

## Product Summary

BV <sub>bss</sub>	R <sub>DS(ON)</sub> MAX	I <sub>D</sub> T <sub>A</sub> = +25°C
-20V	0.75Ω @ V <sub>GS</sub> = -4.5V	-0.85A
	1.05Ω @ V <sub>GS</sub> = -2.5V	-0.7A
	1.5Ω @ V <sub>GS</sub> = -1.8V	-0.6A

## Description and Applications

This new generation MOSFET is designed to minimize the on-state resistance (R<sub>DS(ON)</sub>) yet maintain superior switching performance, making it ideal for high-efficiency power management applications.

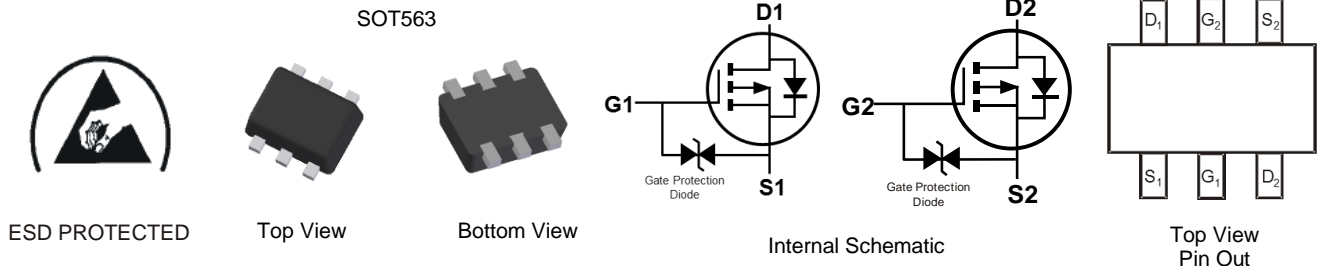
- DC-DC converters
- Load switches
- Power management functions

## Features and Benefits

- Dual P-Channel MOSFET
- Low On-Resistance
- Low Gate Threshold Voltage
- 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)**
- **The DIODES™ DMP2900UVQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**  
<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Package: SOT563
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Below
- Terminals: Finish—Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 Ⓔ3
- Weight: 0.006 grams (Approximate)

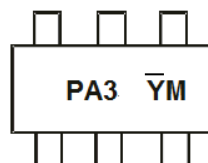


## Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMP2900UVQ-7	SOT563	3000	Tape & Reel
DMP2900UVQ-13	SOT563	10,000	Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



PA3 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: J = 2022)  
 M = Month (ex: 5 = May)

### Date Code Key

Year	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Code	J	K	L	M	N	O	P	R	S	T	U	V

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V <sub>DSS</sub>	-20	V
Gate-Source Voltage			V <sub>GSS</sub>	±6	V
Continuous Drain Current (Note 6) V <sub>GS</sub> = -4.5V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	-0.85	A
		T <sub>A</sub> = +70°C		-0.68	
Maximum Continuous Body Diode Forward Current (Note 6)			I <sub>S</sub>	-0.9	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)			I <sub>DM</sub>	-2.5	A
Pulsed Source Current (10µs Pulse, Duty Cycle = 1%)			I <sub>SM</sub>	-2.5	A

