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Green

ZVP0545G

SOT223 P-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

Product Summary

BV_{DSS}	Max $R_{DS(ON)}$	Max I_D T_A = +25°C
-450V	150Ω @ V_{GS} = -10V	-75mA

Features and Benefits

- 450 Volt V_{DS}
- $R_{DS(ON)}$ = 150Ω
- **Lead-Free Finish; 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-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

Description and Applications

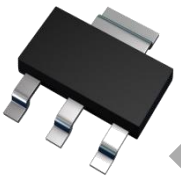
This new generation MOSFET has been designed to minimize the on-state resistance ($R_{DS(ON)}$) yet maintain superior switching performance, making it ideal for high-efficiency power-management applications.

- High-voltage power MOSFET drivers

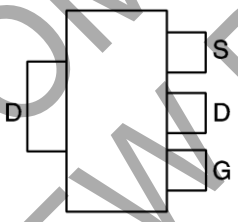
Mechanical Data

- Package: SOT223
- 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 e3
- Weight: 0.112 grams (Approximate)

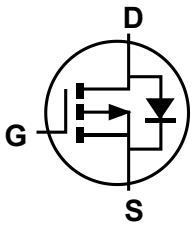
SOT223 (Type DN)



Top View



Pinout - Top View



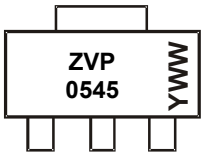
Equivalent Circuit

Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
ZVP0545GTA	SOT223 (Type DN)	1,000	Tape & Reel

Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
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



ZVP0545 = Product Type Marking Code
YWW = Date Code Marking
Y or $\overline{Y}$ = Last Digit of Year (ex: 6 = 2026)
WW or $\overline{WW}$ = Week Code (01 to 53)

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Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	-450	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D	-75	mA
Pulsed Drain Current	I_{DM}	-150	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation	P_D	2	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	-450	—	—	V	V_{GS} = 0V, I_D = 1mA
Zero Gate Voltage Drain Current (T_J = +25°C)	I_{DSS}	—	—	-20 -2	μA mA	V_{DS} = -450V, V_{GS} = 0V V_{DS} = -360V, V_{GS} = 0V, T_A = +125°C (Note 6)
Gate-Source Leakage	I_{GSS}	—	—	20	nA	V_{GS} = ±20V, V_{DS} = 0V
On-State Drain Current (Note 5)	$I_{D(ON)}$	-100	—	—	mA	V_{GS} = -10V, V_{DS} = -25V
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	-1.5	—	-4.5	V	V_{DS} = V_{GS}, I_D = -1mA
Static Drain-Source On-Resistance (Note 5)	$R_{DS(ON)}$	—	—	150	Ω	V_{GS} = -10V, I_D = -50mA
Forward Transconductance (Note 5) (Note 6)	g_{fs}	40	—	—	mS	V_{DS} = -25V, I_D = -50mA
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C_{iss}		—	120	pF	V_{DS} = -25V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}		—	20	pF	
Reverse Transfer Capacitance	C_{rss}		—	5	pF	
Turn-On Delay Time (Note 7)	$t_{D(ON)}$	—	—	10	ns	V_{DD} = -25V, I_D = -50mA
Turn-On Rise Time (Note 7)	t_R	—	—	15	ns	
Turn-Off Delay Time (Note 7)	$t_{D(OFF)}$	—	—	15	ns	
Turn-Off Fall Time (Note 7)	t_F	—	—	20	ns	

Notes: 5. Measured under pulsed conditions. Width=300μs. Duty cycle ≤2%.
6. Sample test.
7. Switching times measured with 50Ω source impedance and <5ns rise time on a pulse generator.

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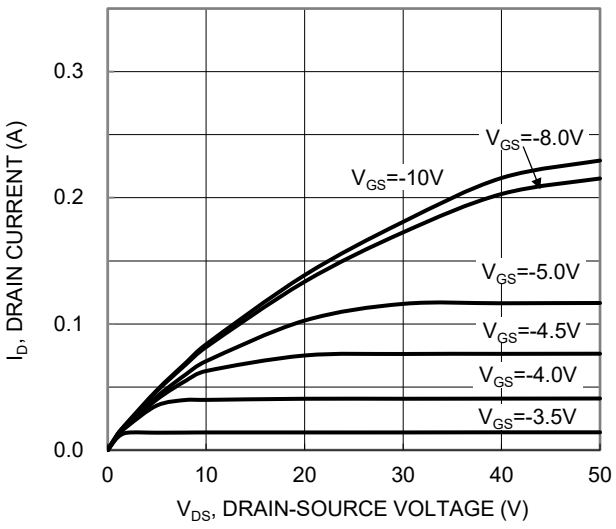


