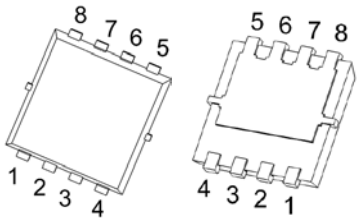
GP40N04P33

40V N-Channel MOSFET

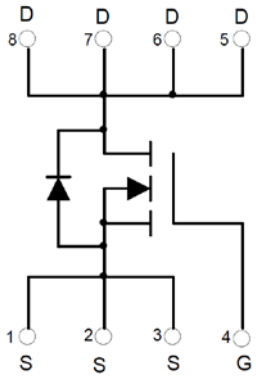
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	5.5mΩ@10V	40A
	8.1mΩ@4.5V	

PDFNWB3.3×3.3–8L



Schematic diagram



Feature

- High cell density trenched N-ch MOSFETs
- Super low gate charge
- Advanced high cell density Trench technology

Application

- Battery protection applications
- Load switch

MARKING:

40N04= Device code

Solid dot=Pin1 indicator

XX=Date Code

ABSOLUTE MAXIMUM RATINGS (T_C=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D(1)	40	A
Pulsed Drain Current	I_{DM}(1), (2)	80	A
Single Pulsed Avalanche Energy	E_{AS}*	41	mJ
Avalanche Current	I_{AS}	13	A
Power Dissipation	P_D(3)	12.5	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	30.2	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

*E_{AS} Test Condition V_{DD}=24V, V_{GS}=20V, L=0.1mH, I_{AS}=13A

MOSFET ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} = 40V, V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$ (4)	V_{DS} = V_{GS}, I_D = 250μA	1		2	V
Drain-source on-resistance	$R_{DS(on)}$ (4)	V_{GS} = 10V, I_D = 12A		5.5	7.2	mΩ
		V_{GS} = 4.5V, I_D = 10A		8.1	11	
Dynamic characteristics(5)						
Input capacitance	C_{iss}	V_{DS} = 20V, V_{GS} = 0V, f = 1MHz		588		pF
Output capacitance	C_{oss}			135		
Reverse transfer capacitance	C_{rss}			66		
Switching Characteristics(5)						
Total gate charge	Q_g	V_{DS} = 32V, V_{GS} = 10V, I_D = 40A		24.6		nC
Gate-source charge	Q_{gs}			5.2		
Gate-drain charge	Q_{gd}			3.6		
Turn-on delay time	$t_{d(on)}$	V_{DD} = 20V, V_{GS}= 10V, R_G = 4.7Ω, R_L = 1.8Ω		5	10	ns
Turn-on rise time	t_r			25	35	
Turn-off delay time	$t_{d(off)}$			35	45	
Turn-off fall time	t_f			13	25	
Diode Characteristics						
Continuous Source Current	I_S	V_G = V_D = 0V, Force Current			40	A
Pulsed Source Current	I_{SM}				80	
Diode Forward Voltage	V_{SD} (4)	V_{GS} = 0V, I_S = 40A, T_J = 25℃			1.2	V

Notes:

1.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper

2.Pulse Test: Pulse Width < 10us, Duty Cycle < 0.5%.

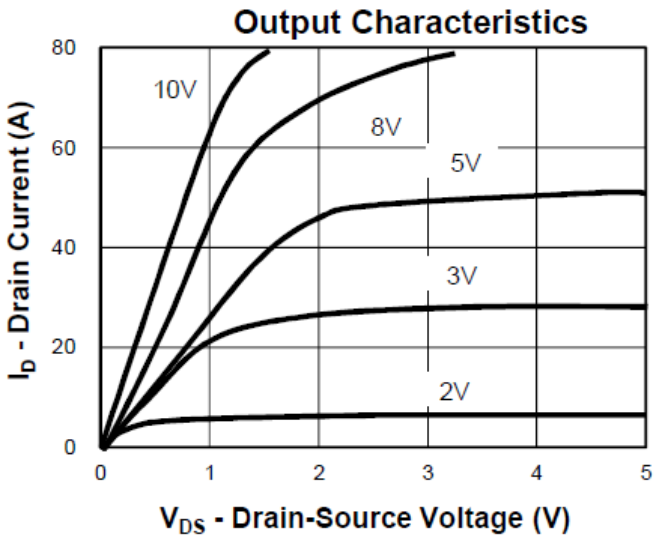
3.The power dissipation is limited by 150℃ junction temperature

