



WANSEMI
万晶半导体

WX058P02P3

Enhancement Mode N-Channel Power MOSFET

PDFN3X3/PMOS/-20V/ \pm 12V/-0.9V/-55A/5.4m Ω

Rev0.5



-20V, 5.4mΩ, -55A, P-Channel MOSFET

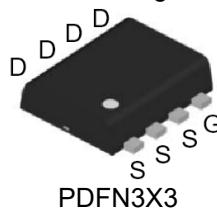
1. Features

- ◆ -20V MOSFET technology
- ◆ Low on-state resistance
- ◆ Fast switching
- ◆ $V_{GS} \pm 12V$
- ◆ 100% RG Tested
- ◆ 100% UIS Tested

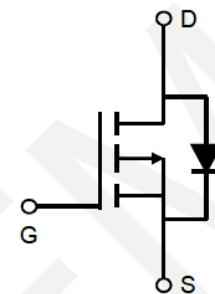
V_{DS}	$R_{DS(on)}$ Typ.	I_D Max.
-20V	5.4mΩ @ -4.5V	-55A
	7.9mΩ @ -2.5V	

2. Applications

- ◆ Power Switching Application
- ◆ Load Switching



Pin Description



Schematic Diagram

3. Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WX058P02P3	058P02	PDFN3X3	5,000	50,000

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

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	V_{DSS}	-20	V
Gate to Source Voltage	V_{GSS}	± 12	V
Drain Current (DC)	I_D	-55	A
Drain Current (Pulse), $PW \leq 300\mu s$	I_{DP}	-220	A
Total Dissipation	P_D	42	W
Avalanche Energy, Single Pulsed	E_{AS}	72.25	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 Case	R _{AJC}	3.0	°C/W

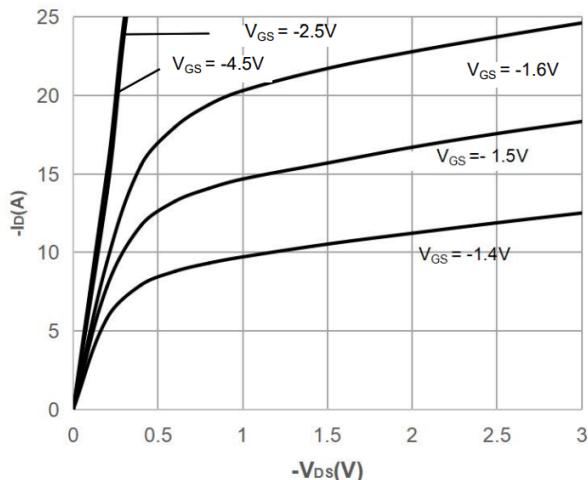
Note 2: When mounted on 1 inch square copper board $t \leq 10\text{sec}$ The value in any given application depends on the user's specific board design.

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

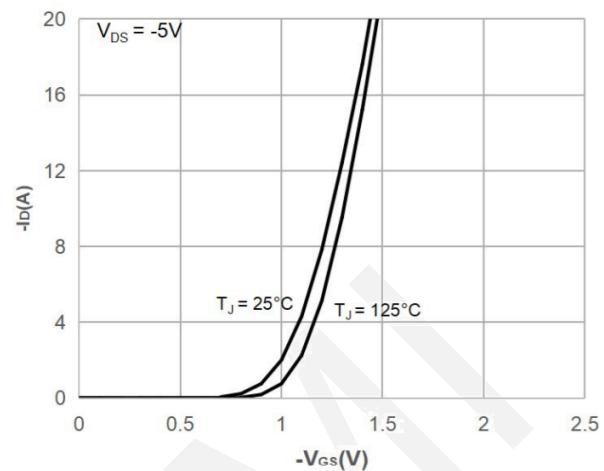
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	V _{(BR)DSS}	I _D = -250μA, V _{GS} = 0V	-20	-	-	V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} = -20V, V _{GS} = 0V	-	-	-1	μA
Gate to Source Leakage Current	I _{GSS}	V _{GS} = ±12V, V _{DS} = 0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.4	-0.9	-1.2	V
Static Drain to Source On-State Resistance	R _{DS(on)}	I _D = -15A, V _{GS} = -4.5V	-	5.4	7.0	mΩ
		I _D = -12A, V _{GS} = -2.5V	-	7.9	10.5	mΩ
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-10V, Frequency=1.0MHz	-	3962	-	pF
Output Capacitance	C _{oss}		-	471	-	pF
Reverse Transfer Capacitance	C _{rss}		-	384	-	pF
Turn-ON Delay Time	t _{d(on)}	V _{DD} = -4.5V, R _{GEN} = 3Ω V _{GS} = -4.5V, I _D = -15A	-	13	-	ns
Rise Time	t _r		-	105	-	ns
Turn-OFF Delay Time	t _{d(off)}		-	145	-	ns
Fall Time	t _f		-	150	-	ns
Total Gate Charge	Q _g	V _{DS} = -4.5V, V _{GS} = -4.5V, I _D = -15A	-	54	-	nC
	Q _{gs}		-	7	-	nC
	Q _{gd}		-	14	-	nC
Diode Forward Voltage	V _{FSD}	I _S = -15A, V _{GS} = 0V	-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.

