

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
85V	4.6mΩ@10V	100A

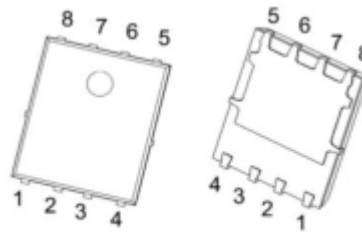
Feature

- Trench Power Technology
- Low $R_{DS(on)}$
- Low Gate Charge
- Optimized for Fast-switching Applications

Applications

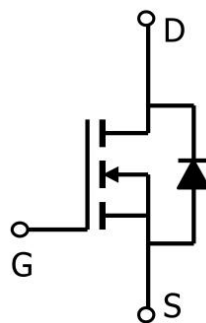
- High Speed Power Switching
- DC/DC Converters

Package



PDFNWB5×6-8L

Circuit diagram



Marking



85N04BH : Product code
* : Month code.

Absolute maximum ratings

(T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	85	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current (T _C =25°C)	I _D	100	A
Pulsed Drain Current	I _{DM}	400	A
Single Pulse Avalanche Energy	E _{AS}	400	mJ
Power Dissipation (T _C =25°C)	P _D	155	W
Thermal Resistance,Junction-to-Case	R _{θJC}	0.81	°C/W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55~+150	°C

Electrical characteristics

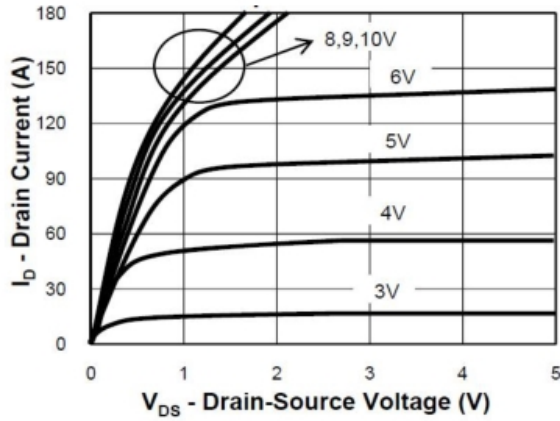
($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV (BR)DSS	V _{GS} = 0V, I _D =250μA	85			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =85V, V _{GS} = 0V , T _J =25°C			1	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V			±100	uA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =45A		4.6	5.5	mΩ
Forward Transconductance	g _{fs}	V _{DS} = 5V, I _D = 45A		60		S
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =40V, f=1MHz		4300		pF
Output capacitance	C _{oss}			485		
Reverse transfer capacitance	C _{rss}			270		
Total Gate Charge	Q _g	V _{DD} =68V, I _D =45A, V _{GS} =10V		48		pF
Gate-Source Charge	Q _{gs}			14		
Gate-Drain Charge	Q _{gd}			17		
Turn-on Delay Time	T _{d(on)}	V _{DD} =40V, V _{GS} =10V, I _D =45A, R _G =0.8Ω		24		nS
Turn-on Rise Time	T _r			50		
Turn-Off Delay Time	T _{d(off)}			120		
Turn-Off Fall Time	t _f			18		
Drain-Source Body Diode Characteristics						
Body Diode Voltage	V _{SD}	I _S =45A, V _{GS} = 0V			1.2	V
Reverse Recovery Time	t _{rr}	I _F =45A,		30		ns
Reverse Recovery Charge	Q _{rr}	diF/dt = 100A/μs		48		nC

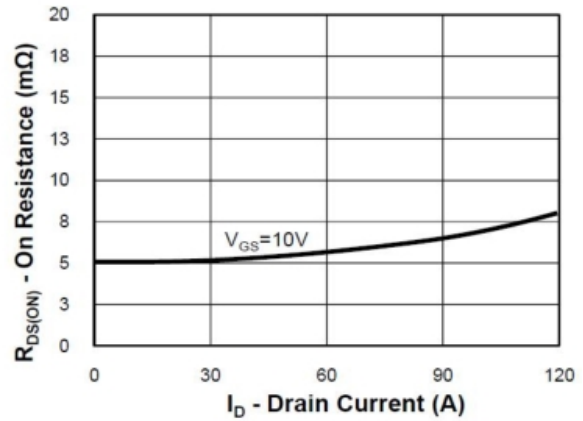
Note:

1. EAS condition: $V_{DD} = 40V, V_G=10V, L=0.5mH, R_g=25\Omega, T_J = 25^{\circ}\text{C}$.

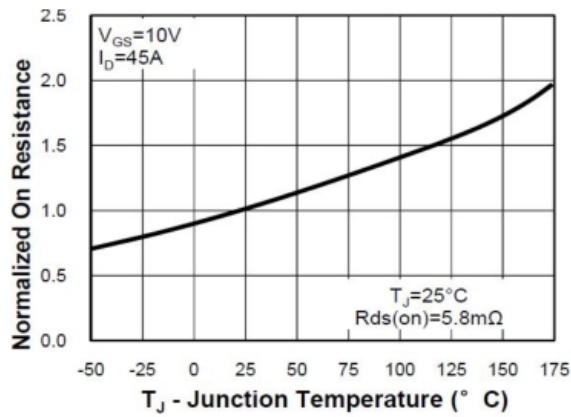
Typical Characteristics



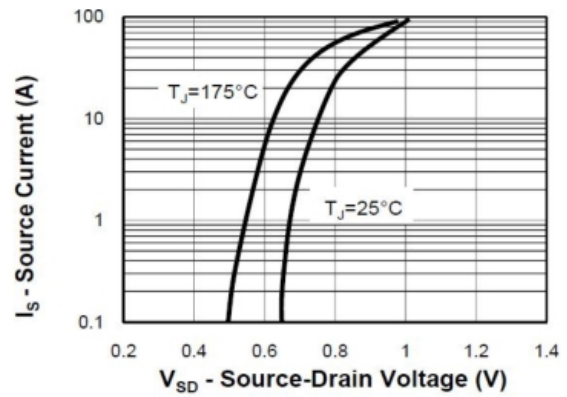
Output Characteristics



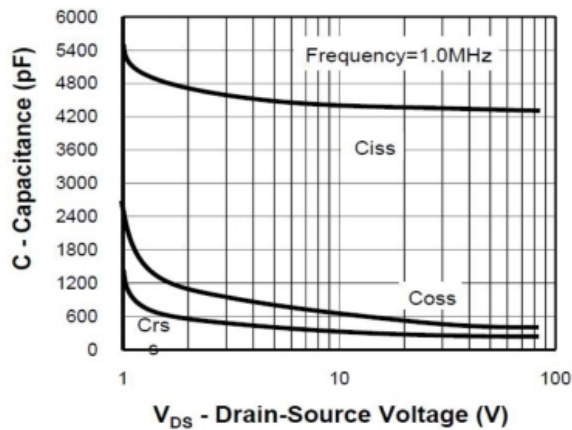
