

Product Summary

BV _{DSS}	R _{DS(ON)}	I _D T _A = +25°C
-20V	750mΩ @ V _{GS} = -4.5V	-0.6A
	1050mΩ @ V _{GS} = -2.5V	-0.5A
	1500mΩ @ V _{GS} = -1.8V	-0.45A

Description and Applications

This MOSFET is designed to meet the stringent requirements of automotive applications. It is qualified to AEC-Q101, supported by a PPAP.

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

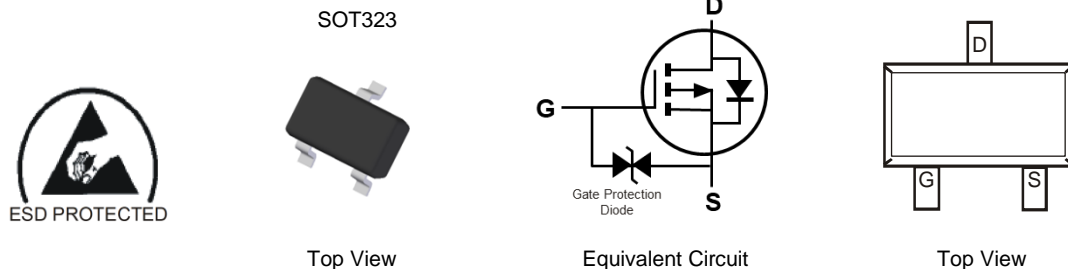
Features and Benefits

- Low On-Resistance
- Low Gate Threshold Voltage
- 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)**
- **The DMP2900UWQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Package: SOT323
- 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 Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 Ⓔ3
- Weight: 0.006 grams (Approximate)



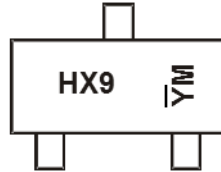
Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMP2900UWQ-7	SOT323	3,000	Tape & Reel
DMP2900UWQ-13	SOT323	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

SOT323



HX9 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: K = 2023)
 M = Month (ex: 9 = September)

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_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V _{DSS}	-20	V
Gate-Source Voltage	V _{GSS}	±6	V
Continuous Drain Current (Note 5) V _{GS} = 4.5V	I _D	T _A = +25°C -0.6	A
		T _A = +70°C -0.5	
Maximum Body Diode Forward Current (Note 5)	I _S	-0.45	A
Pulsed Drain Current (10µs Pulse, Duty Cycle=1%)	I _{DM}	-2.5	A

