



WANSEMI  
万尚半导体

WP4435AD8

# Enhancement Mode Single P-Channel Power MOSFET

SOP8/PMOS/-30V/ $\pm$ 20V/-1.5V/-9.3A/16m $\Omega$

Rev0.1

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## -30V, 16mΩ, -9.3A, Single P-Channel

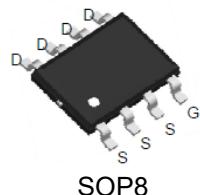
### 1. Features

- ◆ -30V MOSFET technology
- ◆ Low on-state resistance
- ◆ Fast switching
- ◆  $V_{GS} \pm 20V$
- ◆ 100% RG Tested
- ◆ 100% UIS Tested

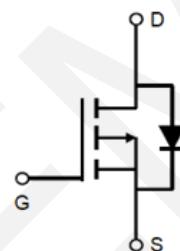
$V_{DS}$	$R_{DS(on)}$ Typ.	$I_D$ Max.
-30V	16mΩ @ -10V	-9.3A
	25mΩ @ -4.5V	

### 2. Applications

- ◆ Power Switching Application
- ◆ Load Switching



SOP8  
Pin Description



Schematic Diagram

### 3. Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WP4435AD8	4435A	SOP8	4,000	48,000

### 4. Absolute Max Ratings at $T_a=25^\circ C$ (Note1)

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	$V_{DSS}$	-30	V
Gate to Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current (DC)	$I_D$	-9.3	A
Drain Current (Pulse), $PW \leq 300\mu s$	$I_{DP}$	-37.2	A
Total Dissipation	$P_D$	3.1	W
Avalanche Energy, Single Pulsed	$E_{AS}$	25	mJ
Junction Temperature	$T_j$	150	°C
Storage Temperature	$T_{stg}$	-55 to +150	°C

