diode Forward Voltage vs. Current

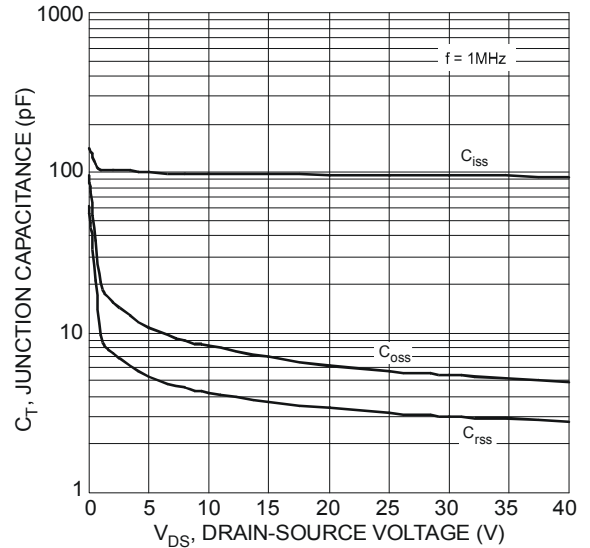


Figure 10 Typical Junction Capacitance

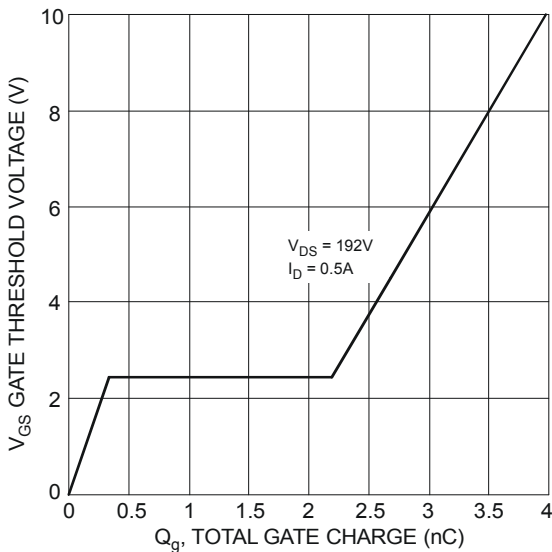


Figure 11 Gate Charge

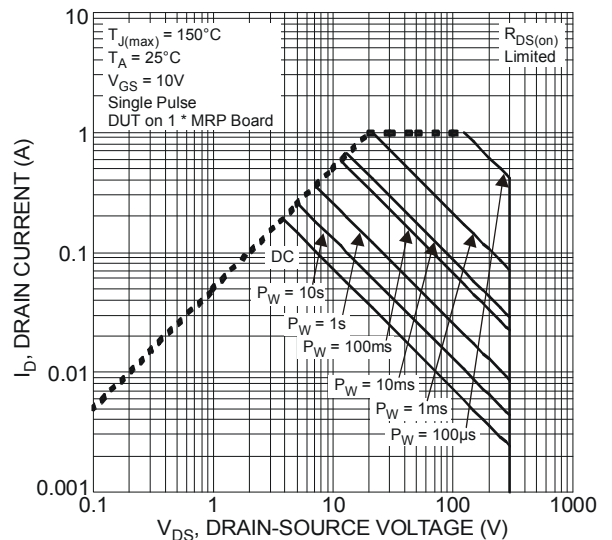
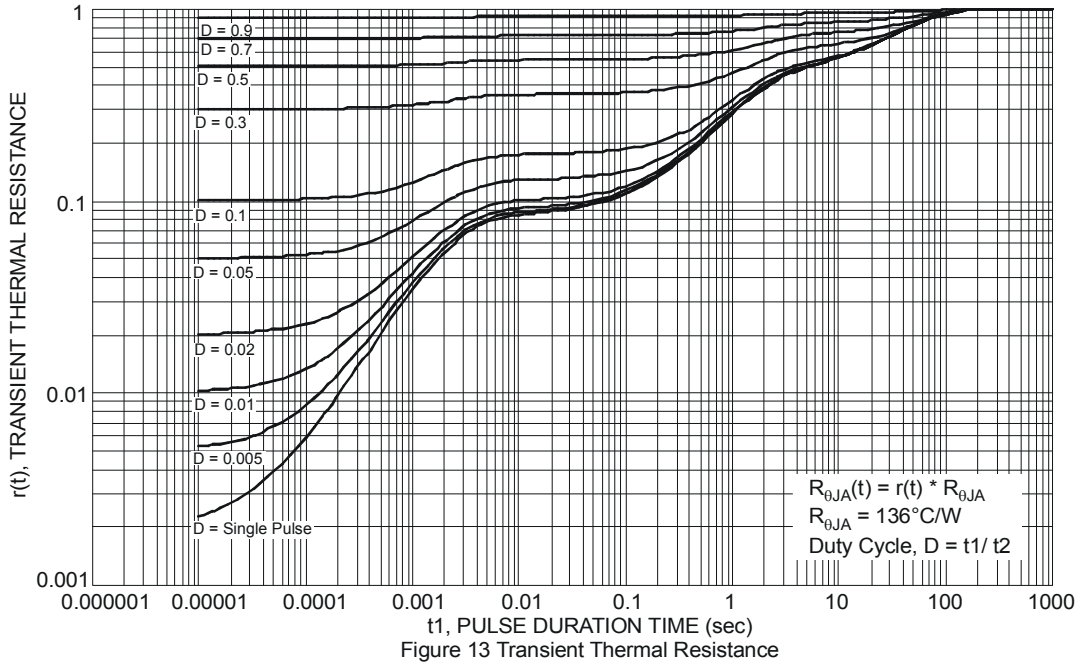
