

NB8304D

N-Channel Logic Level Enhancement Mode MOSFET

1. FEATURES

- Low RDS(on) trench technology.
- Low thermal impedance.
- Fast switching speed.
- We declare that the material of product are Halogen Free and compliance with RoHS requirements.



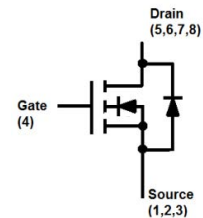
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2. APPLICATION

- Power Routing
- DC/DC Conversion
- Motor Drives

3. ORDERING INFORMATION

Device	Marking	Shipping
NB8304D	N2B	2000/Tape&Reel



4. MAXIMUM RATINGS(Ta = 25°C unless otherwise stated)

Parameter	Symbol	Limits	Unit
Drain-to-Source Voltage	VDSS	30	V
Gate-to-Source Voltage	VGS	±20	V
Continuous Drain Current	ID	TA = 25°C	20
		TC = 25°C	32
		TC = 100°C	22
Pulsed Drain Current (Note 1)	IDM	128	A
Avalanche Current	IAS	39	
Avalanche Energy(L = 0.1mH)	EAS	76	
Power Dissipation	PD	TC = 25°C	21
		TC = 100°C	8.3
Operating Junction Temperature	TJ	-55 ~+150	°C
Storage Temperature Range	Tstg	-55 ~+150	

1.Pulse width limited by maximum junction temperature.

2.Duty cycle ≤ 1%

3.50°C/W when mounted on a 1 in² pad of 2 oz copper.

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Maximum Junction-to-Ambient	RθJA	50	°C/W
Maximum Junction-to-Case	RθJC	6	

