

1.Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	13mΩ@10V	50A
	17mΩ@4.5V	

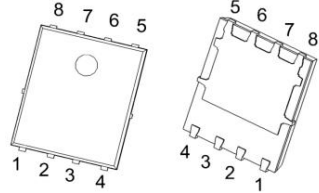
2.Features

- V_{DS} 60V
- I_D 50A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) <20 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) <25 mohm
- Very Low On-resistance $R_{DS(ON)}$
- Fast Switching Speed

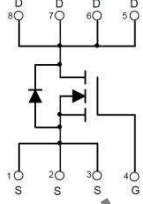
3.Applications

- Load Switch
- PWM Application
- Power management

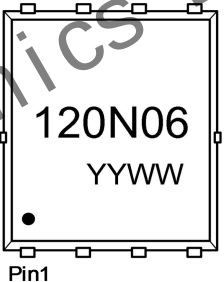
PDFNWB5*6-8L



Schematic diagram



Marking



120N06 : Device Code
YY : Year Code
WW : Week Code

4. Absolute Maximum rating ($T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	60	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	50	A
Pulsed Drain Current ¹	I_{DM}	200	A
Power Dissipation	P_D	34.7	W
Thermal Resistance from Junction-to-Case	$R_{\theta Jc}$	3.6	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~ +150	°C

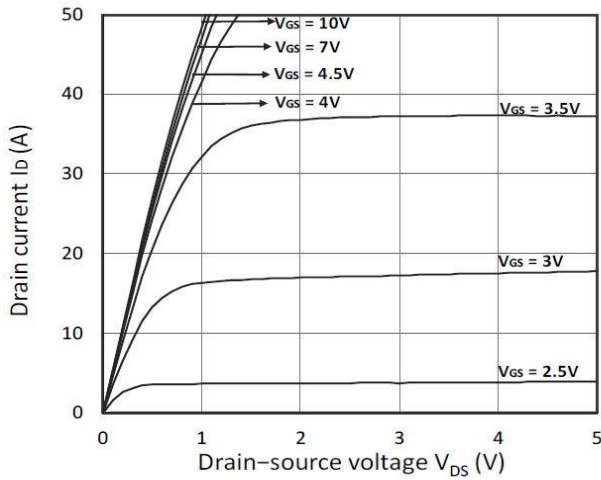
5. Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60V, 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)}	V _{DS} = V _{GS} , I _D = 250μA	1.0	1.6	2.5	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 20A		13	20	mΩ
		V _{GS} = 4.5V, I _D = 10A		17	25	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f=1.0MHz		2690		pF
Output Capacitance	C _{oss}			120		
Reverse Transfer Capacitance	C _{rss}			98		
Gate Resistance	R _G	f =1MHz		0.6		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} =30V, I _D =20A, V _{GS} =10V		46		nC
Gate-source Charge	Q _{gs}			8.5		
Gate-drain Charge	Q _{gd}			7.5		
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V, I _D =20A,R _{GEN} =3Ω, V _{GS} =10V		10.5		ns
Turn-on Rise Time	t _r			21.2		
Turn-off Delay Time	t _{d(off)}			35		
Turn-off Fall Time	t _f			13		
Source - Drain Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 20A			1.2	V

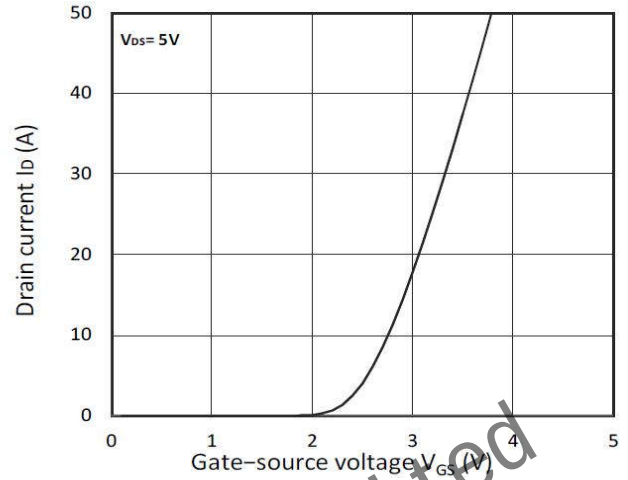
Notes :

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$.

