

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	7.5mΩ@10V	40A
	10mΩ@4.5V	

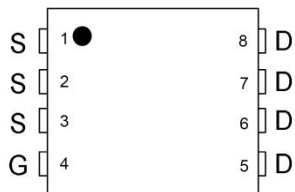
Feature

- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent reliability and uniformity
- Fast switching and soft recovery

Application

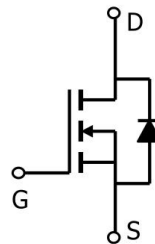
- PD charger
- Motor driver
- Switching voltage regulator
- DC-DC convertor
- Switched mode power supply

Package

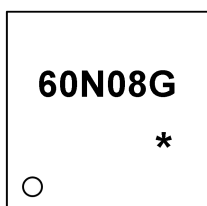


PDFNWB3.3×3.3-8L

Circuit diagram



Marking



60N08G =Device Code
* =Month Code

Absolute maximum ratings (Ta=25°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 ¹⁾ , TC=25 °C	I_D	40	A
Pulsed drain current ²⁾ , TC=25 °C	$I_{D, pulse}$	160	A
Power dissipation ³⁾ , TC=25 °C	P_D	81	W
Single pulsed avalanche energy ⁴⁾	E_{AS}	91	mJ
Thermal resistance, junction-case	$R_{\theta JC}$	1.54	°C/W
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

Electrical characteristics (T_A=25 °C, unless otherwise noted)

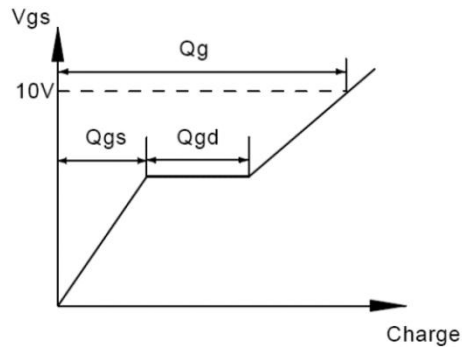
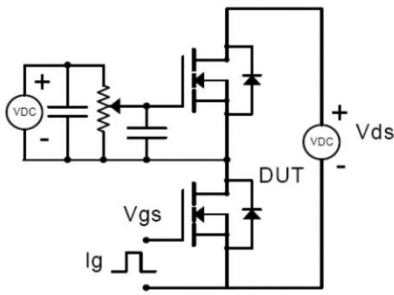
Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0\text{ V}, I_D=250\ \mu\text{A}$	60			V
Gate-source leakage current	I_{GSS}	$V_{GS}=\pm 20\text{ V}$			±100	nA
Drain-source leakage current	I_{DSS}	$V_{DS}=48\text{ V}, V_{GS}=0\text{ V}$			1	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\ \mu\text{A}$	1		2.5	V
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=10\text{ V}, I_D=20\text{ A}$		7.5	10	mΩ
		$V_{GS}=4.5\text{ V}, I_D=10\text{ A}$		10	13	
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{GS}=0\text{ V}, V_{DS}=50\text{ V}, f=100\text{ kHz}$		1204		pF
Output capacitance	C_{oss}			194.1		
Reverse transfer capacitance	C_{rss}			9.9		
Total gate charge	Q_g	$V_{GS}=10\text{ V}, V_{DS}=50\text{ V}, I_D=25\text{ A}$		17.9		nC
Gate-source charge	Q_{gs}			3.8		
Gate-drain charge	Q_{gd}			4.2		
Switching Characteristics						
Turn-on delay time	$t_{d(on)}$	$V_{GS}=10\text{ V}, V_{DS}=50\text{ V}, R_G=2\ \Omega, I_D=25\text{ A}$		23.9		ns
Rise time	t_r			4.6		
Turn-off delay time	$t_{d(off)}$			37.8		
Fall time	t_f			6.4		
Body Diode Characteristics						
Diode forward voltage	V_{SD}	$I_S=20\text{ A}, V_{GS}=0\text{ V}$			1.2	V
Reverse recovery time	t_{rr}	$V_R=50\text{ V}, I_S=25\text{ A}, di/dt=100\text{ A}/\mu\text{s}$		42.6		ns
Reverse recovery charge	Q_{rr}			36.3		nC