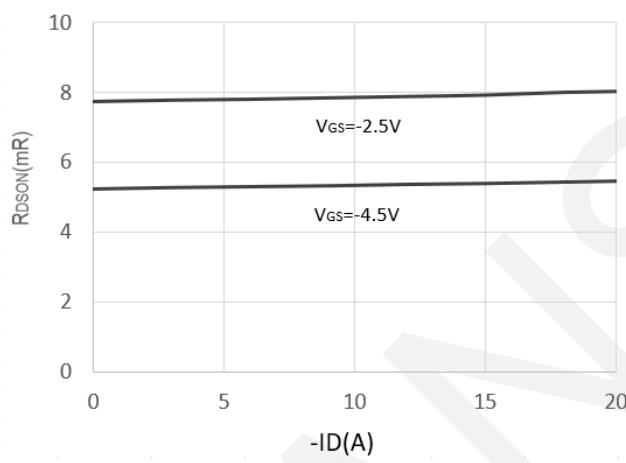
7.Typical electrical and thermal characteristics



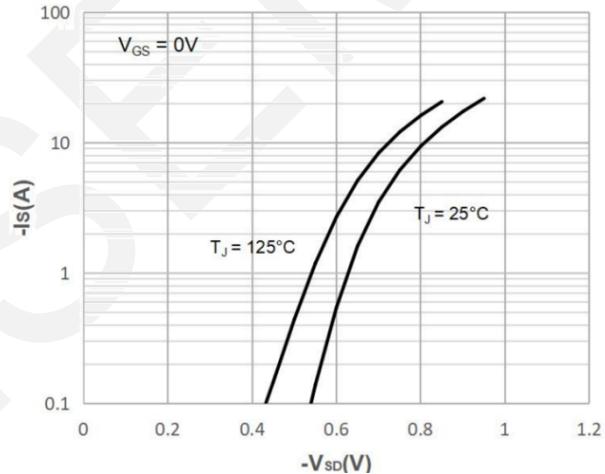
Output Characteristics



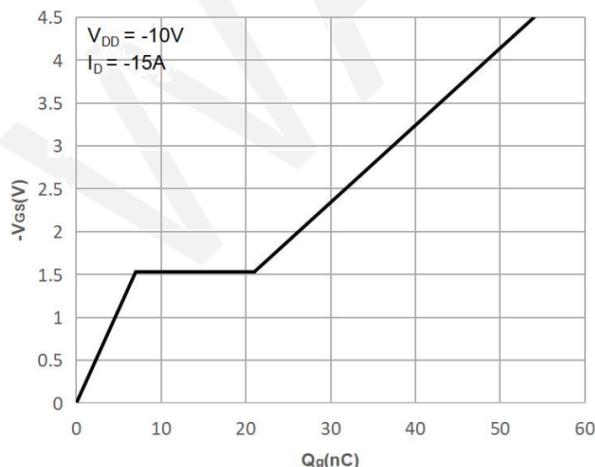
Typical Transfer Characteristics



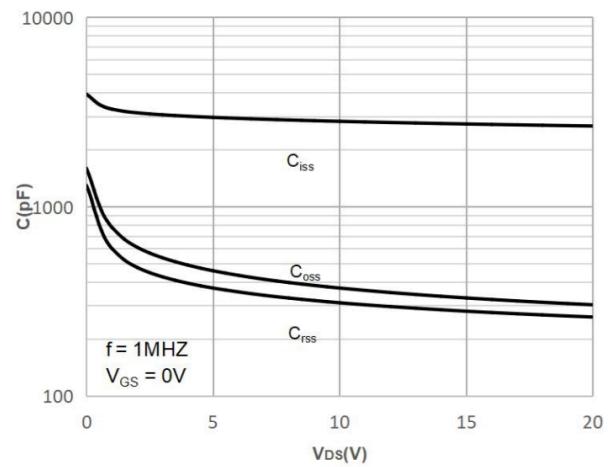
