



**THE DATASHEET OF  
DMN32D4SDW-7**



## Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)}$ max	$I_D$ 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

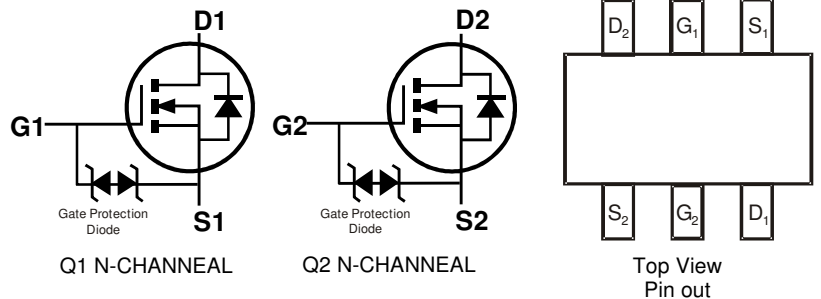
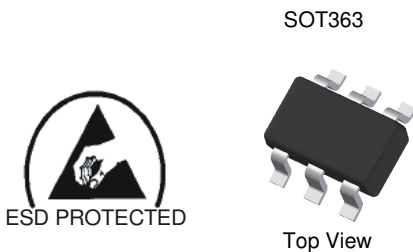
- Motor Control
- Power Management Functions
- DC-DC Converters
- Backlighting

## 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 Ⓔ3
- Weight: 0.006 grams (Approximate)

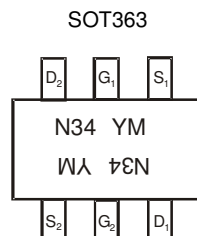


## Ordering Information (Note 4)

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

Month Code	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<sub>A</sub> = +25°C, unless otherwise specified.)