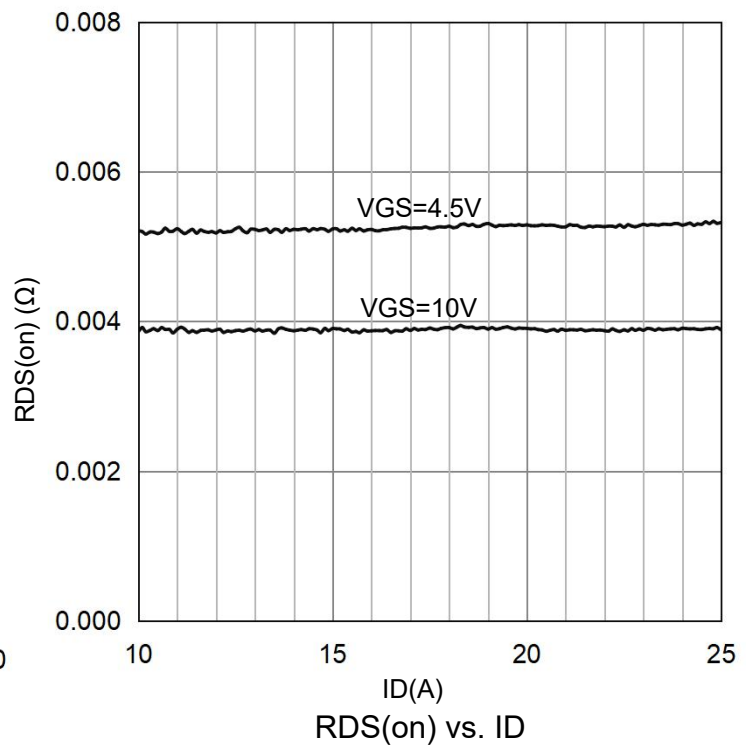
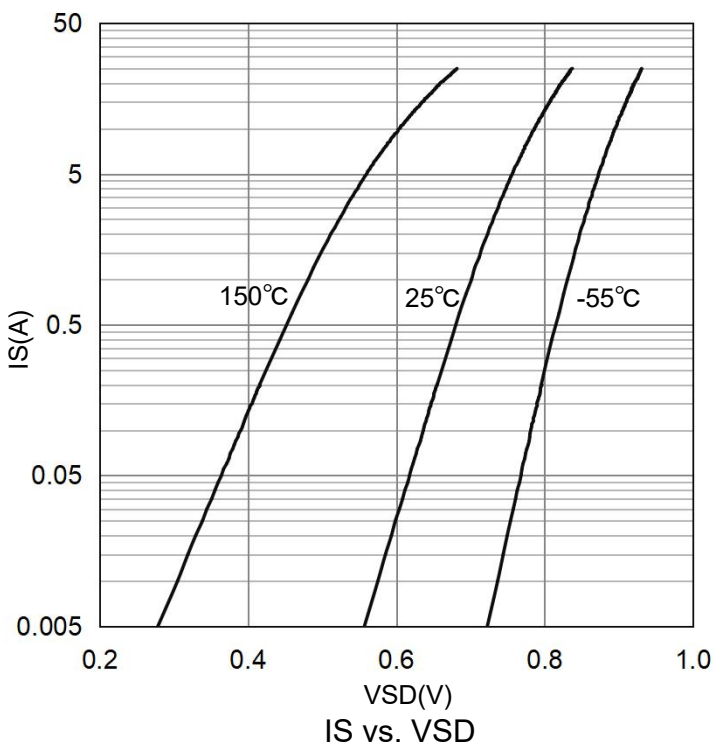
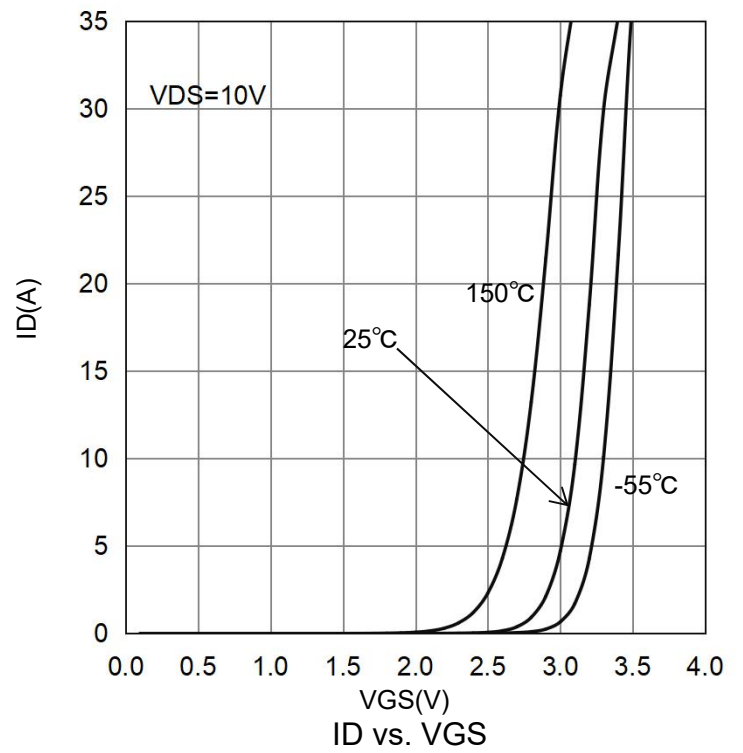
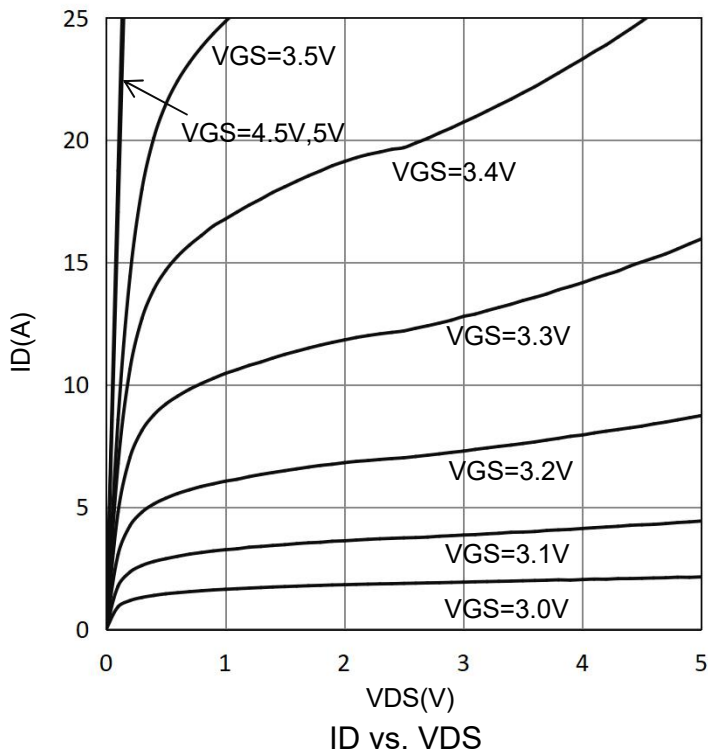


