

DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)} \text{ max}$	$I_D \text{ max}$ $T_A = +25^\circ\text{C}$
30V	0.4Ω @ $V_{GS} = 10\text{V}$	0.65A
	0.7Ω @ $V_{GS} = 4.5\text{V}$	0.52A

Description

This MOSFET is 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

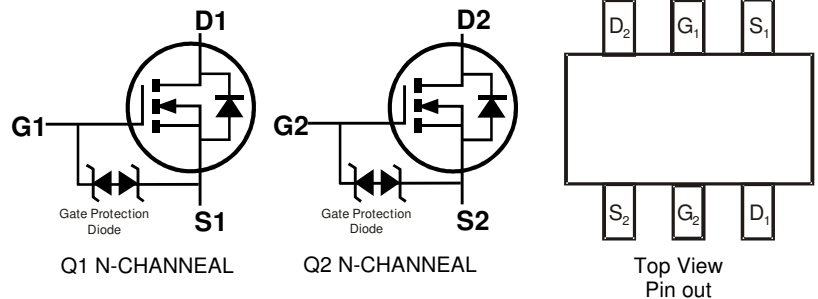
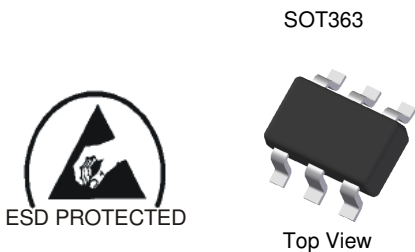
- Motor Control
- Power Management Functions
- DC-DC Converters
- Backlighting

Features and Benefits

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- ESD Protected Gate
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: SOT363
- 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 Alloy42 Leadframe.
Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.006 grams (Approximate)

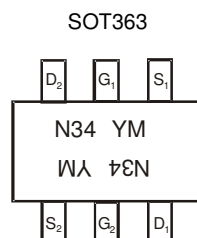


Ordering Information (Note 4)

Part Number	Case	Packaging
DMN32D4SDW-7	SOT363	3,000K/Tape & Reel
DMN32D4SDW-13	SOT363	10,000K/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 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/products/packages.html>

Marking Information



N34 = Product Type Marking Code
YM = Date Code Marking
Y or Y = Year (ex: B = 2014)
M = Month (ex: 9 = September)

Date Code Key

Year	2014	2015	2016	2017	2018	2019	2020
Code	B	C	D	E	F	G	H

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V _{DSS}	30	V
Gate-Source Voltage			V _{GSS}	±20	V
Continuous Drain Current (Note 6) V _{GS} = 10V	Steady State	T _A = 25°C	I _D	0.65	A
		T _A = 70°C		0.50	
Maximum Continuous Body Diode Forward Current (Note 6)			I _S	0.4	A
Pulsed Drain Current (10μs pulse, duty cycle = 1%)			I _{DM}	4	A

