

Product Summary

BV _{DSS}	R _{D(on) MAX}	I _D T _A = +25°C
-20V	0.75Ω @ V _{GS} = -4.5V	-0.85A
	1.05Ω @ V _{GS} = -2.5V	-0.7A
	1.5Ω @ V _{GS} = -1.8V	-0.6A

Description and Applications

This new generation MOSFET is designed to minimize the on-state resistance (R_{D(on)}) yet maintain superior switching performance, making it ideal for high-efficiency power management applications.

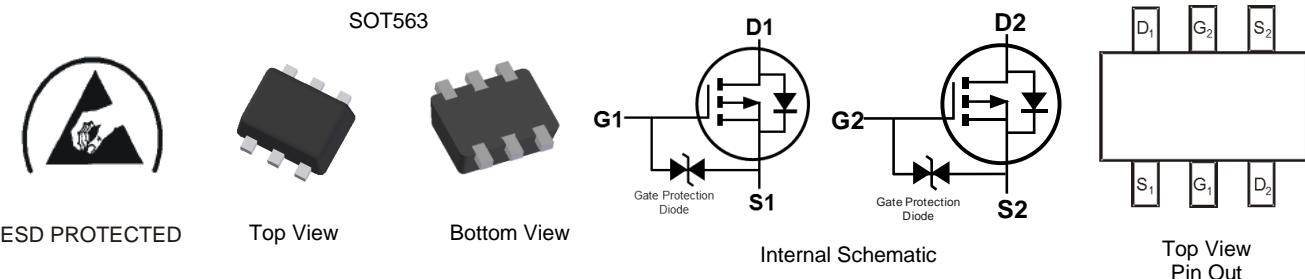
- DC-DC Converters
- Load Switch
- Power Management Functions

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)**
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative.
<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Case: SOT563
- Case 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 (e3)
- Weight: 0.006 grams (Approximate)



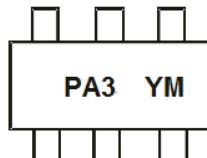
Ordering Information (Note 4)

Part Number	Case	Packaging
DMP2900UV-7	SOT563	3000/Tape & Reel
DMP2900UV-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 or YM = Year (ex: I = 2021)
M = Month (ex: 9 = September)

Date Code Key

Year	2018	...	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	F	...	I	J	K	L	M	N	O	P	R	S
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	Unit
Drain-Source Voltage			V_{DSS}	-20	V
Gate-Source Voltage			V_{GSS}	± 6	V
Continuous Drain Current (Note 6) $V_{GS} = -4.5\text{V}$	Steady State	$T_A = +25^\circ\text{C}$	I_D	-0.85	A
		$T_A = +70^\circ\text{C}$		-0.68	
Maximum Continuous Body Diode Forward Current (Note 6)			I_S	-0.9	A
Pulsed Drain Current (10 μs Pulse, Duty Cycle = 1%)			I_{DM}	-2.5	A
Pulsed Source Current (10 μs Pulse, Duty Cycle = 1%)			I_{SM}	-2.5	A

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	Steady State	P_D	0.5	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	236	$^\circ\text{C}/\text{W}$
Total Power Dissipation (Note 6)	Steady State	P_D	0.8	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	153	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