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

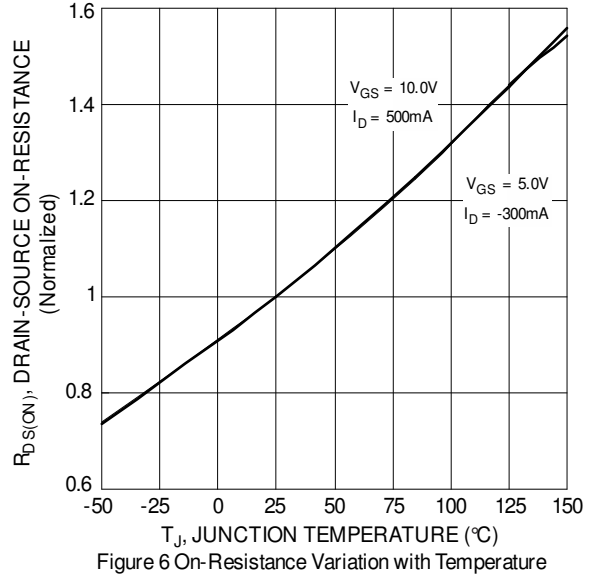
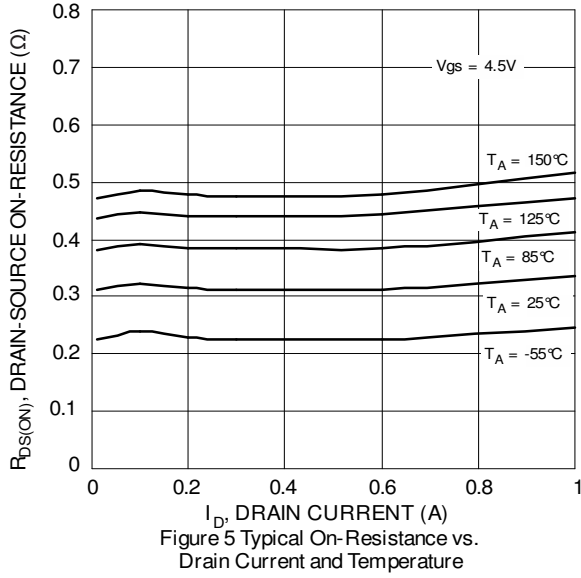
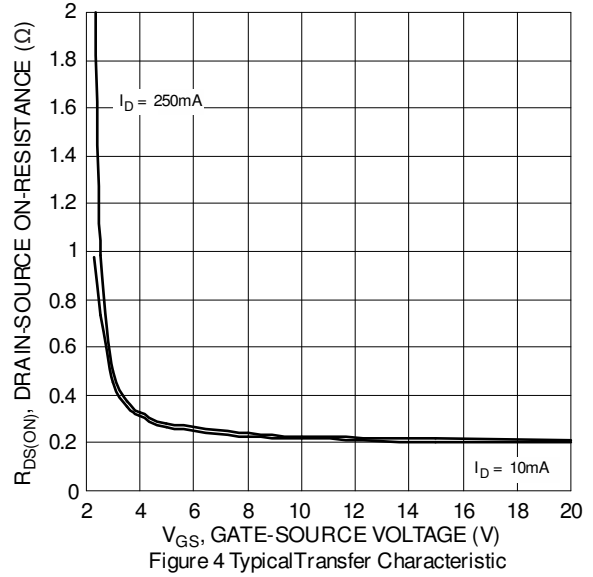
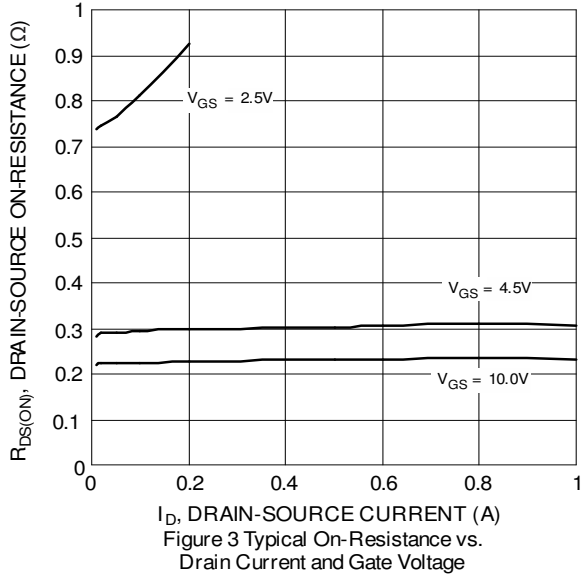
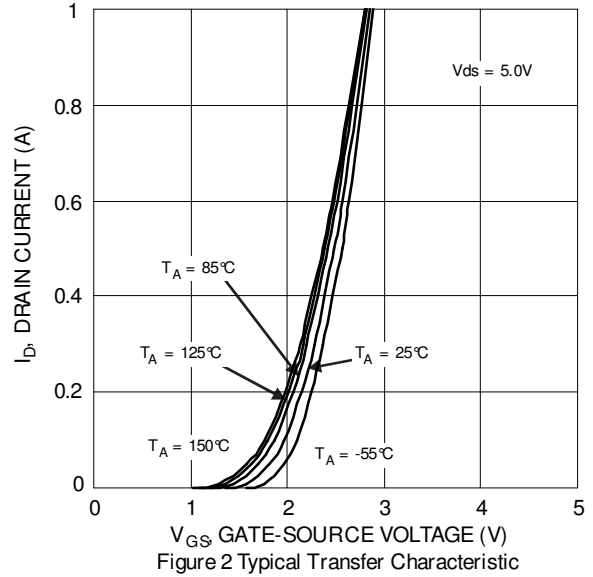
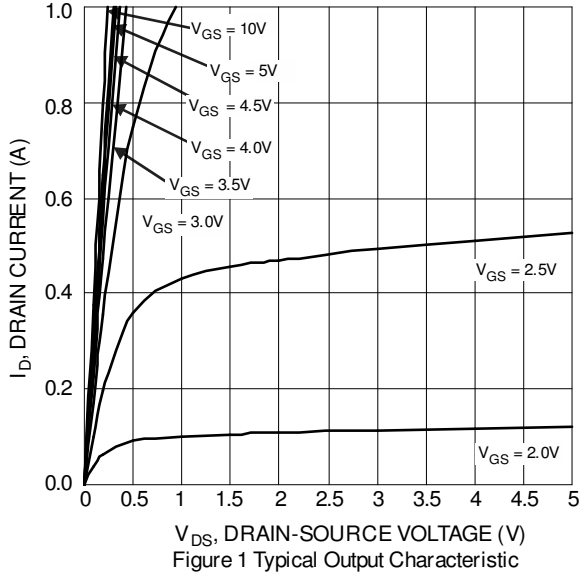
**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