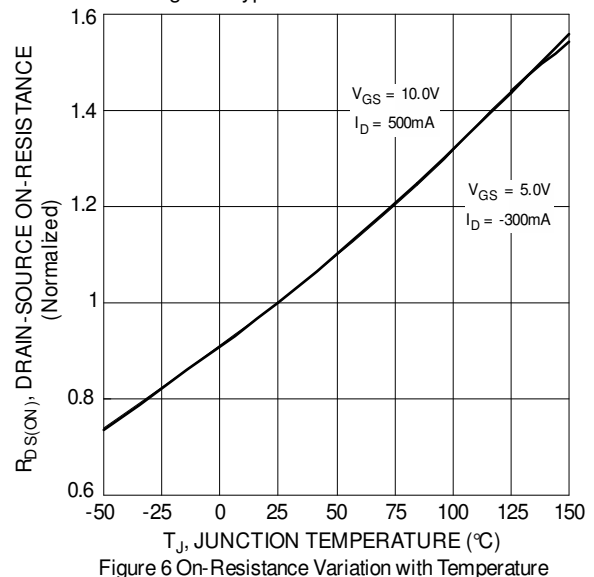
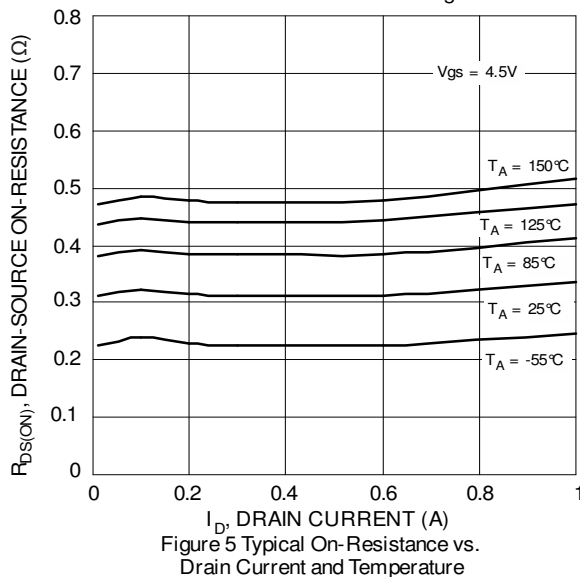
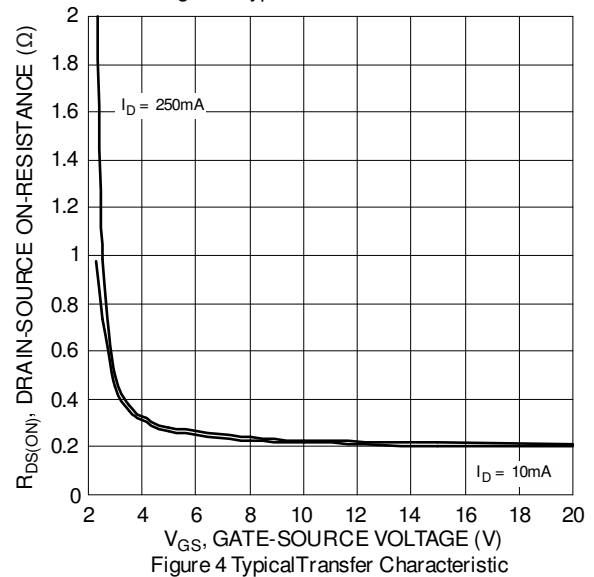
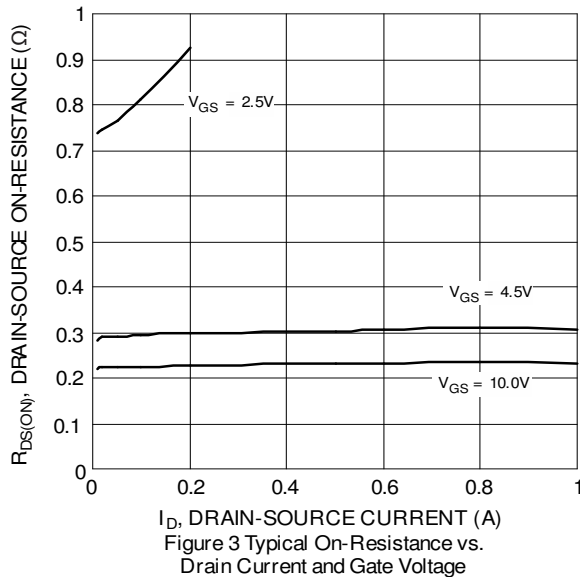
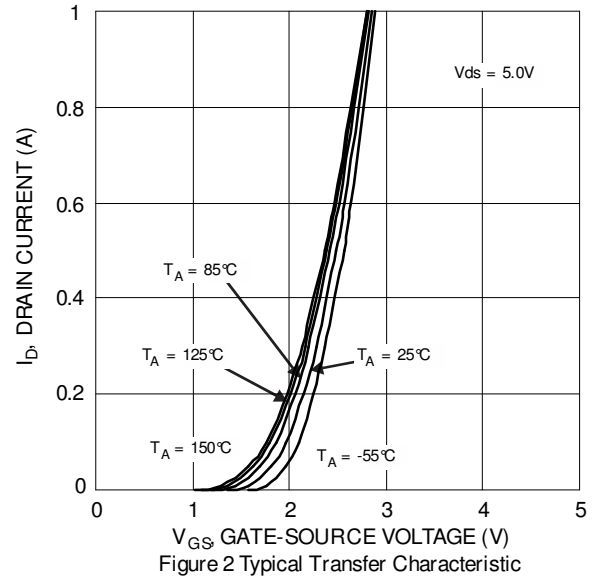
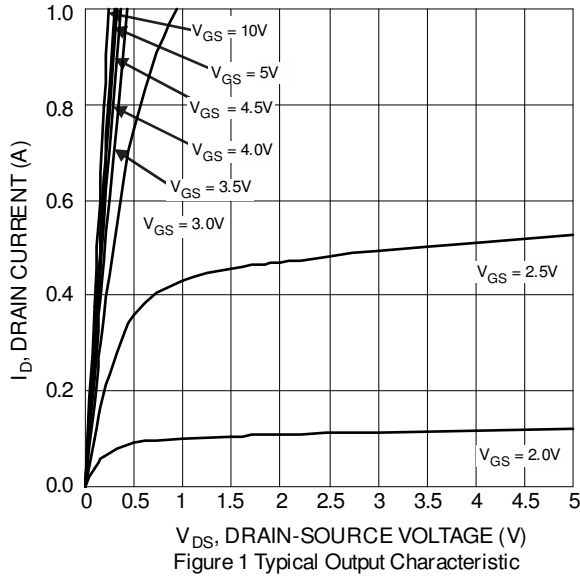
Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 5)		P _D	0.29	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	R _{θJA}	420	°C/W
Total Power Dissipation (Note 6)		P _D	0.35	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	R _{θJA}	360	°C/W
Thermal Resistance, Junction to Case		R _{θJC}	128	°C/W
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}	30	-	-	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	-	-	1	μA	V _{DS} = 30V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	-	-	±10	μA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(th)}	0.8	-	1.6	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(on)}	-	0.2	0.4	Ω	V _{GS} = 10V, I _D = 0.25A
