NB8404D

N-Channel 40-V (D-S) MOSFET

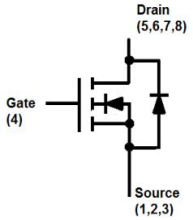
1. FEATURES

- 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.

DFN3333-8A

2. APPLICATION

- DC/DC Conversion
- Power Routing
- Motor Drives



3. ORDERING INFORMATION

Device	Marking	Shipping
NB8404D	B4N	2000/Tape&Reel

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

Parameter		Symbol	Limits	Unit
Drain−to−Source Voltage		VDSS	40	V
Gate−to−Source Voltage		VGS	±20	V
Continuous Drain Current(Note 1)	TA =25°C	ID	31	A
	TA =70°C		25	
	TC =25°C		75	
	TC =70°C		66	
Pulsed Drain Current (Note 2)		IDM	120	
Avalanche Current(L=0.1mH)		IAS	33	A
Avalanche energy(L=0.1mH)		EAS	54.45	mJ
Power Dissipation(Note 1)	TA =25°C	PD	3.5	W
	TA =70°C		2.3	
Operating Junction Temperature		TJ	−55 ~+150	℃
Storage Temperature Range		Tstg	−55 ~+150	

5. THERMAL CHARACTERISTICS

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

1.Surface mounted on "1.5 x 1.5" FR4 board using 1 sq in pad, 2 oz Cu.

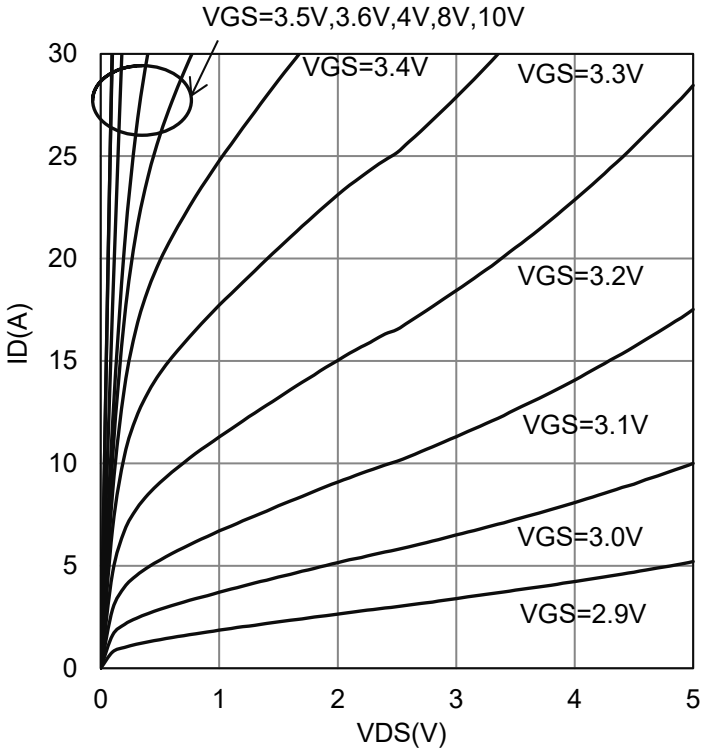
2.Pulse width limited by maximum junction temperature