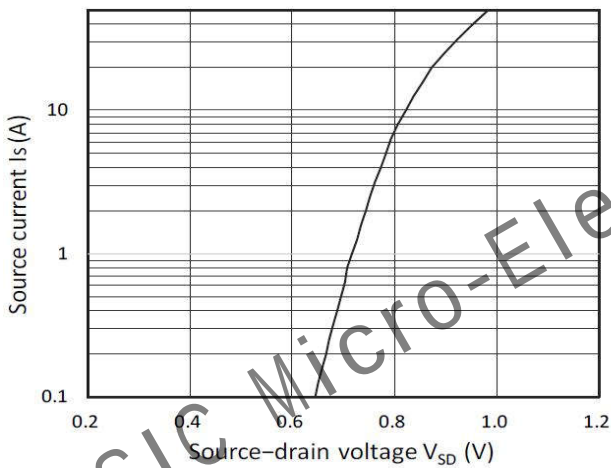
6. Typical Characteristic



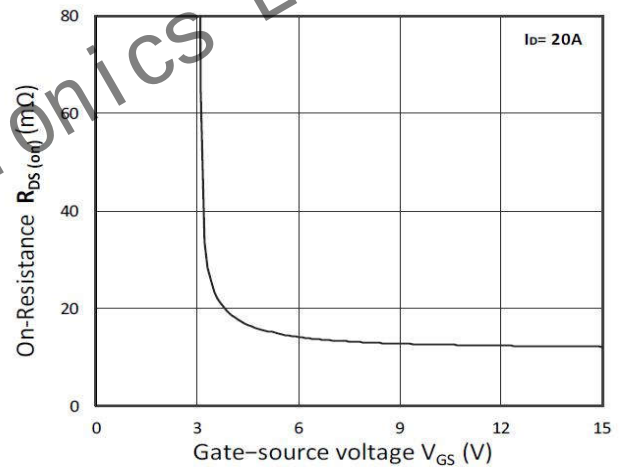
Output Characteristics



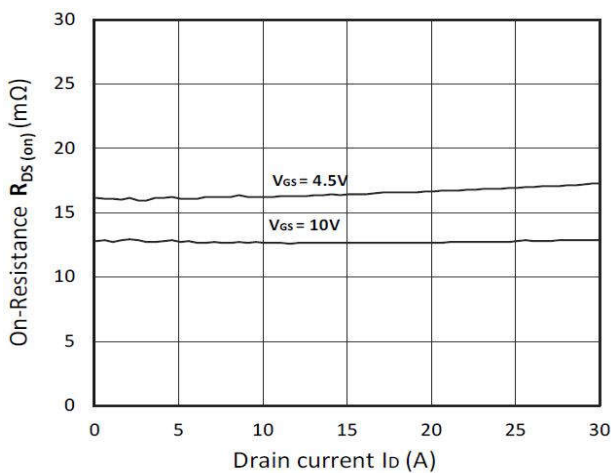
Typical Transfer Characteristics



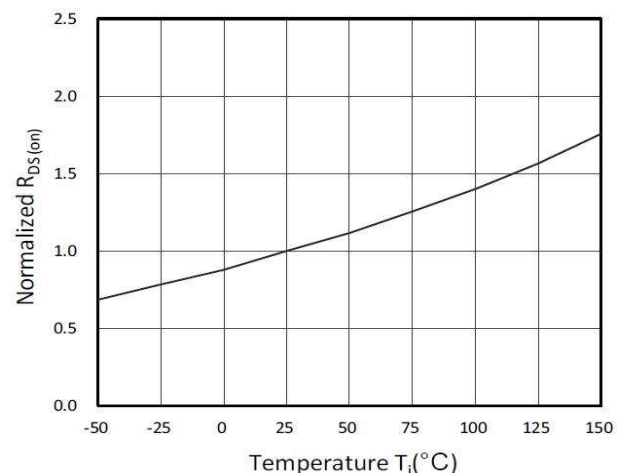
Forward Characteristics of Reverse



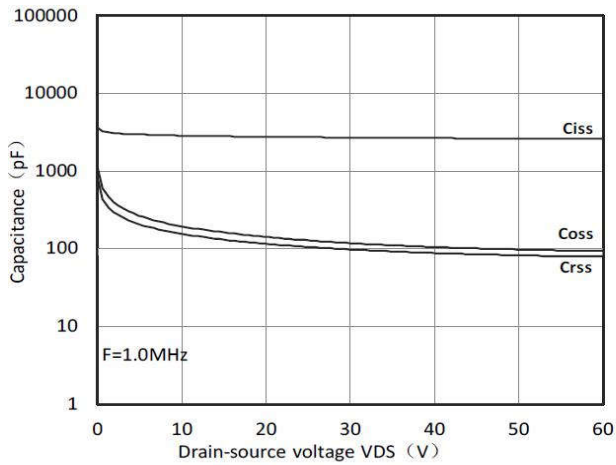
$R_{DS(on)}$ vs. V_{GS}



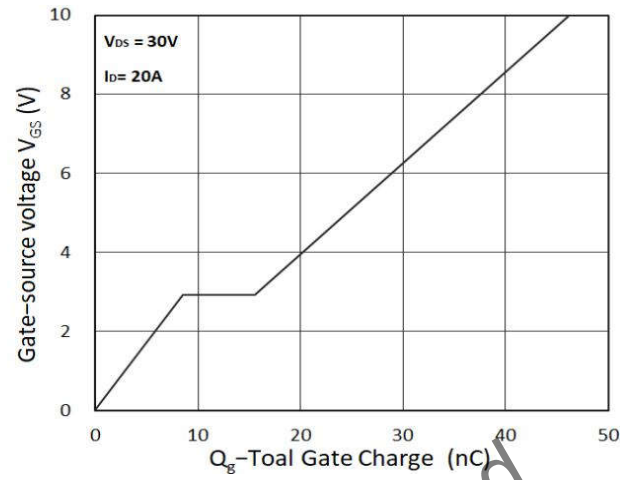