Figure 1. Typical Output Characteristic

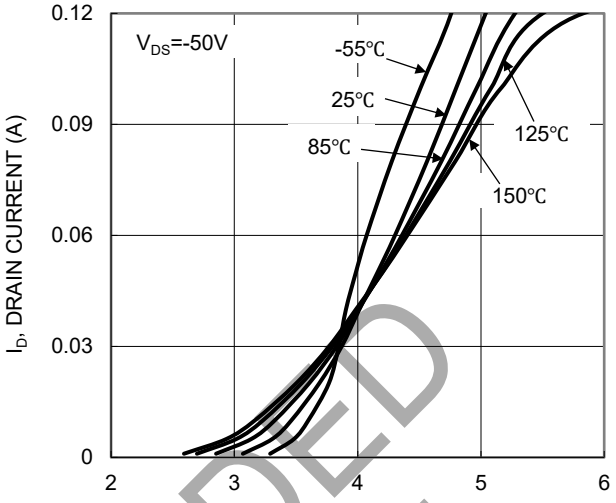


Figure 2. Typical Transfer Characteristic

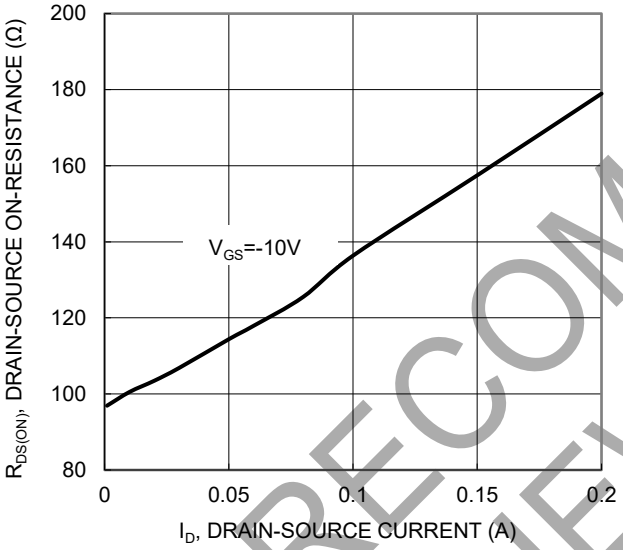


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

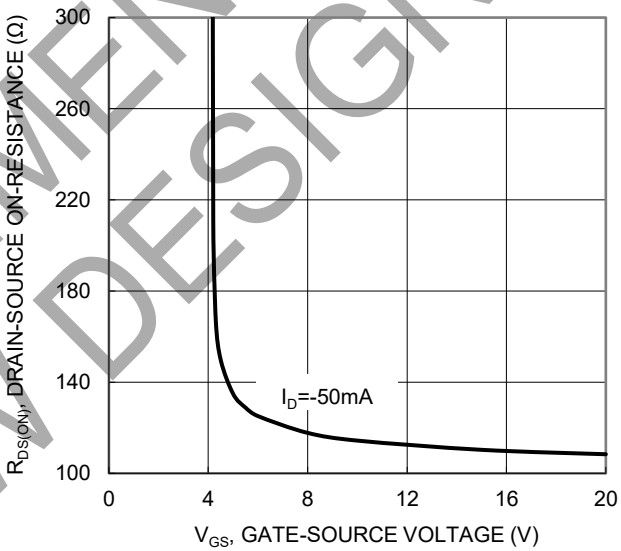


Figure 4. Typical Transfer Characteristic