		-	0.3	0.7		V _{GS} = 4.5V, I _D = 0.25A
		-	0.4	1.0		V _{GS} = 4.0V, I _D = 0.25A
		-	0.9	-		V _{GS} = 2.5V, I _D = 0.01A
		-	0.8	1.2		V _{GS} = 0V, I _S = 0.23A
Diode Forward Voltage	V _{SD}	-	0.8	1.2	V	V _{GS} = 0V, I _S = 0.23A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	-	50	-	pF	V _{DS} = 15V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	-	10	-	pF	
Reverse Transfer Capacitance	C _{rss}	-	6.8	-	pF	
Gate Resistance	R _g	-	114	-	Ω	V _{DS} = V _{GS} = 0V, f = 1.0MHz
Total Gate Charge (V _{GS} = 4.5V)	Q _g	-	0.6	-	nC	V _{DS} = 10V, I _D = 250mA
Total Gate Charge (V _{GS} = 10V)	Q _g	-	1.3	-	nC	
Gate-Source Charge	Q _{gs}	-	0.2	-	nC	
Gate-Drain Charge	Q _{gd}	-	0.1	-	nC	
Turn-On Delay Time	t _{D(on)}	-	2.8	-	ns	V _{GS} = 10V, V _{DS} = 30V, I _D = 100mA, R _G = 10Ω
Turn-On Rise Time	t _r	-	3.2	-	ns	
Turn-Off Delay Time	t _{D(off)}	-	26.3	-	ns	
Turn-Off Fall Time	t _f	-	22.8	-	ns	