Thermal Characteristics

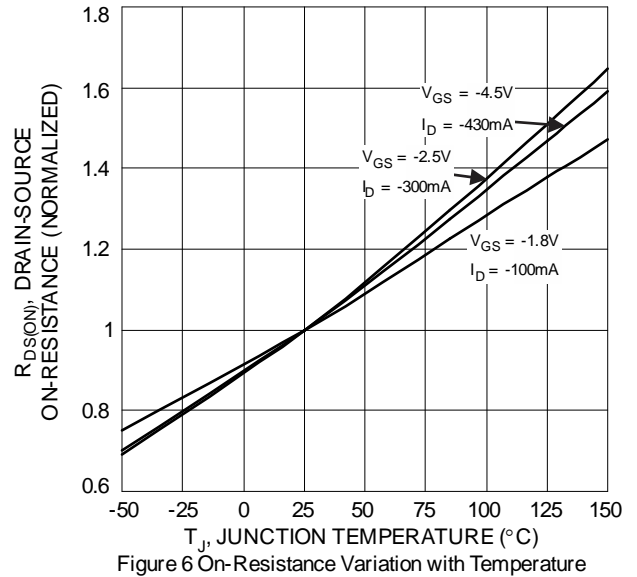
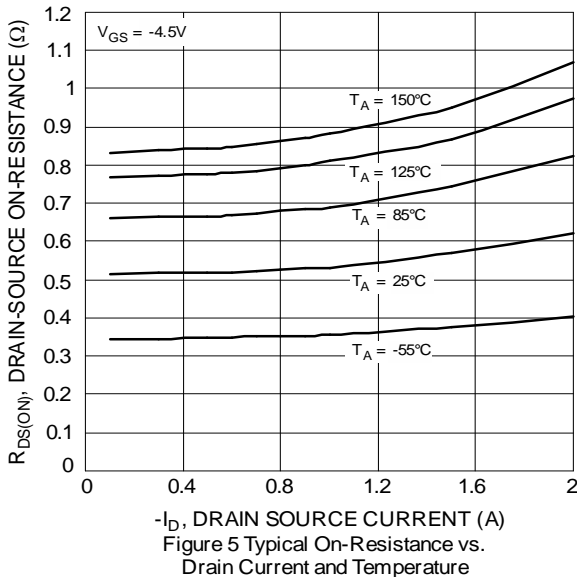
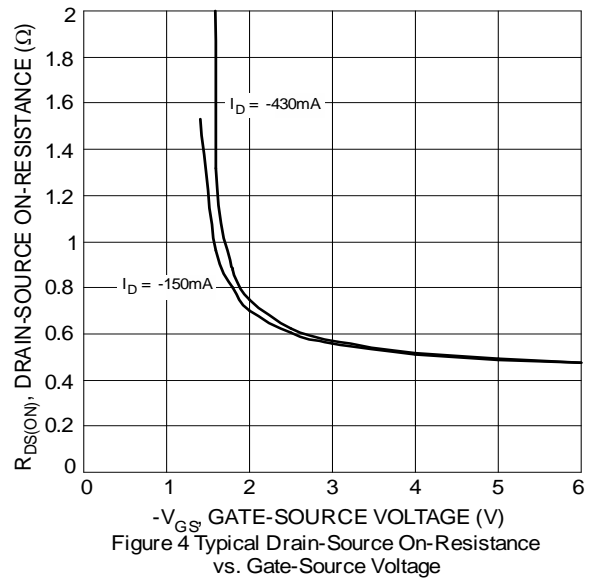
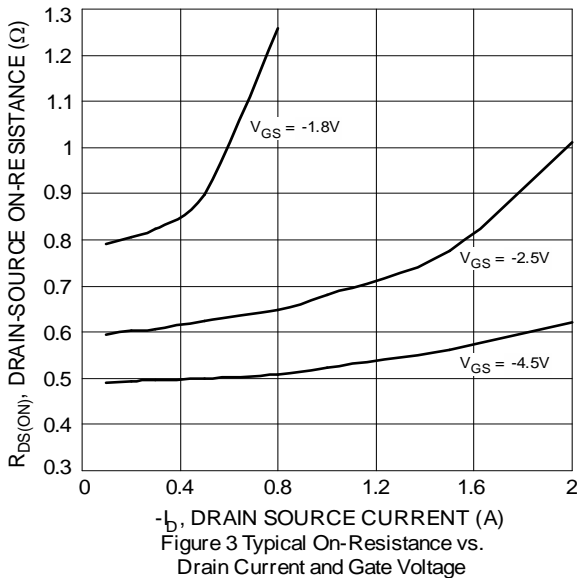
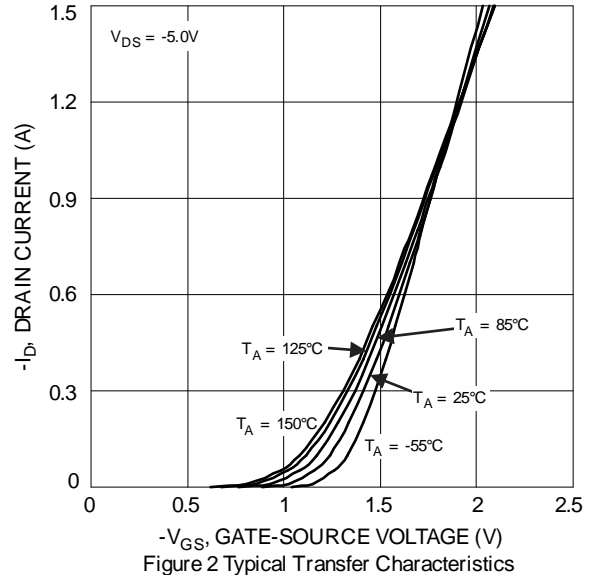
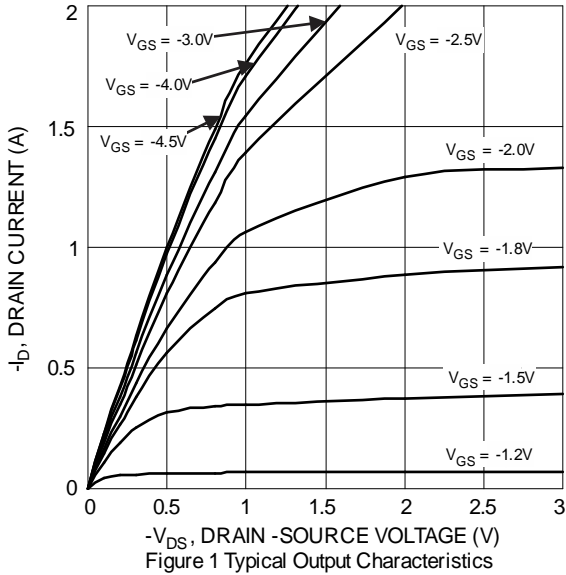
Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 6)	P _D	0.3	W
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	393	°C/W
Total Power Dissipation (Note 5)	P _D	0.5	W
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	272	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