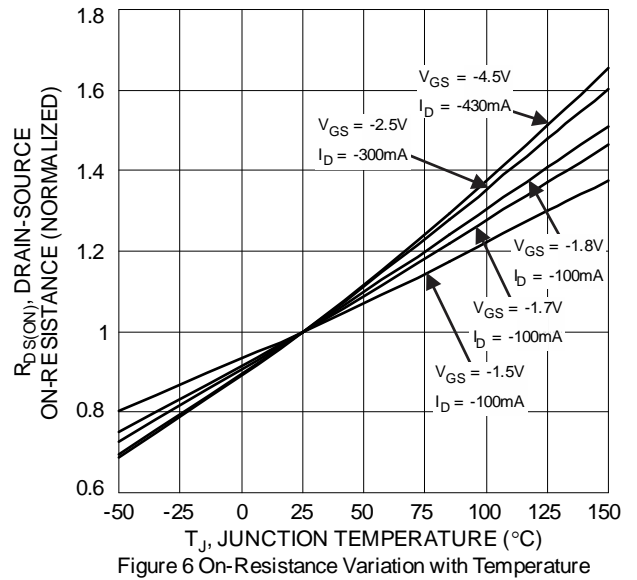
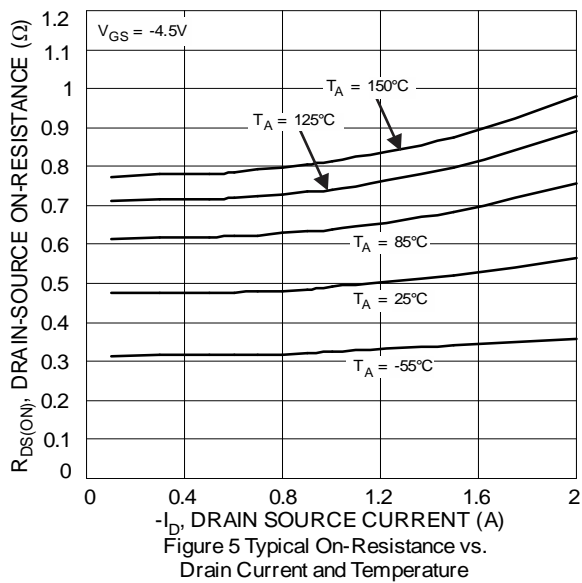
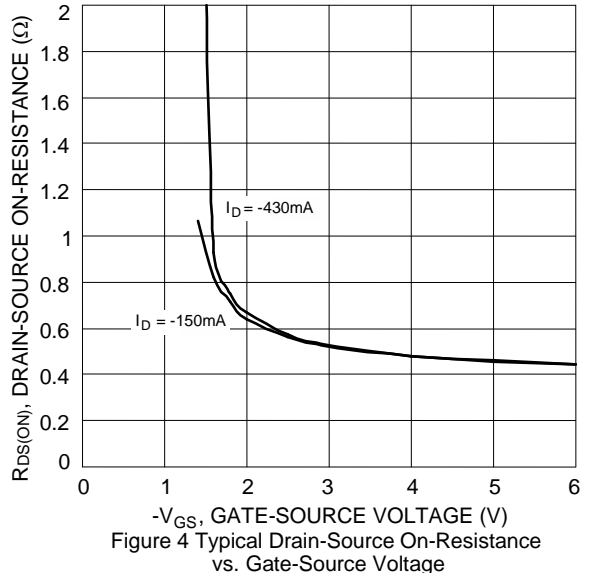
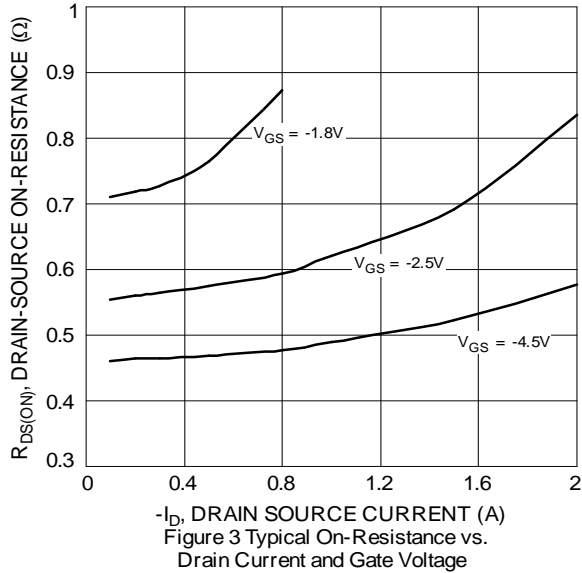
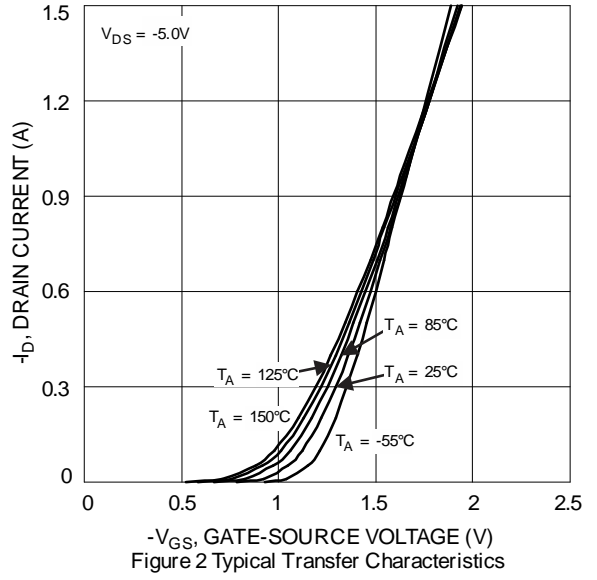
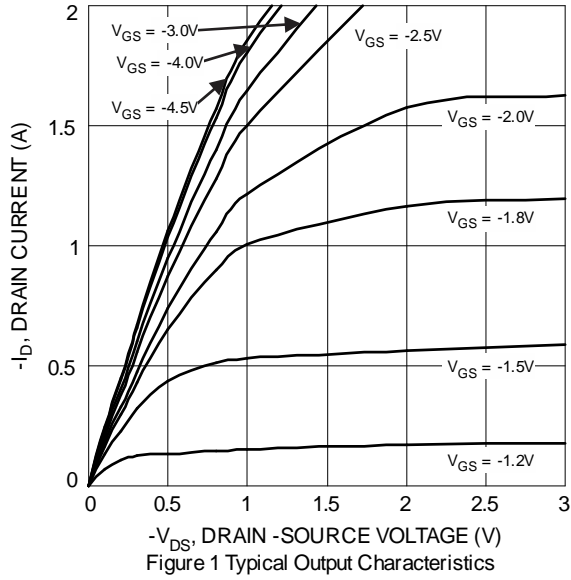
**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	Steady State	P <sub>D</sub>	0.5	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	R <sub>θJA</sub>	236	°C/W
Total Power Dissipation (Note 6)	Steady State	P <sub>D</sub>	0.8	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	R <sub>θJA</sub>	153	°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>	-20	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250µA	
Zero Gate Voltage Drain Current T <sub>J</sub> = +25°C	I <sub>DSS</sub>	—	—	-100	nA	V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V	
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±2.0	µA	V <sub>GS</sub> = ±4.5V, V <sub>DS</sub> = 0V	
<b>ON CHARACTERISTICS (Note 7)</b>							
Gate Threshold Voltage	V <sub>GS(TH)</sub>	-0.5	—	-1.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250µA	
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	0.46	0.75	Ω	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -430mA	
			0.56	1.05			V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -300mA