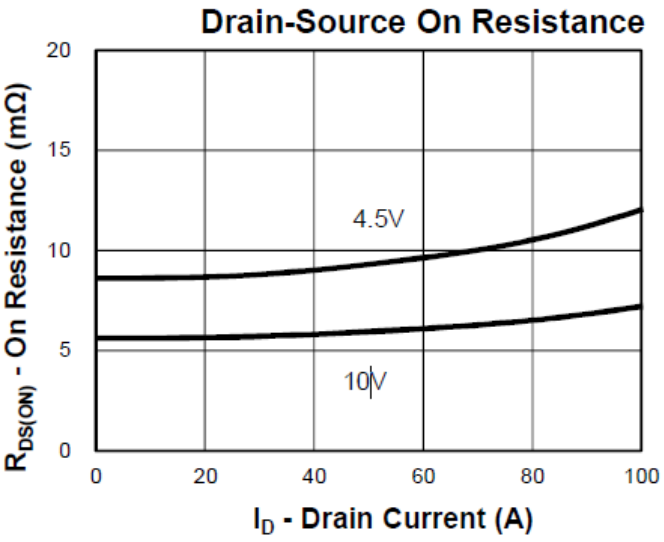
4.Pulse Test : Pulse width≤300μs, duty cycle≤0.5%.

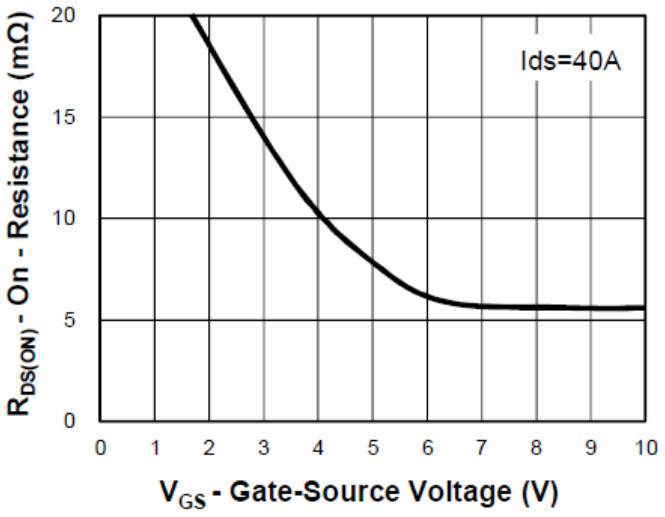
5.Guaranteed by design, not subject to production testing.

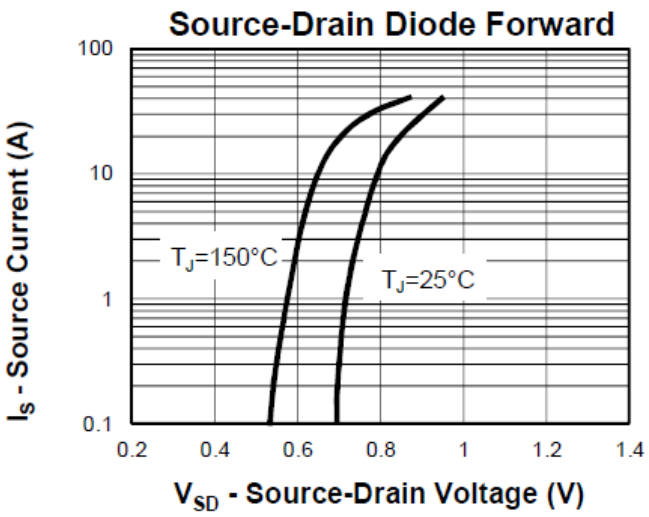
6.The data is theoretically the same as I_D, in real applications , should be limited by total power dissipation.

Typical Electrical and Thermal Characteristics

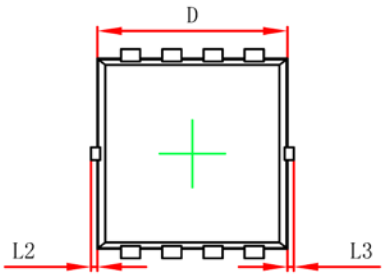




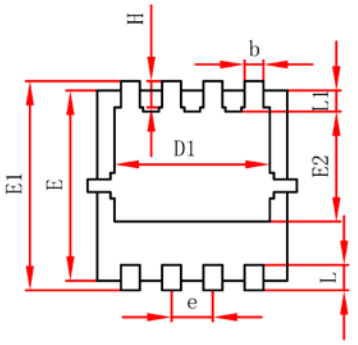




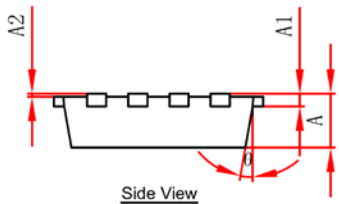
PDFNWB3.3×3.3-8L Package Information



Top View
[顶视图]