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 $T_J = +25^\circ\text{C}$	I_{DSS}	—	—	-100	nA	$V_{DS} = -20\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 2.0	μA	$V_{GS} = \pm 4.5\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	-0.5	-0.7	-1.0	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	0.46	0.75		$V_{GS} = -4.5\text{V}, I_D = -430\text{mA}$
			0.56	1.05		$V_{GS} = -2.5\text{V}, I_D = -300\text{mA}$
			0.7	1.5	Ω	$V_{GS} = -1.8\text{V}, I_D = -150\text{mA}$
			0.72	20		$V_{GS} = -1.7\text{V}, I_D = -100\text{mA}$
			0.8	25		$V_{GS} = -1.5\text{V}, I_D = -100\text{mA}$
Diode Forward Voltage (Note 7)	V_{SD}	—	-0.7	-1.2	V	$V_{GS} = 0\text{V}, I_S = -150\text{mA}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	49	—	pF	
Output Capacitance	C_{oss}	—	12	—	pF	$V_{DS} = -16\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Reverse Transfer Capacitance	C_{rss}	—	3.4	—	pF	
Total Gate Charge	Q_g	—	0.7	—	nC	
Gate-Source Charge	Q_{gs}	—	0.1	—	nC	$V_{GS} = -4.5\text{V}, V_{DS} = -10\text{V}, I_D = -250\text{mA}$
Gate-Drain Charge	Q_{gd}	—	0.1	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	16	—	ns	
Turn-On Rise Time	t_r	—	15	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	213	—	ns	
Turn-Off Fall Time	t_f	—	89	—	ns	
Reverse Recovery Time	t_{RR}	—	10.5	—	ns	
Reverse Recovery Charge	Q_{RR}	—	1.8	—	nC	$I_f = -1\text{A}, di/dt = 100\text{A}/\mu\text{s}$

