

# NB8616D

## N-Channel Power Trench MOSFET


**DFN3333-8A**

### 1. FEATURES

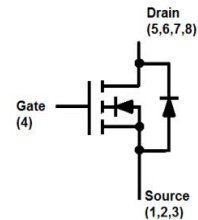
- Advanced Package and Silicon combination for low RDS(on) and high efficiency.
- We declare that the material of product compliance with RoHS requirements and Halogen Free.

### 2. APPLICATIONS

- DC-DC Conversion

### 3. DEVICE MARKING AND RESISTOR VALUES

Device	Marking	Shipping
NB8616D	B16	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	V
Continuous Drain Current(Note 1)	ID	TA =25°C	12
		TA =70°C	8.5
Pulsed Drain Current (Note 2)	IDM	48	A
Continuous Source Current (Diode Conduction)(Note 1)	IS	3.5	A
Avalanche Current	IAS	14	A
Avalanche energy (L=0.1mH)	EAS	9.8	mJ
Power Dissipation(Note 1)	PD	TA =25°C	3.5
		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

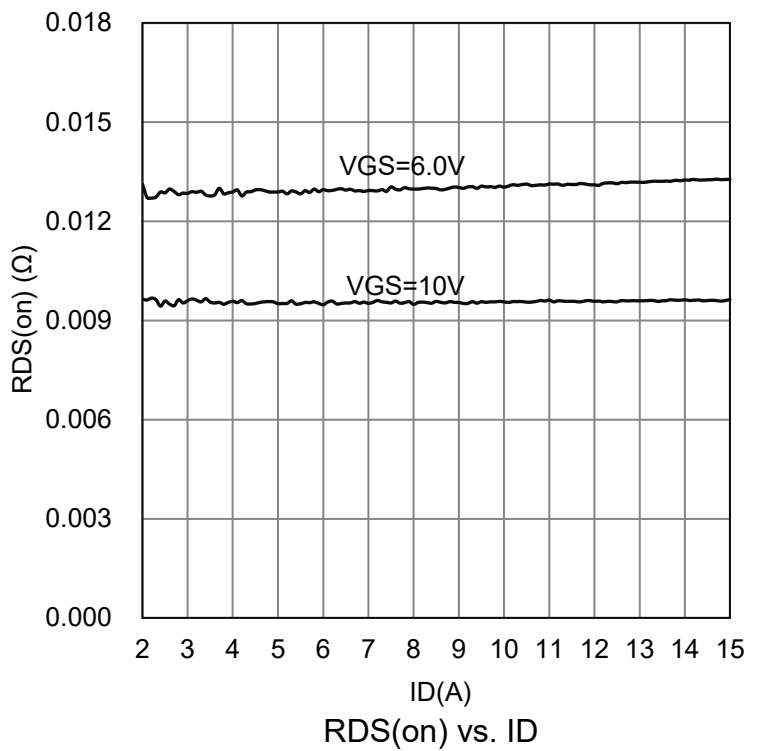
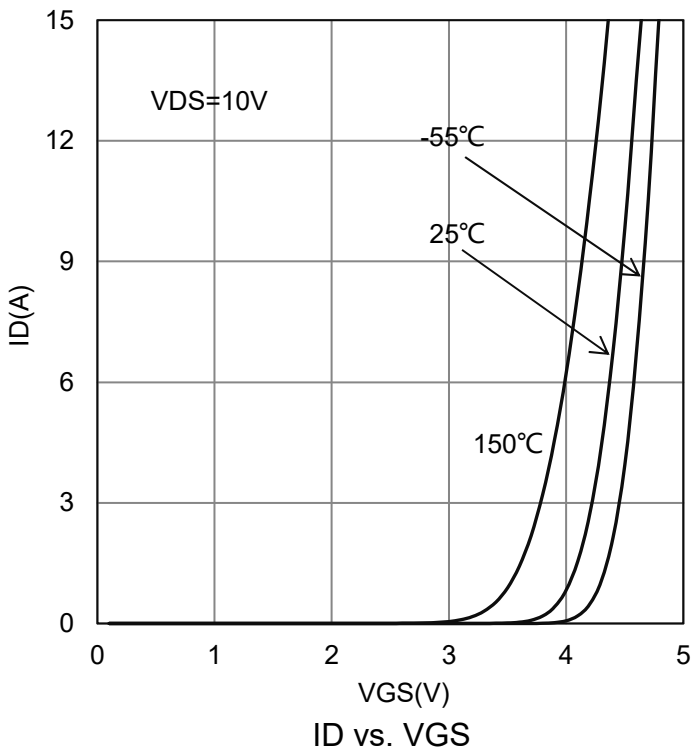
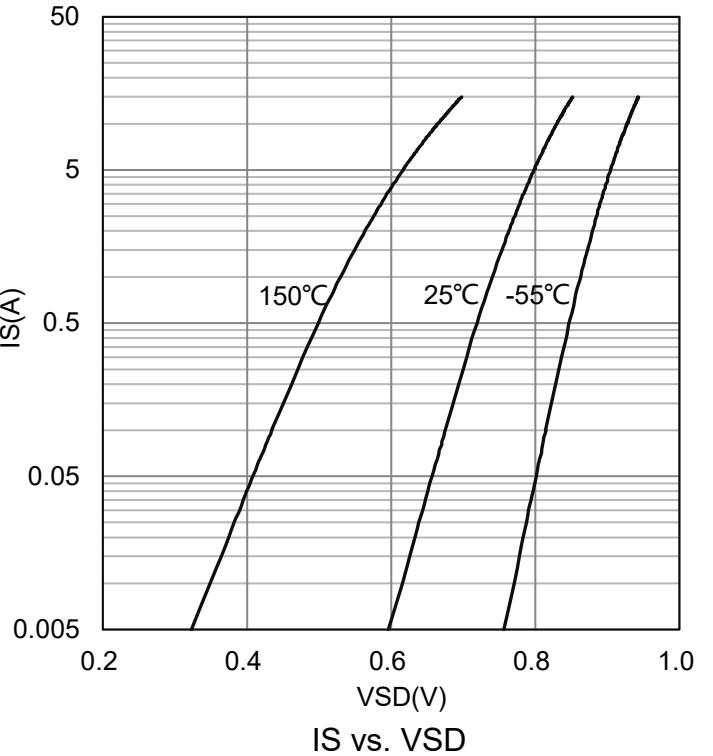
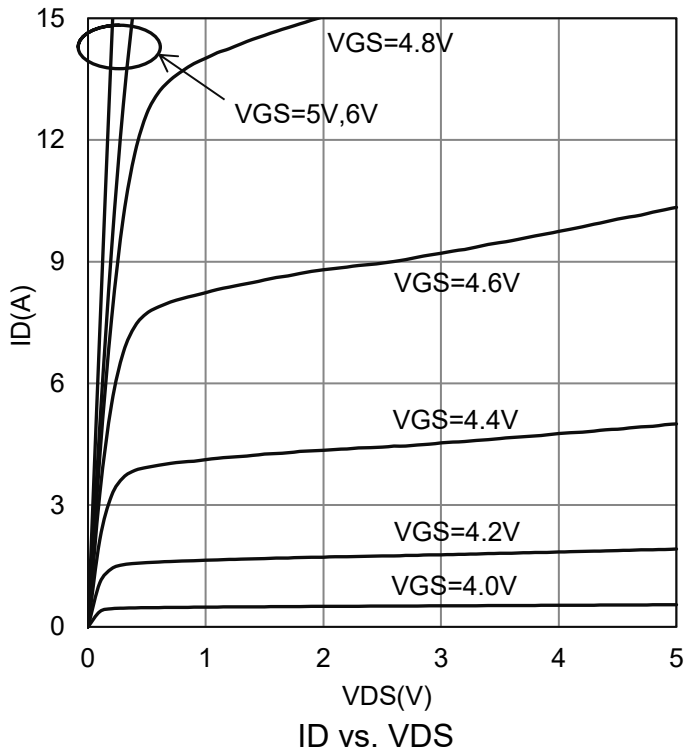
Parameter	Symbol	Limits	Unit
Maximum Junction-to-Ambient(Note 1)	RθJA	t ≤ 10s	35
		Steady State	81