Bottom View
[背视图]

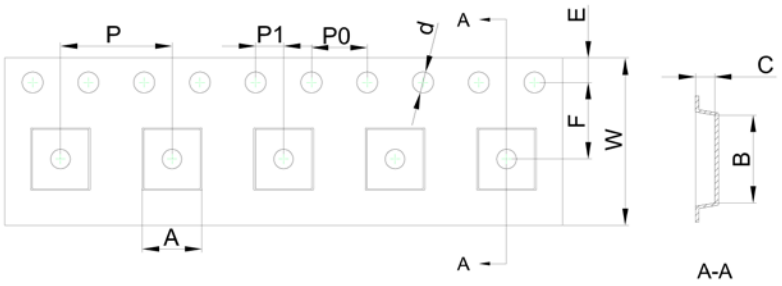


Side View
[侧视图]

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°

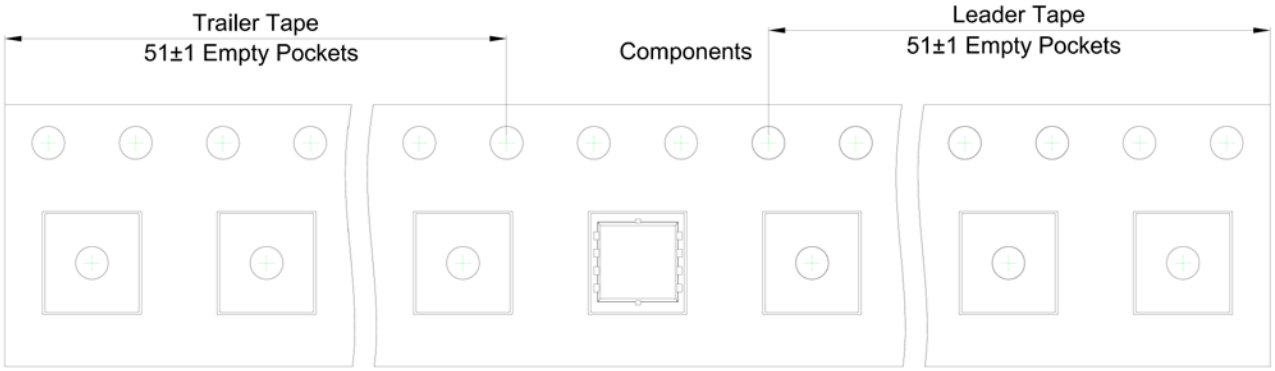
PDFNWB3.3×3.3-8L Tape and Reel

PDFNWB3.3×3.3-8L Embossed Carrier Tape

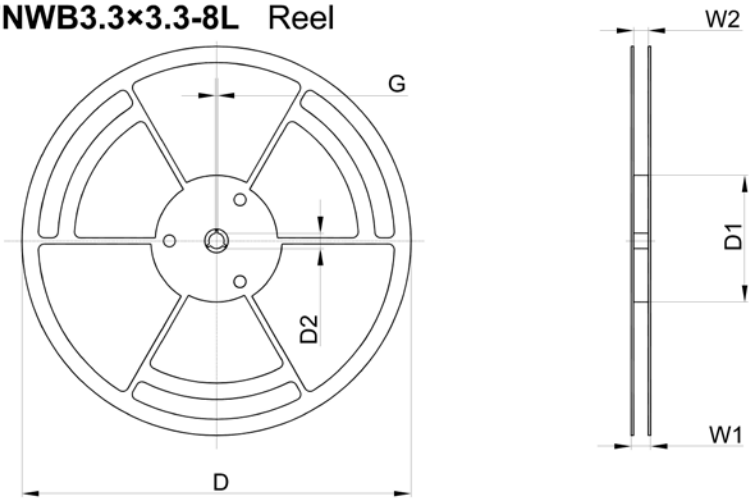


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
PDFNWB3.3×3.3-8L	3.55	3.55	1.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

PDFNWB3.3×3.3-8L Tape Leader and Trailer



PDFNWB3.3×3.3-8L Reel



Dimensions are in millimeter						
Reel Option	D	D1	D2	G	W1	W2
13"Dia	Ø330.00	100.00	13.00	1.90	17.60	12.40

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)
5,000 pcs	13 inch	5,000 pcs	340×336×29	50,000 pcs	353×346×365