6. ELECTRICAL CHARACTERISTICS

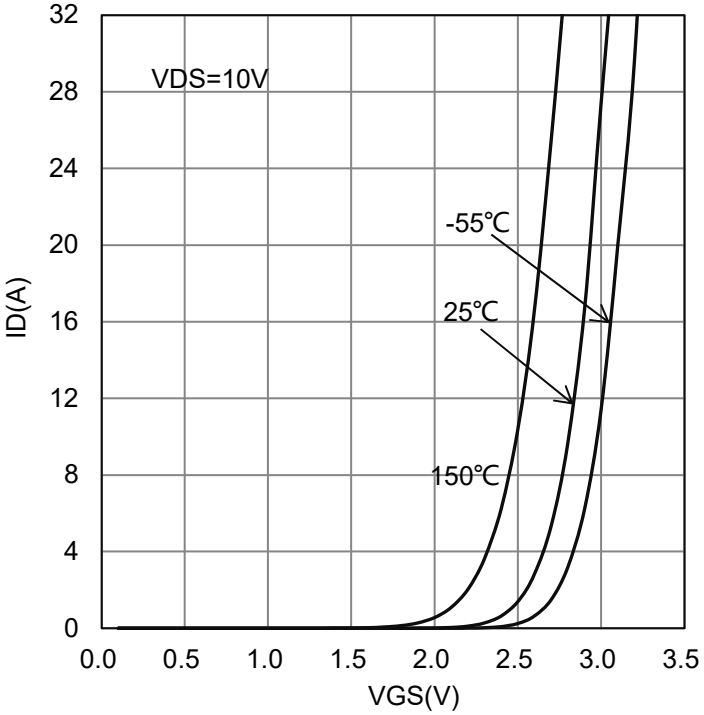
Characteristic		Symbol	Min.	Typ.	Max.	Unit
Static						
Gate-Source Threshold Voltage (VDS = VGS , ID = 250 uA)		VGS(th)	1	2	3	V
Gate-Body Leakage (VDS = 0 V, VGS = ±20 V)		IGSS	-	-	±100	nA
Zero Gate Voltage Drain Current (VDS = 32 V, VGS = 0 V)		IDSS	-	-	1	μA
Drain-Source On-Resistance(Note 3) (VGS = 10 V, ID = 16 A) (VGS = 4.5 V, ID = 14 A)		RDS(on)	- -	- -	3.2 6	mΩ
Diode Forward Voltage(Note 3) (IS = 3.1 A, VGS = 0 V)		VSD	-	0.7	1.3	V
Dynamic						
Total Gate Charge	(VDS = 20 V, VGS = 4.5 V,ID = 16 A)	Qg	-	20.5	-	nC
Gate-Source Charge		Qgs	-	7.6	-	
Gate-Drain Charge		Qgd	-	8.3	-	
Input Capacitance	(VDS = 15 V, VGS = 0 V, f = 1 MHz)	Ciss	-	2478	-	pF
Output Capacitance		Coss	-	1387	-	
Reverse Transfer Capacitance		Crss	-	146	-	
Turn-On Delay Time	(VDS = 20 V, RL = 1.3 Ω,ID = 16 A,VGEN = 10 V, RGEN = 6 Ω)	td(on)	-	11	-	ns
Rise Time		tr	-	19	-	
Turn-Off Delay Time		td(off)	-	116	-	
Fall Time		tf	-	40	-	
Gate Resistance (VDS=0V,VGS=0V,f=1.0MHz)		Rg	-	105	-	Ω

3.Pulse test: PW≤ 300μs duty cycle ≤ 2%.