- Notes:
5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
 6. Device mounted on 1" x 1" FR-4 PCB with high coverage 2oz. Copper, single sided.
 7. Short duration pulse test used to minimize self-heating effect.
 8. Guaranteed by design. Not subject to product testing.



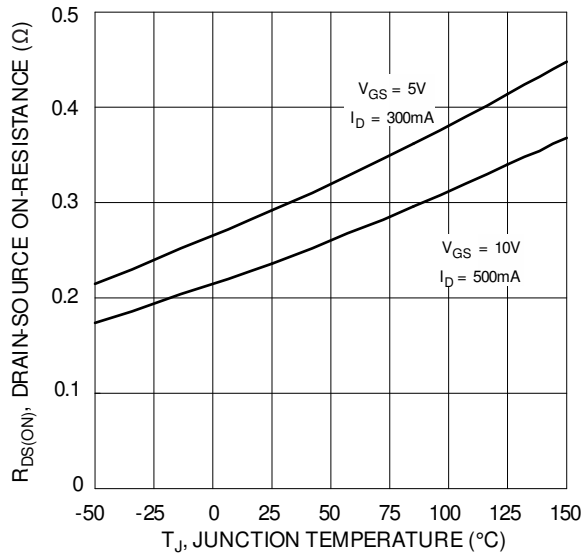


Figure 7 On-Resistance Variation with Temperature

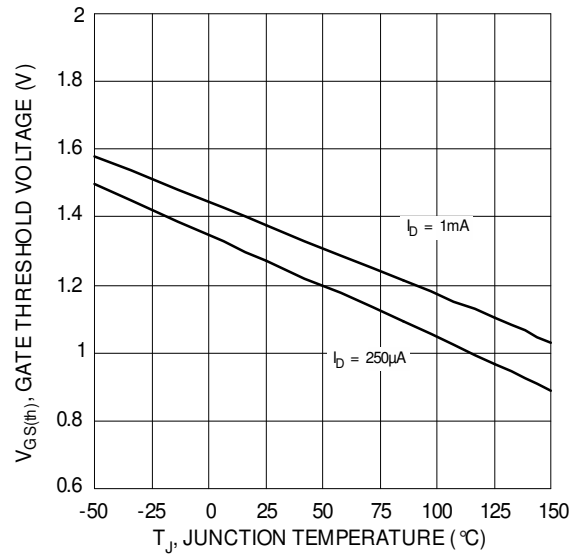


Figure 8 Gate Threshold Variation vs. Ambient Temperature

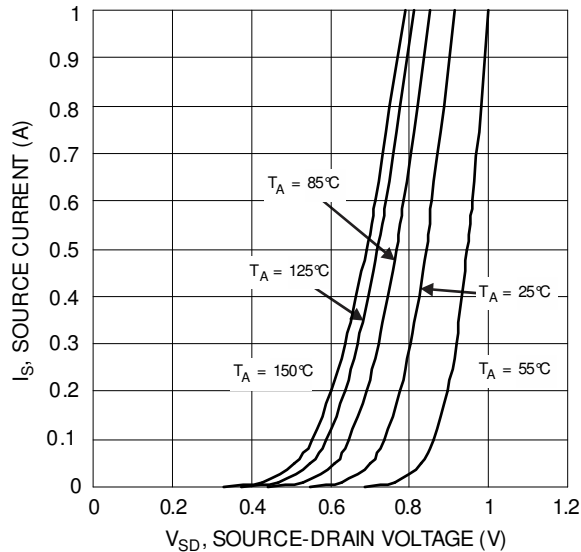


Figure 9 Diode Forward Voltage vs. Current

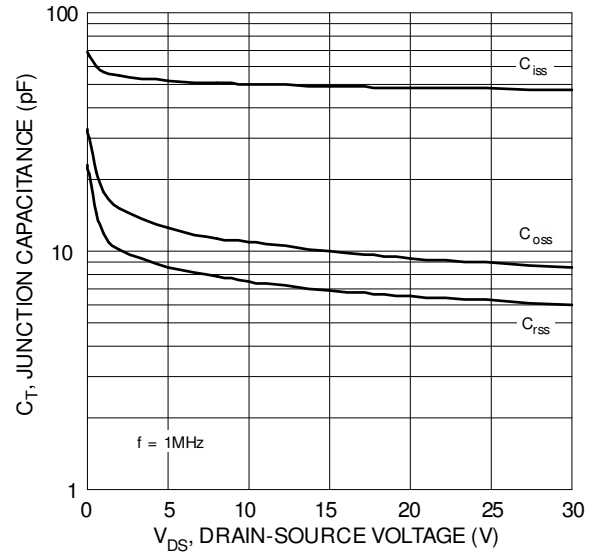


Figure 10 Typical Junction Capacitance

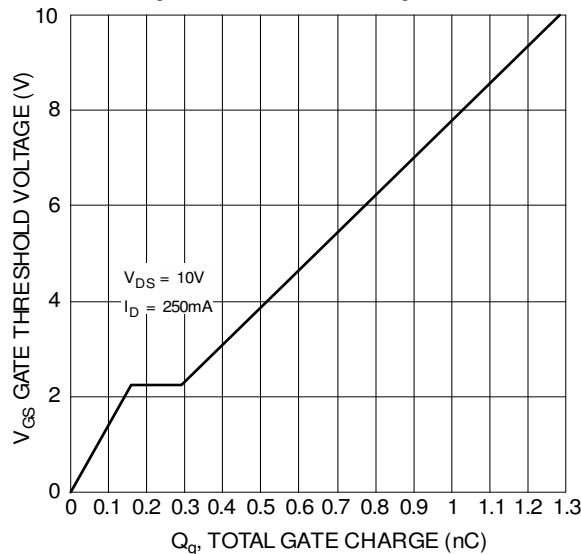


Figure 11 Gate Charge