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

6. Device mounted on FR-4 substrate PCB, 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 production testing.

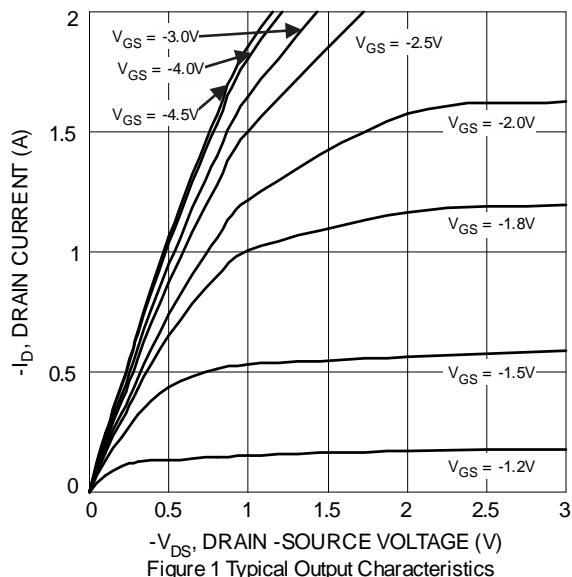


Figure 1 Typical Output Characteristics

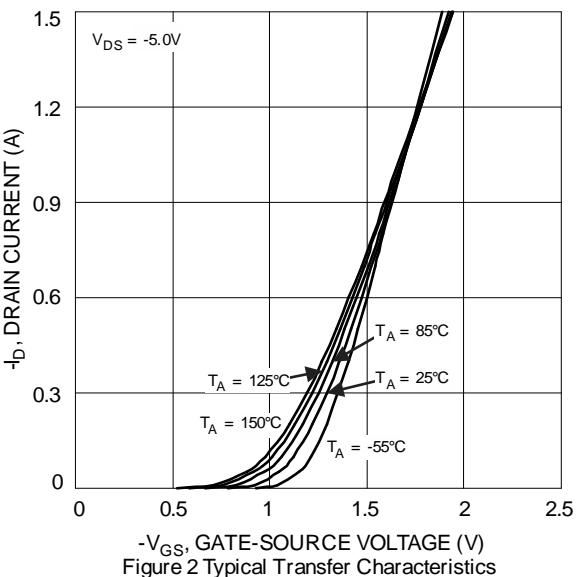


Figure 2 Typical Transfer Characteristics