$R_{DS(on)}$ vs. I_D



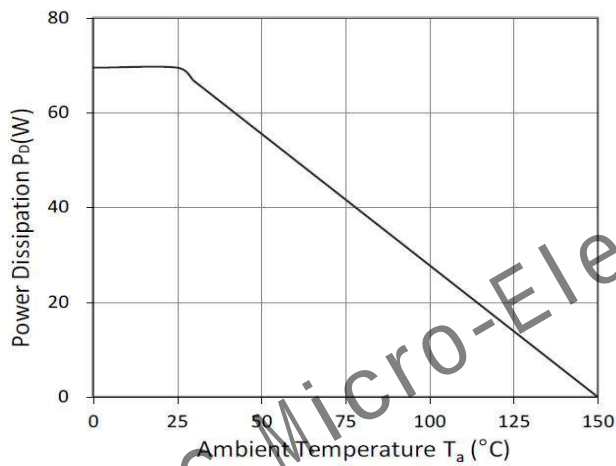
Normalized $R_{DS(on)}$ vs. Temperature



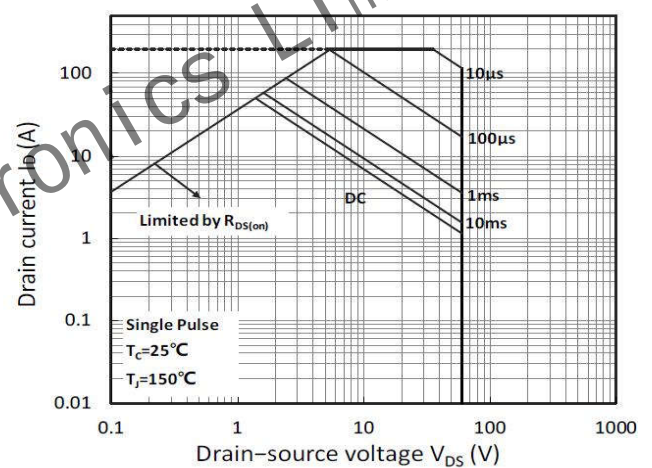
Capacitance Characteristics



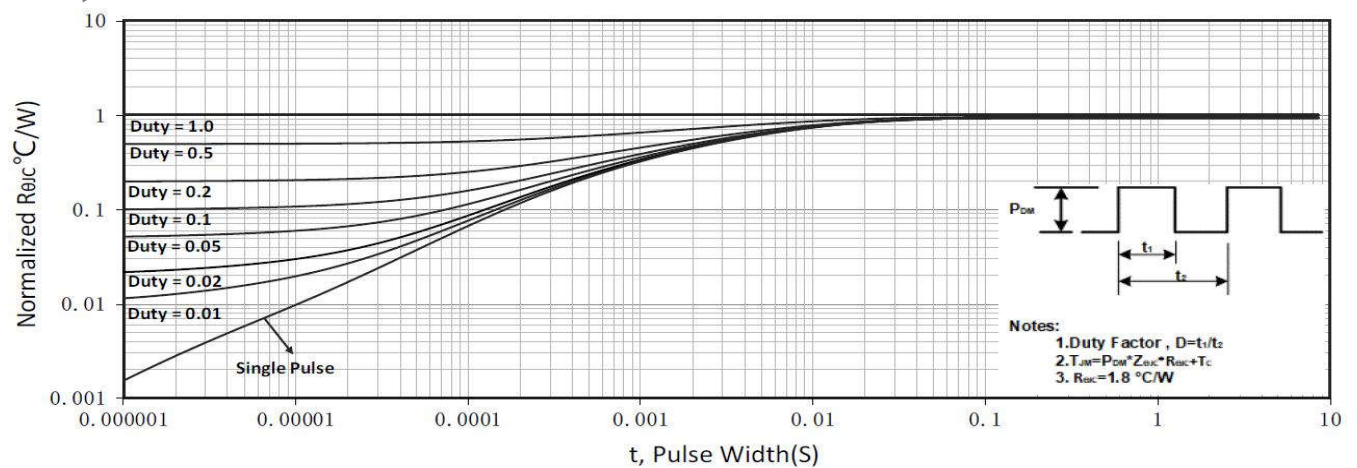
Gate Charge Characteristics



Power Dissipation

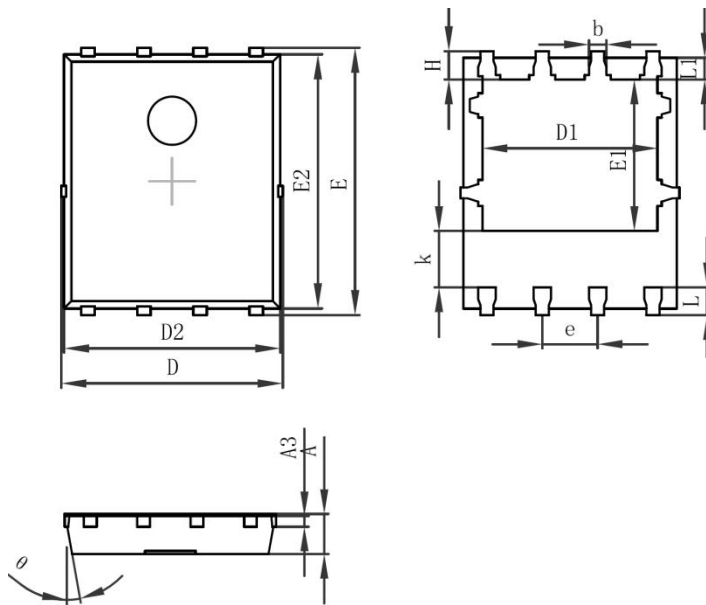


Safe Operating Area



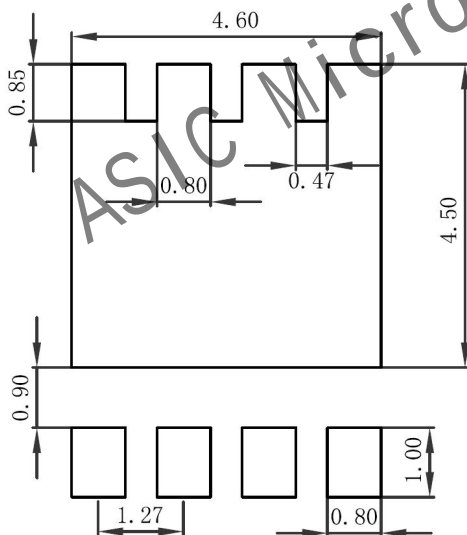