On-resistance vs. Drain Current



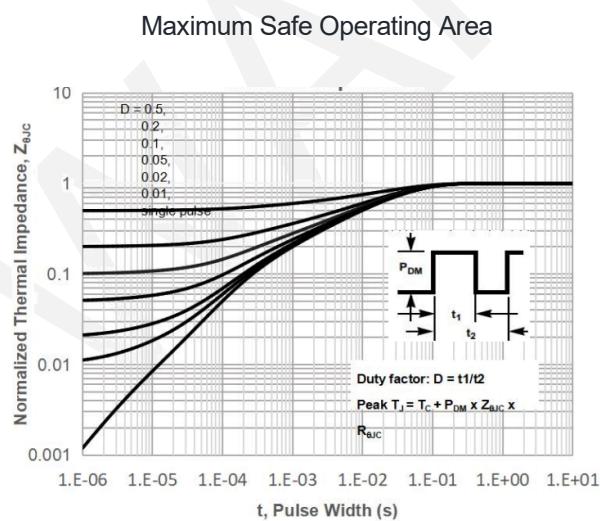
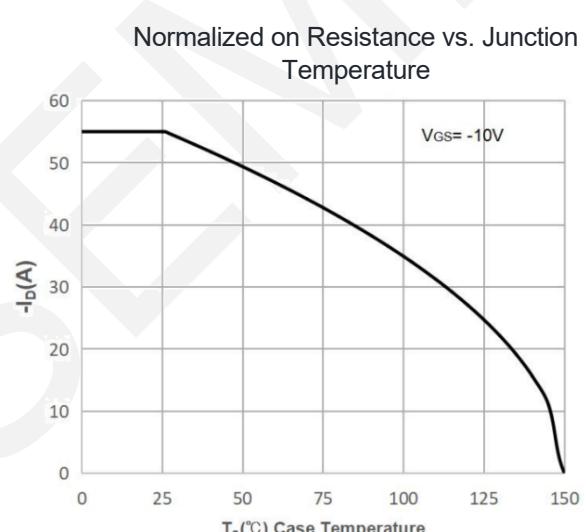
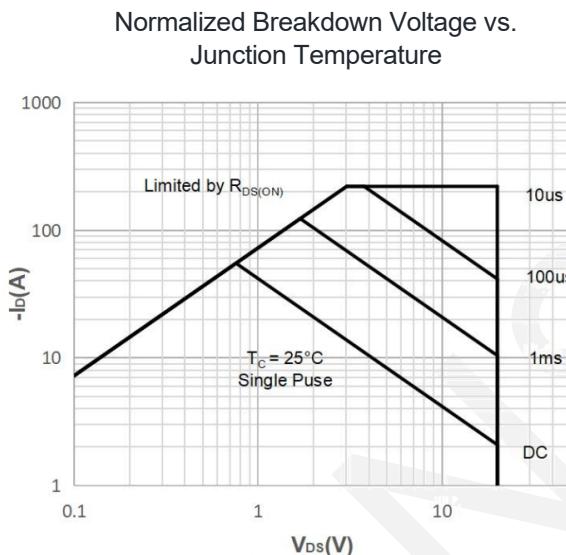
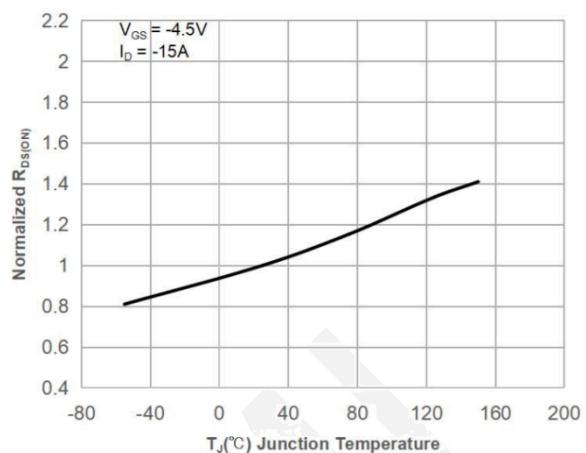
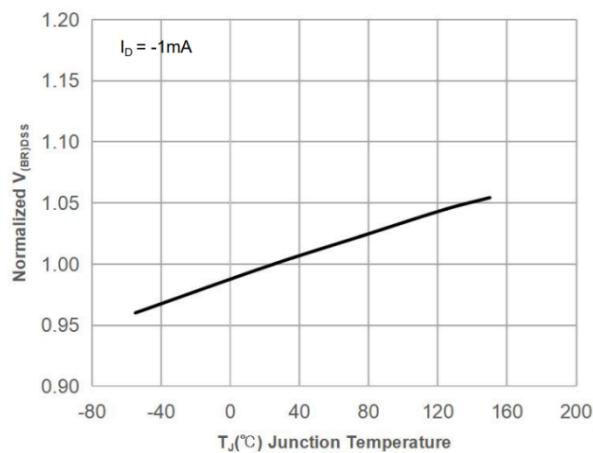
Body Diode Characteristics



