

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
40V	2.9m $\Omega$ @10V	75A
	3.7m $\Omega$ @4.5V	

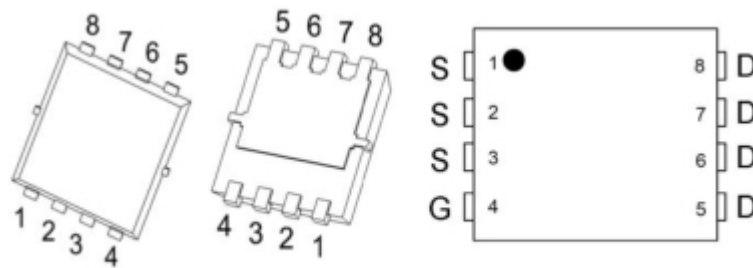
## Feature

- Fast Switching
- Low Gate Charge and Rdson
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

## Application

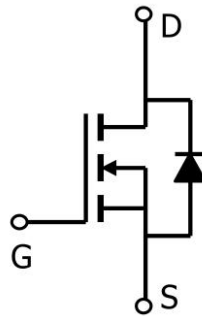
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

## Package

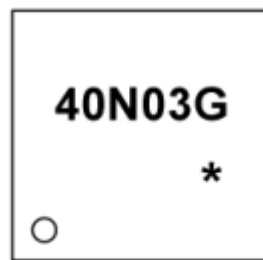


**PDFNWB3.3×3.3-8L**

## Circuit diagram



## Marking



40N03G =Device Code  
\* =Month Code

## Absolute maximum ratings

(T<sub>a</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	40	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current <sup>1</sup> (T <sub>c</sub> =25°C)	I <sub>D</sub>	55	A
Pulsed Drain Current <sup>2</sup>	I <sub>DM</sub>	220	A
Single Pulse Avalanche Energy <sup>3</sup>	E <sub>AS</sub>	256	mJ
Avalanche Current	I <sub>AS</sub>	32	A
Total Power Dissipation <sup>4</sup>	P <sub>D</sub>	65	W
Thermal Resistance Junction-Case <sup>1</sup>	R <sub>θJC</sub>	1.92	°C/W
Storage Temperature Range	T <sub>STG</sub>	-55 to 175	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to 175	°C