Note 1: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



## 5.Thermal Resistance Ratings (Note 2)

Parameter	Symbol	Value	Unit
Junction to Ambient	R <sub>θJA</sub>	33.8	°C/W

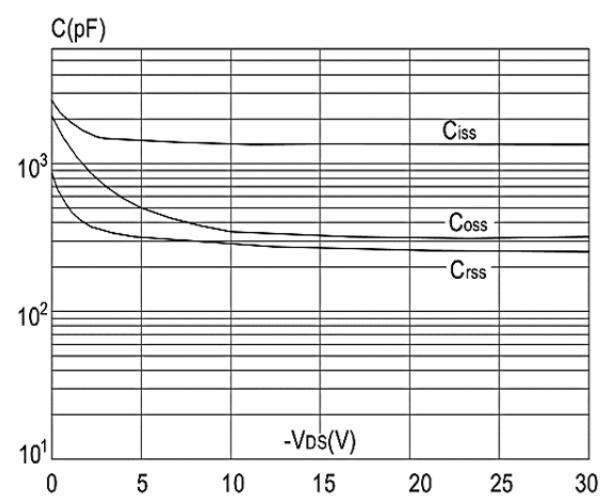
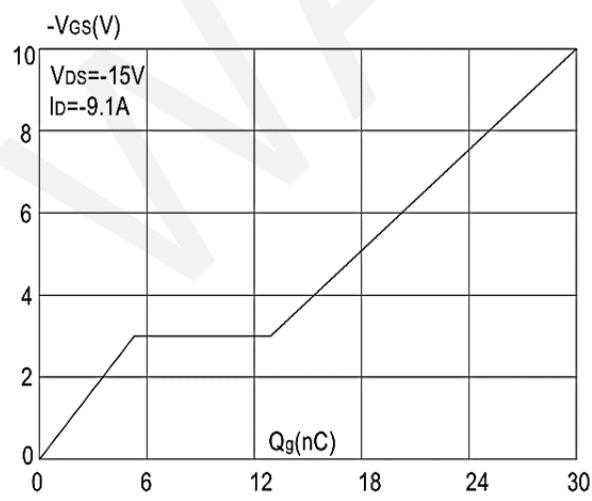
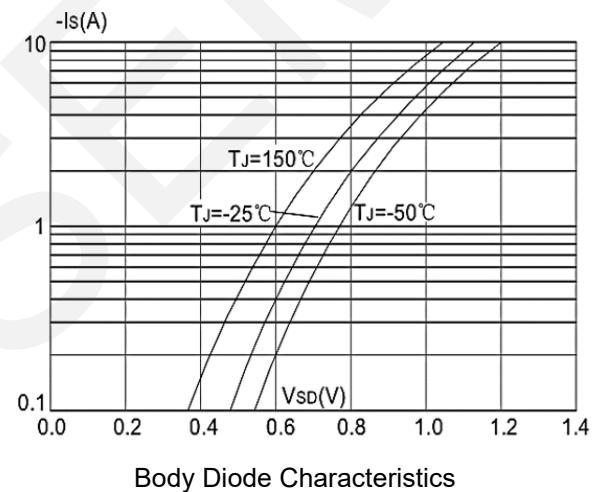
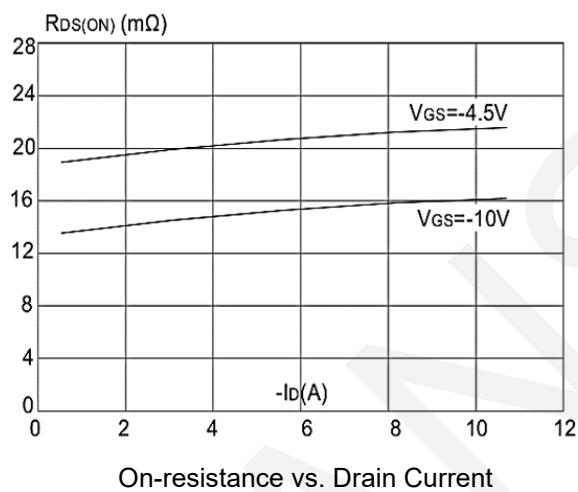
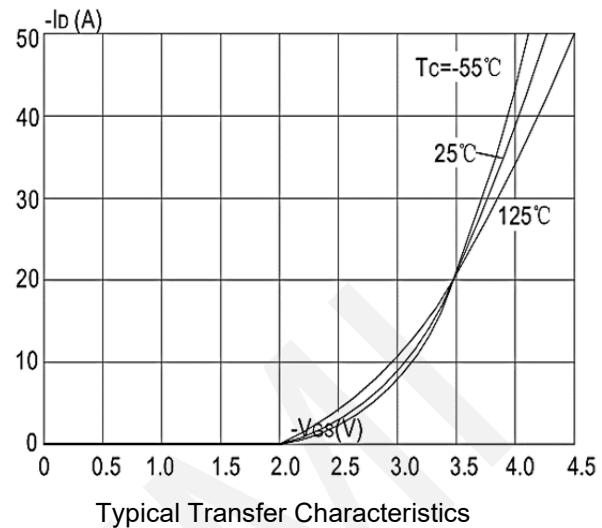
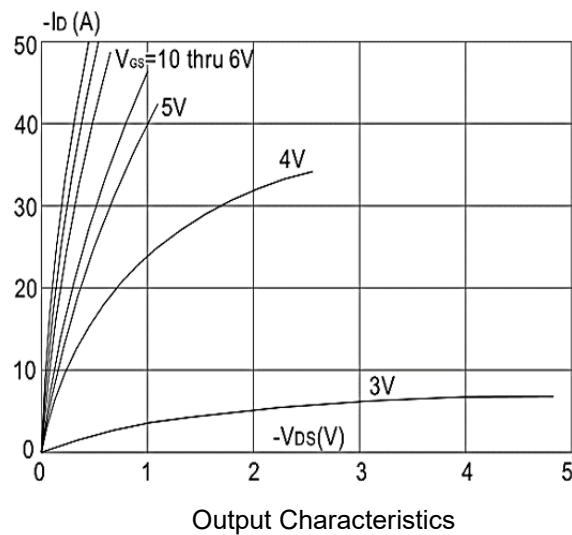
Note 2: When mounted on 1 inch square copper board  $t \leq 10\text{sec}$  The value in any given application depends on the user's specific board design.