Normalized Maximum Transient Thermal Impedance

7.Dimension



Symbol	Millimeters		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°

8.Recommended Land Pattern

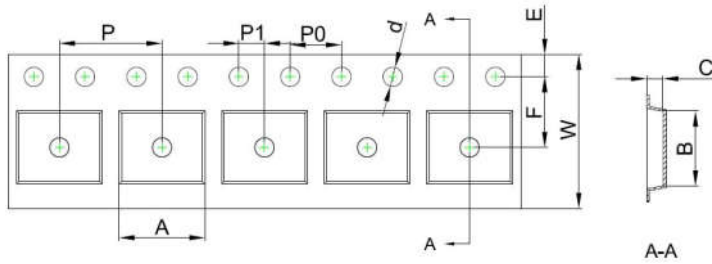


Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only
4. Unit: mm

9. Tape and Reel

PDFN5*6-8L Embossed Carrier Tape

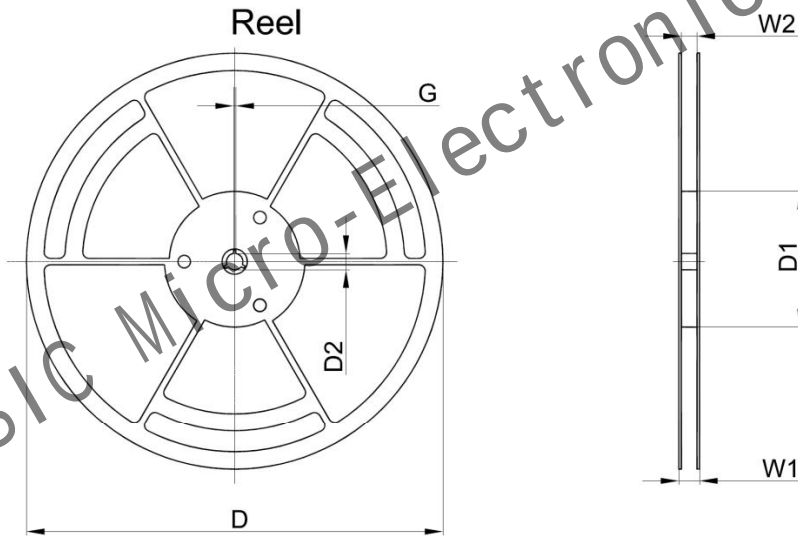


Packaging Description:

PDFNWB5*6-8L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 5,000 units per 13" or 33.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter											
Pkg type	A	B	C	d	E	F	P0	P	P1	W	
PDFNWB5*6-8L	6.30	5.30	1.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00	

PDFN5*6-8L 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

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