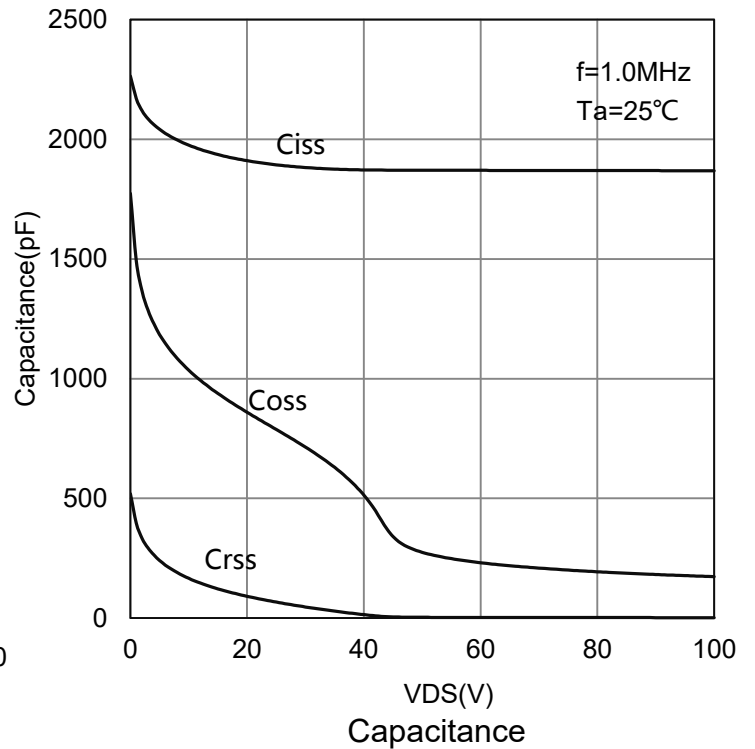
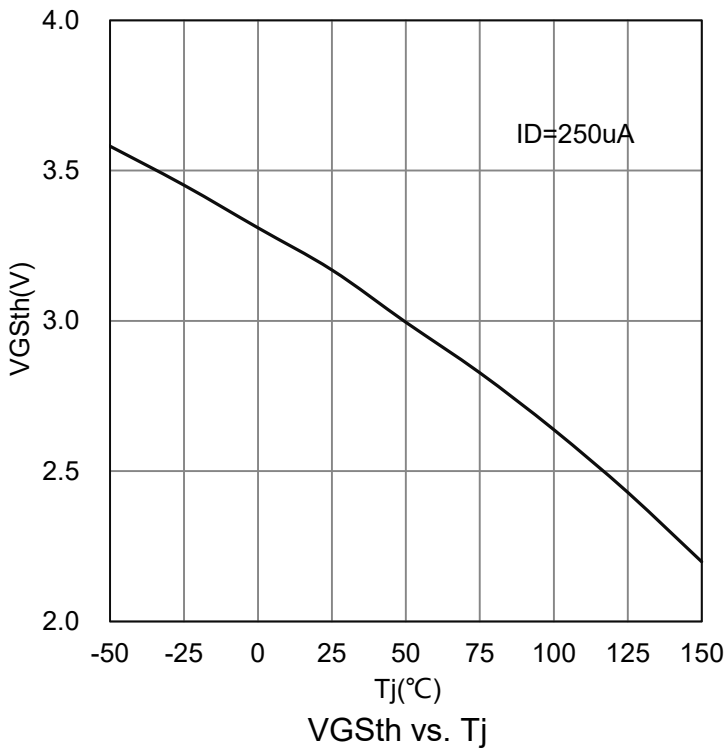
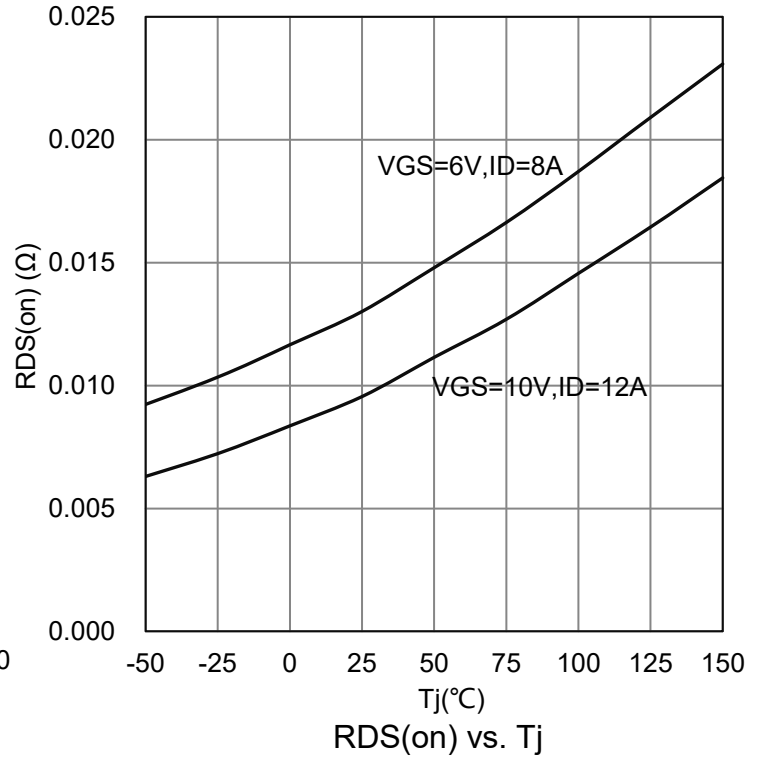
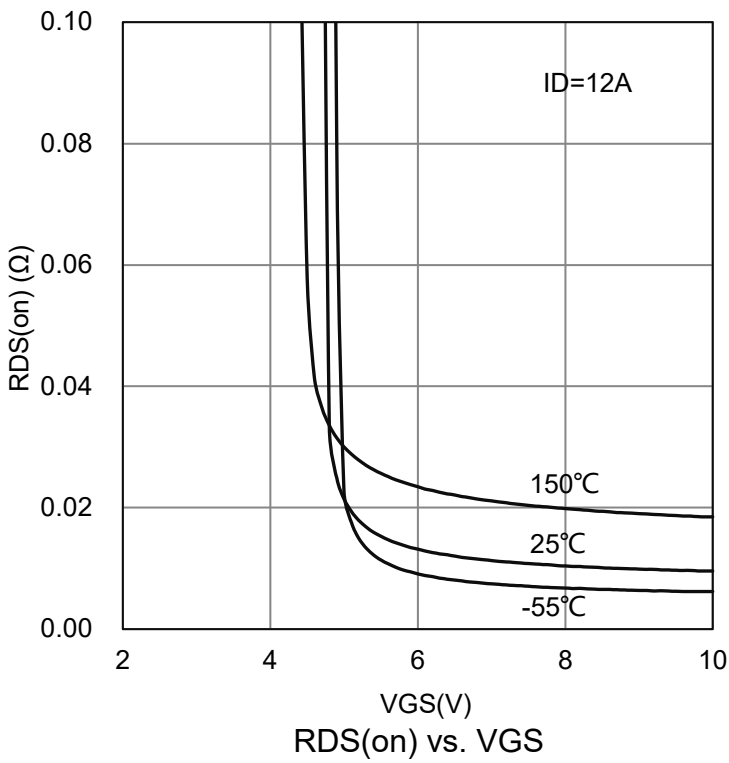