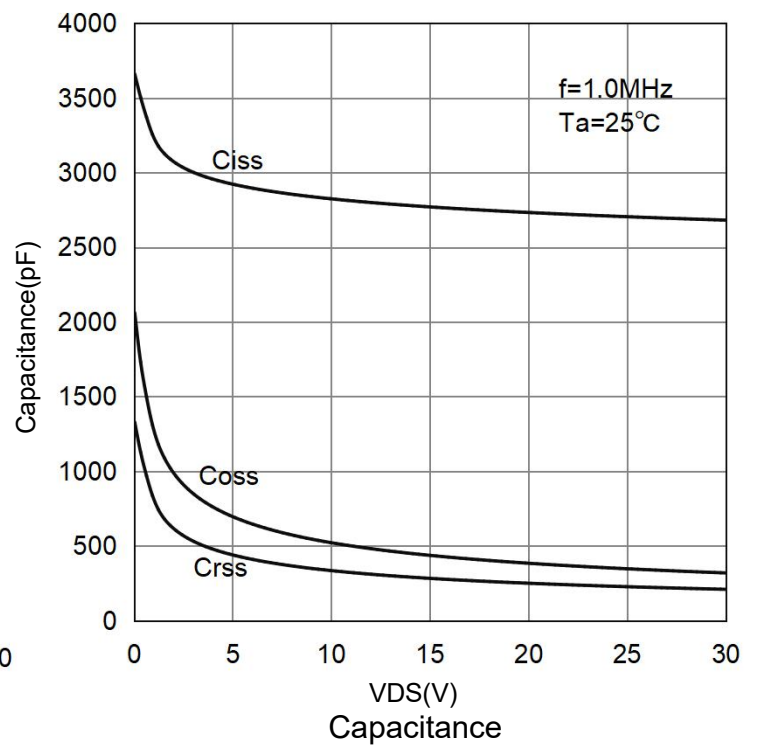
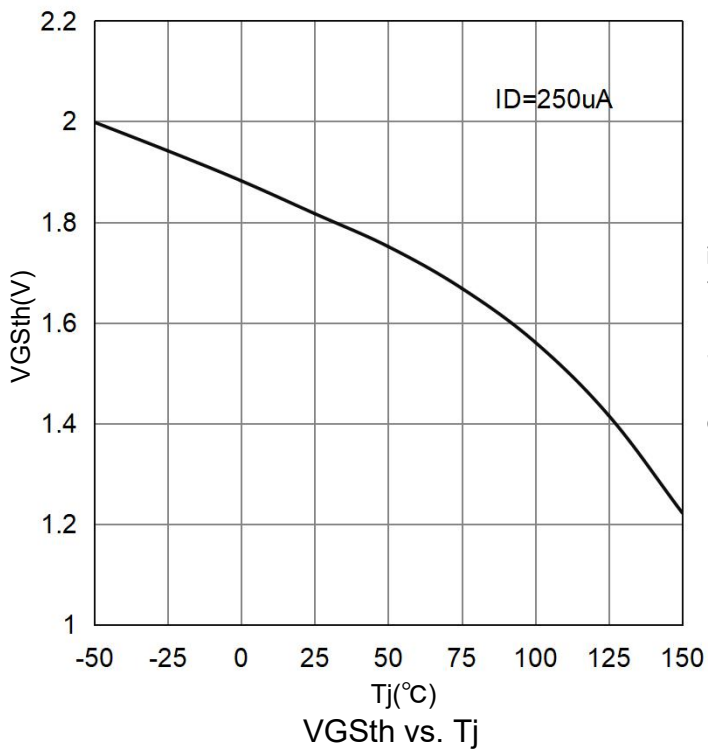
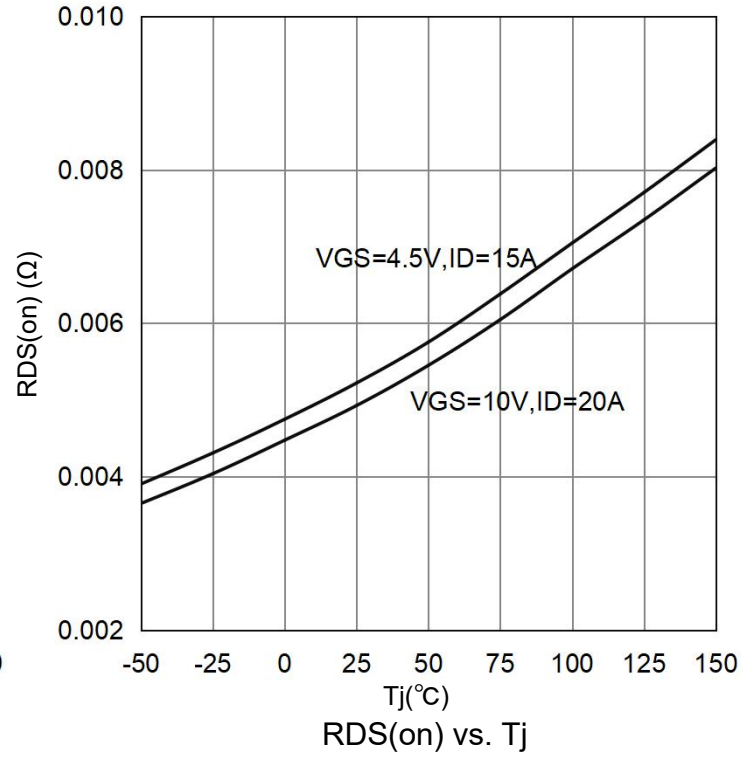
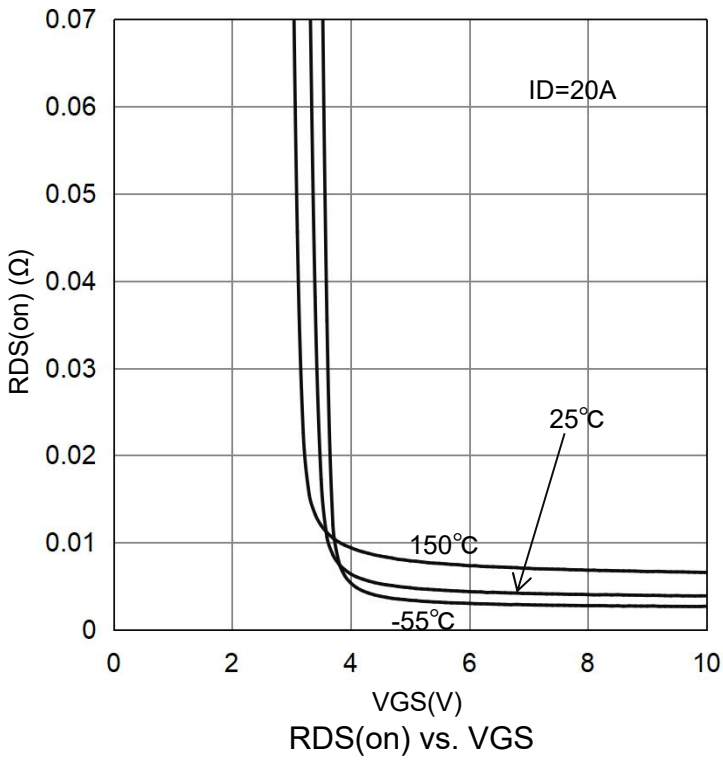
6. ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Static					
Drain-Source Breakdown Voltage (VGS = 0V, ID = 250μA)	V(BR)DSS	30	-	-	V
Gate-Source Threshold Voltage (VDS = VGS, ID = 250 uA)	VGS(th)	1	1.5	3	V
Gate-Body Leakage (VDS = 0 V, VGS = ±20 V)	IGSS	-	-	±100	nA
Zero Gate Voltage Drain Current (VDS = 24 V, VGS = 0 V)	IDSS	-	-	1	μA
Drain-Source On-Resistance(Note 4) (VGS = 10 V, ID = 20 A) (VGS = 4.5 V, ID = 15 A)	RDS(on)	-	3.2 4.9	4 6.6	mΩ
Forward Transconductance(Note 4) (VDS = 5 V, ID = 16 A)	gfs	-	26	-	S
Dynamic					
Input Capacitance	(VDS = 15 V, VGS = 0 V, f = 1MHz)	Ciss	-	2769	-
Output Capacitance		Coss	-	436	-
Reverse Transfer Capacitance		Crss	-	283	-
Total Gate Charge(VGS=4.5V)	(VDS = 15 V, VGS = 10 V, ID = 16A)	Qg	-	24	-
Total Gate Charge(VGS=10V)		Qg	-	47.6	-
Gate-Source Charge		Qgs	-	7.5	-
Gate-Drain Charge		Qgd	-	11.4	-
Turn-On Delay Time	(VDS=15 V, ID=1A, VGS= 10V, RGS = 2.7 Ω)	td(on)	-	18	-
Rise Time		tr	-	15	-
Turn-Off Delay Time		td(off)	-	55	-
Fall Time		tf	-	20	-
Gate Resistance (VGS = 0V, VDS = 0V, f = 1MHz)	Rg	-	0.97	-	Ω
SOURCE - DRAIN DIODE RATINGS AND CHARACTERISTICS (TC = 25 °C)					
Continuous Current	IS	-	-	32	A
Pulsed Current(Note 6)	ISM	-	-	128	A
Forward Voltage (IF= 16A, VGS = 0V)	VSD	-	-	1.3	V