Note:

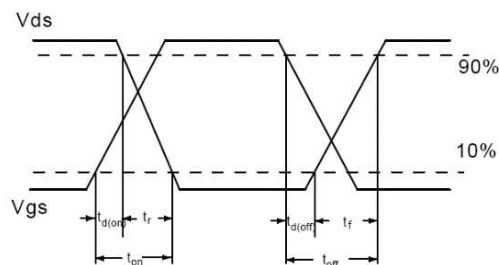
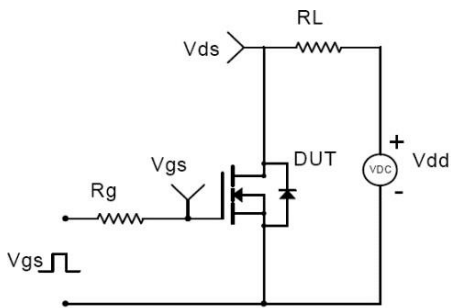
1. Calculated continuous current based on maximum allowable junction temperature.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. P_d is based on max. junction temperature, using junction-case thermal resistance.
4. $V_{DD}=30\text{ V}, V_{GS}=10\text{ V}, L=0.3\text{ mH}$, starting $T_j=25\text{ °C}$.

Test circuits and waveforms

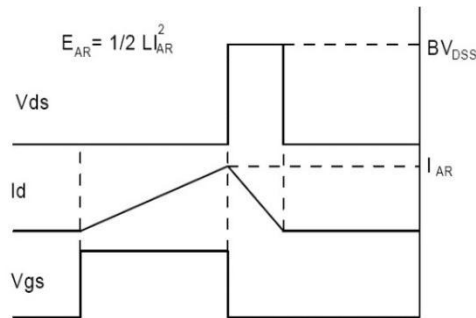
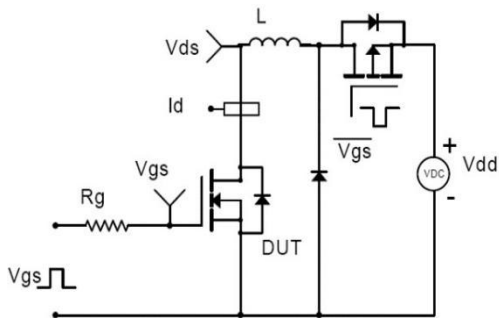
1) Gate charge test circuit & waveform



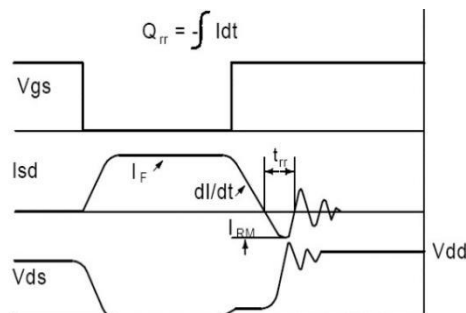
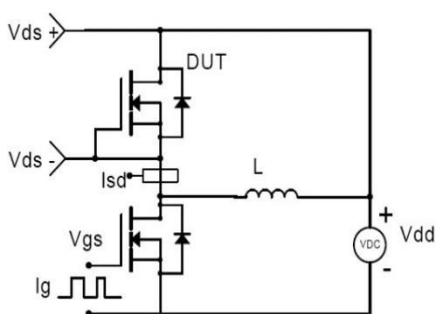
2) Switching time test circuit & waveforms



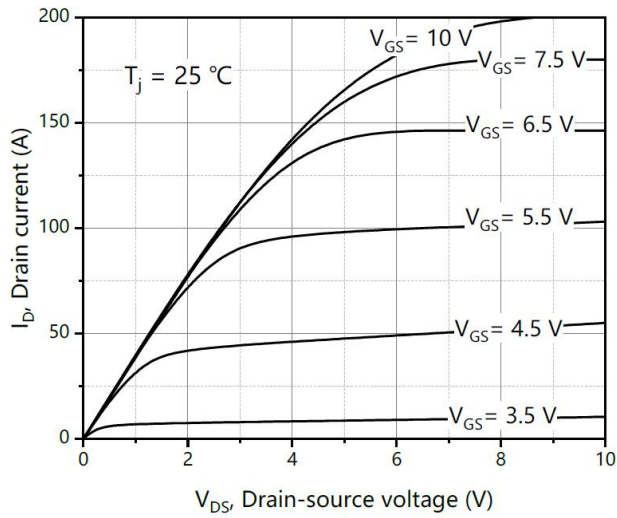
3) Unclamped inductive switching (UIS) test circuit & waveforms