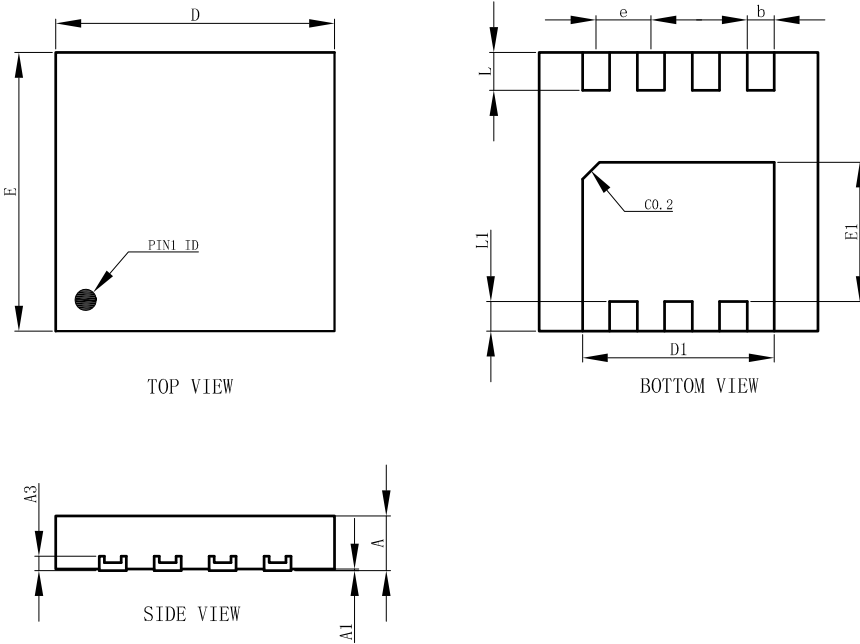
**6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)**