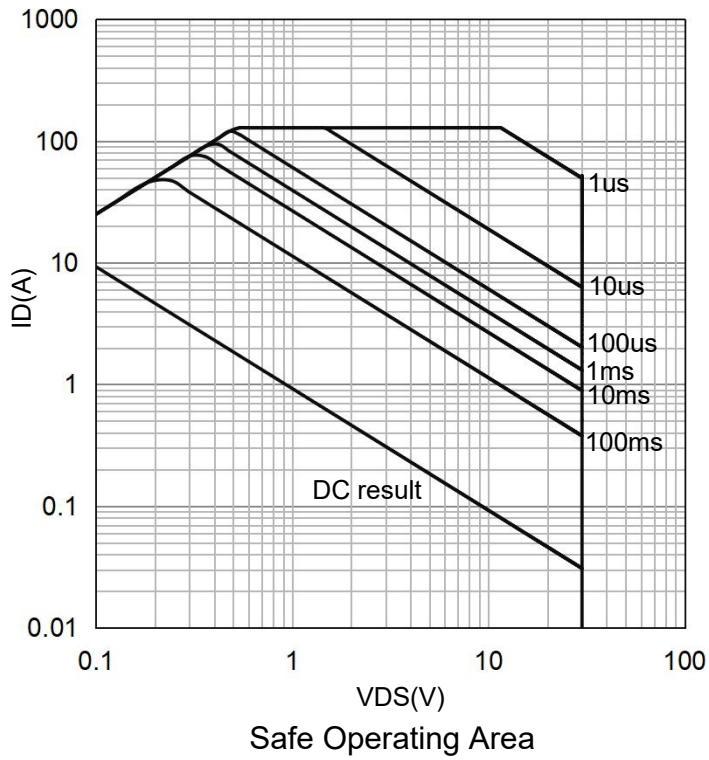
- 4. Pulse test: $PW \leq 300\mu s$ duty cycle $\leq 2\%$.
- 5. Independent of operating temperature.
- 6. Pulse width limited by maximum junction temperature.