Drain-Source On Resistance



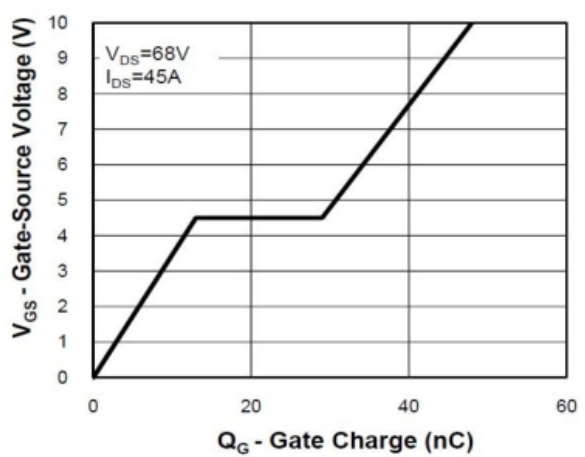
Drain-Source On Resistance



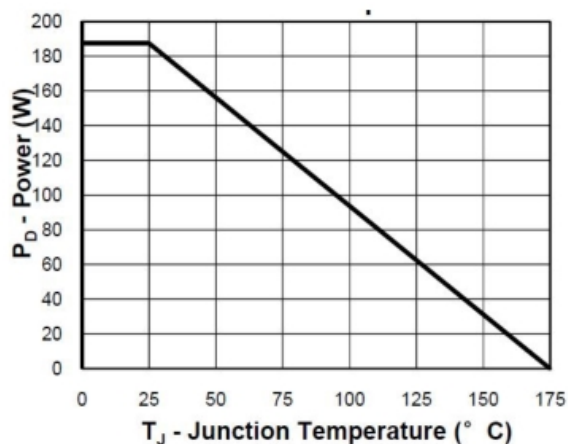
Source-Drain Diode Forward



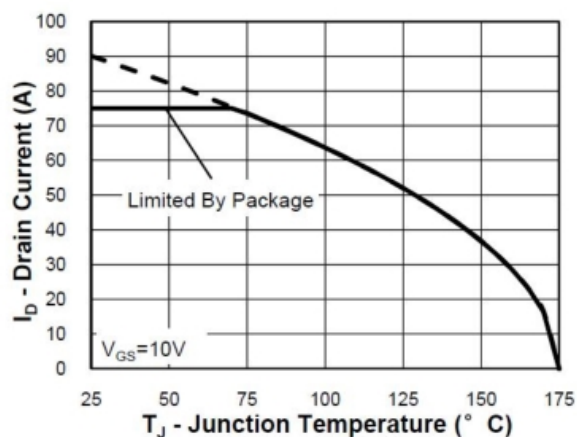
Capacitance



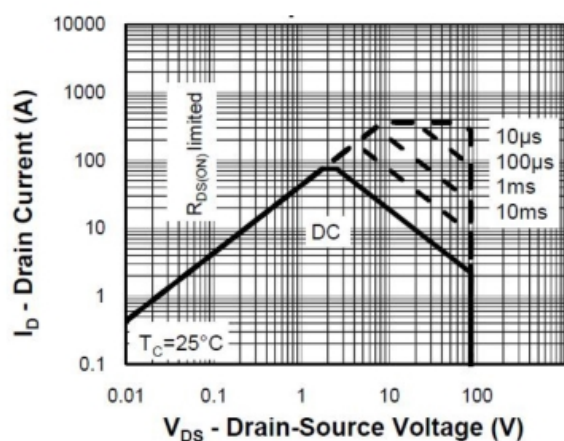