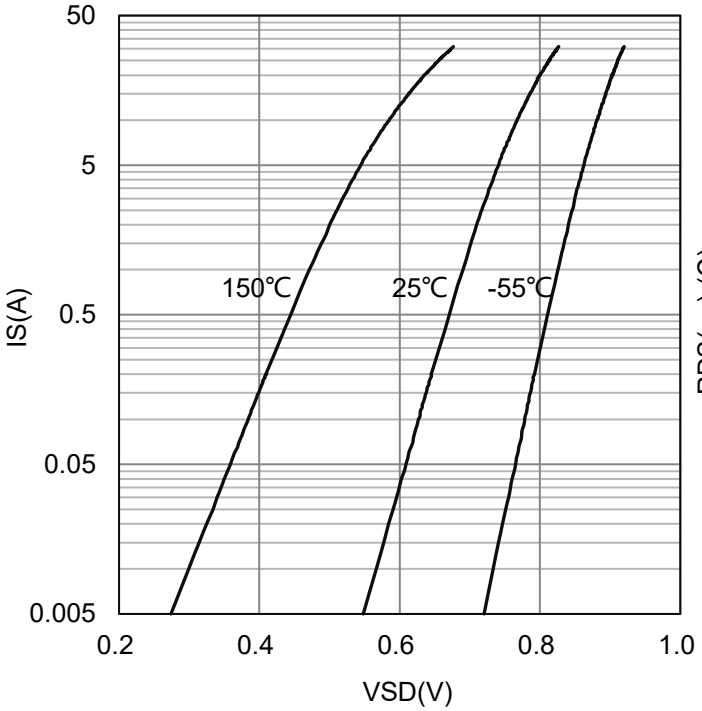
7.ELECTRICAL CHARACTERISTICS CURVES



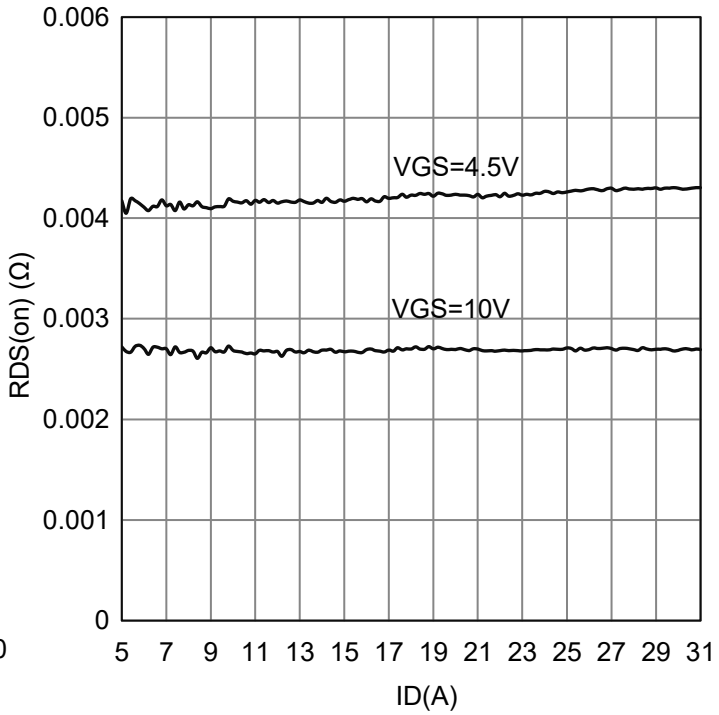
ID vs. VDS



ID vs. VGS

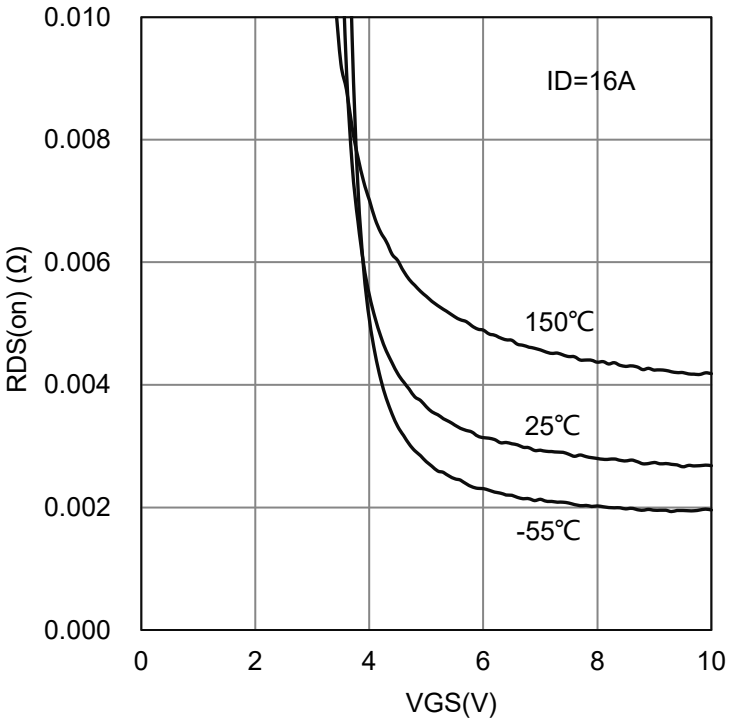