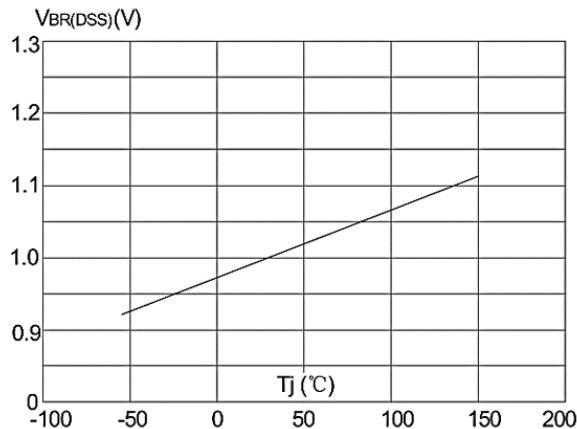
## 6.Electrical Characteristics at Ta=25°C (Note 3)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> = -250μA, V <sub>GS</sub> = 0V	-30	-	-	V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V	-	-	-1.0	μA
Gate to Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V	-	-	±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.0	-1.5	-2.5	V
Static Drain to Source On-State Resistance	R <sub>DS(on)</sub>	I <sub>D</sub> = -9A, V <sub>GS</sub> = -10V	-	16	20	mΩ
		I <sub>D</sub> = -5A, V <sub>GS</sub> = -4.5V	-	25	30	mΩ
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-15V, Frequency=1.0MHz	-	1550	-	pF
Output Capacitance	C <sub>oss</sub>		-	327	-	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		-	278	-	pF
Turn-ON Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -15V, I <sub>D</sub> = -6A, R <sub>G</sub> = 2.5Ω, V <sub>GS</sub> = -10V	-	14	-	ns
Rise Time	t <sub>r</sub>		-	20	-	ns
Turn-OFF Delay Time	t <sub>d(off)</sub>		-	95	-	ns
Fall Time	t <sub>f</sub>		-	65	-	ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = -10V, I <sub>D</sub> = -9.1A	-	30	-	nC
	Q <sub>gs</sub>		-	5.3	-	nC
	Q <sub>gd</sub>		-	7.6	-	nC
Diode Forward Voltage	V <sub>FSD</sub>	I <sub>SD</sub> = -9A, V <sub>GS</sub> = 0	-0.5	-	-1.2	V

Note 3: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

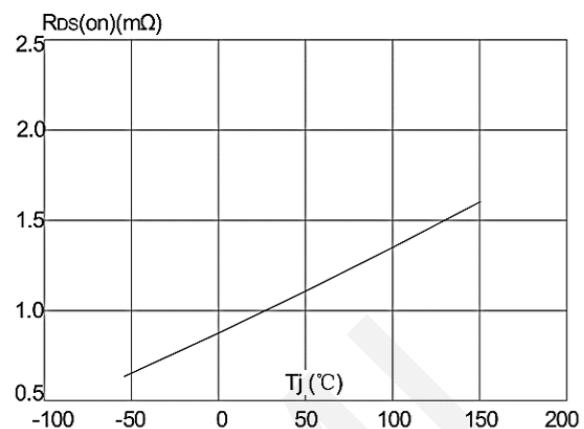
## 7.Typical electrical and thermal characteristics





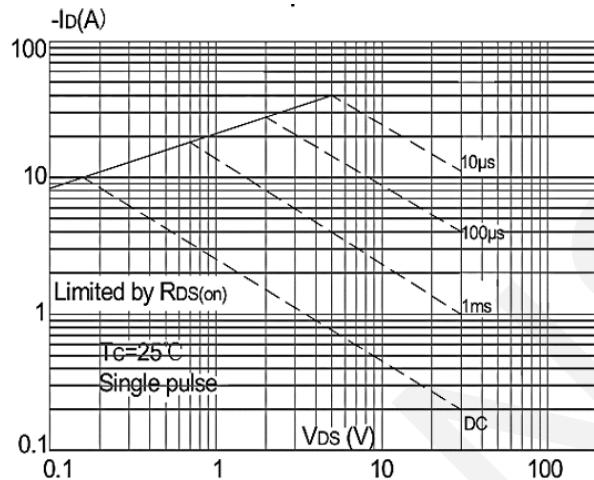
Normalized Breakdown Voltage vs.

Junction Temperature

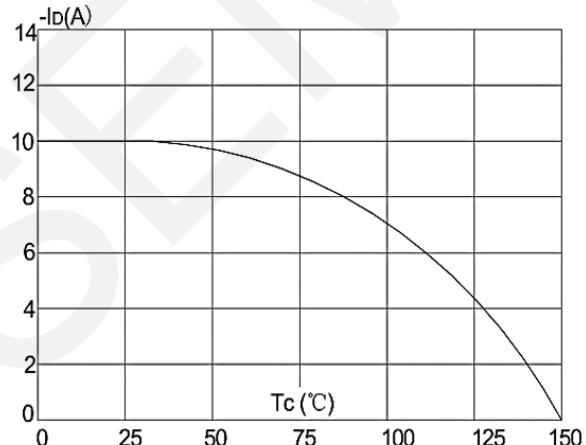
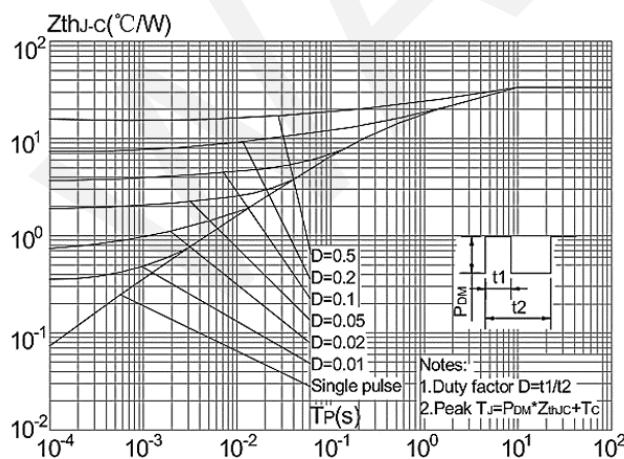


