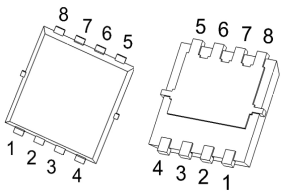
60V N-Channel MOSFET

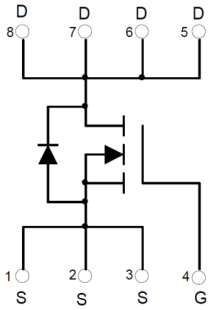
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	26mΩ@10V	20A

PDFNWB3.3×3.3-8L



Schematic diagram



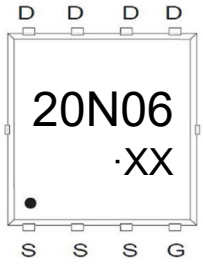
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- AEC-Q101 qualified (Automotive grade with suffix "Q".)
- Exsemi technology

Application

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible Power Supply

MARKING:



20N06 = 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}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	20	A
Pulsed Drain Current	I_{DM}	60	A
Single Pulse Avalanche Energy[5]	E_{AS}	70	mJ
Total Power Dissipation	P_D	1.5	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	83.3	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS(T_C=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	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[3]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1	2	3	V
Drain-source on-resistance[3]	$R_{DS(on)}$	V_{GS} =10V, I_D =10A		26	35	mΩ
Forward tranconductance[3]	g_{FS}	V_{DS} =6V, I_D =10A	18			S
Dynamic characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} =30V,V_{GS} =0V,f =1MHz		960		pF
Output Capacitance	C_{oss}			62		
Reverse Transfer Capacitance	C_{rss}			54		
Switching Characteristics[4]						
Total Gate Charge@-4.5V	Q_g	V_{DS}=48V , V_{GS}=10V , I_D=15A		12		nC
Gate-Source Charge	Q_{gs}			4.1		
Gate-Drain Charge	Q_{gd}			4.5		
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V , V_{GS}=10V , R_L=15Ω , R_G=2.5Ω		5		ns
Turn-on rise time	t_r			2.6		
Turn-off delay time	$t_{d(off)}$			17		
Turn-off fall time	t_f			2.5		
Diode Characteristics						
Continuous Source Current[2]	I_S	V_G=V_D=0V , Force Current			20	A
Diode Forward Voltage[3]	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25℃		0.72	1.2	V

Note :

1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Surface Mounted on FR4 Board, t ≤ 10 sec.

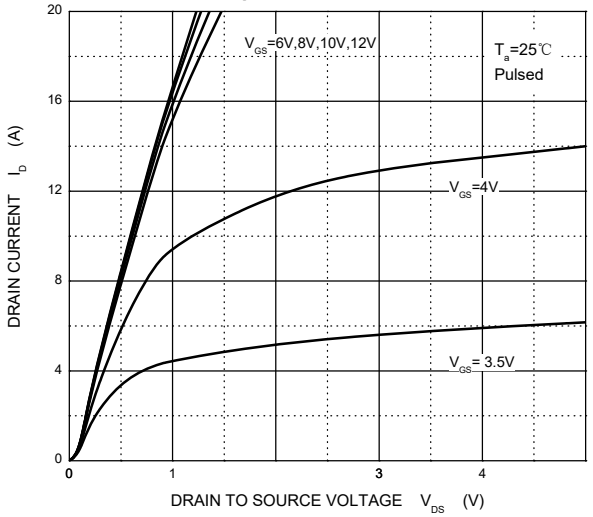
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

4. Guaranteed by design, not subject to production

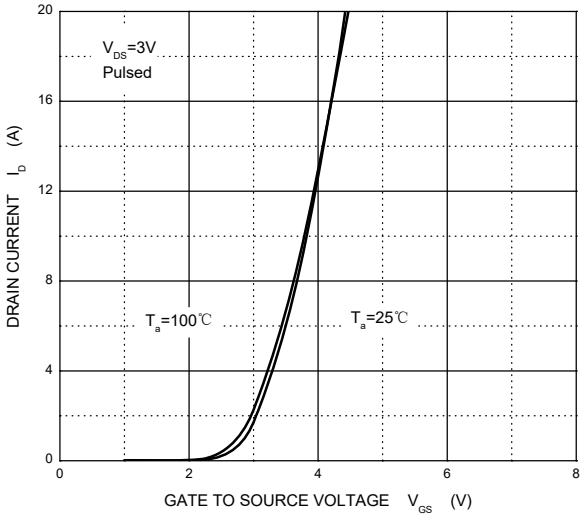
5. EAS condition : T_j=25℃,V_{DD}=30V,V_G=10V,L=0.5mH,R_g=25Ω