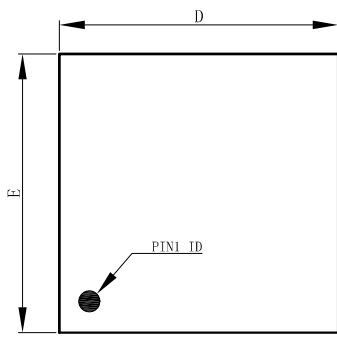


7.ELECTRICAL CHARACTERISTICS CURVES


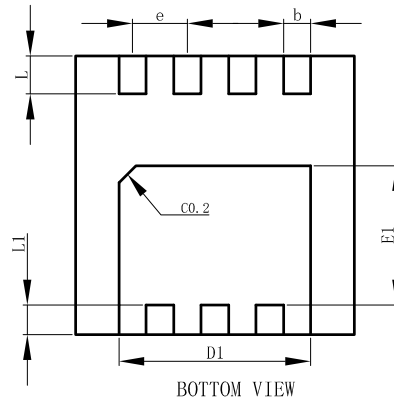
7.ELECTRICAL CHARACTERISTICS CURVES(Con.)


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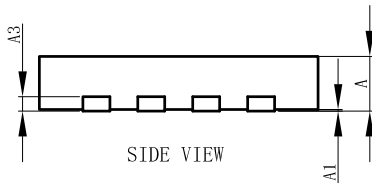


8.OUTLINE AND DIMENSIONS
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TOP VIEW

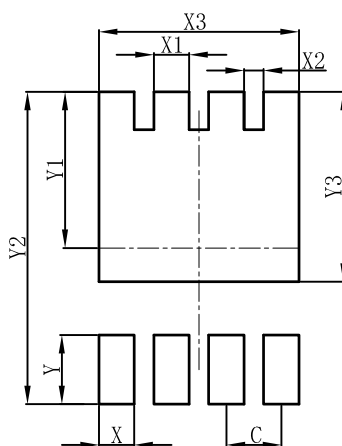


BOTTOM VIEW



SIDE VIEW

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DIM	MIN	NOR	MAX
A	0.60	0.65	0.70
A1	0.00	0.03	0.05
b	0.27	0.32	0.37
D	3.25	3.30	3.35
E	3.25	3.30	3.35
D1	2.22	2.27	2.32
E1	1.60	1.65	1.70
e	0.65BSC		
L	0.40	0.45	0.50
L1	0.30	0.35	0.40
A3	0.152REF.		
All Dimensions in mm			

9.SOLDERING FOOTPRINT
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DIM	(mm)
C	0.65
X	0.42
X1	0.42
X2	0.23
X3	2.37
Y	0.70
Y1	1.85
Y2	3.70
Y3	2.25