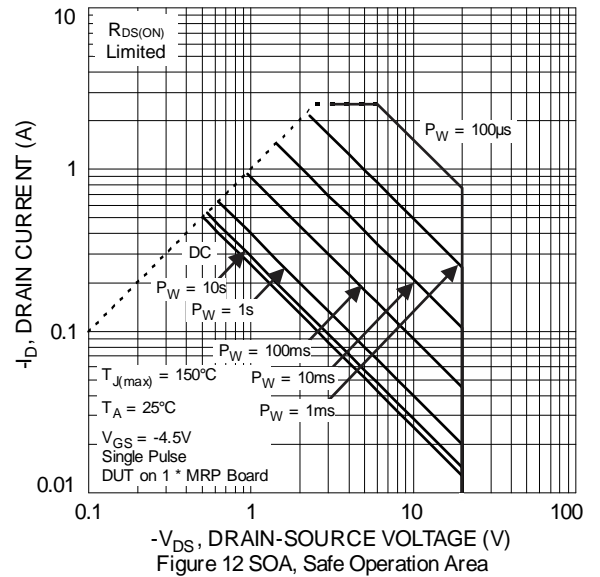
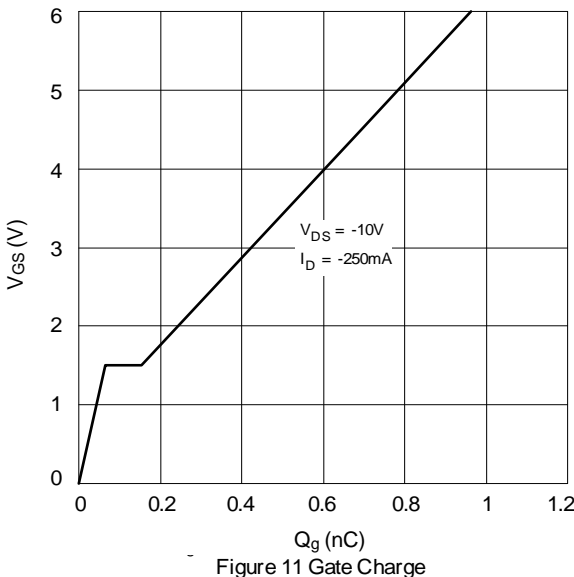
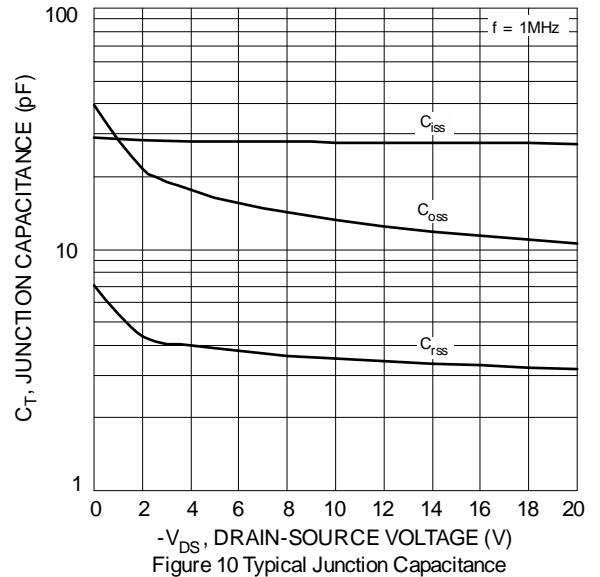
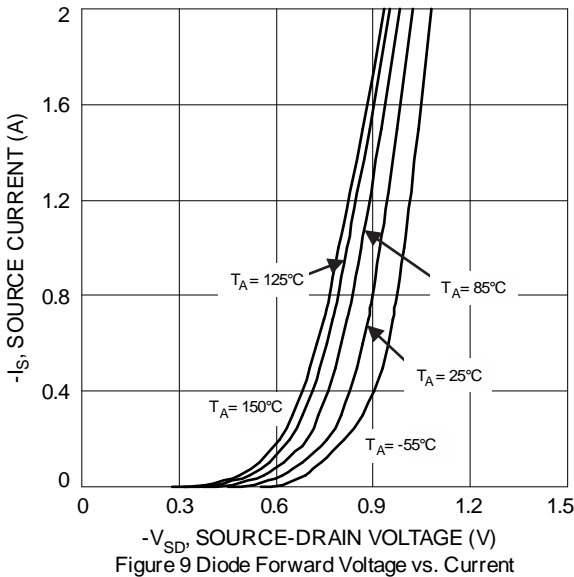
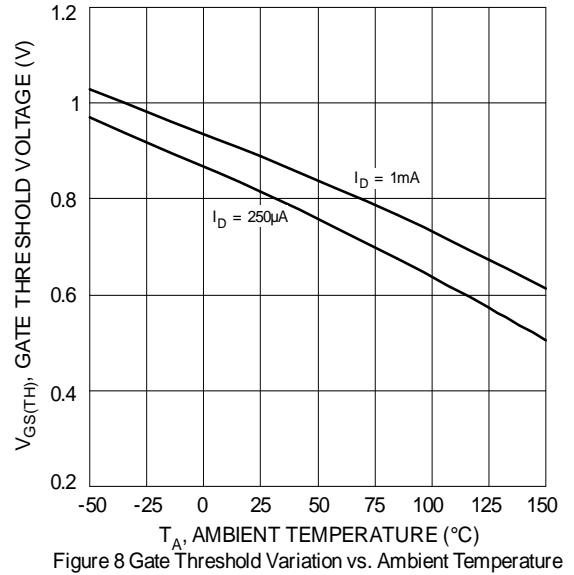
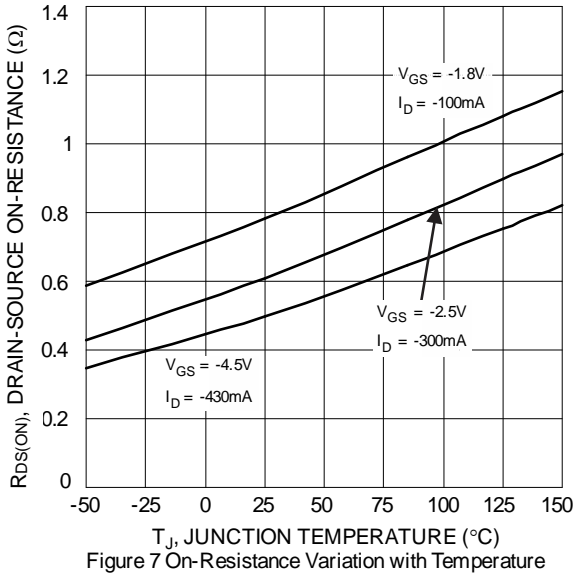
Notes: 5. Device mounted on FR-4 substrate PCB, 2oz copper, with 1inch square copper plate.
 6. Device mounted on FR-4 substrate PCB, 2oz copper, with minimum recommended pad layout.