Typical Electrical and Thermal Characteristics

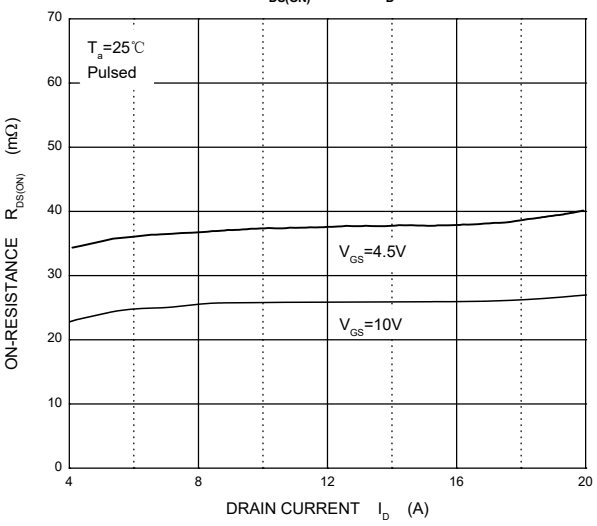
Output Characteristics



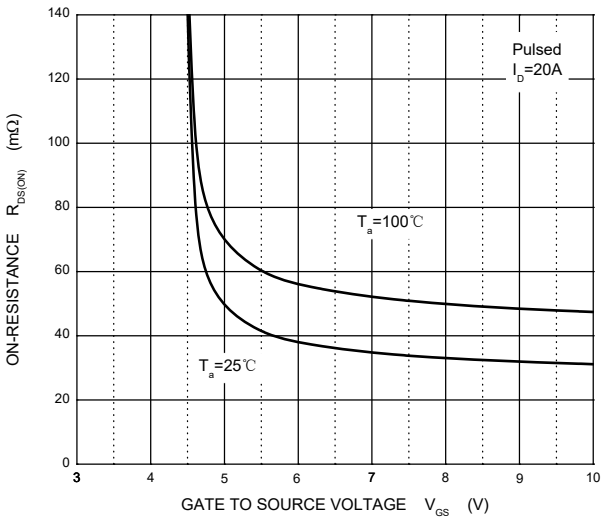
Transfer Characteristics



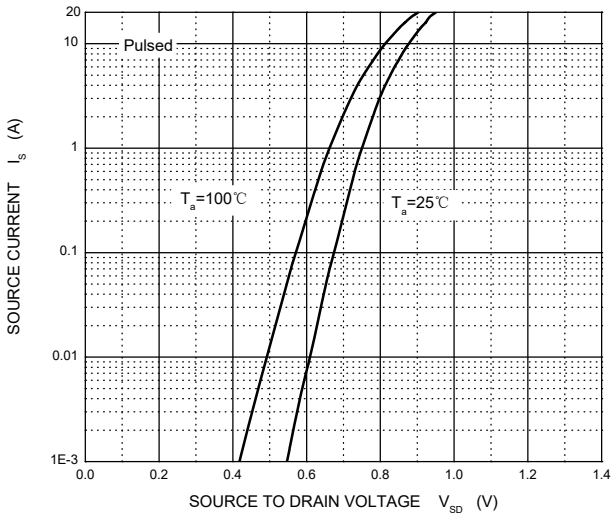
$R_{DS(ON)}$ — I_D



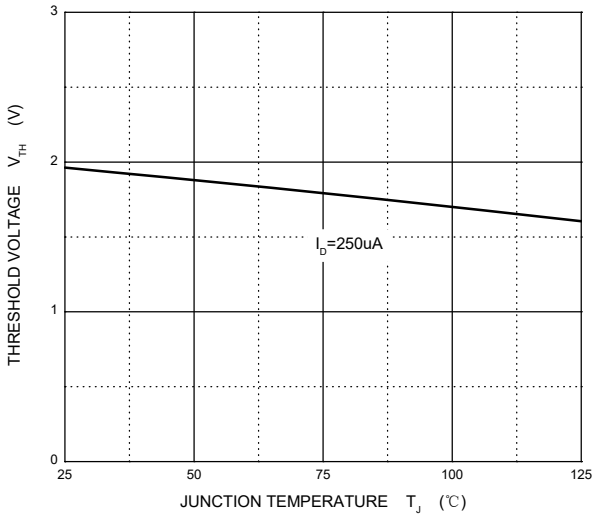
$R_{DS(ON)}$ — V_{GS}



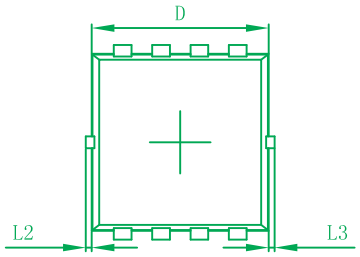
I_S — V_{SD}



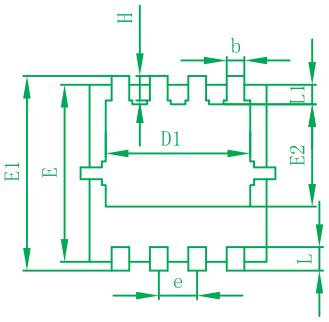
Threshold Voltage



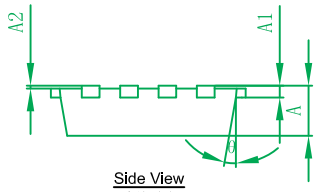
PDFNWB3.3*3.3-8L Package Information



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°

Device	Package	Shipping
EP20N06P33	PDFNWB3.3*3.3-8L	5000/Tape&Reel