



450V P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV _{DSS}	R _{DS(ON)}	I _D T _A = +25°C	
-450V	150Ω @ V _{GS} = -10V	-0.1A	

Features and Benefits

- Low Gate Drive
- Low Input Capacitance
- Fast Switching Speed
- 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-Q100/101/104/200, 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 450V enhancement mode p-channel MOSFET provides users with a competitive specification offering efficient power handling capability, high impedance and is free from thermal runaway and thermally induced secondary breakdown. Applications benefiting from this device include a variety of telecom and general high-voltage switching circuits.

- Load switching
- Uninterrupted power supplies

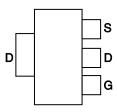
Mechanical Data

- Package: SOT223
- Package Material: Molded Plastic, "Green" Molding Compound.
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram Below
- Terminals: Finish Matte Tin Annealed over Copper Leadframe.
 Solderable per MIL-STD-202, Method 208 (§3)
- Weight: 0.112 grams (Approximate)

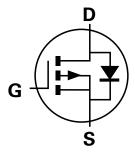
SOT223



Top View



Pinout - Top View



Equivalent Circuit

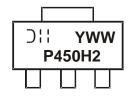
Ordering Information (Note 4)

Orderable Part Number	Dealises	Packing		
Orderable Part Number	Package	Qty.	Carrier	
DMP45H150DHE-13	SOT223	2,500	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
- 4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



Oll = Manufacturer's Marking
P450H2 = Product Type Marking Code
YWW = Date Code Marking
Y = Year (ex: 5 = 2025)
WW = Week (01 to 53)



Characteristic	Symbol	Value	Unit	
Drain-Source Voltage	VDSS	-450	V	
Gate-Source Voltage	Vgss	±30	V	
Continuous Drain Current (Note 5) V _{GS} = -10V	$T_A = +25$ °C $T_A = +70$ °C	lo	-0.1 -0.077	А
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)	I _{DM}	-0.45	Α	
Maximum Body Diode Continuous Current	Is	-0.1	Α	
Avalanche Energy, L = 60mH	Eas	2	mJ	
Avalanche Current, L = 60mH	las	0.25	Α	
Peak Diode Recovery dv/dt (I _{SD} ≤ 1.0A, di/dt ≤ 100A/µs)		dv/dt	4.5	V/ns

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

Characteristic	Symbol	Value	Unit	
Total Daylar Dissination (Note 5)	T _A = +25°C	D-	2.1	W
Total Power Dissipation (Note 5)	$T_A = +70$ °C	PD	1.35	W
Thermal Resistance, Junction to Ambient	(Note 5)	R _{θJA}	59.4	°C/W
Operating and Storage Temperature Range		TJ, TSTG	-55 to +150	°C

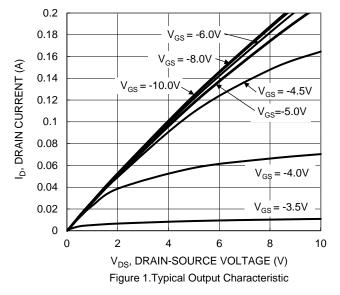
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 6)	OFF CHARACTERISTICS (Note 6)						
Drain-Source Breakdown Voltage	BVDSS	-450	_	_	V	$V_{GS} = 0V, I_{D} = -250\mu A$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	-1	μΑ	V _{DS} = -450V, V _{GS} = 0V	
Gate-Source Leakage	Igss	_	_	±100	nA	$V_{GS} = \pm 30V$, $V_{DS} = 0V$	
ON CHARACTERISTICS (Note 6)							
Gate Threshold Voltage	V _{GS(TH)}	-2.0	-3.0	-4.0	V	$V_{DS} = V_{GS}$, $I_D = -250\mu A$	
Static Drain-Source On-Resistance	RDS(ON)	_	40	150	Ω	V _G S = -10V, I _D = -50mA	
Diode Forward Voltage	VsD	_	-0.8	-1.2	V	V _G S = 0V, I _S = -50mA	
DYNAMIC CHARACTERISTICS (Note 7)							
Input Capacitance	C _{iss}	_	59.2	_			
Output Capacitance	Coss	_	11	_	pF	V _{DS} = -25V, V _{GS} = 0V, f = 1.0MHz	
Reverse Transfer Capacitance	Crss	_	1	_			
Forward Transconductance	g FS	40	_	_	ms	$V_{DS} = -25V, I_{D} = -50mA$	
Gate Resistance	R _G	_	50	_	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1.0MHz$	
Total Gate Charge	Qg	_	1.8	_		2051/ 1 400 4	
Gate-Source Charge	Qgs	_	0.3	_	nC	V _{DS} = -225V, I _D = -100mA V _{GS} = -10V	
Gate-Drain Charge	Q _{gd}	_	0.9	_		VGS = -10V	
Turn-On Delay Time	t _D (ON)	_	12	_			
Turn-On Rise Time	tr	_	9	_		$V_{DD} = -225V, R_G = 3.0\Omega$ $I_D = -100mA$	
Turn-Off Delay Time	tD(OFF)	_	19	_	ns		
Turn-Off Fall Time	t _F	_	87	_			
Body Diode Reverse-Recovery Time	t _{RR}	_	108	_	ns	$V_{GS} = 0V$, $I_S = -1A$, $V_{DD} = -100V$ di/dt = 100A/ μ s	
Body Diode Reverse-Recovery Charge	Qrr	_	391	_	nC	$V_{GS} = 0V$, $I_S = -1A$, $V_{DD} = -100V$ di/dt = 100A/ μ s	