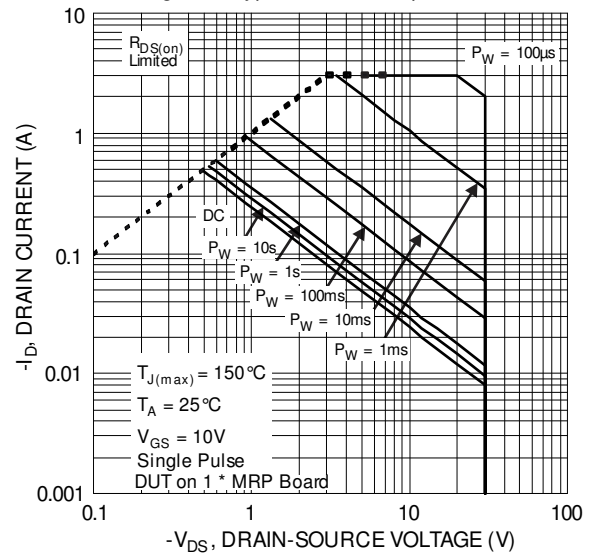
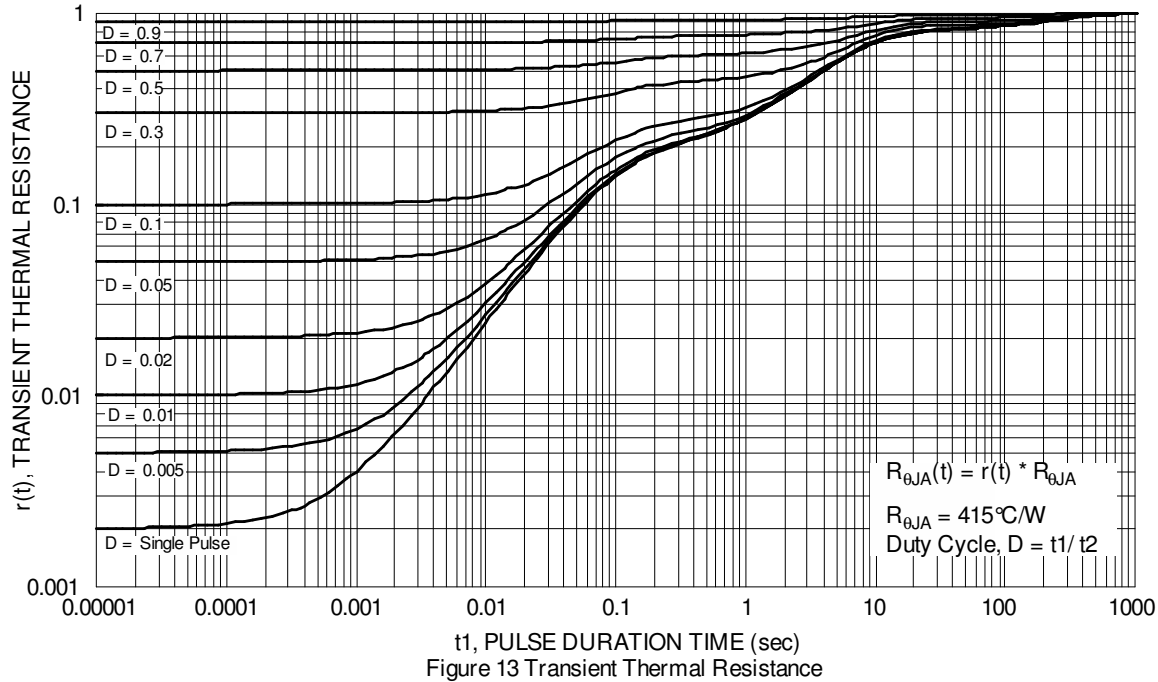
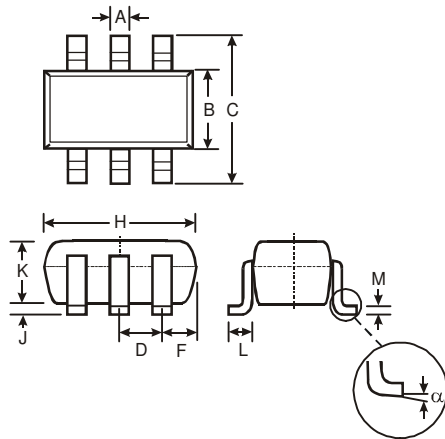


Figure 12 SOA, Safe Operation Area



Package Outline Dimensions

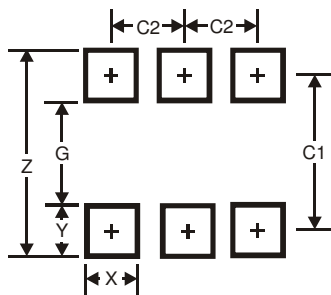
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SOT363			
Dim	Min	Max	Typ
A	0.10	0.30	0.25
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	0.65 Typ		
F	0.40	0.45	0.425
H	1.80	2.20	2.15
J	0	0.10	0.05
K	0.90	1.00	1.00
L	0.25	0.40	0.30
M	0.10	0.22	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout

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



Dimensions	Value (in mm)
Z	2.5
G	1.3
X	0.42
Y	0.6
C1	1.9
C2	0.65

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