Gate Charge Characteristics



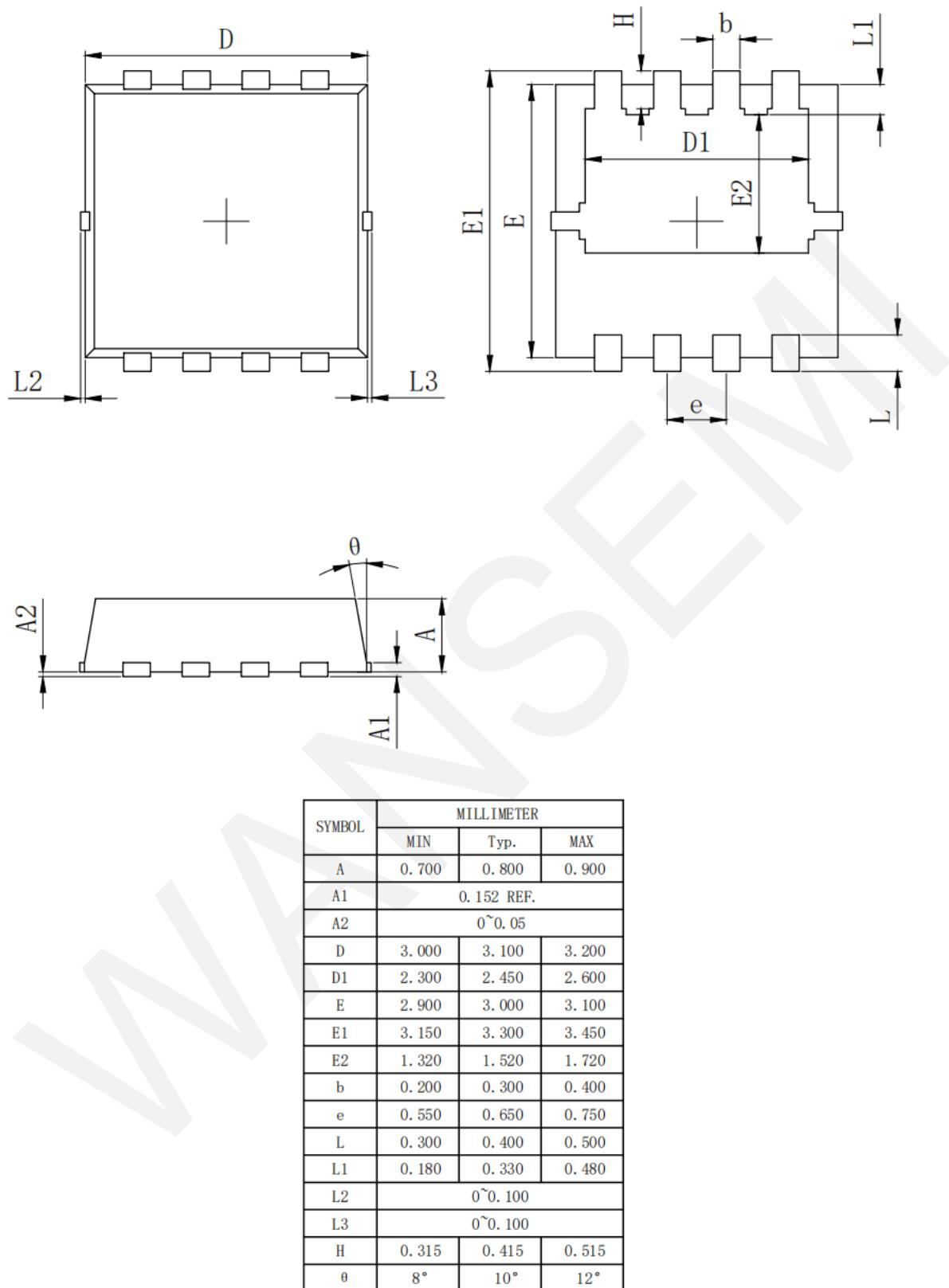
Capacitance Characteristics



Maximum Effective Transient Thermal Impedance, Junction-to-Case



8.Package Dimensions



9. Important Notice

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