IS vs. VSD

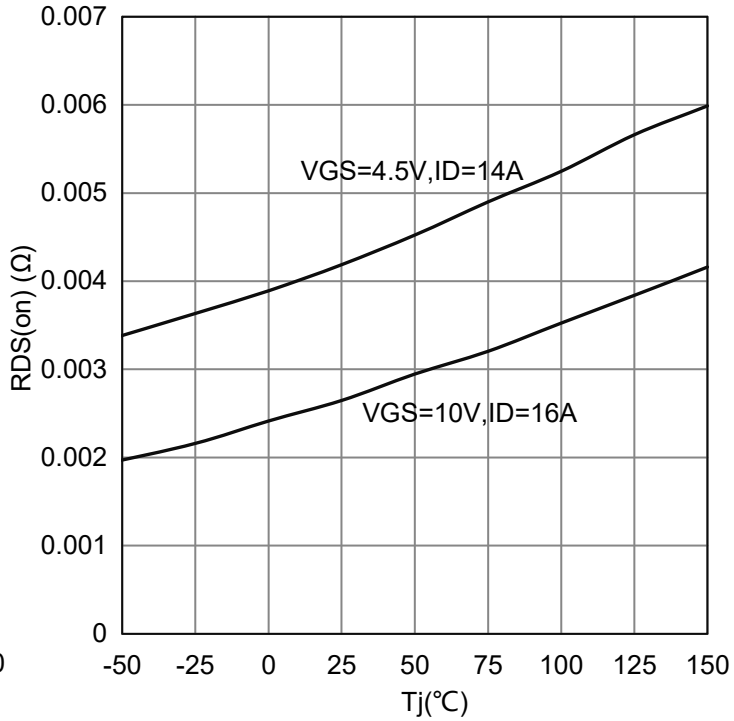


RDS(on) vs. ID

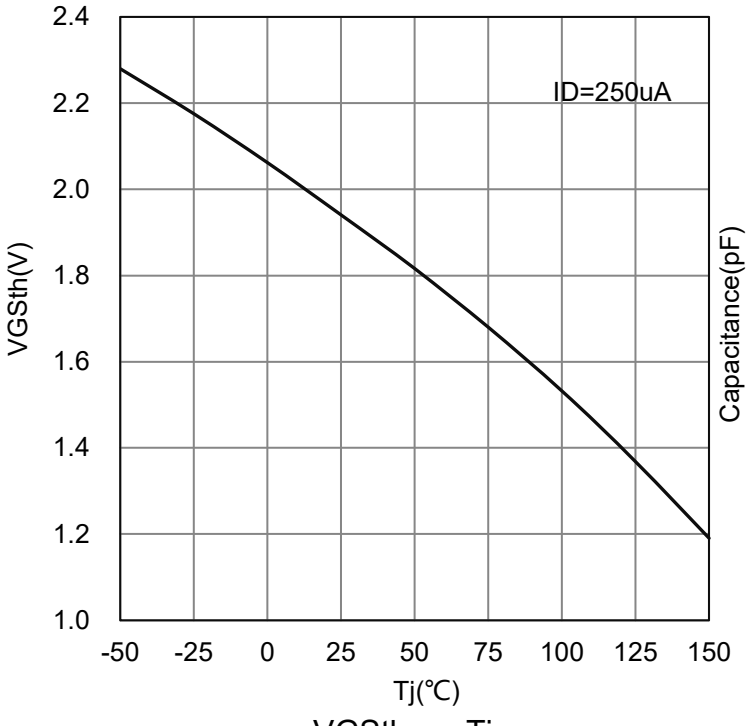
7.ELECTRICAL CHARACTERISTICS CURVES(Con.)