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

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



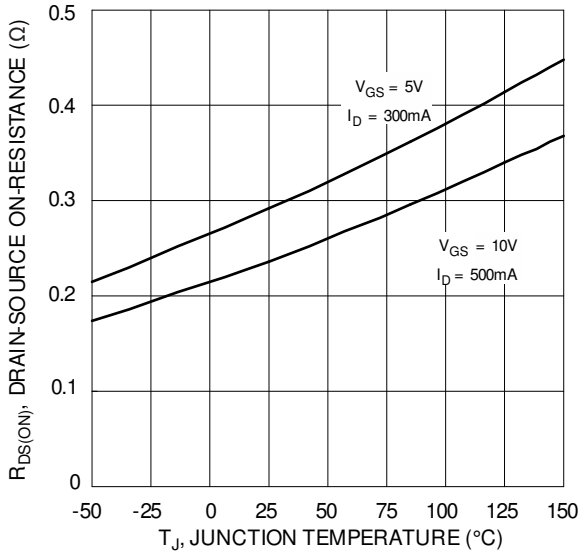


Figure 7 On-Resistance Variation with Temperature

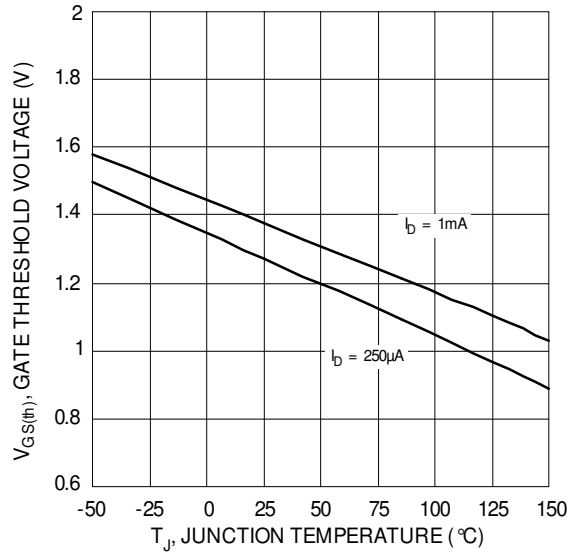


Figure 8 Gate Threshold Variation vs. Ambient Temperature

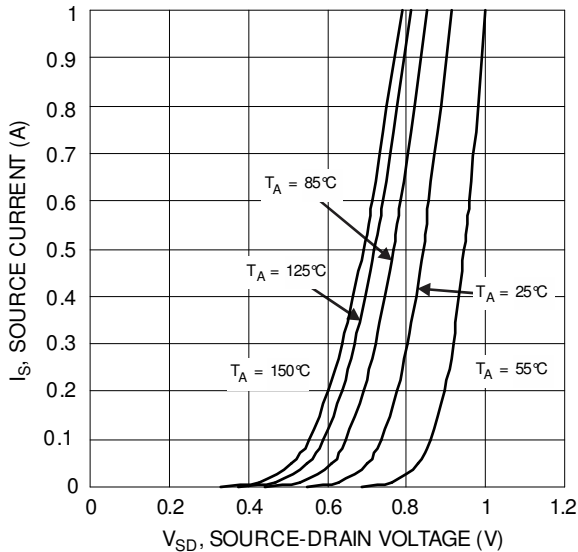


Figure 9 Diode Forward Voltage vs. Current

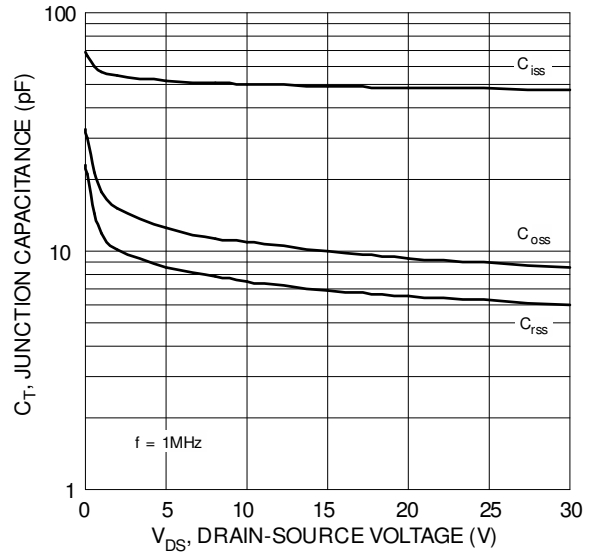


Figure 10 Typical Junction Capacitance

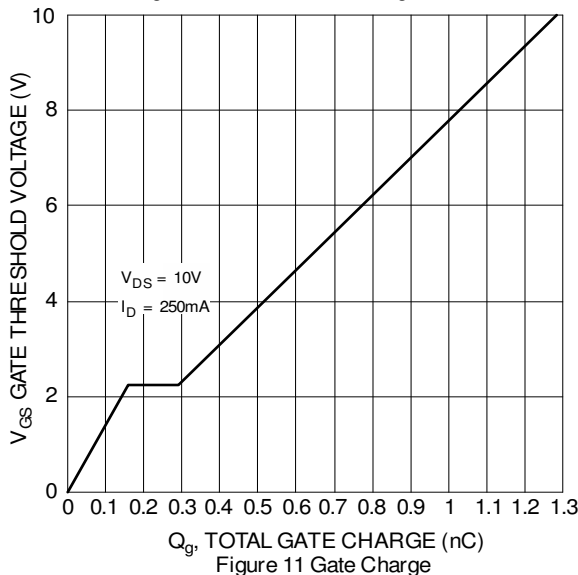