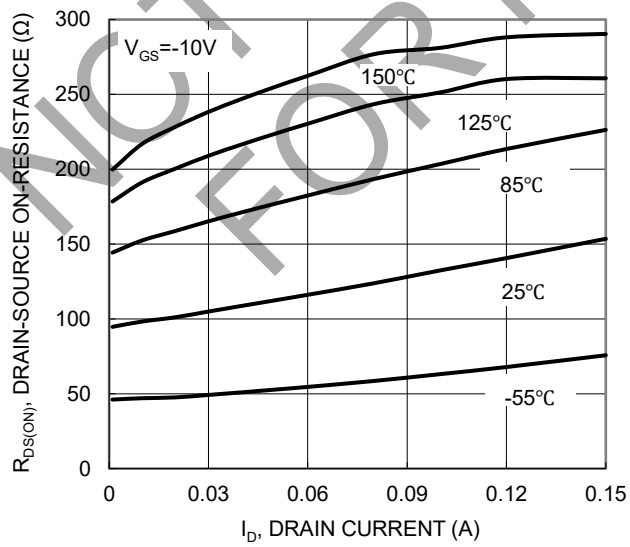


Figure 5. Typical On-Resistance vs Drain Current and Junction Temperature

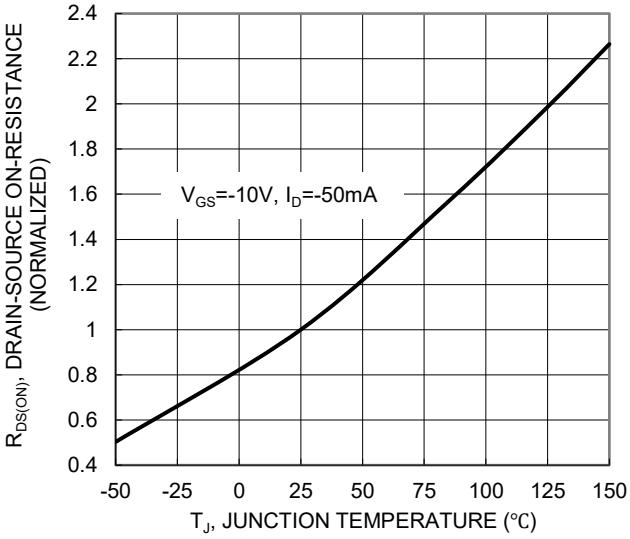


Figure 6. On-Resistance Variation with Junction Temperature

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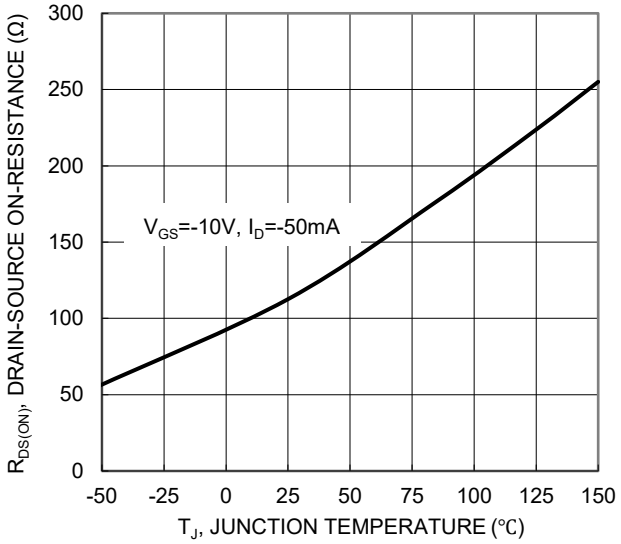