			0.7	1.5			V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -150mA
			0.72	20			V <sub>GS</sub> = -1.7V, I <sub>D</sub> = -100mA
			0.8	25			V <sub>GS</sub> = -1.5V, I <sub>D</sub> = -100mA
Diode Forward Voltage (Note 7)	V <sub>SD</sub>	—	-0.7	-1.2	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = -150mA	
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>							
Input Capacitance	C <sub>iss</sub>	—	49	—	pF	V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V, f = 1.0MHz	
Output Capacitance	C <sub>oss</sub>	—	12	—	pF		
Reverse Transfer Capacitance	C <sub>rss</sub>	—	3.4	—	pF		
Total Gate Charge	Q <sub>g</sub>	—	0.7	—	nC	V <sub>GS</sub> = -4.5V, V <sub>DS</sub> = -10V, I <sub>D</sub> = -250mA	
Gate-Source Charge	Q <sub>gs</sub>	—	0.1	—	nC		
Gate-Drain Charge	Q <sub>gd</sub>	—	0.1	—	nC		
Turn-On Delay Time	t <sub>D(ON)</sub>	—	16	—	ns	V <sub>DD</sub> = -10V, V <sub>GS</sub> = -4.5V, R <sub>L</sub> = 47Ω, R <sub>G</sub> = 10Ω, I <sub>D</sub> = -200mA	
Turn-On Rise Time	t <sub>r</sub>	—	15	—	ns		
Turn-Off Delay Time	t <sub>D(OFF)</sub>	—	213	—	ns		
Turn-Off Fall Time	t <sub>f</sub>	—	89	—	ns		
Reverse Recovery Time	t <sub>RR</sub>	—	10.5	—	ns		
Reverse Recovery Charge	Q <sub>R</sub>	—	1.8	—	nC	I <sub>F</sub> = -1A, di/dt = 100A/µs	

