

NB8610D

N-Channel Power Trench MOSFET

1. FEATURES

- Max RDS(on) = 11 mΩ at VGS = 10 V, ID = 15 A
- Advanced Package and Silicon combination for low RDS(on) and high efficiency.
- We declare that the material of product compliance with RoHS requirements and Halogen Free.



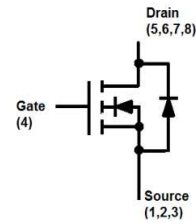
DFN3333-8A

2. APPLICATIONS

- DC-DC Conversion

3. DEVICE MARKING AND RESISTOR VALUES

Device	Marking	Shipping
NB8610D	B10	2000/Tape&Reel



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

Parameter		Symbol	Limits	Unit
Drain-to-Source Voltage		VDSS	100	V
Gate-to-Source Voltage		VGS	+20/-12	V
Continuous Drain Current(Note 1)	TA =25°C	ID	11.5	A
	TA =70°C		9	
	TC =25° C		40	
	TC =100° C		19	
Pulsed Drain Current (Note 2)		IDM	60	
Continuous Source Current (Diode Conduction)(Note 1)		IS	3.5	A
Valanche Current		IAS	34	A
Valanche energy L=0.1mH		EAS	58	mJ
Power Dissipation(Note 1)	TA =25°C	PD	3.5	W
	TA =70°C		2	
Operating Junction Temperature		TJ	-55 ~+150	°C
Storage Temperature Range		Tstg	-55 ~+150	

1.Surface Mounted on 1" x 1" FR4 Board.

2.Pulse width limited by maximum junction temperature.