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}	-20	—	—	V	V _{GS} = 0V, I _D = -250μA
Zero Gate Voltage Drain Current T _J = +25°C	I _{DSS}	—	—	-100	nA	V _{DS} = -20V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±2.0	μA	V _{GS} = ±4.5V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	-0.5	—	-1.0	V	V _{DS} = V _{GS} , I _D = -250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	—	0.75	Ω	V _{GS} = -4.5V, I _D = -430mA
		—	—	1.05		V _{GS} = -2.5V, I _D = -300mA
		—	—	1.5		V _{GS} = -1.8V, I _D = -150mA
Diode Forward Voltage	V _{SD}	—	—	-1.2	V	V _{GS} = 0V, I _S = -150mA
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	—	49	—	pF	V _{DS} = -16V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	12	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	3.4	—	pF	
Total Gate Charge	Q _g	—	0.7	—	pC	V _{GS} = -4.5V, V _{DS} = -10V I _D = -250mA
Gate-Source Charge	Q _{gs}	—	0.1	—	pC	
Gate-Drain Charge	Q _{gd}	—	0.1	—	pC	
Turn-On Delay Time	t _{D(on)}	—	16	—	ns	V _{DD} = -10V, V _{GS} = -4.5V R _L = 47Ω, R _G = 10Ω I _D = -200mA
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 = 1.0A, dI/dt = 100A/μs

Notes: 7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to production testing.