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	-	-	1	μA	
Gate-Body leakage current (VDS =0V, VGS = ±20V)	IGSS	-	-	±100	nA	
Gate Threshold Voltage (VDS = VGS , ID = 250μA)	VGS(TH)	2	3	4	V	
Drain-to-Source On-Resistance (VGS = 10 V, ID = 12 A ) (VGS = 6 V, ID = 8 A ) (VGS = 10 V, ID = 8 A, TJ = 125 °C)	RDS(ON)	- - -	10 14 13	13 19 16	mΩ	
Gate Resistance (VDS=0V,VGS=0V,f=1.0MHz)	Rg	-	0.74	-	Ω	
Forward Transconductance (VDS = 10V, ID = 13A)	gfs	-	45	-	S	
Total Gate Charge VGS(0 ~5 V)	(ID =13A,VDD =50V)		Qg	23.4	-	nC
Total Gate Charge VGS(0 ~10 V)			Qg	29.2	-	
Gate to Source Charge			Qgs	12.9	-	
Gate to Drain Charge			Qgd	6.2	-	
Turn-on Delay Time	(VDD = 50V, ID = 13A, RG = 6 Ω, VGS = 10V)		td(ON)	15	-	nS
Rise Time			tr	8	-	
Turn-Off Delay Time			td(OFF)	23	-	
Fall Time			tf	7	-	
Input Capacitance	(VGS = 0V ,VDS = 50V, f = 1MHz)		Ciss	1871	-	pF
Output Capacitance			Coss	275	-	
Reverse Transfer Capacitance			Crss	3.15	-	
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	

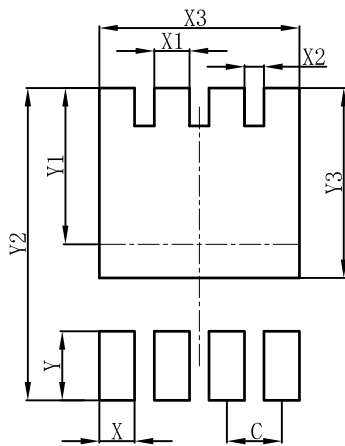


**7. ELECTRICAL CHARACTERISTICS CURVES**


**7.ELECTRICAL CHARACTERISTICS CURVES(Con.)**


**8.OUTLINE AND DIMENSIONS**


DFN3333-8A			
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**


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