Figure 7. On-Resistance Variation with Junction Temperature

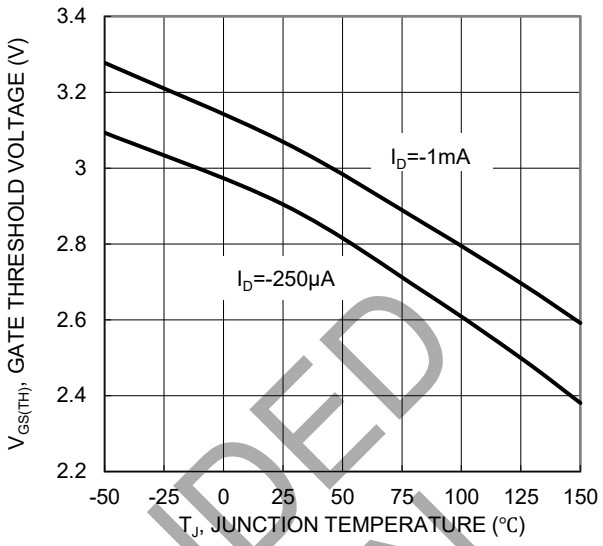


Figure 8. Gate Threshold Variation vs Junction Temperature

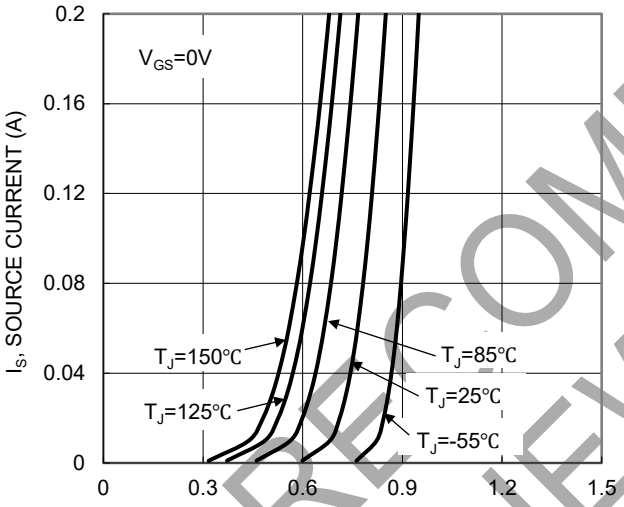


Figure 9. Diode Forward Voltage vs Current

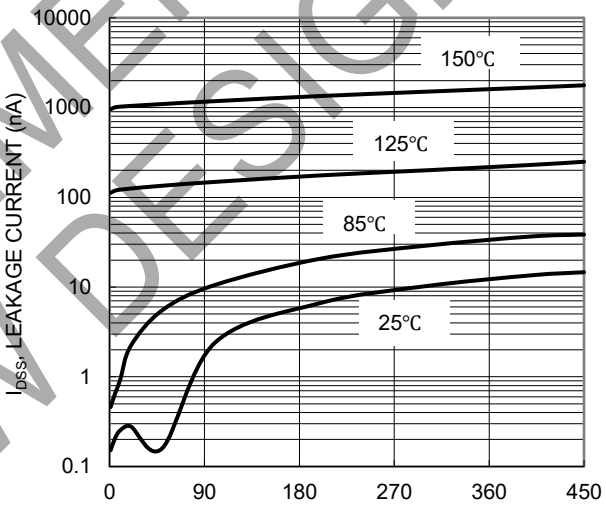


Figure 10. Typical Drain-Source Leakage Current vs Voltage

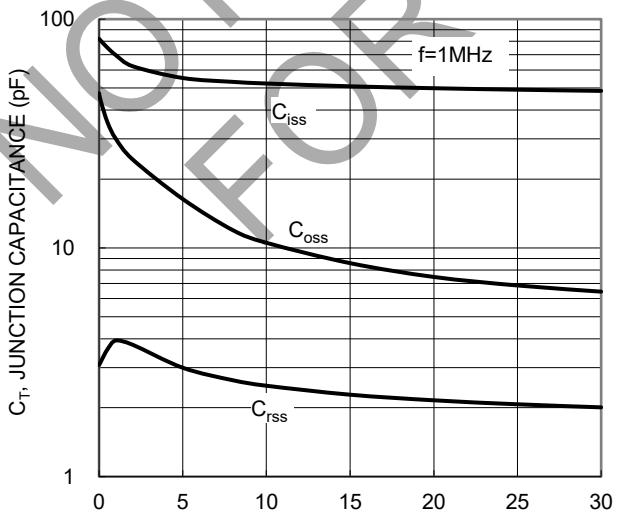


Figure 11. Typical Junction Capacitance

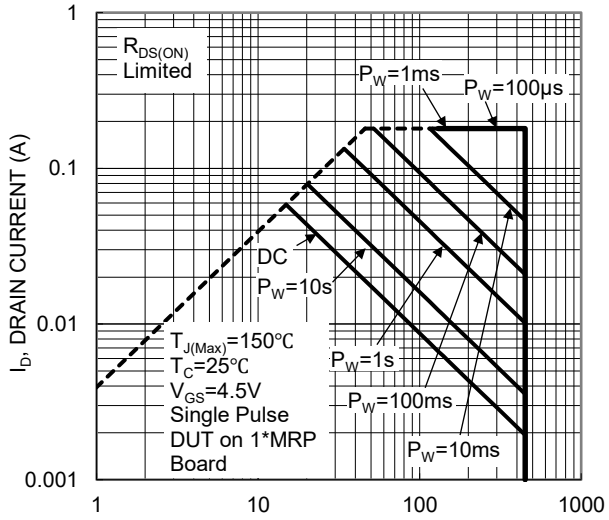


Figure 12. SOA, Safe Operation Area

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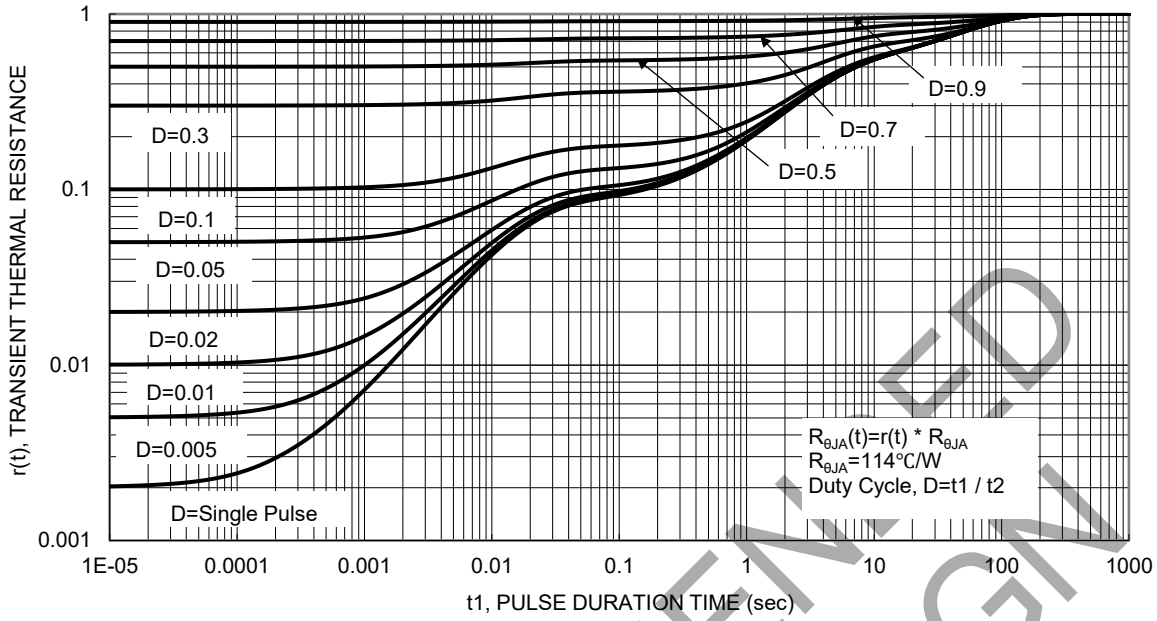


