

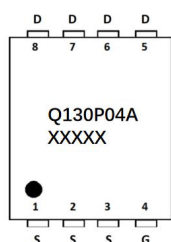
### FEATURES

- $R_{DS(ON)} \leq 13m\Omega$  (10.3m $\Omega$  Typ.)  
@  $V_{GS} = -10V$
- $R_{DS(ON)} \leq 19m\Omega$  (13.6m $\Omega$  Typ.)  
@  $V_{GS} = -4.5V$
- AEC Q101 qualified
- Green Product (RoHS compliant)

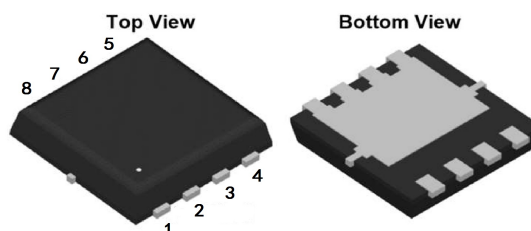
### APPLICATIONS

- Automotive domain controller
- PWM Applications
- Load Switch
- Power Management

### MARKING

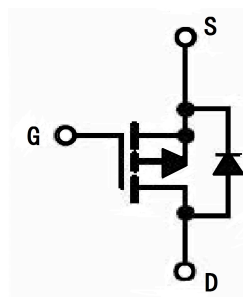


### PDFNWB3.3\*3.3-8L



1: S      3: S      5: D      7: D  
2: S      4: G      6: D      8: D

### P-CHANNEL MOSFET



### Absolute Maximum Ratings ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter		Max.	Units
$V_{DSS}$	Drain-Source Voltage		-40	V
$V_{GSS}$	Gate-Source Voltage		$\pm 20$	V
$I_D$	Continuous Drain Current	$T_C = 25^\circ\text{C}$	-30	A
		$T_C = 100^\circ\text{C}$	-20	A
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>		-120	A
$E_{AS}$	Single Pulsed Avalanche Energy <sup>note2</sup>		96	mJ
$P_D$	Power Dissipation	$T_C = 25^\circ\text{C}$	20	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		7.5	$^\circ\text{C}/\text{W}$
$T_J, T_{STG}$	Operating and Storage Temperature Range		-55 to +175	$^\circ\text{C}$

## Electrical Characteristics (T<sub>c</sub>=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> = -250μA	-40	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = -40V, V <sub>GS</sub> =0V	-	-	-1	μA
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±20V	-	-	±100	nA
On Characteristics						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = -250μA	-1.0	-1.5	-2.5	V
R <sub>DS(on)</sub>	Static Drain-Source on-Resistance note3	V <sub>GS</sub> = -10V, I <sub>D</sub> = -20A	-	10.3	13	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -10A	-	13.6	19	
Dynamic Characteristics						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = -20V, V <sub>GS</sub> =0V, f=1.0MHz	-	3700	-	pF
C <sub>Oss</sub>	Output Capacitance		-	340	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	290	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> = -20V, I <sub>D</sub> = -20A, V <sub>GS</sub> = -10V	-	42	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	7.3	-	nC
Q <sub>gd</sub>	Gate-Drain(“Miller”) Charge		-	8.5	-	nC
Switching Characteristics						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> = -20V, I <sub>D</sub> = -20A, V <sub>GS</sub> = -10V, R <sub>GEN</sub> =2.5Ω	-	10	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	21	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time		-	53	-	ns
t <sub>f</sub>	Turn-off Fall Time		-	29	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	-30	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-120	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> = -30A	-	-0.8	-1.2	V
t <sub>rr</sub>	Reverse Recovery Time	V <sub>GS</sub> =0V, I <sub>S</sub> = -30A,	-	39	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge	di/dt=100A/μs	-	42	-	nC

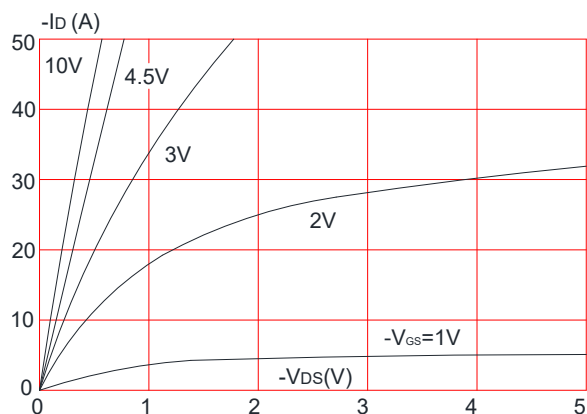
Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: T<sub>J</sub>= 25°C, V<sub>DD</sub>= -20V, V<sub>G</sub>= -10V, L= 0.5mH, R<sub>G</sub>= 25Ω, I<sub>AS</sub>= -19.6A

