

Summary

$V_{(BR)DSS}$	$R_{DS(on)}$ max	I_D max
-20V	260m Ω @ $V_{GS} = -4.5V$	-0.9 A
	500m Ω @ $V_{GS} = -2.5V$	
	1000m Ω @ $V_{GS} = -1.8V$	

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

- Battery Disconnect Switch
- Load Switch for Power Management Functions

Features

- Low $R_{DS(on)}$ – Minimizes Conduction Losses
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **ESD Protected Gate**
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

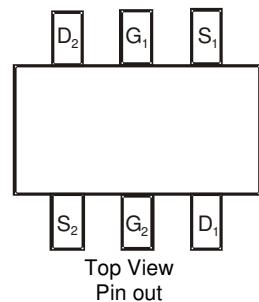
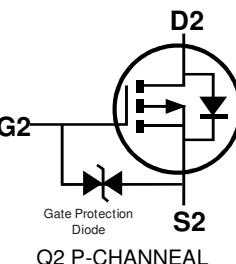
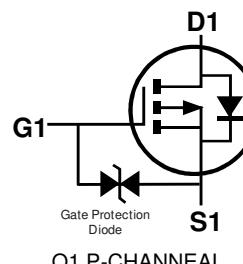
- Case: SOT363
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram
- Terminals: Finish - Matte Tin Annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.006 grams (Approximate)



SOT363



Top View



Ordering Information (Note 4)

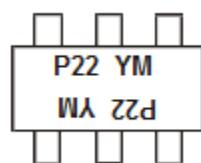
Part Number	Case	Packaging
DMP2200UDW-7	SOT363	3,000/Tape & Reel
DMP2200UDW-13	SOT363	10,000/Tape & Reel

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

SOT363



P22 = 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 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Units	
Drain-Source Voltage	V_{DSS}	-20	V	
Gate-Source Voltage	V_{GSS}	± 8	V	
Continuous Drain Current (Note 6)	$T_A = +25^\circ\text{C}$ $T_A = +85^\circ\text{C}$	I_D	-0.9 -0.7	A

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

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 5)	P_D	0.45	W
Total Power Dissipation (Note 6)		0.6	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	275	°C/W
Thermal Resistance, Junction to Ambient (Note 6)		208	
Thermal Resistance, Junction to Case	$R_{\theta JC}$	72	
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}	-20	—	—	V	$V_{GS} = 0\text{V}$, $I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	μA	$V_{DS} = -16\text{V}$, $V_{GS} = 0\text{V}$
Gate-Body Leakage	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 8\text{V}$, $V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(\text{th})}$	-0.4	—	-1.2	V	$V_{DS} = V_{GS}$, $I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	—	180 240 320	260 500 1,000	$\text{m}\Omega$	$V_{GS} = -4.5\text{V}$, $I_D = -0.88\text{A}$ $V_{GS} = -2.5\text{V}$, $I_D = -0.71\text{A}$ $V_{GS} = -1.8\text{V}$, $I_D = -0.20\text{A}$
Diode Forward Voltage	V_{SD}	—	-0.8	-1.2	V	$V_{GS} = 0\text{V}$, $I_S = -0.48\text{A}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	184	—	pF	$V_{DS} = -10\text{V}$, $V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	26.4	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	18.5	—	pF	
Gate Resistance	R_g	—	221	—	Ω	$V_{DS} = V_{GS} = 0\text{V}$, $f = 1.0\text{MHz}$
Total Gate Charge	Q_g	—	2.1	—	nC	$V_{GS} = -4.5\text{V}$, $V_{DS} = -10\text{V}$, $I_D = -1.7\text{A}$
Gate-Source Charge	Q_{gs}	—	0.4	—	nC	
Gate-Drain Charge	Q_{gd}	—	0.5	—	nC	
Turn-On Delay Time	$t_{D(\text{ON})}$	—	9.8	—	ns	$V_{DD} = -10\text{V}$, $I_D = -1.5\text{A}$, $V_{GS} = -4.5\text{V}$, $R_{\text{GEN}} = 1\Omega$
Turn-Off Delay Time	$t_{D(\text{OFF})}$	—	24.4	—	ns	
Turn-On Rise Time	t_r	—	88	—	ns	
Turn-Off Fall Time	t_f	—	45	—	ns	