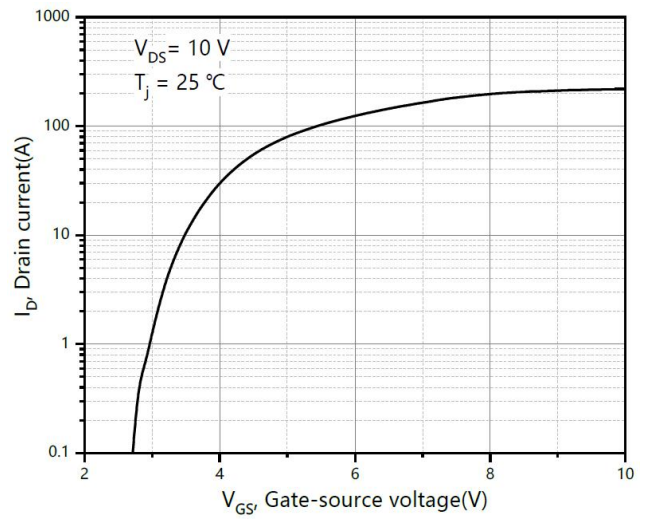
4) Diode reverse recovery test circuit & waveforms



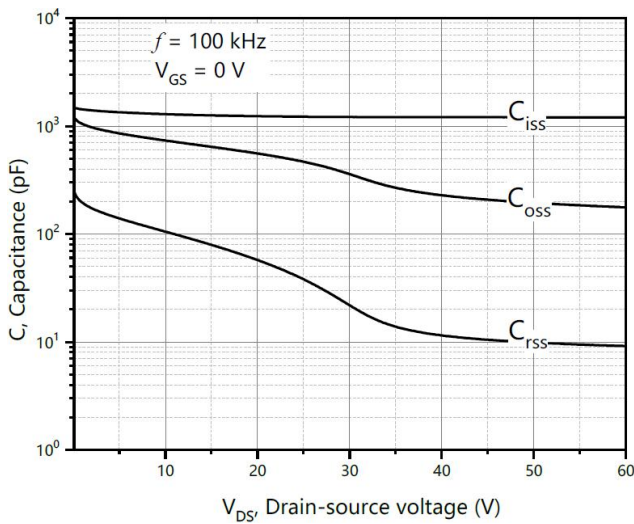
Typical Characteristics



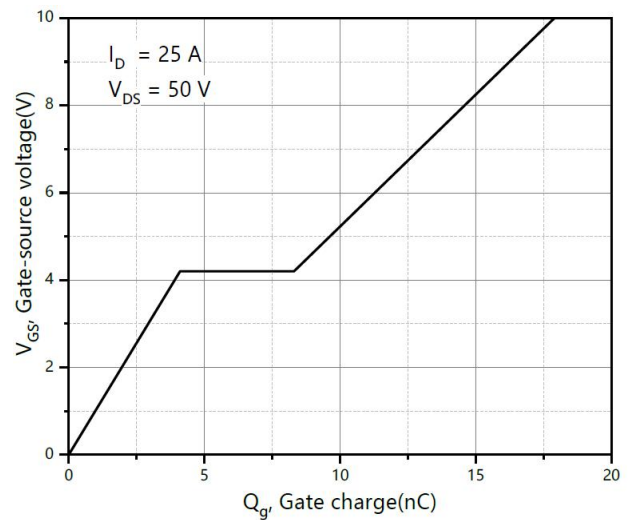
Output characteristics



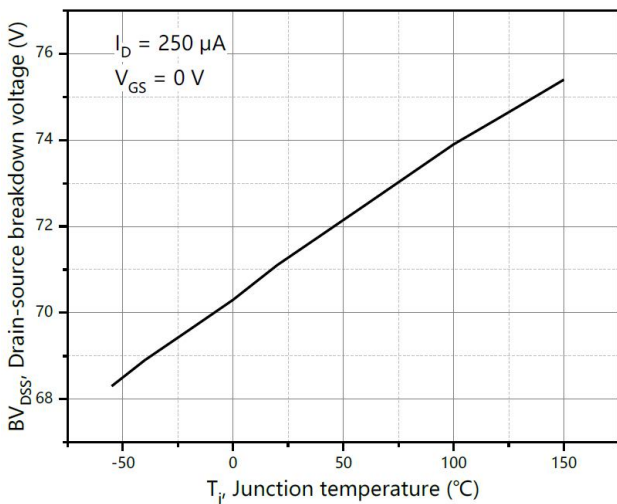