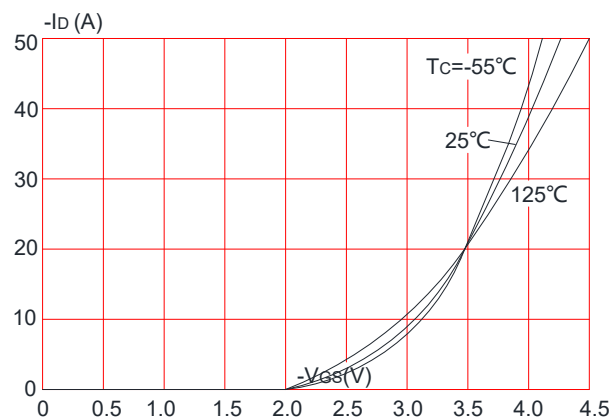
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

## Typical Performance Characteristics

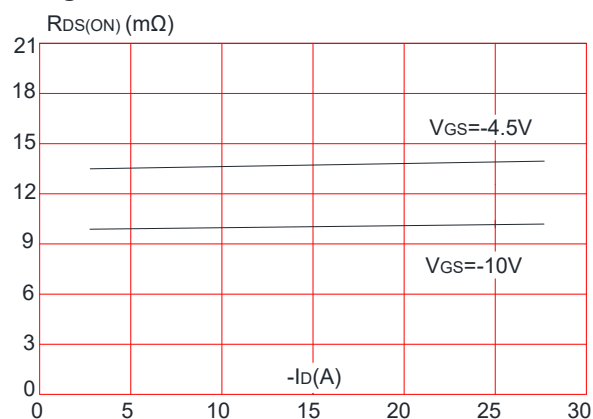
**Figure1: Output Characteristics**



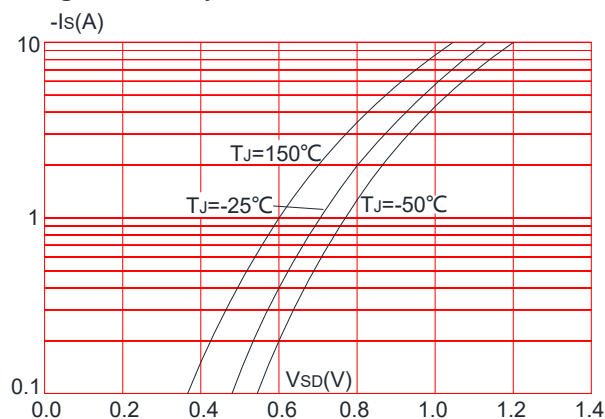
**Figure 2: Typical Transfer Characteristics**



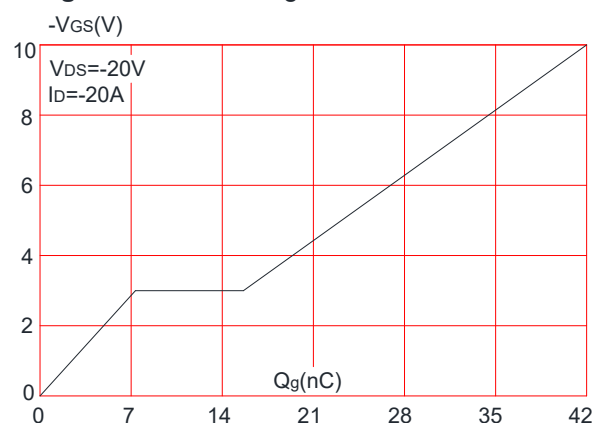
**Figure 3: On-resistance vs. Drain Current**



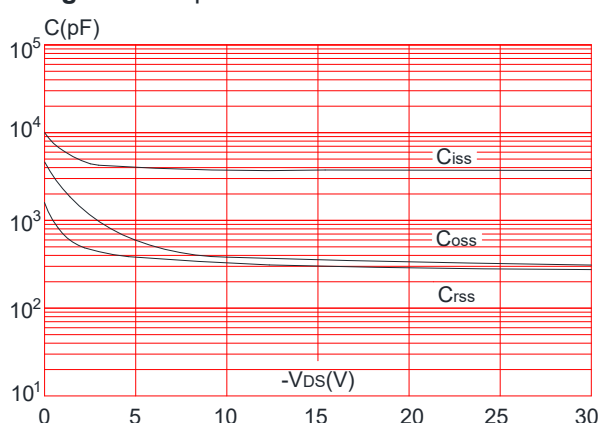
**Figure 4: Body Diode Characteristics**