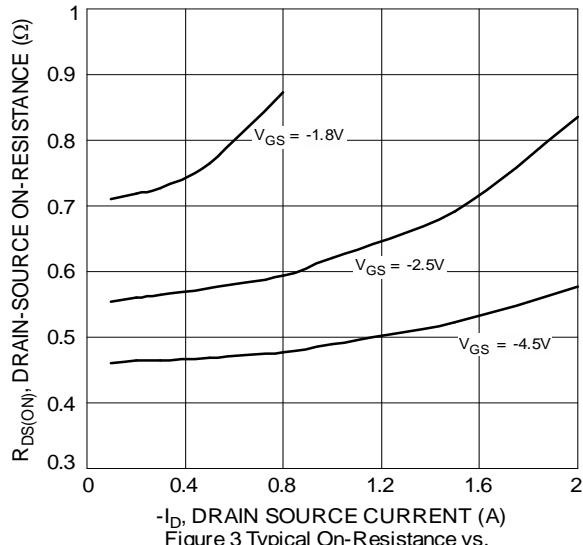


Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

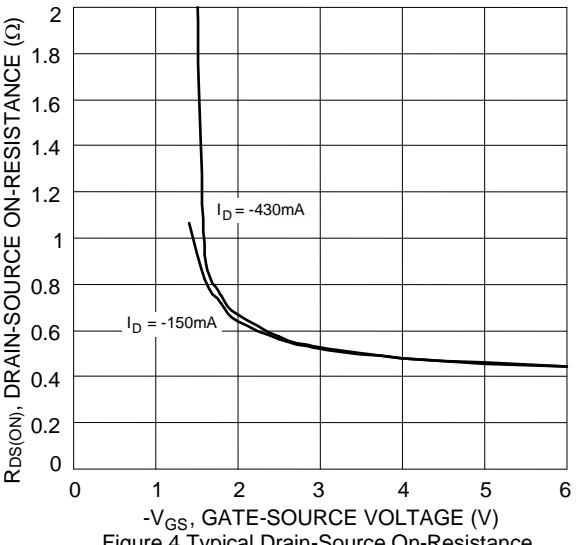


Figure 4 Typical Drain-Source On-Resistance
vs. Gate-Source Voltage

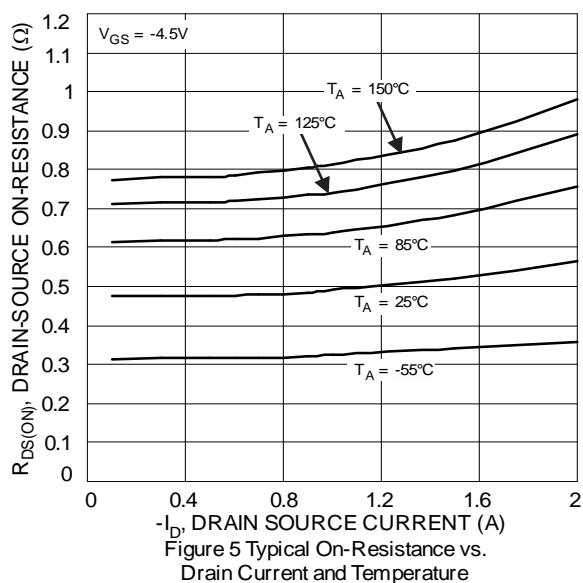


Figure 5 Typical On-Resistance vs.
Drain Current and Temperature