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

7. Short duration pulse test used to minimize self-heating effect.

8. Guaranteed by design. Not subject to product testing.

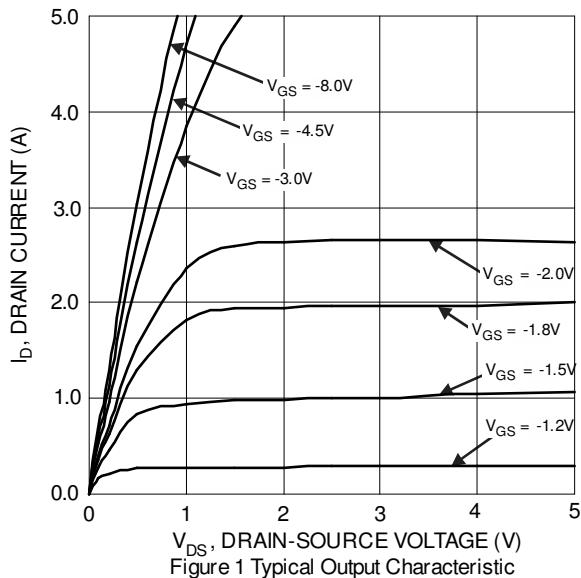


Figure 1 Typical Output Characteristic

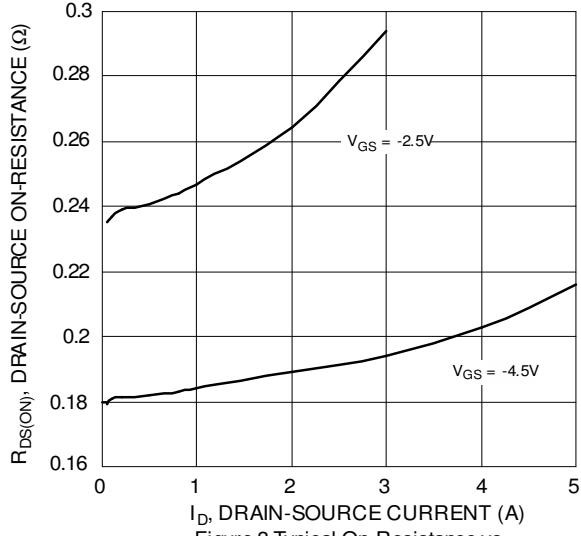


Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

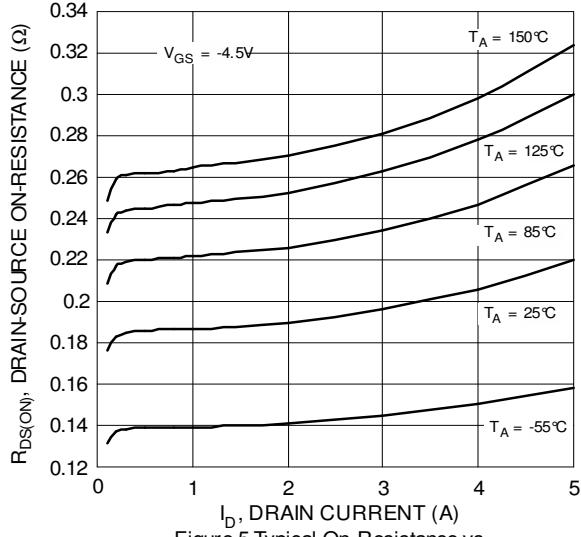


Figure 5 Typical On-Resistance vs.
Drain Current and Temperature

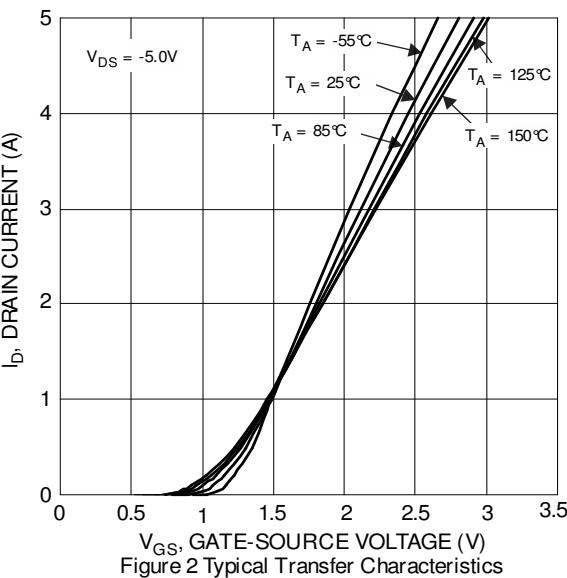


Figure 2 Typical Transfer Characteristics

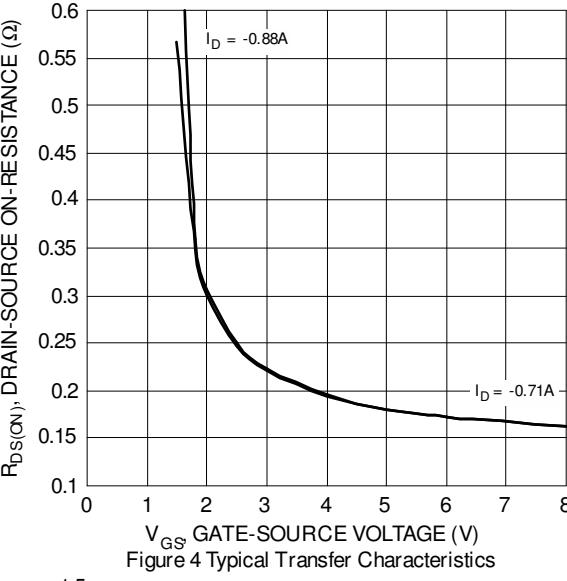