5. THERMAL CHARACTERISTICS

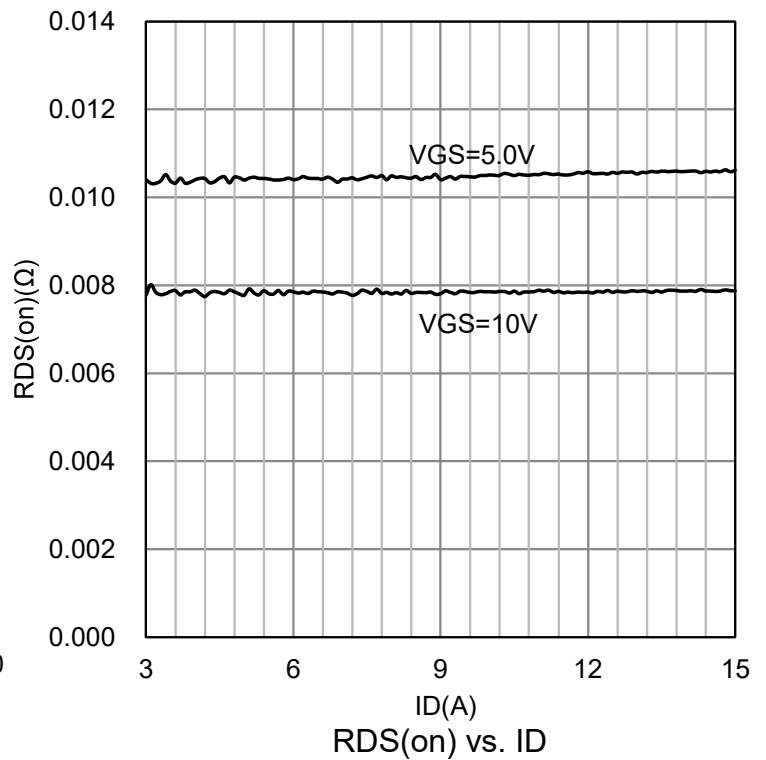
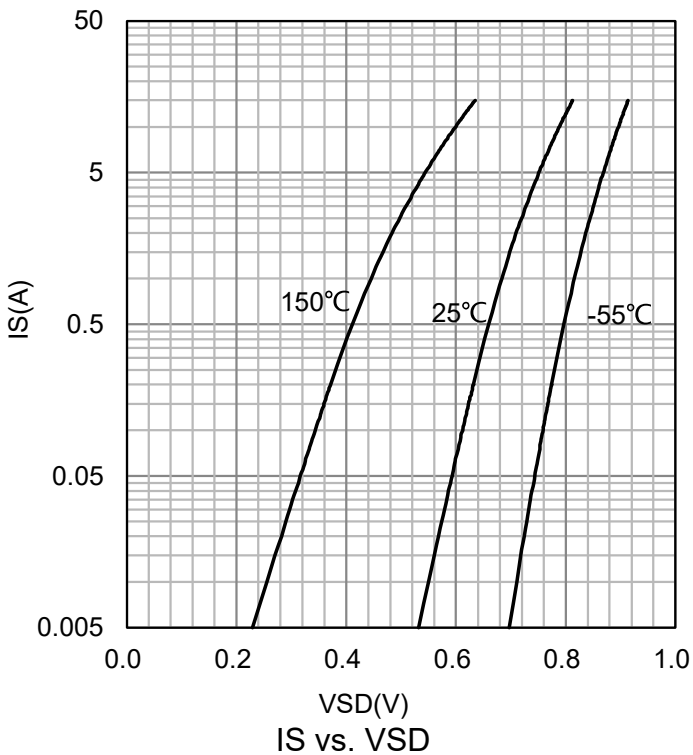
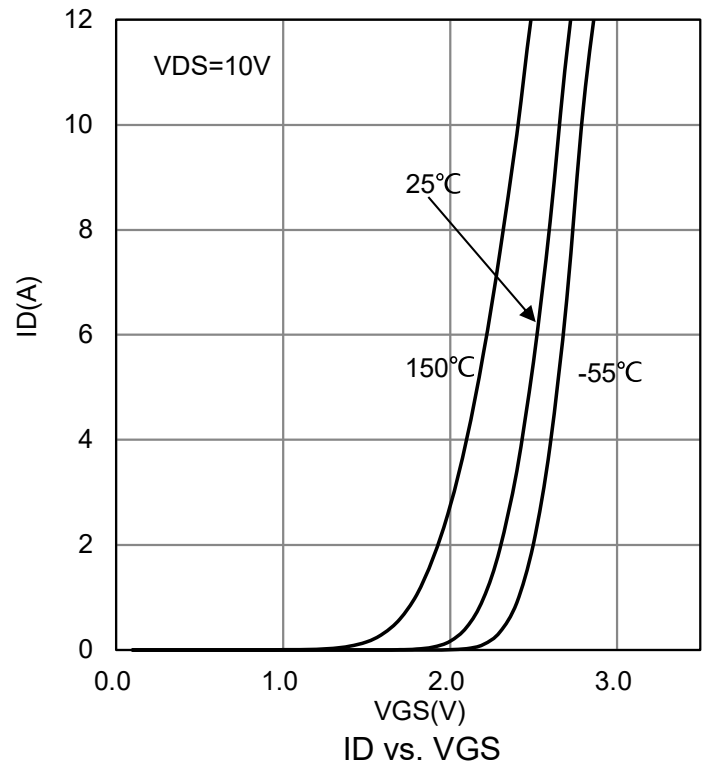
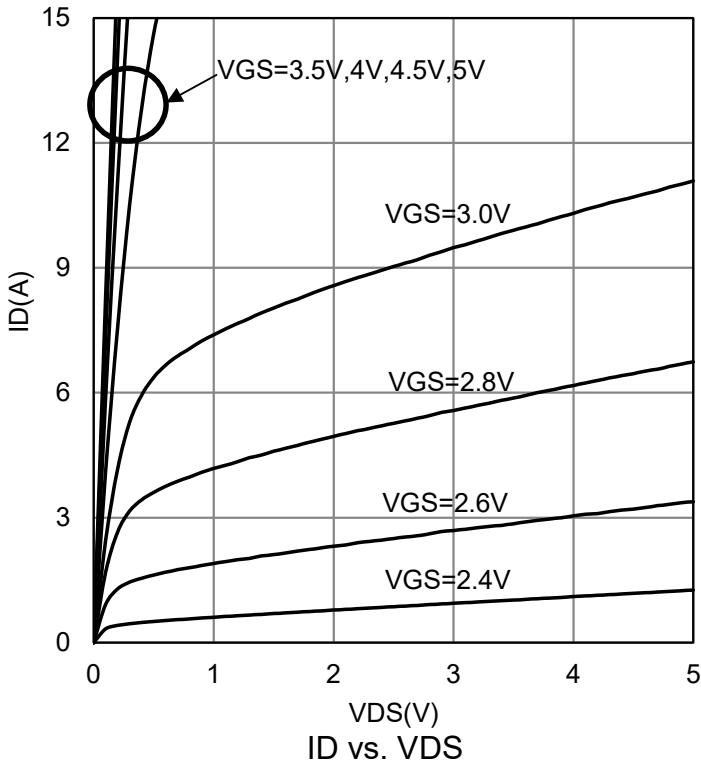
Parameter		Symbol	Limits	Unit
Maximum Junction-to-Ambient(Note 1)	t ≤ 10s	RθJA	35	°C/W
	Steady State		81	
Maximum Junction-to-Case(Note 1)	Steady State	RθJC	6	