## Electrical characteristics

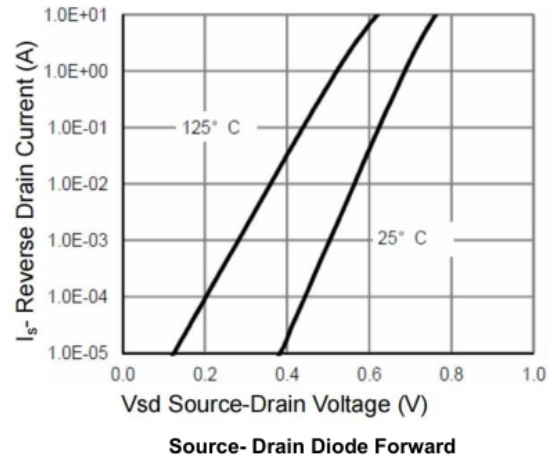
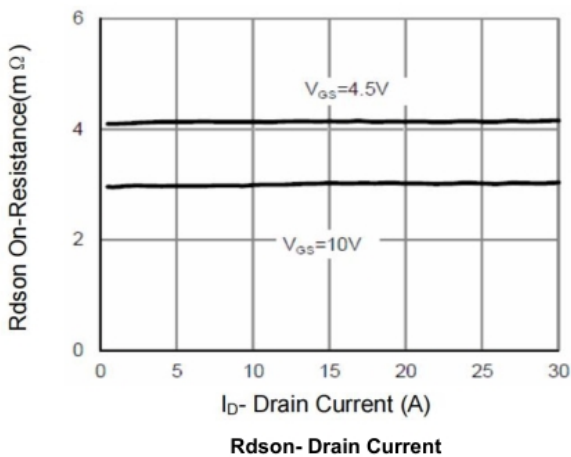
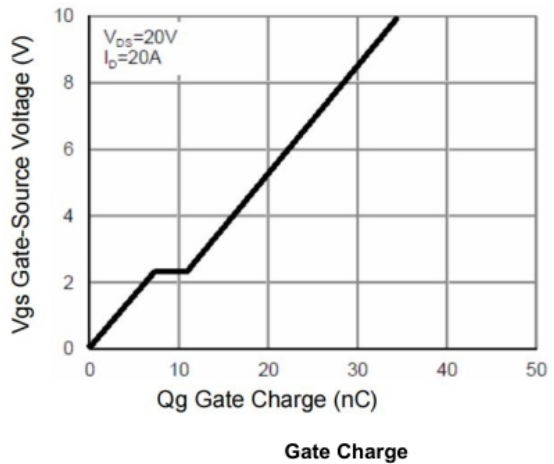
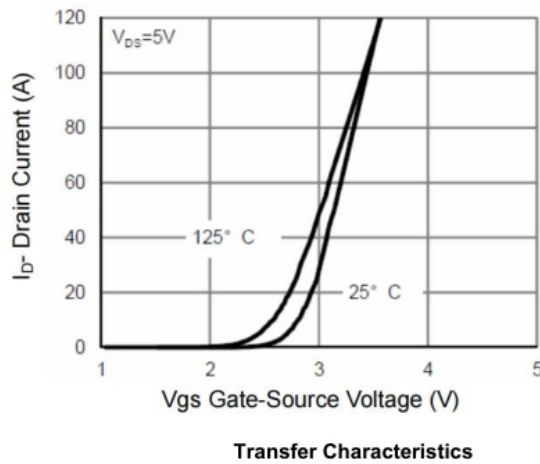
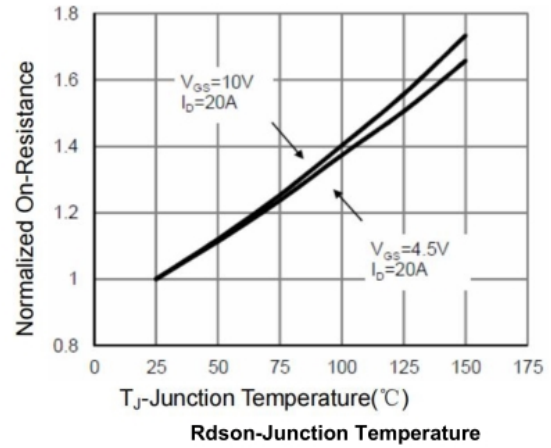
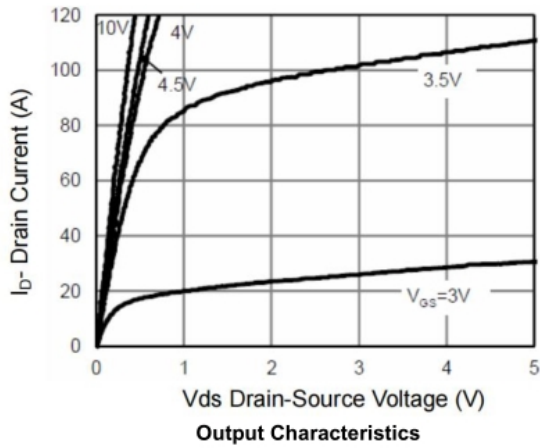
( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

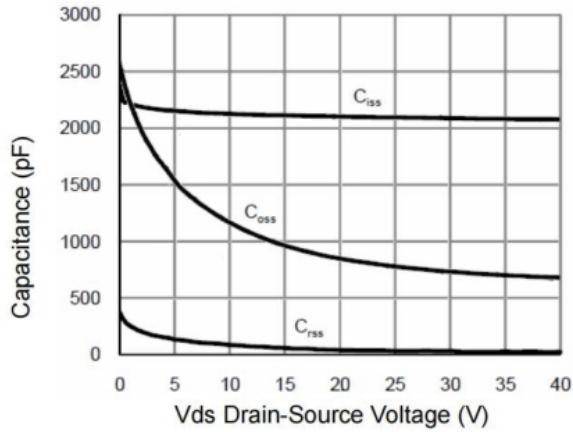
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV (BR)DSS	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	40			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =32V,V <sub>GS</sub> = 0V, T <sub>J</sub> =25°C			1	uA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V , V <sub>DS</sub> =0V			±100	uA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1	1.5	2.5	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =30A		2.9	3.7	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A		4.2	5.6	
Dynamic Characteristics						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =20V, I <sub>D</sub> =20A, V <sub>GS</sub> =10V		35		pF
Gate-Source Charge	Q <sub>gs</sub>			5.1		
Gate-Drain Charge	Q <sub>gd</sub>			4		
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V, f=1MHz		1687		pF
Output Capacitance	C <sub>oss</sub>			641		
Reverse Transfer Capacitance	C <sub>rss</sub>			32		
Switching Characteristics						
Turn-On Delay Time	T <sub>d(on)</sub>	V <sub>DD</sub> =20V, V <sub>GS</sub> =10V, R <sub>G</sub> =1.6Ω, I <sub>D</sub> =20A		7.8		nS
Rise Time	T <sub>r</sub>			4.2		
Turn-Off Delay Time	T <sub>d(off)</sub>			28		
Fall Time	T <sub>f</sub>			3.8		
Diode Characteristics						
Diode Forward Voltage2	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C			1.2	V