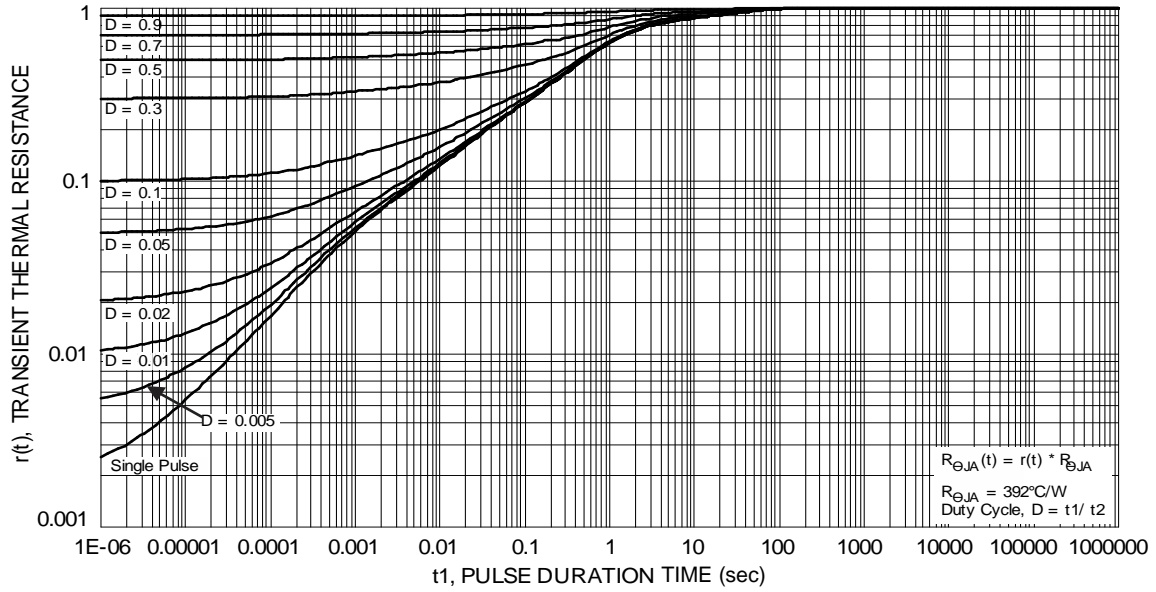
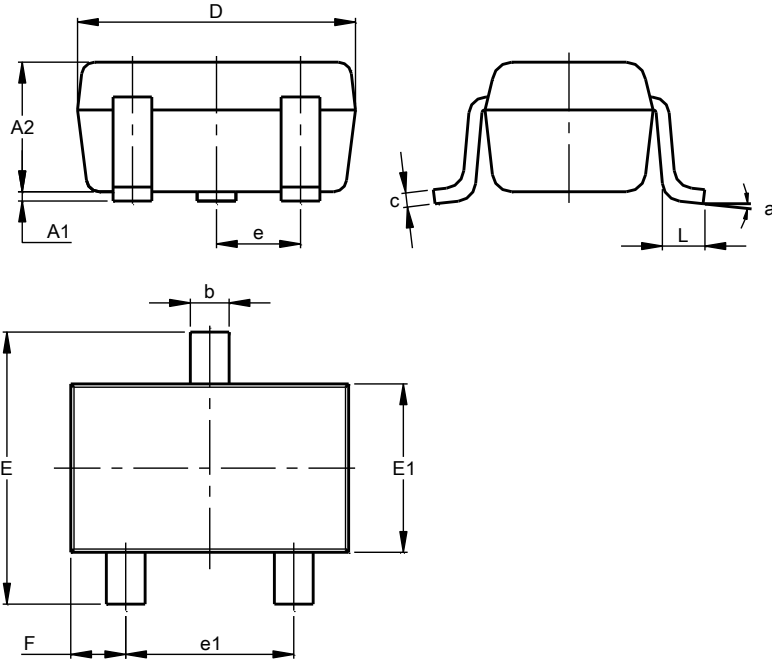


Figure 13 Transient Thermal Resistance

Package Outline Dimensions

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

SOT323

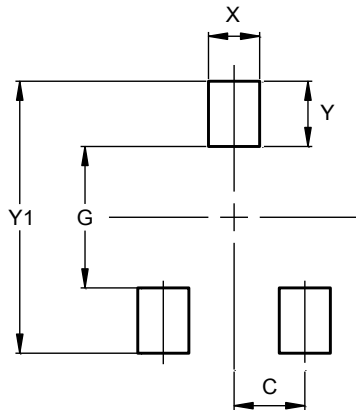


SOT323			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT323



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.470
Y	0.600
Y1	2.500

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