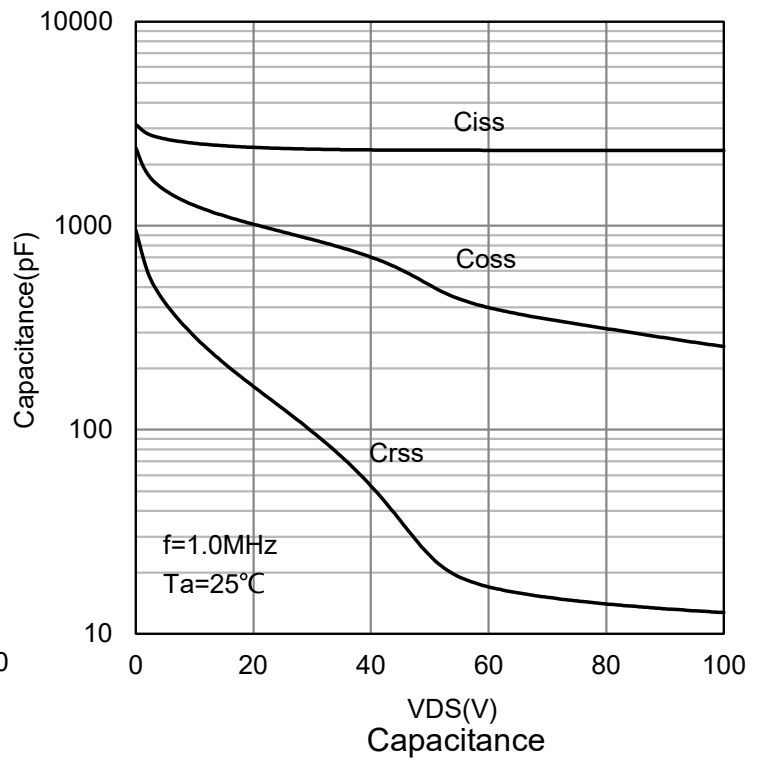
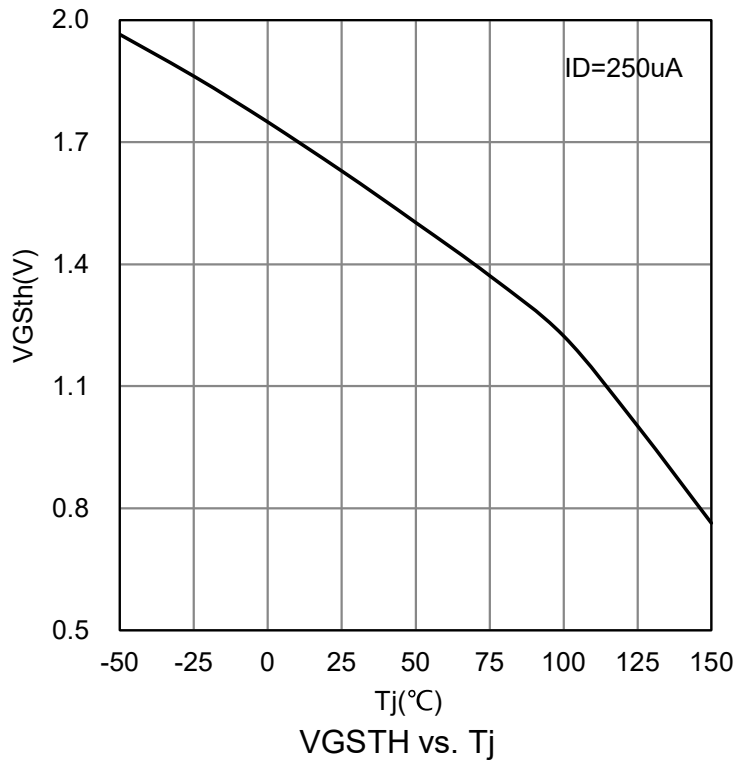