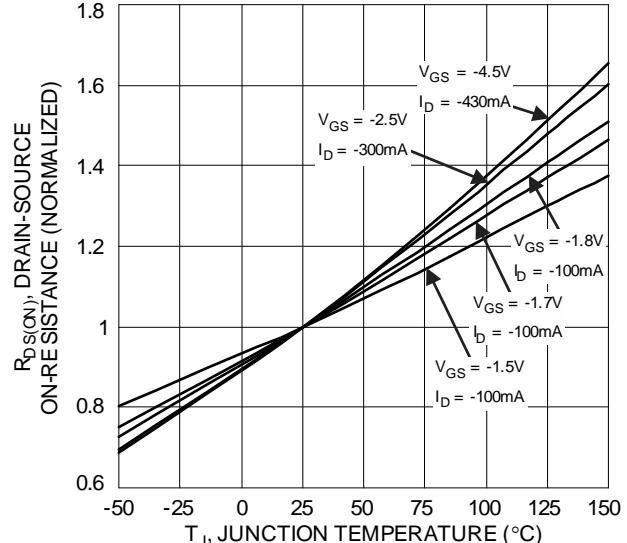


Figure 6 On-Resistance Variation with Temperature

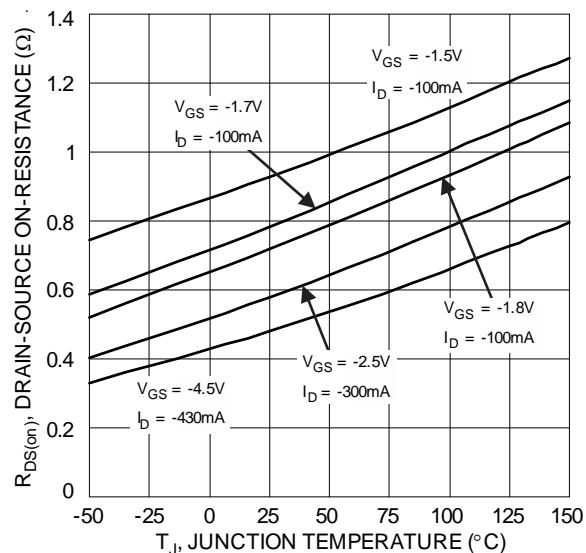
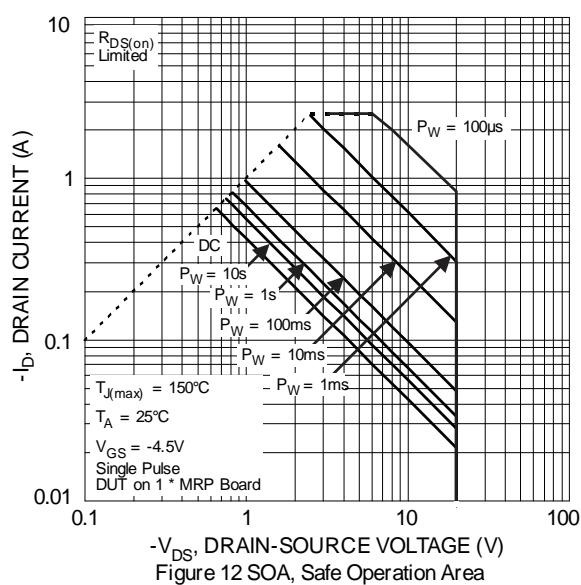
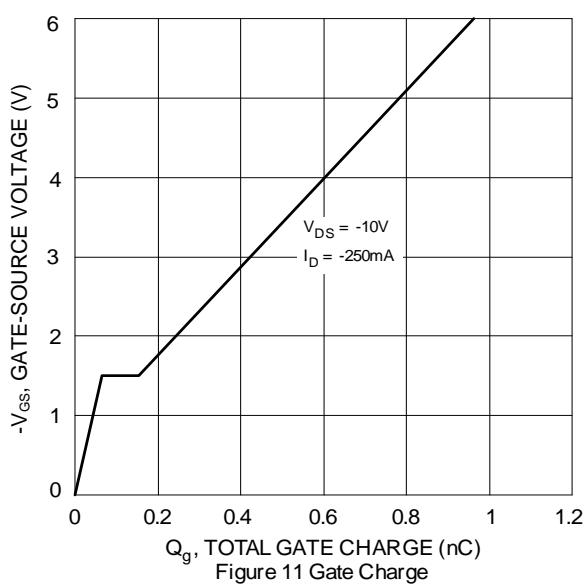
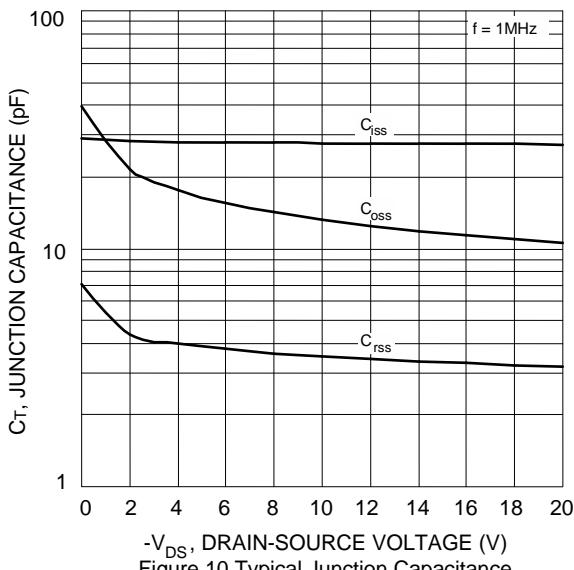
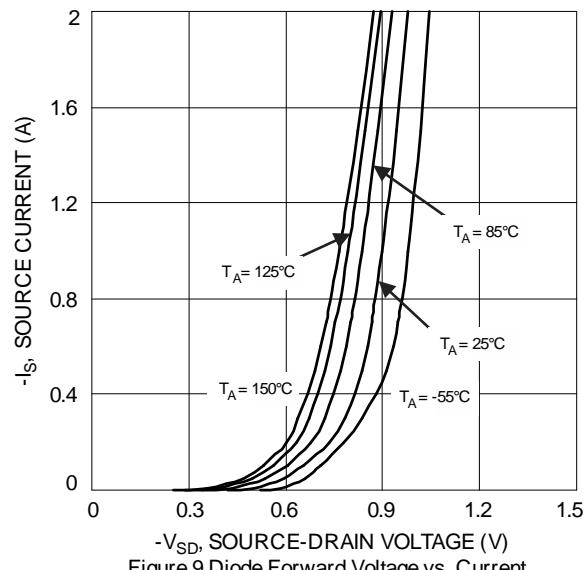
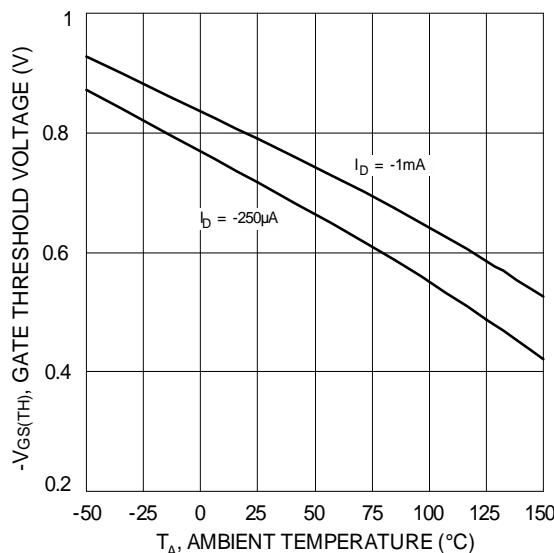