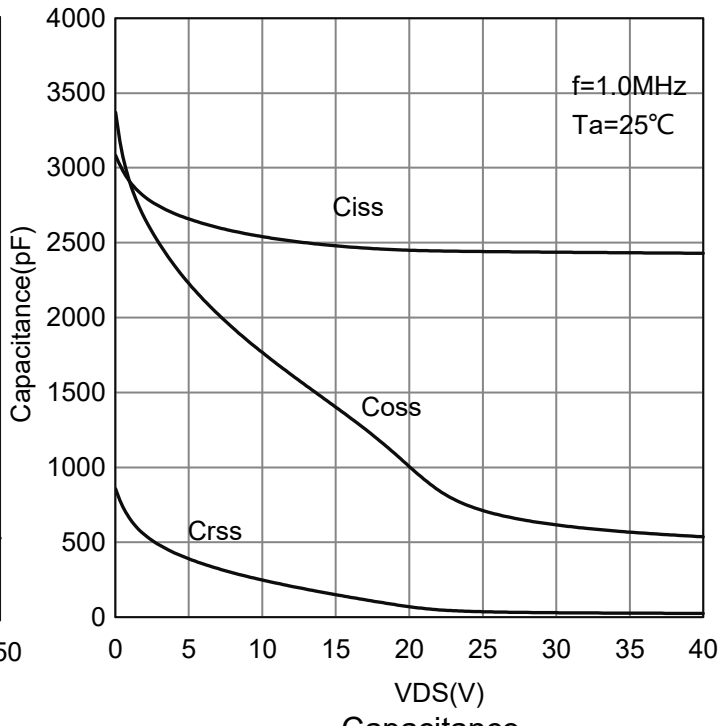
RDS(on) vs. VGS



RDS(on) vs. Tj

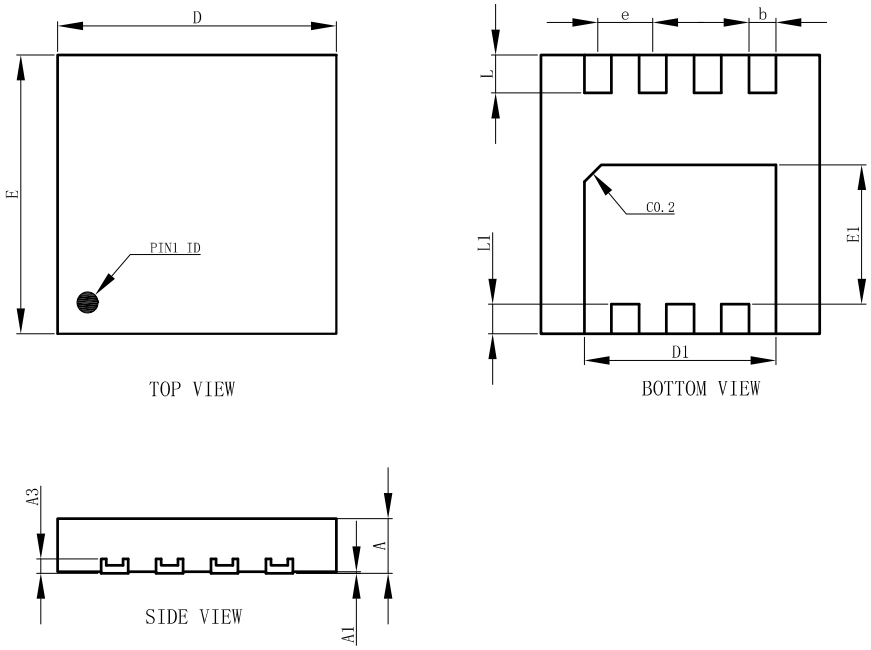


VGSth vs. Tj



Capacitance

8.OUTLINE AND DIMENSIONS



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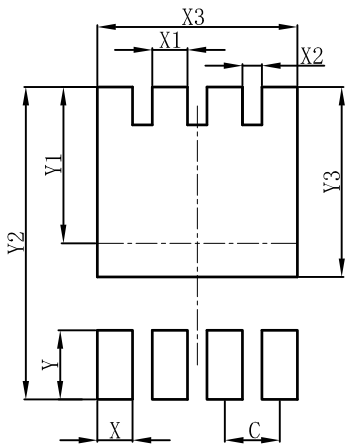
DIM	MIN	NOR	MAX
A	0.60	0.65	0.70
A1	0.00	0.03	0.05
b	0.27	0.32	0.37
D	3.25	3.30	3.35
E	3.25	3.30	3.35
D1	2.22	2.27	2.32
E1	1.60	1.65	1.70
e	0.65BSC		
L	0.40	0.45	0.50
L1	0.30	0.35	0.40
A3	0.152REF.		
All Dimensions in mm			

9.SOLDERING FOOTPRINT



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