Gate Charge



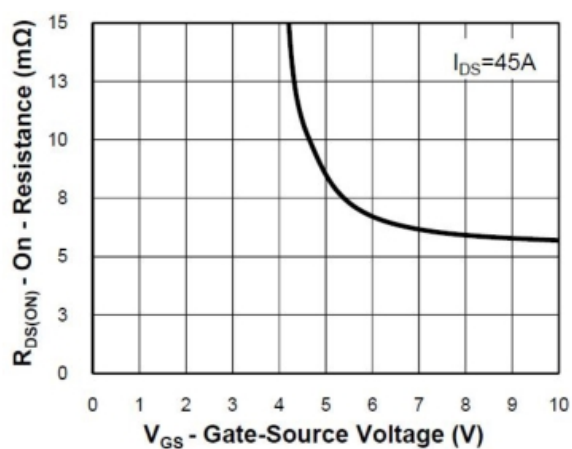
Power Dissipation



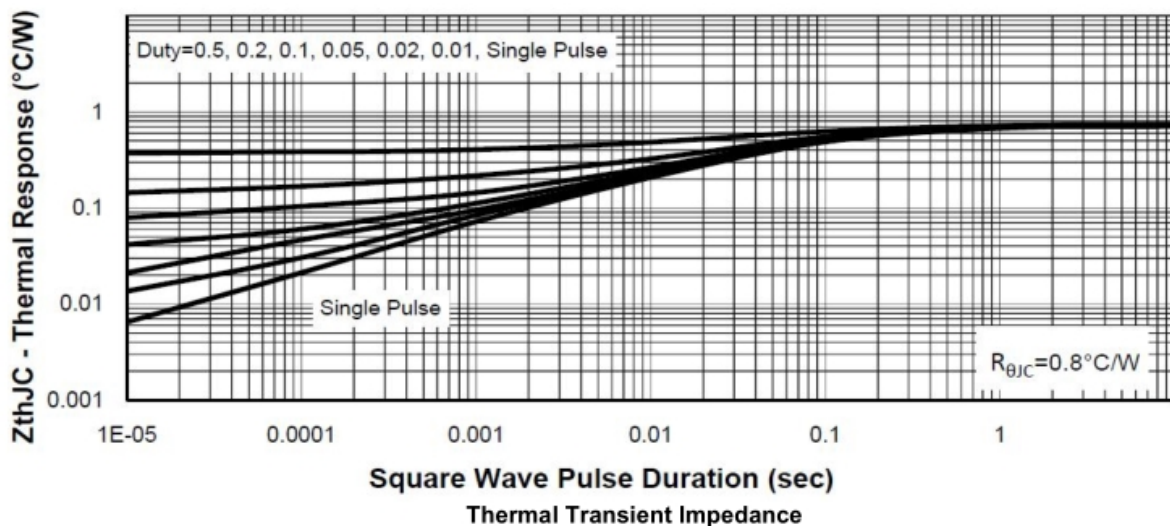
Drain Current



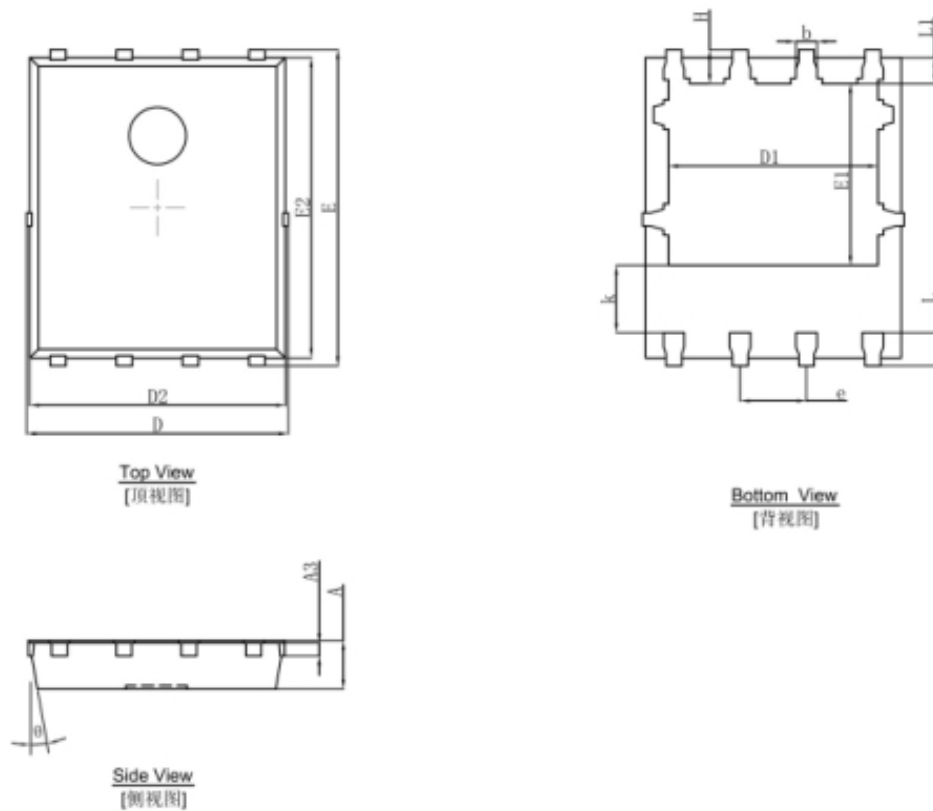
Safe Operation



Area Drain Current



PDFNWB5×6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°