Transfer characteristics



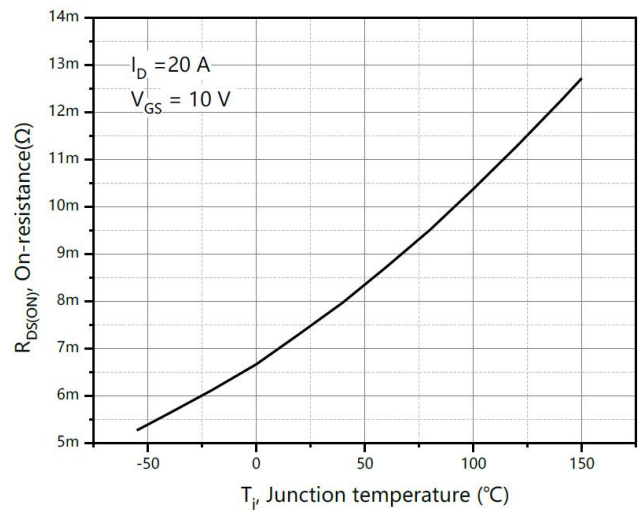
Capacitances



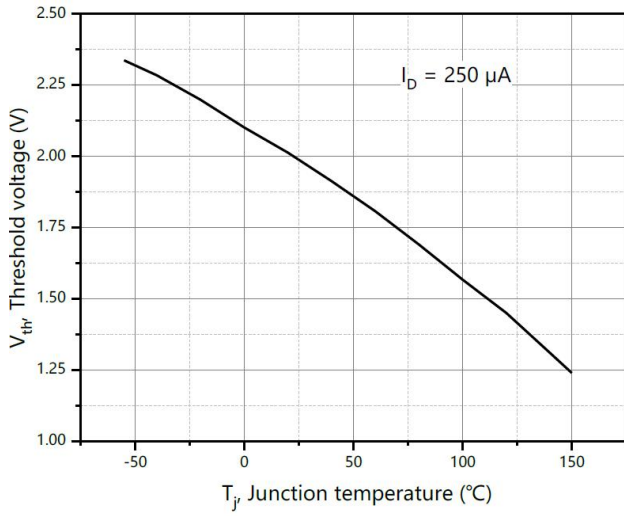
Gate charge



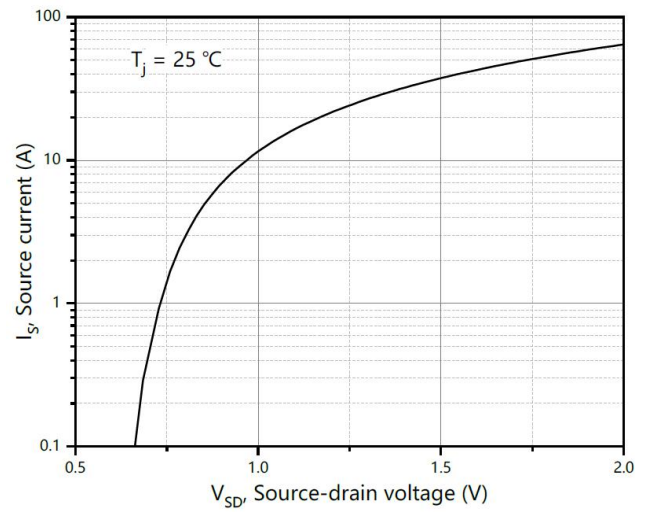
Drain-source breakdown voltage



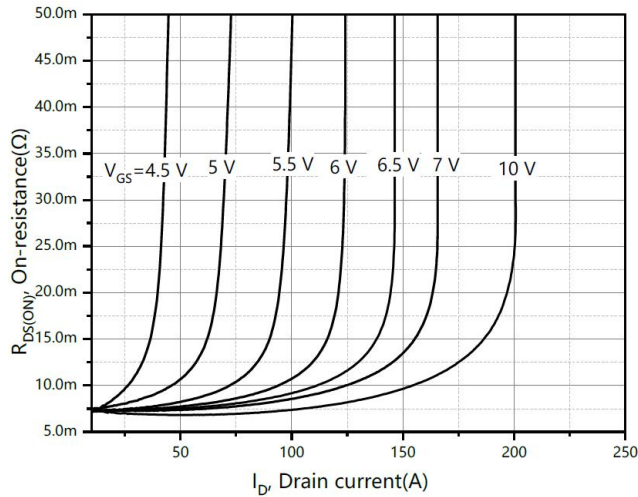