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



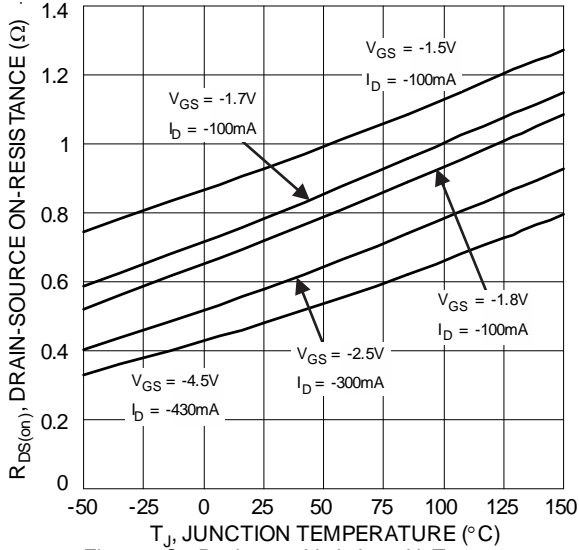


Figure 7 On-Resistance Variation with Temperature

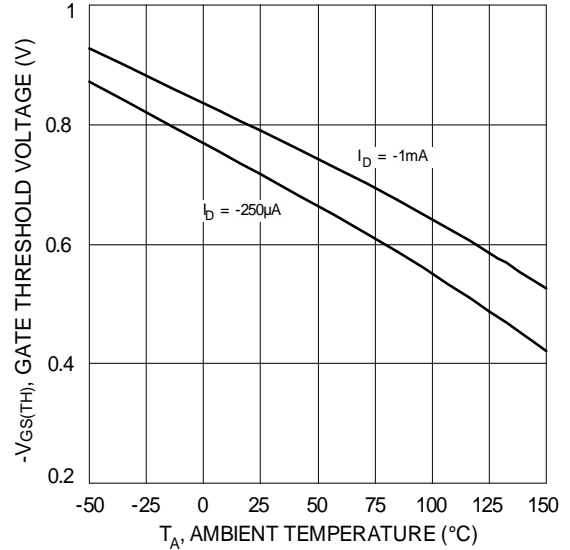


Figure 8 Gate Threshold Variation vs. Ambient Temperature

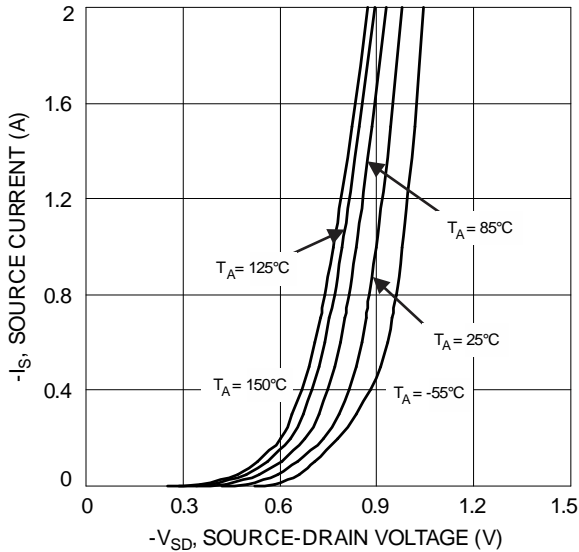


Figure 9 Diode Forward Voltage vs. Current

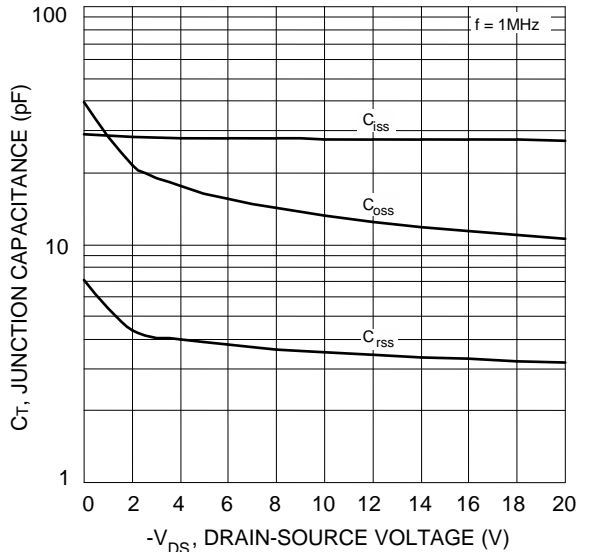


Figure 10 Typical Junction Capacitance