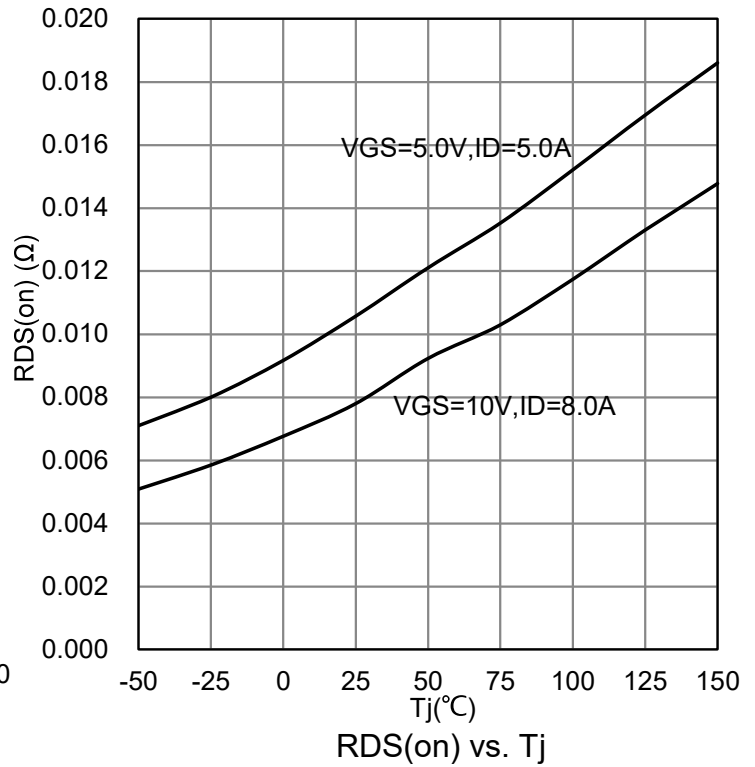
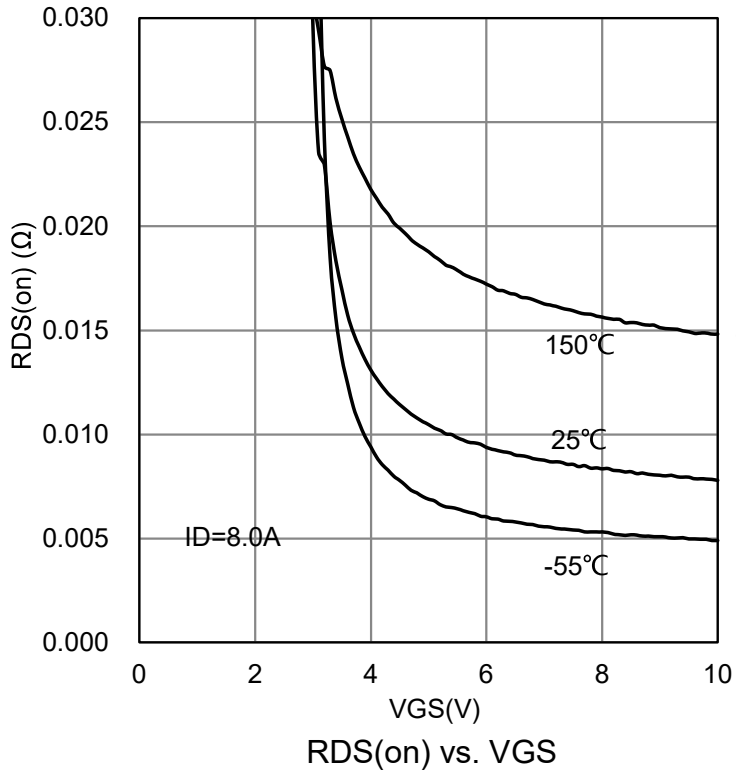