Drain-source on-state resistance



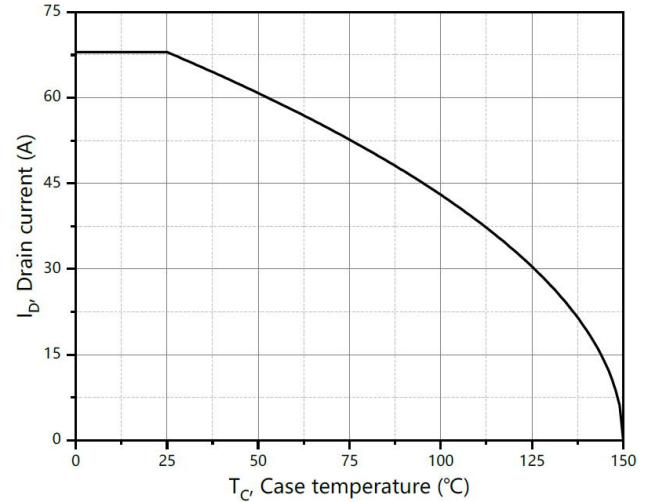
Threshold voltage



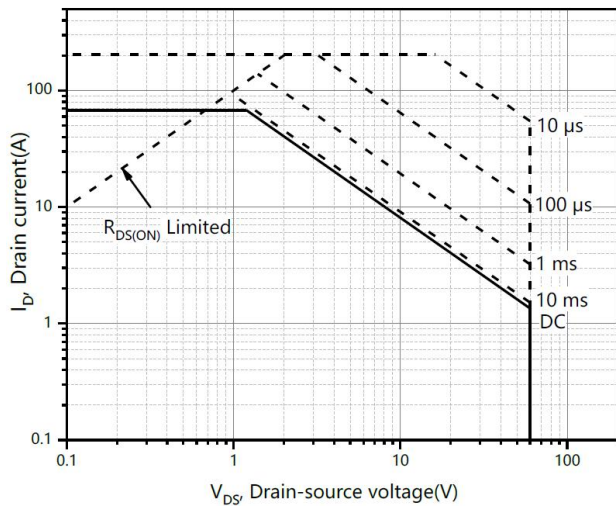
Forward characteristic of body diode



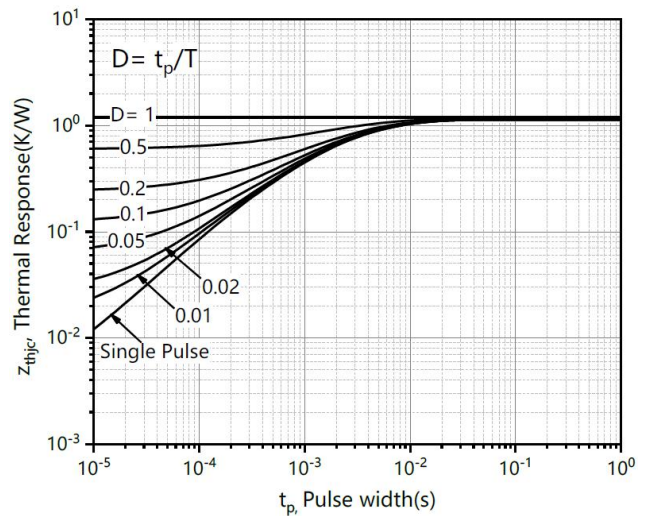