**Figure 5: Gate Charge Characteristics**

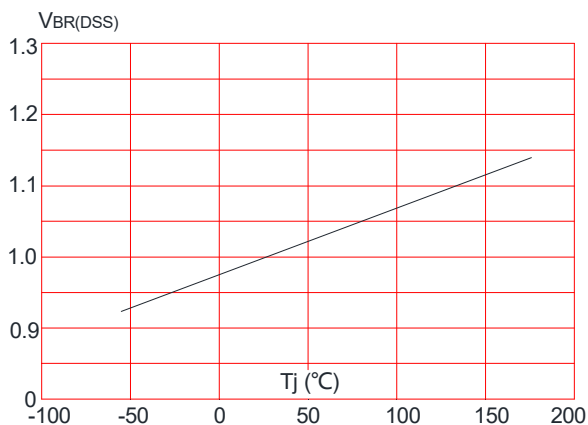


**Figure 6: Capacitance Characteristics**

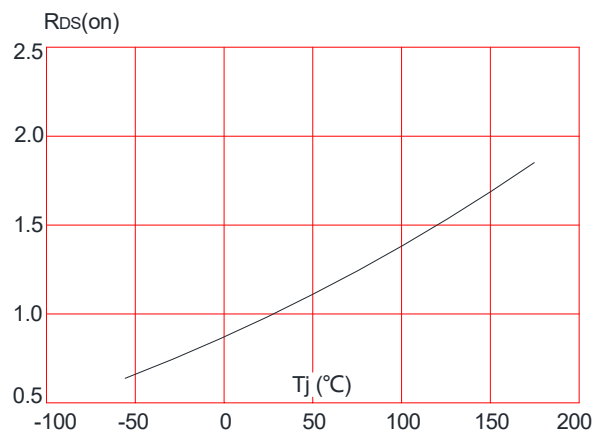


## Typical Performance Characteristics

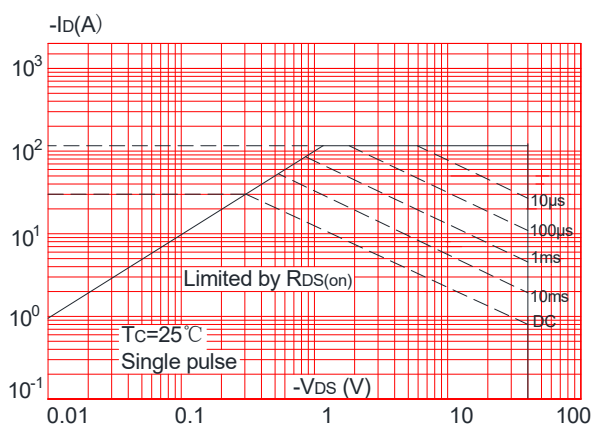
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



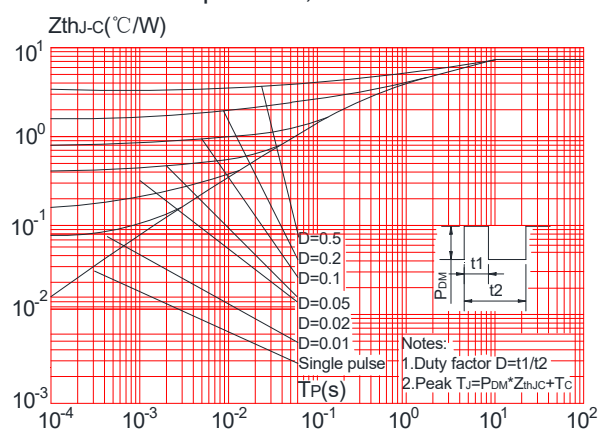
**Figure 8:** Normalized on Resistance vs. Junction Temperature



**Figure 9:** Maximum Safe Operating Area



**Figure.10:** Maximum Effective Transient Thermal Impedance, Junction-to-Case



PDFNWB3.3X3.3-8L PACKAGE OUTLINE DRAWING

