



**WANSEMI**  
万芯半导体

**WP30P110PA**

# **Enhancement Mode P-Channel Power MOSFET**

PDFN5X6/PMOS/-30V/ $\pm 20V$ /-1.7V/-110A/2.5m $\Omega$

Rev1.0

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## -30V, 2.5mΩ, -110A, P-Channel Enhancement MOSFET

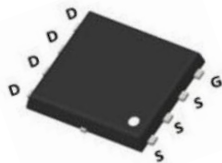
### 1.Features

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

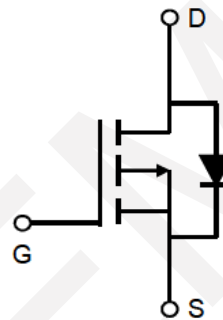
$V_{DS}$	$R_{DS(on)}$ Typ.	$I_D$ Max.
-30V	2.5mΩ @ -10V	-110A
	4.0mΩ @ -4.5V	

### 2.Applications

- ◆ Power Switching Application
- ◆ Load Switching



PDFN5X6  
Pin Description



Schematic Diagram

### 3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WP30P110PA	*	PDFN5X6	5,000	50,000

### 4.Absolute Max Ratings at $T_c=25^\circ C$ (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)	$I_D$	-110	A
Drain Current (Pulse), $PW \leq 300\mu s$	$I_{DP}$	-440	A
Total Dissipation	$P_D$	60	W
Avalanche Energy, Single Pulsed	$E_{AS}$	576	mJ
Junction Temperature	$T_j$	175	$^\circ C$
Storage Temperature	$T_{stg}$	-55 to +175	$^\circ C$

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 Case	$R_{\theta JC}$	3.6	$^{\circ}C/W$

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.

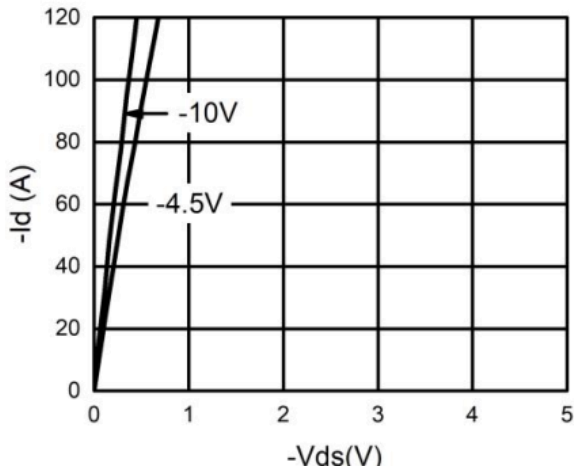
**6. Electrical Characteristics at  $T_a=25^{\circ}C$  (Note 3)**

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -250\mu A, V_{GS} = 0V$	-30	-	-	V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -30V, V_{GS} = 0V$	-	-	-1	$\mu A$
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1.0	-1.7	-2.5	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	$I_D = -20A, V_{GS} = -10V$	-	2.5	3.1	m $\Omega$
		$I_D = -20A, V_{GS} = -4.5V$	-	4.0	5.0	m $\Omega$
Input Capacitance	$C_{iss}$	$V_{GS}=0V,$ $V_{DS}=-15V,$ Frequency=1.0MHz	-	7000	-	pF
Output Capacitance	$C_{oss}$		-	820	-	pF
Reverse Transfer Capacitance	$C_{rss}$		-	540	-	pF
Turn-ON Delay Time	$t_{d(on)}$		-	14	-	ns
Rise Time	$t_r$	$V_{DS} = -15V, R_L=0.75\Omega,$ $V_{GS} = -10V,$ $R_{GEN} = 3\Omega$	-	13	-	ns
Turn-OFF Delay Time	$t_{d(off)}$		-	65	-	ns
Fall Time	$t_f$		-	37	-	ns
Total Gate Charge	$Q_g$	$V_{DS} = -15V,$ $V_{GS} = -10V,$ $I_D = -20A$	-	130	-	nC
	$Q_{gs}$		-	12	-	nC
	$Q_{gd}$		-	31	-	nC
Diode Forward Voltage	$V_{FSD}$	$I_S = -20A, V_{GS} = 0$	-	-	-1.2	V

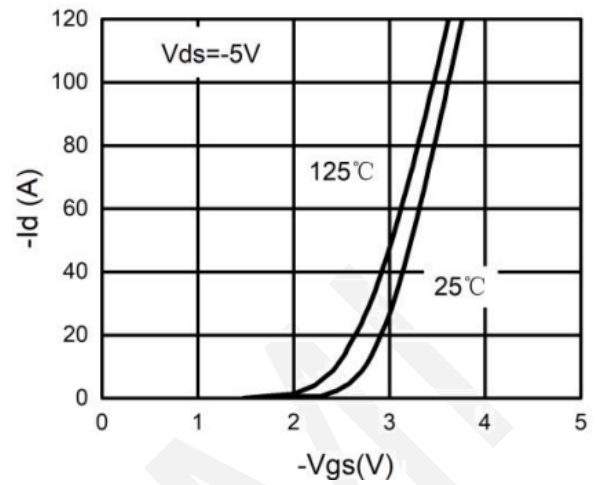
Note 3: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