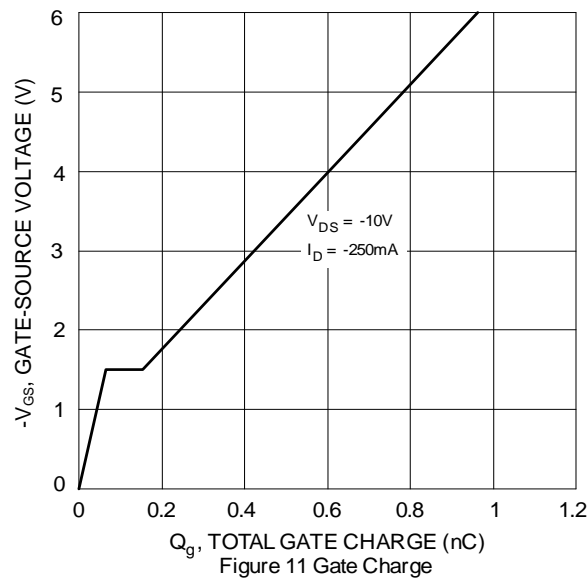


Figure 11 Gate Charge

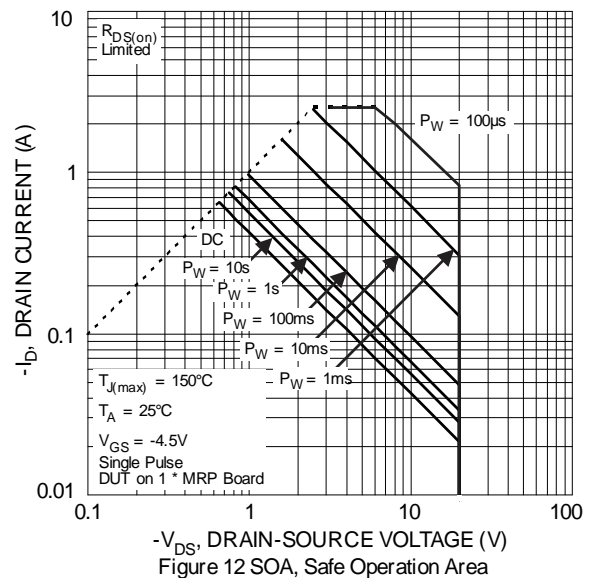


Figure 12 SOA, Safe Operation Area

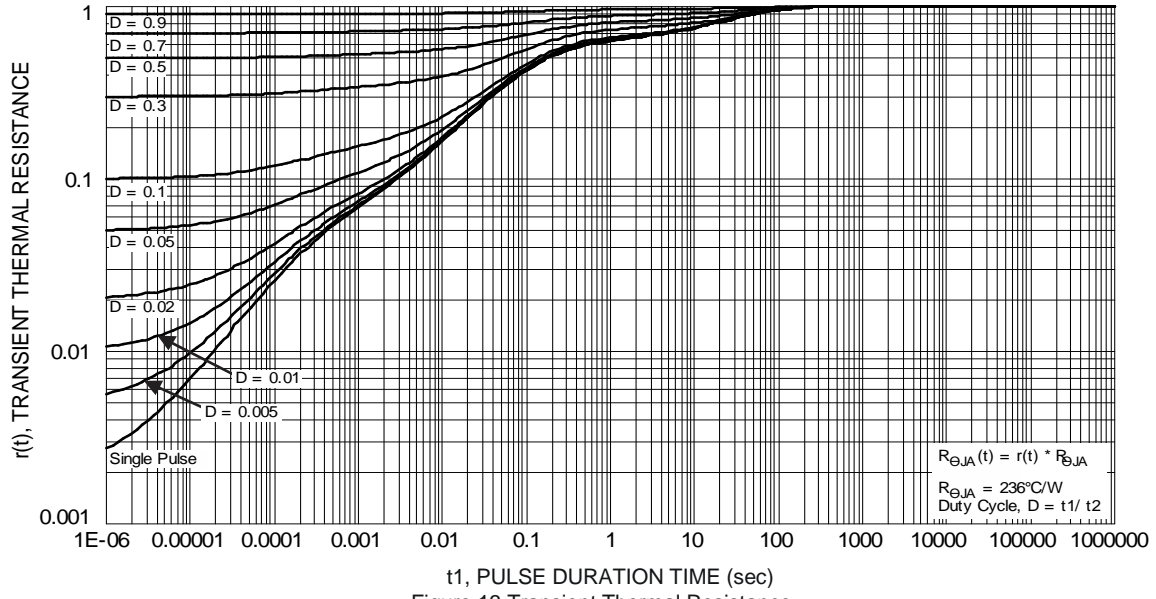
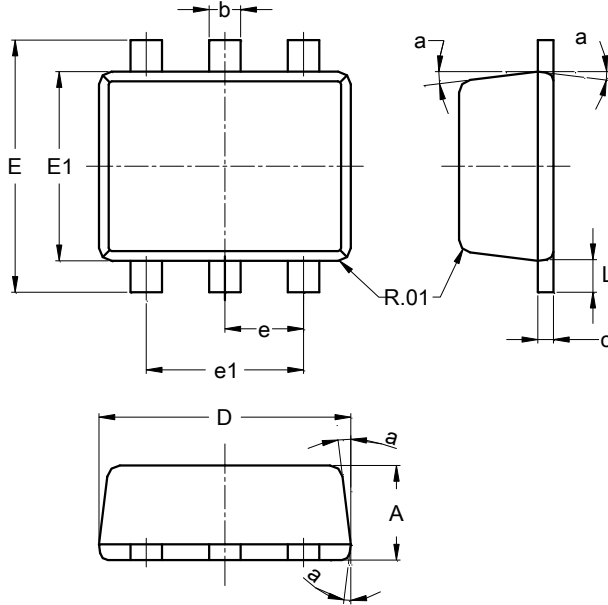


Figure 13 Transient Thermal Resistance

**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT563**

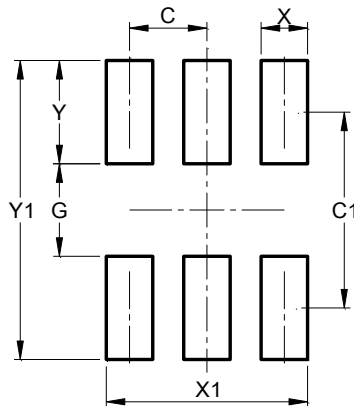


SOT563			
Dim	Min	Max	Typ
A	0.55	0.60	--
b	0.15	0.30	0.20
c	0.10	0.18	0.11
D	1.50	1.70	1.60
E	1.55	1.70	1.60
E1	1.10	1.25	1.20
e	--	--	0.50
e1	0.90	1.10	1.00
L	0.10	0.30	0.20
a	8°	9°	7°
All Dimensions in mm			

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT563**



Dimensions	Value (in mm)
C	0.500
C1	1.270
G	0.600
X	0.300
X1	1.300
Y	0.670
Y1	1.940

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