Figure 7 On-Resistance Variation with Temperature



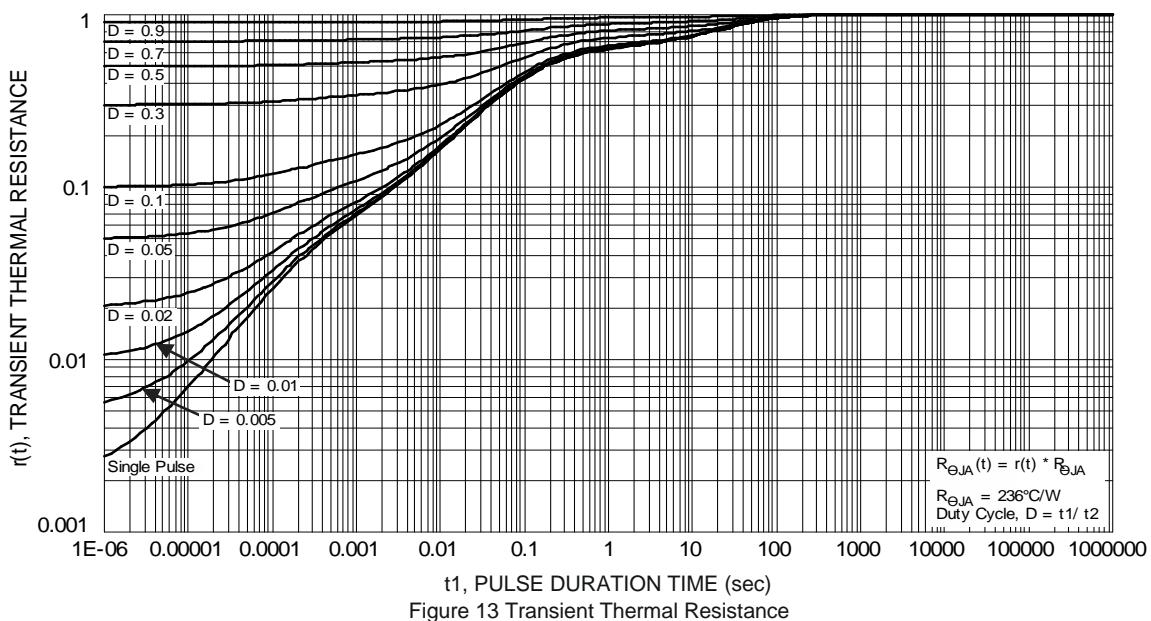
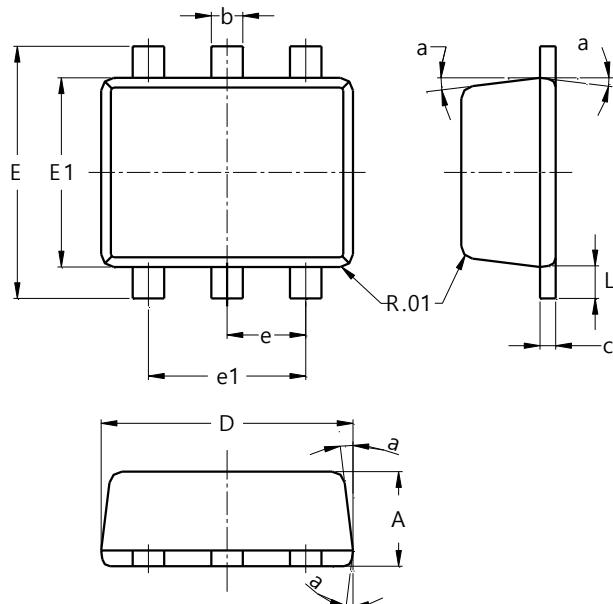


Figure 13 Transient Thermal Resistance

Package Outline Dimensions

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

SOT563



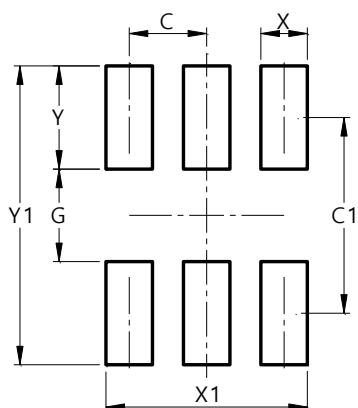
SOT563			
Dim	Min	Max	Typ
A	0.55	0.60	--
b	0.15	0.30	0.20
c	0.10	0.18	0.11
D	1.50	1.70	1.60
E	1.55	1.70	1.60
E1	1.10	1.25	1.20
e	--	--	0.50
e1	0.90	1.10	1.00
L	0.10	0.30	0.20
a	8°	9°	7°

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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