Figure 11 Gate Charge

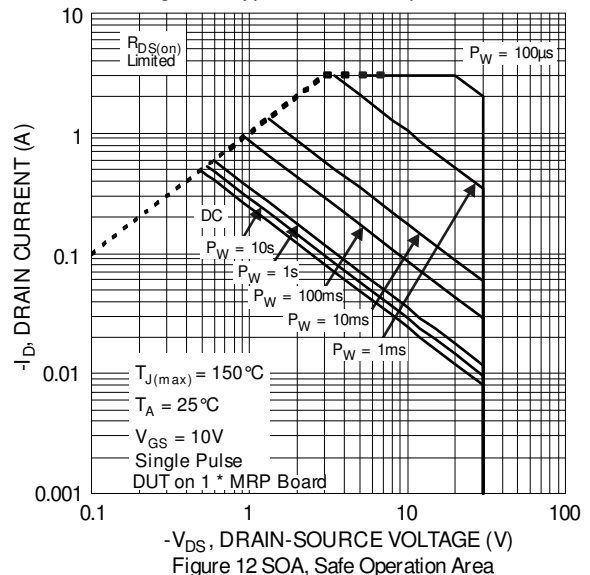
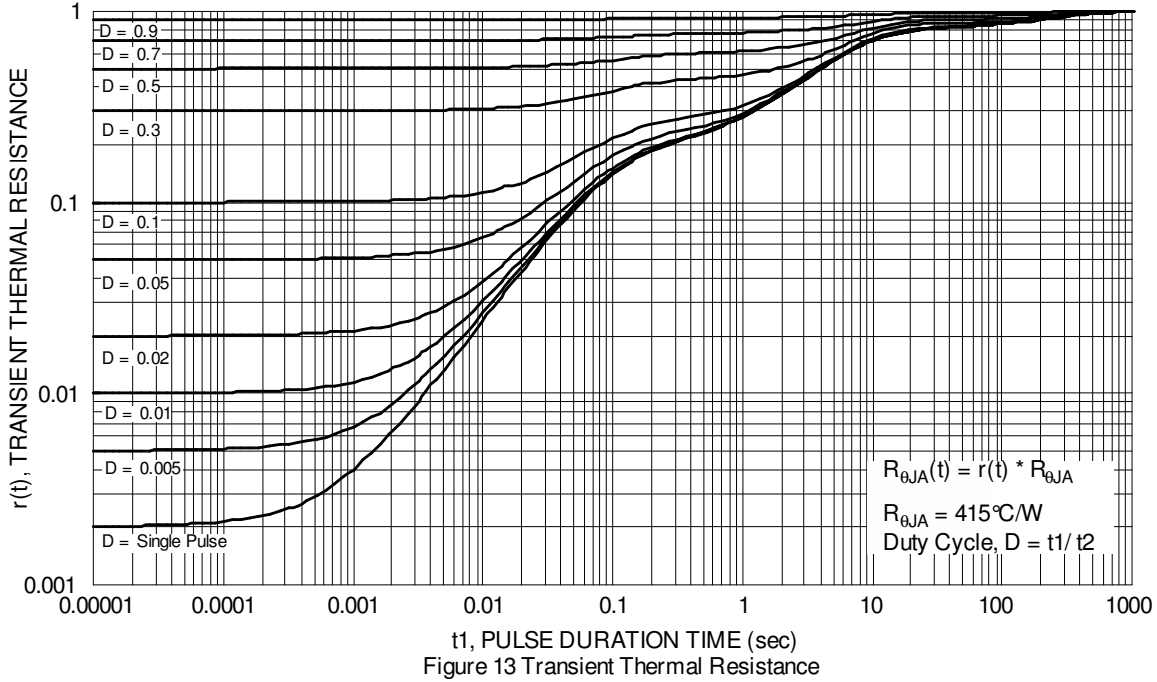
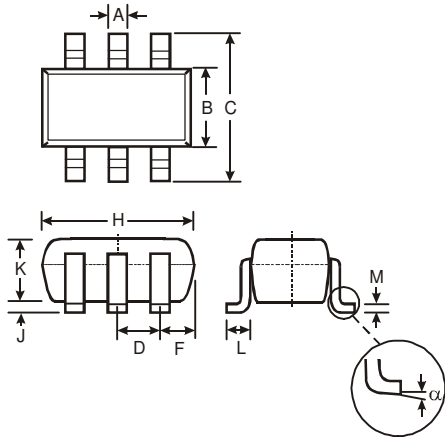


Figure 12 SOA, Safe Operation Area



**Package Outline Dimensions**

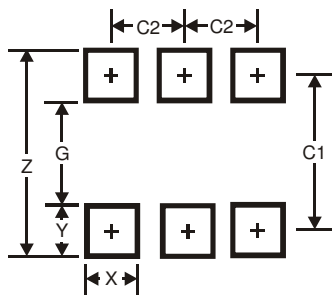
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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°	-
<b>All Dimensions in mm</b>			

**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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