6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

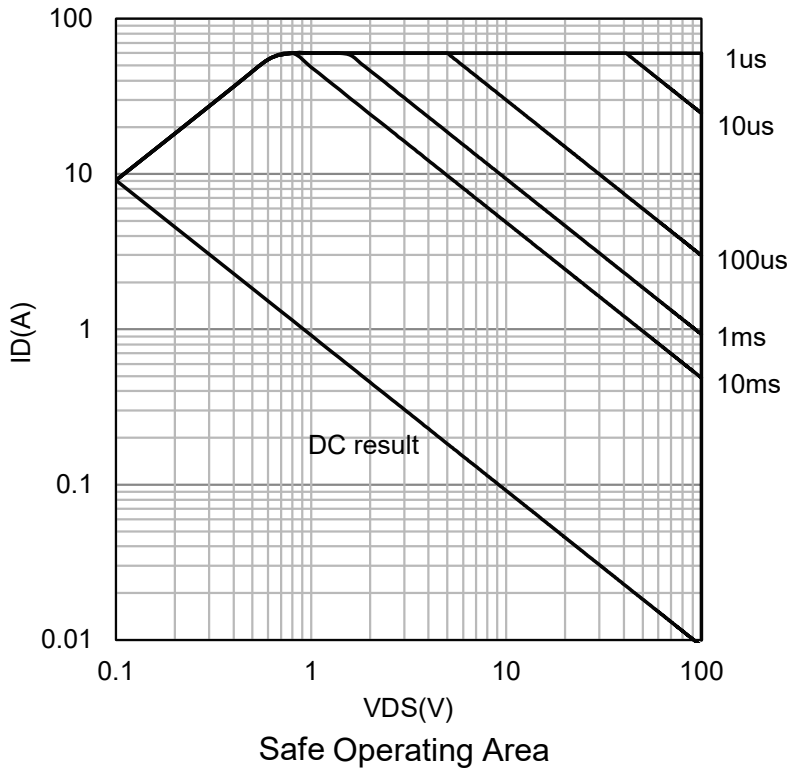
Characteristic	Symbol	Min.	Typ.	Max.	Unit	
Drain to Source Breakdown Voltage (VGS = 0V, ID = 250μA)	VDSS	100	-	-	V	
Drain-to-Source Leakage Current (VDS = 80V, VGS = 0V)	IDSS	-	-	800	nA	
Gate-Body leakage current, Forward (VDS = 0V, VGS = 20V)	IGSSF	-	-	100	nA	
Gate-Body leakage current, Reverse (VDS = 0V, VGS = -12V)	IGSSR	-	-	-100	nA	
Gate Threshold Voltage (VDS = VGS, ID = 250μA)	VGS(TH)	1	1.7	3	V	
Drain-to-Source On-Resistance (VGS = 10 V, ID = 15 A) (VGS = 4.5 V, ID = 12 A) (VGS = 10 V, ID = 15 A, TJ = 125°C)	RDS(ON)	-	9 11 16	11 16 22	mΩ	
Gate Resistance	Rg	0.1	1.1	3	Ω	
Forward Transconductance (VDS = 10V, ID = 13A)	gfs	-	45	-	S	
Total Gate Charge VGS(0 ~10 V)	(ID = 13A, VDD = 50V)	-	Qg	44	-	nC
Total Gate Charge VGS(0 ~5 V)			Qg	26.5	-	
Gate to Source Charge			Qgs	5.5	-	
Gate to Drain Charge			Qgd	13.6	-	
Turn-on Delay Time	(VDD = 50V, ID = 13A, RG = 6 Ω, VGS = 10V)	-	td(on)	15.6	23.4	nS
Rise Time			tr	5.2	7.8	
Turn-Off Delay Time			td(off)	61.8	92.7	
Fall Time			tf	25.6	38.4	
Input Capacitance	(VGS = 0V, VDS = 50V, f = 1MHz)	-	Ciss	2341	3000	pF
Output Capacitance			Coss	440	810	
Reverse Transfer Capacitance			Crss	24	36	
Diode Forward Voltage (VGS = 0 V, IS = 2.1 A) (VGS = 0 V, IS = 13 A)	VSD	-	0.7 0.8	1.2 1.3	V	
Reverse Recovery Time (IF = 13 A, di/dt = 100 A/μs)	trr	-	56	90	nS	
Reverse Recovery Charge (IF = 13 A, di/dt = 100 A/μs)	Qrr	-	80	118	nC	