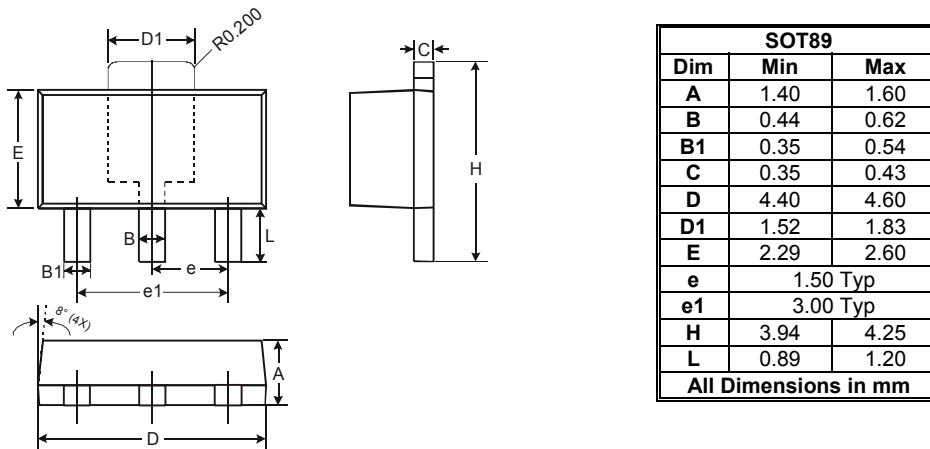


Figure 12 SOA, Safe Operation Area



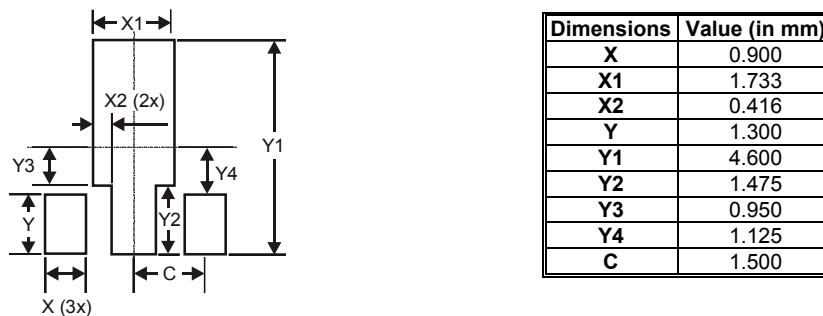
Package Outline Dimensions

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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