Figure 13. Transient Thermal Resistance

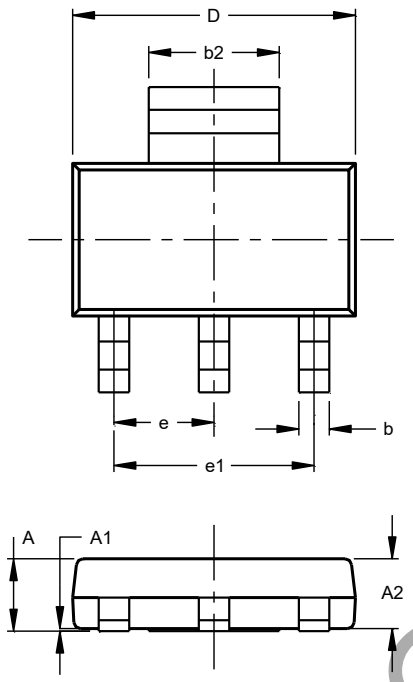
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Package Outline Dimensions

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SOT223 (Type DN)



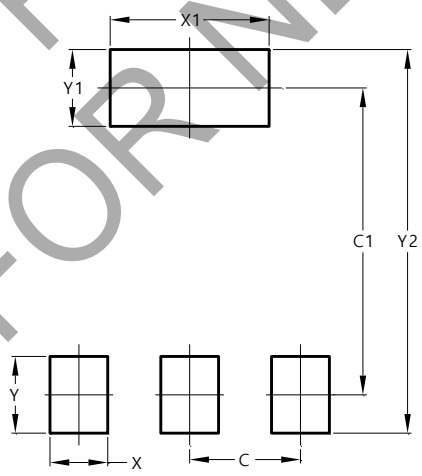
SOT223 (Type DN)			
Dim	**Min**	**Max**	**Typ**
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

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Suggested Pad Layout

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

SOT223 (Type DN)



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

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