Normalized on Resistance vs.

Junction Temperature

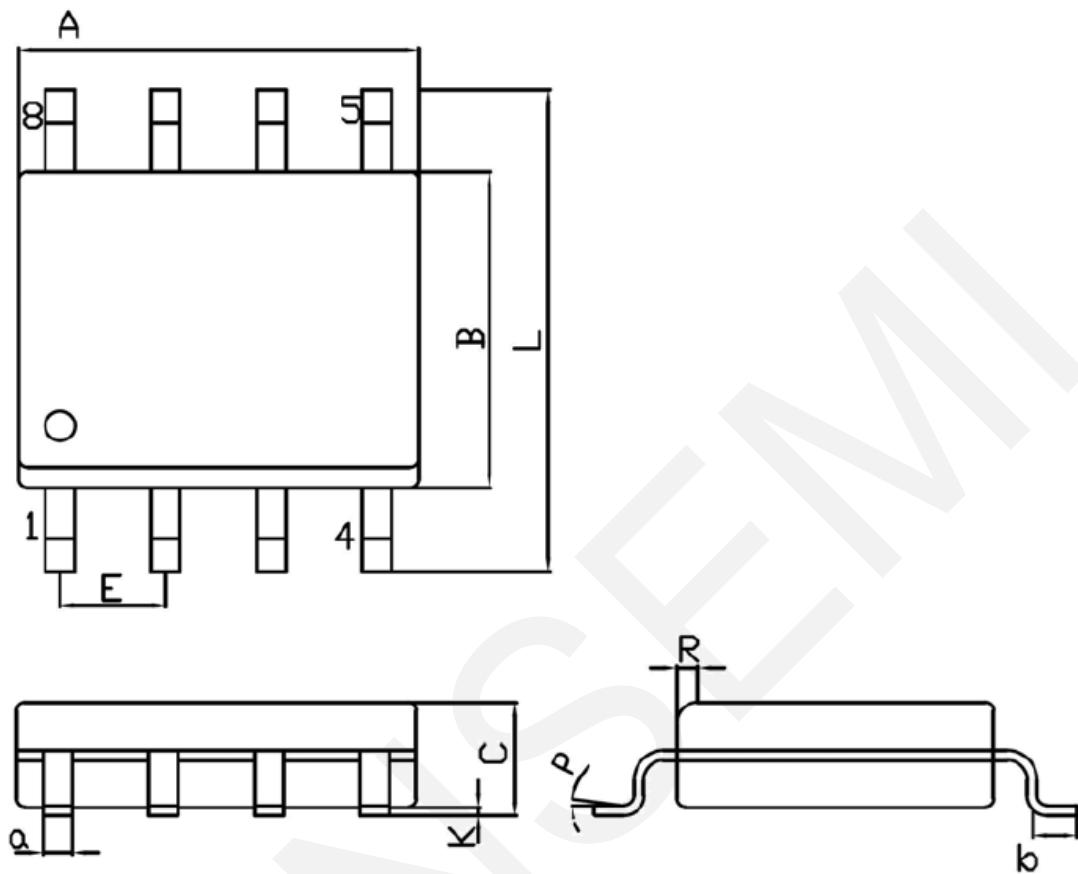


Maximum Safe Operating Area


Maximum Continuous Drain Current vs.  
Case Temperature

Normalized Maximum Transient  
Thermal Impedance



## 8. Package Dimensions



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.70	5.10	C	1.35	1.75
B	3.70	4.10	a	0.35	0.49
L	5.80	6.20	R	0.30	0.60
E	1.27BSC		P	0°	7°
K	0.12	0.22	b	0.40	1.25

## 9. Important Notice

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