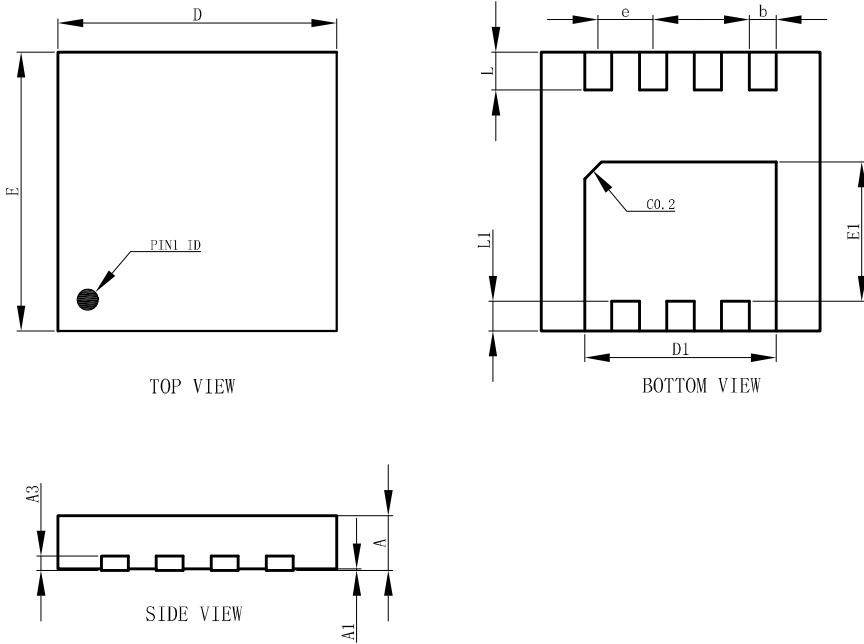


7.ELECTRICAL CHARACTERISTICS CURVES


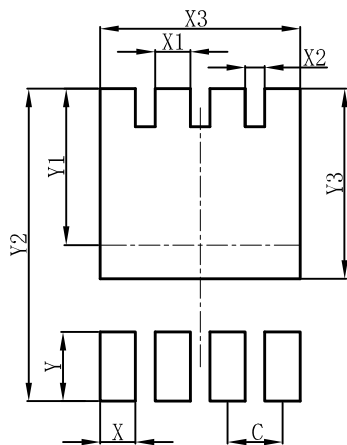
7.ELECTRICAL CHARACTERISTICS CURVES(Con.)


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8. OUTLINE AND DIMENSIONS
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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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DFN3333-8A	
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