### Note:

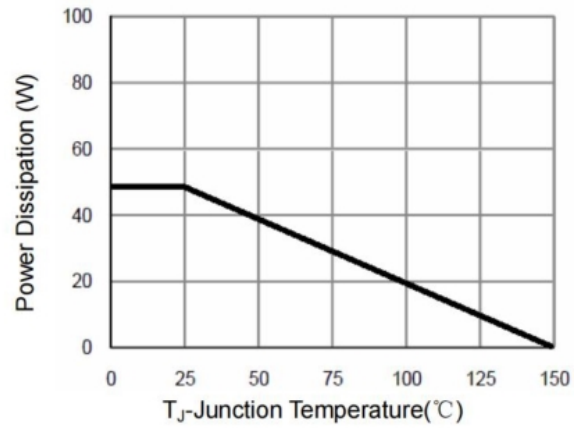
1. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$
3. The EAS data shows Max. rating . The test condition is  $V_{DD}=20V, V_{GS}=10V, L=0.5mH, R_G=25\Omega$
4. The power dissipation is limited by  $150^{\circ}\text{C}$  junction temperature

## Typical Characteristics

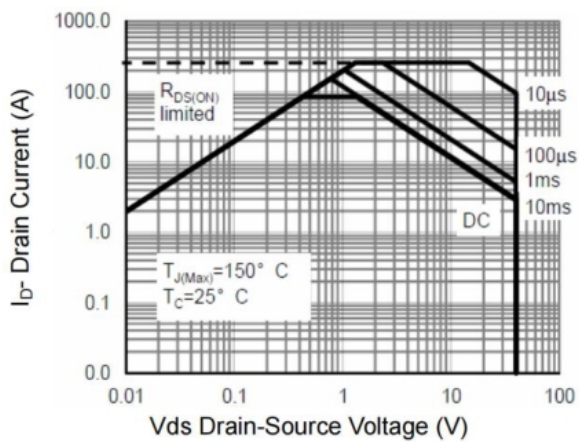




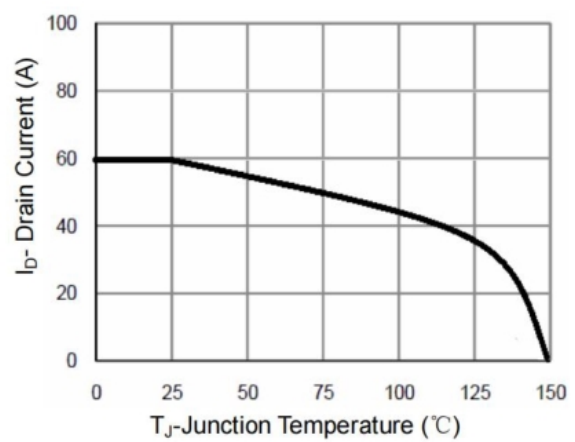
Capacitance vs Vds



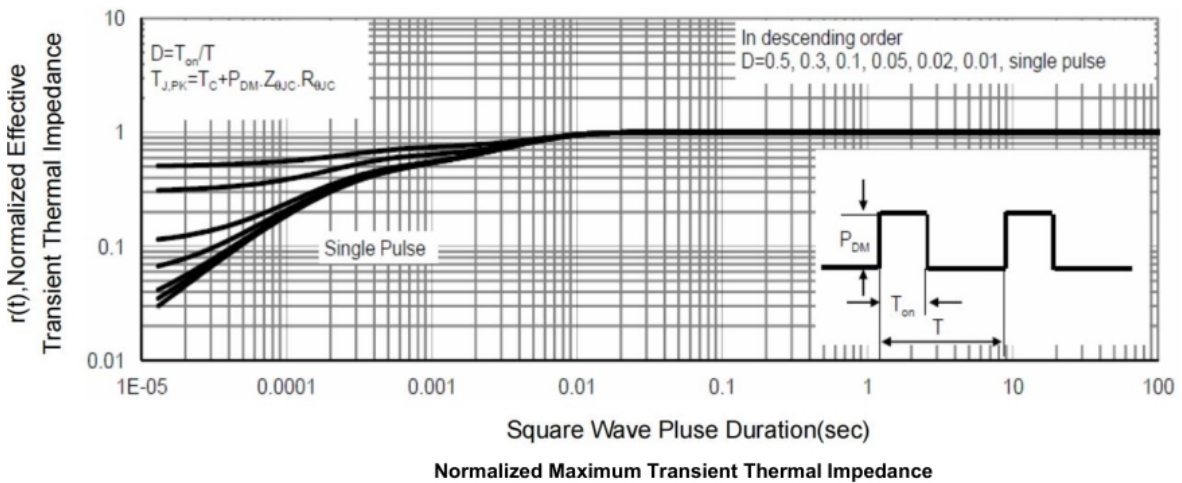
Power De-rating



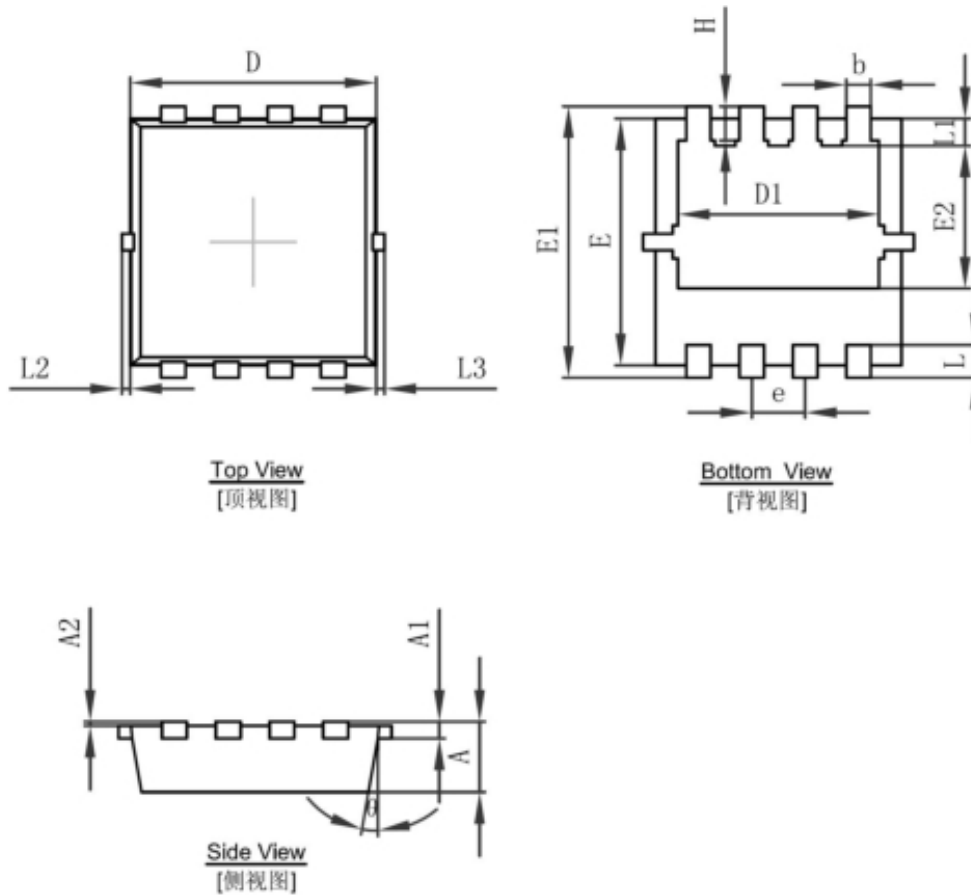
Safe Operation Area



Current De-rating



## PDFNWB3.3×3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°