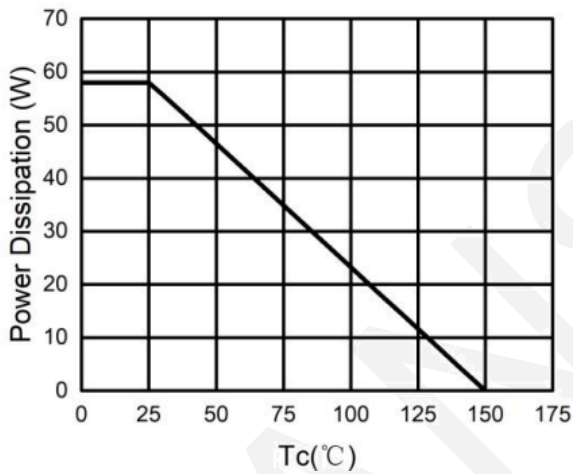
### 7. Typical electrical and thermal characteristics



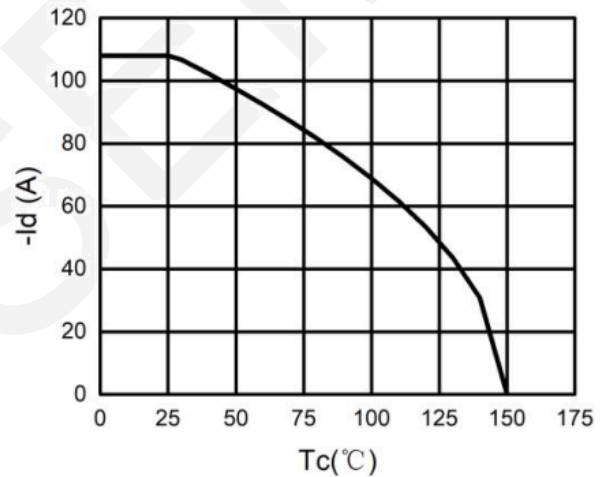
Output Characteristics



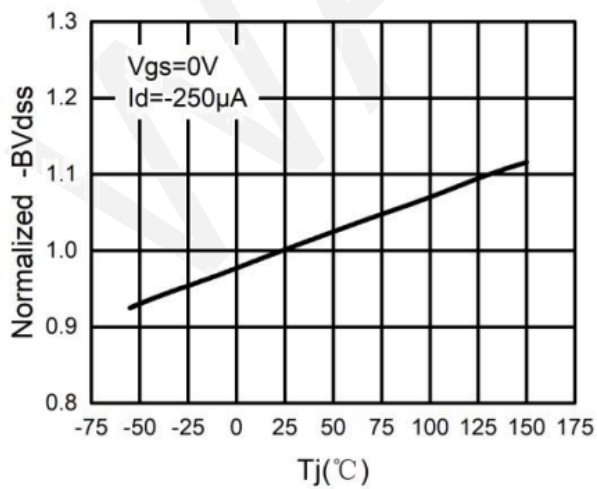
Typical Transfer Characteristics



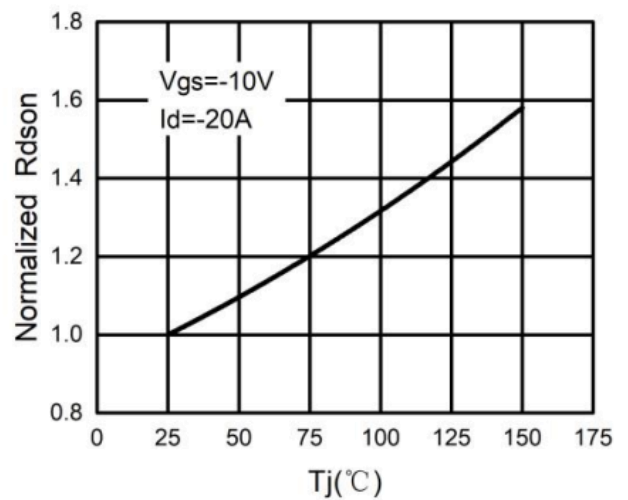
Power Dissipation



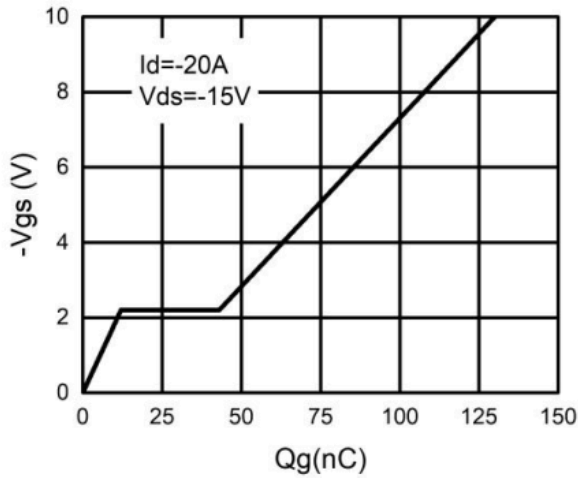
Drain Current



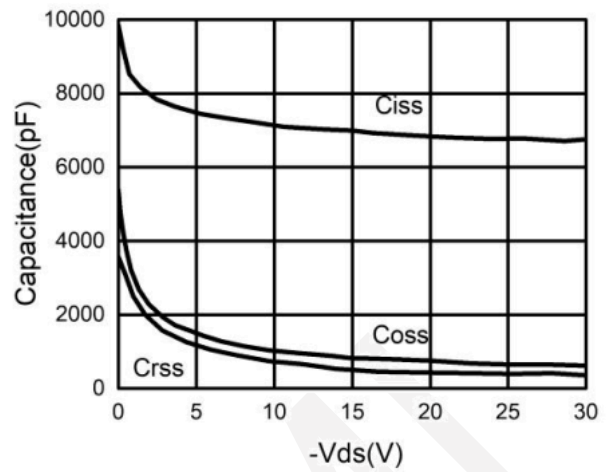
$BV_{DSS}$  vs Junction Temperature