Figure 4 Typical Transfer Characteristics

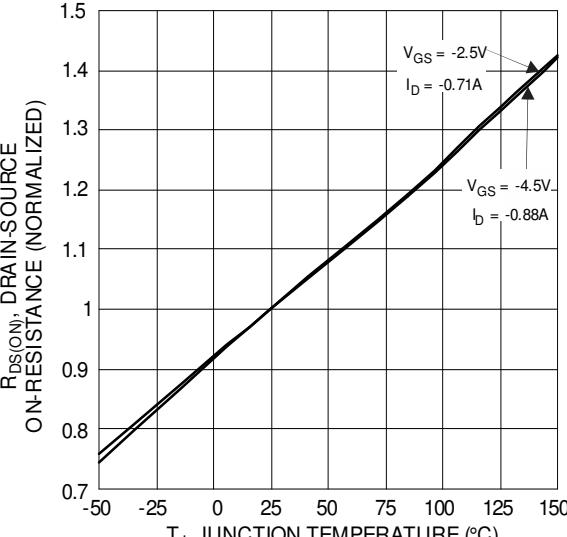
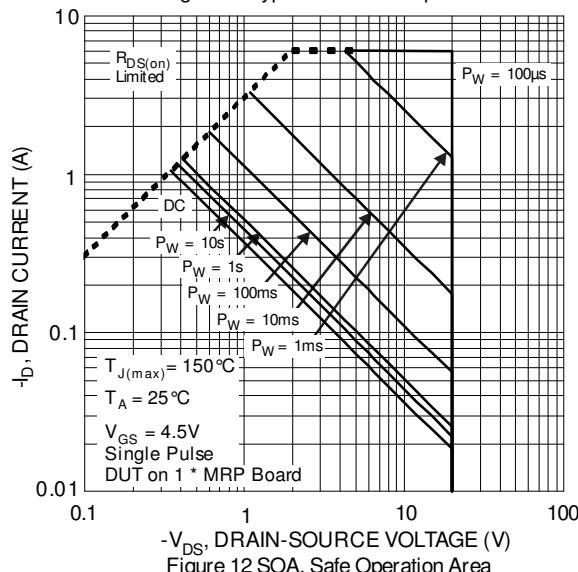
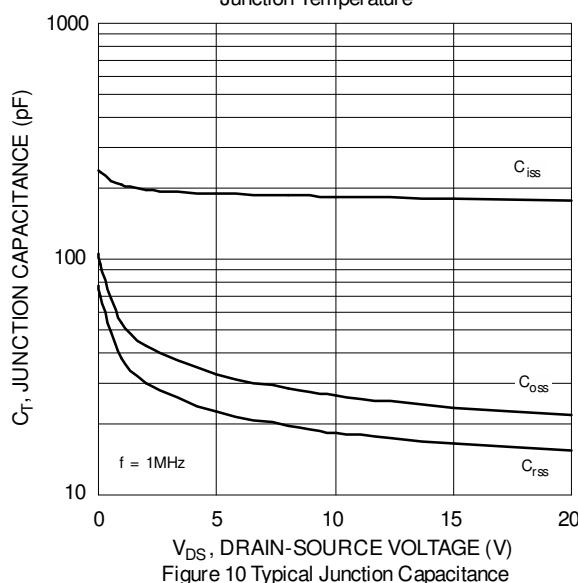
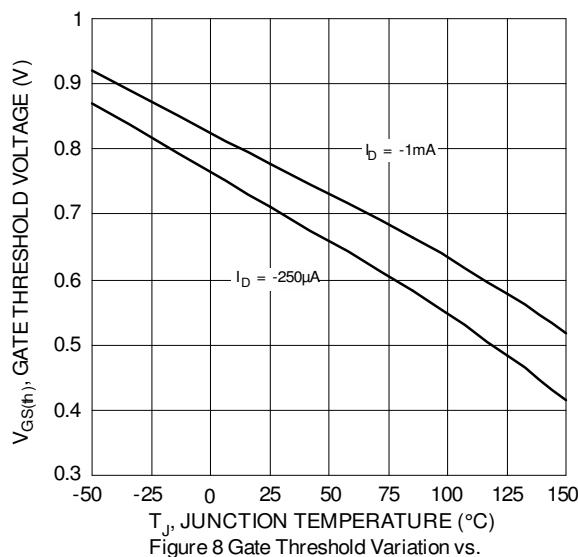
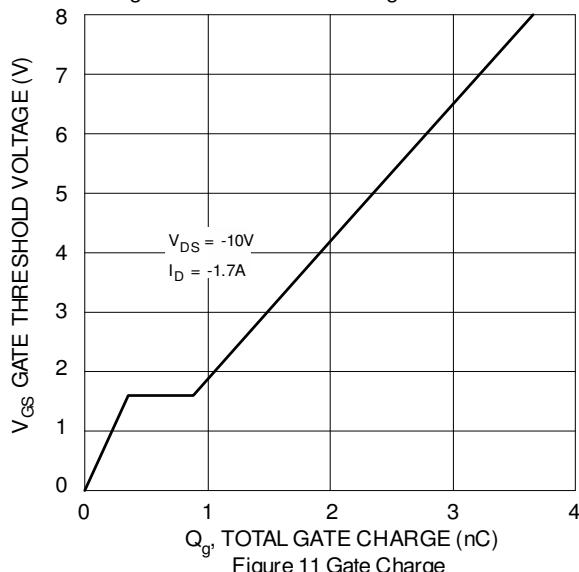
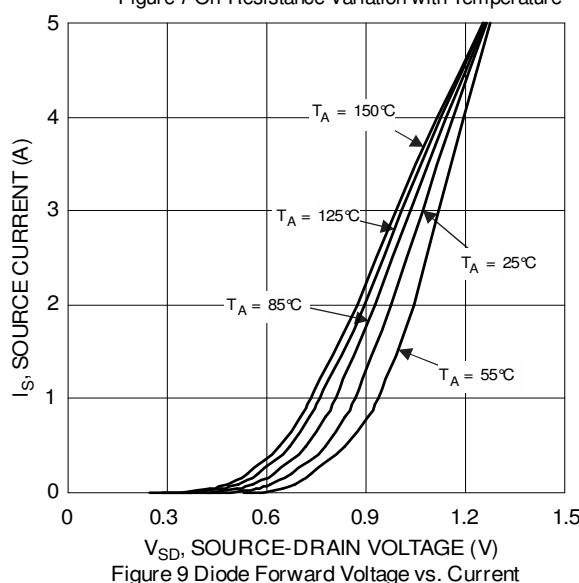
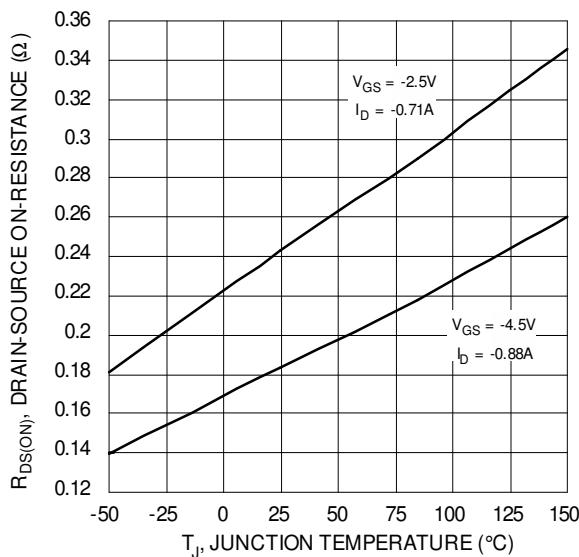