Notes:

- $5. \ \, \text{Device mounted on FR-4 substrate PC board, 2oz copper, with 1 inch square copper pad layout. }$
- Short duration pulse test used to minimize self-heating effect.
 Guaranteed by design. Not subject to production testing.





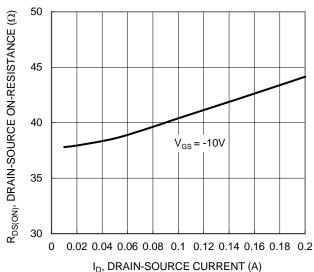


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

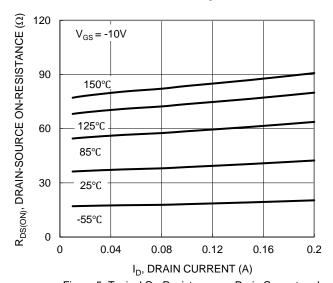


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

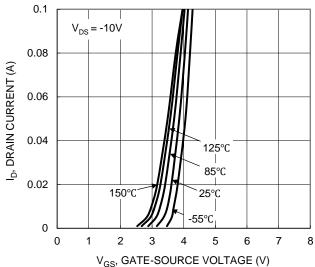


Figure 2. Typical Transfer Characteristic

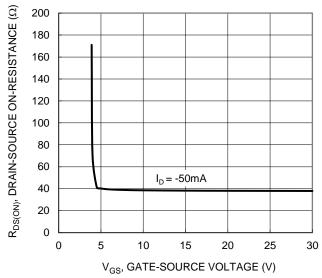


Figure 4. Typical Transfer Characteristic

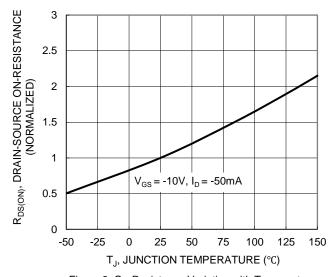


Figure 6. On-Resistance Variation with Temperature



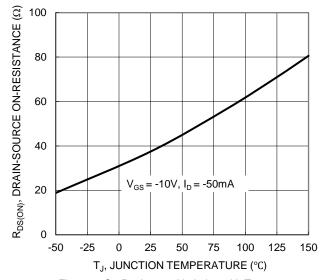


Figure 7. On-Resistance Variation with Temperature

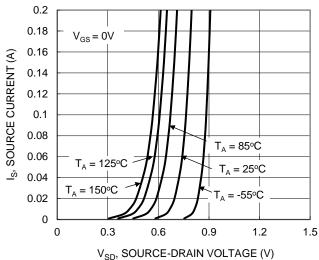


Figure 9. Diode Forward Voltage vs. Current

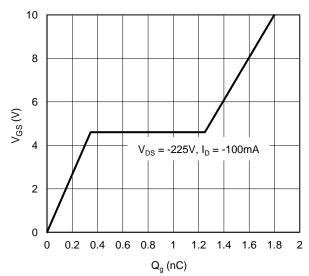


Figure 11. Gate Charge

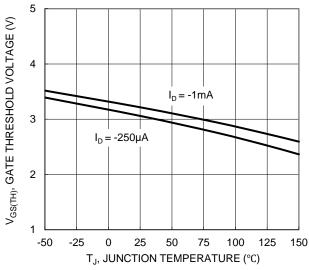


Figure 8. Gate Threshold Variation vs. Junction Temperature

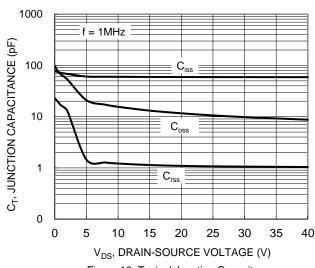


Figure 10. Typical Junction Capacitance

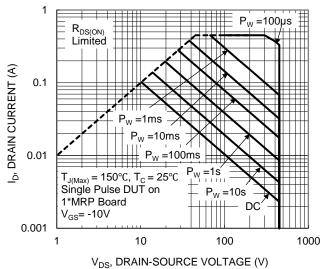


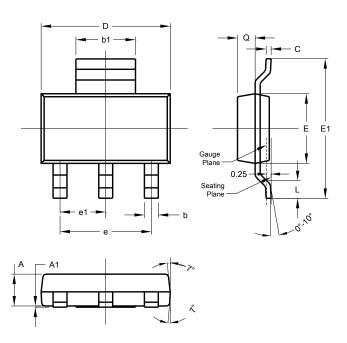
Figure 12. SOA, Safe Operation Area



Package Outline Dimensions

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

SOT223

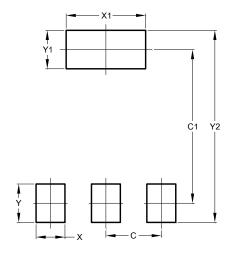


SOT223					
Dim	Min	Max	Тур		
Α	1.55	1.65	1.60		
A1	0.010	0.15	0.05		
b	0.60	0.80	0.70		
b1	2.90	3.10	3.00		
С	0.20	0.30	0.25		
D	6.45	6.55	6.50		
Е	3.45	3.55	3.50		
E1	6.90	7.10	7.00		
е	-	-	4.60		
e1	-	-	2.30		
L	0.85	1.05	0.95		
Q	0.84	0.94	0.89		
All Dimensions in mm					

Suggested Pad Layout

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

SOT223



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



IMPORTANT NOTICE

- 1. DIODES INCORPORATED (Diodes) AND ITS SUBSIDIARIES MAKE NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO ANY INFORMATION CONTAINED IN THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).
- 2. The Information contained herein is for informational purpose only and is provided only to illustrate the operation of Diodes' products described herein and application examples. Diodes does not assume any liability arising out of the application or use of this document or any product described herein. This document is intended for skilled and technically trained engineering customers and users who design with Diodes' products. Diodes' products may be used to facilitate safety-related applications; however, in all instances customers and users are responsible for (a) selecting the appropriate Diodes products for their applications, (b) evaluating the suitability of Diodes' products for their intended applications, (c) ensuring their applications, which incorporate Diodes' products, comply the applicable legal and regulatory requirements as well as safety and functional-safety related standards, and (d) ensuring they design with appropriate safeguards (including testing, validation, quality control techniques, redundancy, malfunction prevention, and appropriate treatment for aging degradation) to minimize the risks associated with their applications.