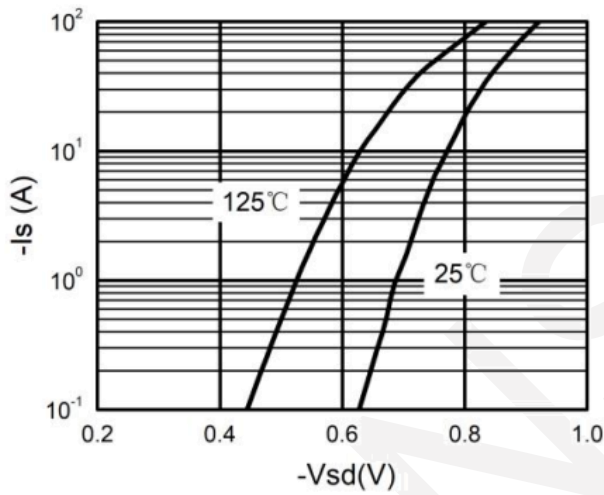
$R_{DS(ON)}$  vs Junction Temperature



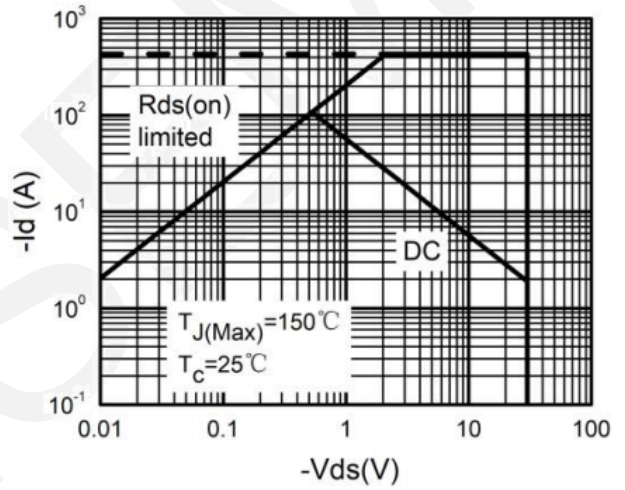
Gate Charge Waveforms



Capacitance



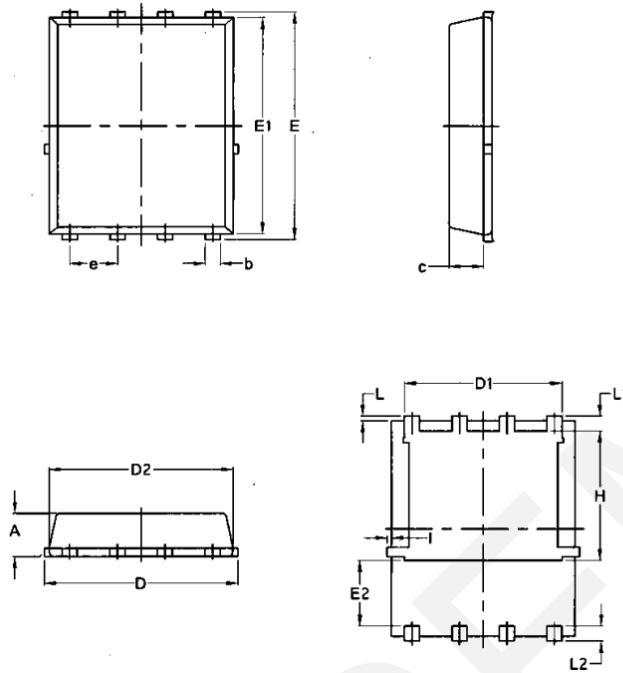
Body-Diode Characteristics



Maximum Safe Operating Area



**8.Package Dimensions**



Symbol	Common		Inch	
	mm		Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070

## 9. Important Notice

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