Figure 6 On-Resistance Variation with Temperature



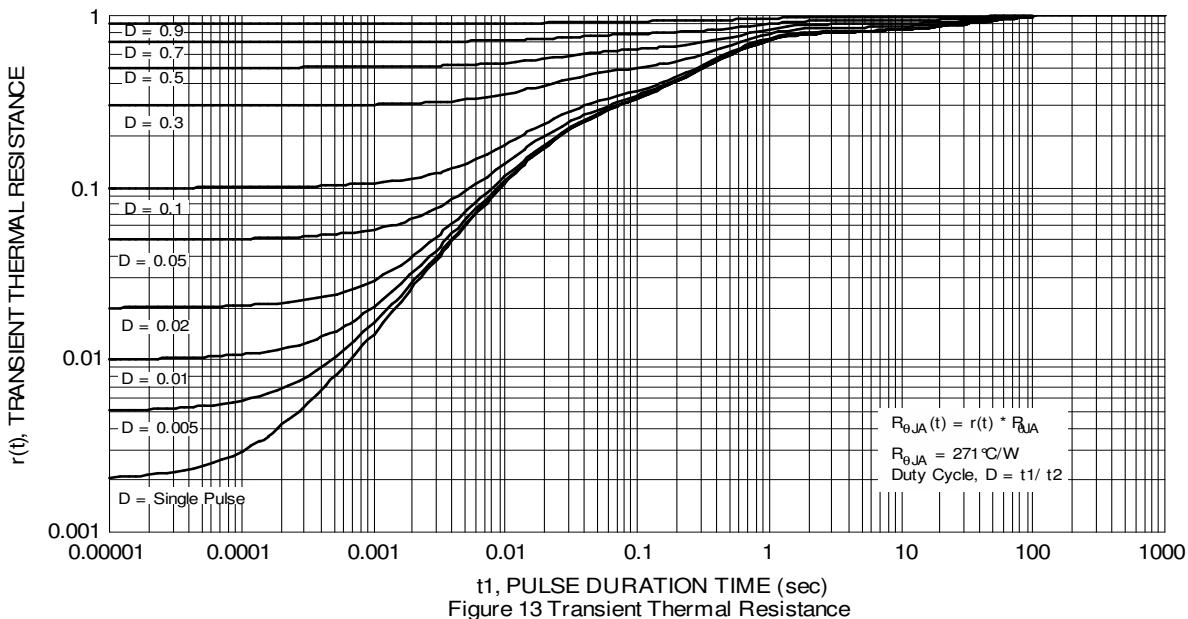
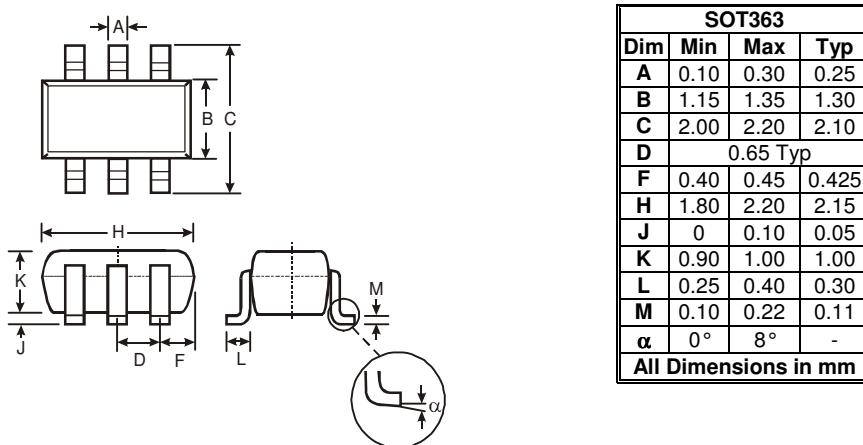


Figure 13 Transient Thermal Resistance

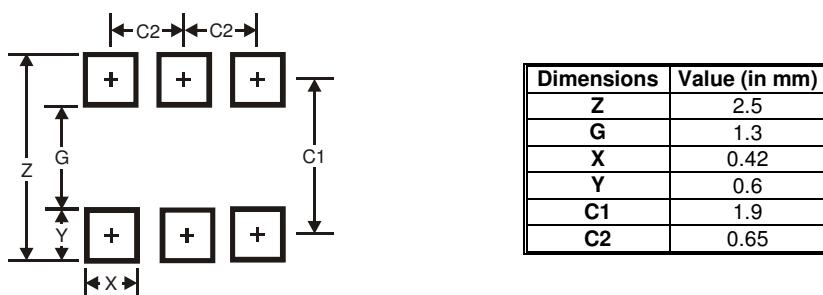
Package Outline Dimensions

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 latest version.



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