Drain-source on-state resistance



Drain current



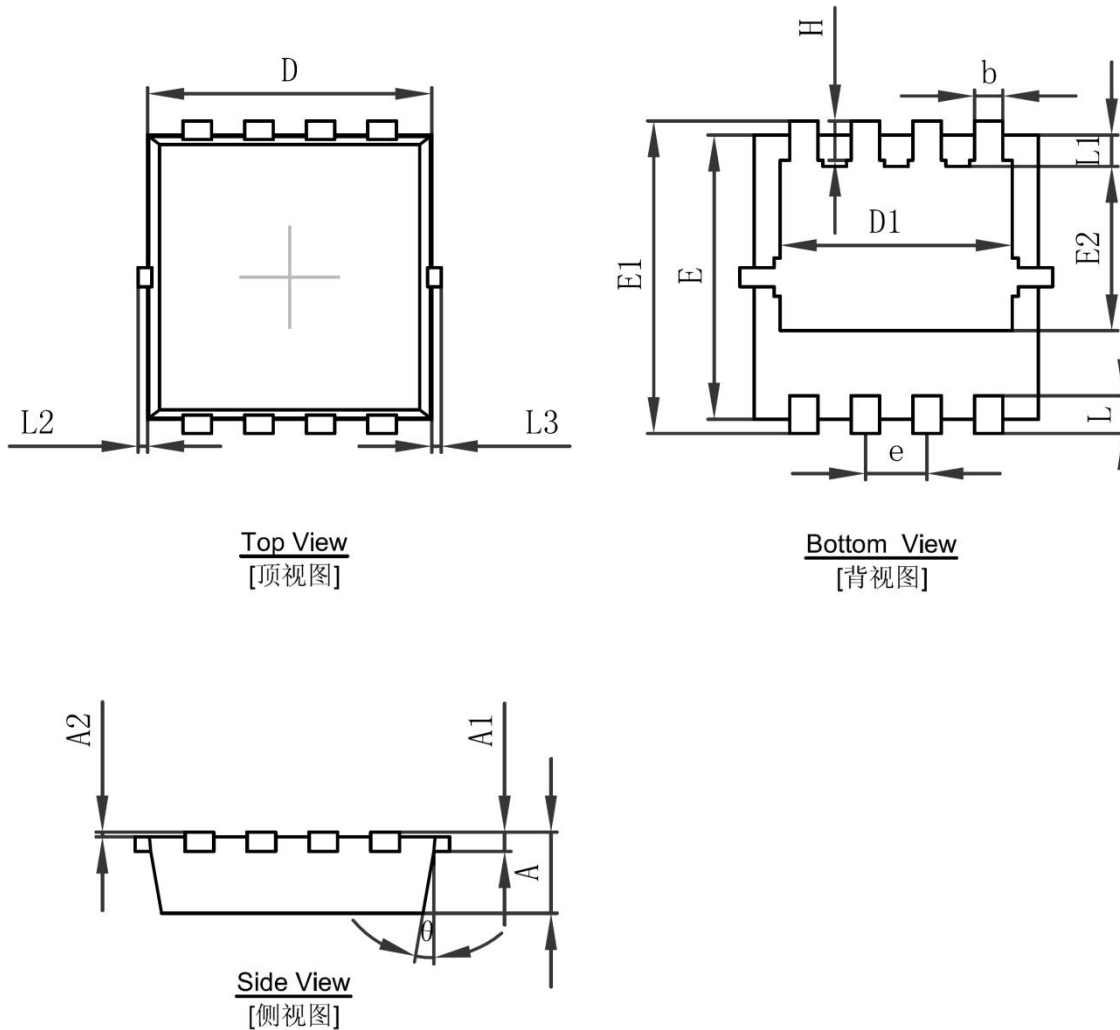
Safe operation area Tc=25 °C



Max. transient thermal impedance



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°

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