- 3. Diodes assumes no liability for any application-related information, support, assistance or feedback that may be provided by Diodes from time to time. Any customer or user of this document or products described herein will assume all risks and liabilities associated with such use, and will hold Diodes and all companies whose products are represented herein or on Diodes' websites, harmless against all damages and liabilities.
- 4. Products described herein may be covered by one or more United States, international or foreign patents and pending patent applications. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks and trademark applications. Diodes does not convey any license under any of its intellectual property rights or the rights of any third parties (including third parties whose products and services may be described in this document or on Diodes' website) under this document.
- 5. Diodes' products are provided subject to Diodes' Standard Terms and Conditions of Sale (https://www.diodes.com/about/company/terms-and-conditions/terms-and-conditions-of-sales/) or other applicable terms. This document does not alter or expand the applicable warranties provided by Diodes. Diodes does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel.
- 6. Diodes' products and technology may not be used for or incorporated into any products or systems whose manufacture, use or sale is prohibited under any applicable laws and regulations. Should customers or users use Diodes' products in contravention of any applicable laws or regulations, or for any unintended or unauthorized application, customers and users will (a) be solely responsible for any damages, losses or penalties arising in connection therewith or as a result thereof, and (b) indemnify and hold Diodes and its representatives and agents harmless against any and all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim relating to any noncompliance with the applicable laws and regulations, as well as any unintended or unauthorized application.
- 7. While efforts have been made to ensure the information contained in this document is accurate, complete and current, it may contain technical inaccuracies, omissions and typographical errors. Diodes does not warrant that information contained in this document is error-free and Diodes is under no obligation to update or otherwise correct this information. Notwithstanding the foregoing, Diodes reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes.
- 8. Any unauthorized copying, modification, distribution, transmission, display or other use of this document (or any portion hereof) is prohibited. Diodes assumes no responsibility for any losses incurred by the customers or users or any third parties arising from any such unauthorized use.
- 9. This Notice may be periodically updated with the most recent version available at https://www.diodes.com/about/company/terms-and-conditions/important-notice

The Diodes logo is a registered trademark of Diodes Incorporated in the United States and other countries. All other trademarks are the property of their respective owners.

© 2025 Diodes Incorporated. All Rights Reserved.

www.diodes.com