

# NB86085D

## N-Channel Power Trench MOSFET

### 1. FEATURES

- Max  $R_{DS(on)}$  = 8.5 m $\Omega$  at  $V_{GS} = 10$  V,  $I_D = 15$  A
- Advanced Package and Silicon combination for low  $R_{DS(on)}$  and high efficiency.
- We declare that the material of product compliance with RoHS requirements and Halogen Free.



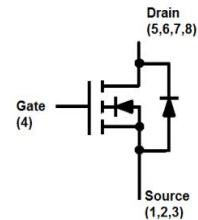
DFN3333-8A

### 2. APPLICATIONS

- DC-DC Conversion

### 3. DEVICE MARKING AND RESISTOR VALUES

Device	Marking	Shipping
NB86085D	B2H	2000/Tape&Reel



### 4. MAXIMUM RATINGS( $T_a = 25^\circ\text{C}$ unless otherwise stated)

Parameter	Symbol	Limits	Unit
Drain-to-Source Voltage	$V_{DSS}$	100	V
Gate-to-Source Voltage	$V_{GS}$	+ 20/-20	V
Continuous Drain Current(Note 1)	$I_D$	$T_A = 25^\circ\text{C}$	11
		$T_A = 70^\circ\text{C}$	7
Pulsed Drain Current (Note 2)	$I_{DM}$	56	A
Continuous Source Current (Diode Conduction)(Note 1)	$I_S$	3.5	A
Avalanche Current( $L=0.1\text{mH}$ )	$I_{AS}$	34	A
Avalanche Energy( $L=0.1\text{mH}$ )	$E_{AS}$	57.8	mJ
Power Dissipation(Note 1)	$P_D$	$T_A = 25^\circ\text{C}$	3.5
		$T_A = 70^\circ\text{C}$	2
Operating Junction Temperature	$T_J$	-55 ~+150	°C
Storage Temperature Range	$T_{stg}$	-55 ~+150	

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

2.Pulse width limited by maximum junction temperature.

### 5. THERMAL CHARACTERISTICS

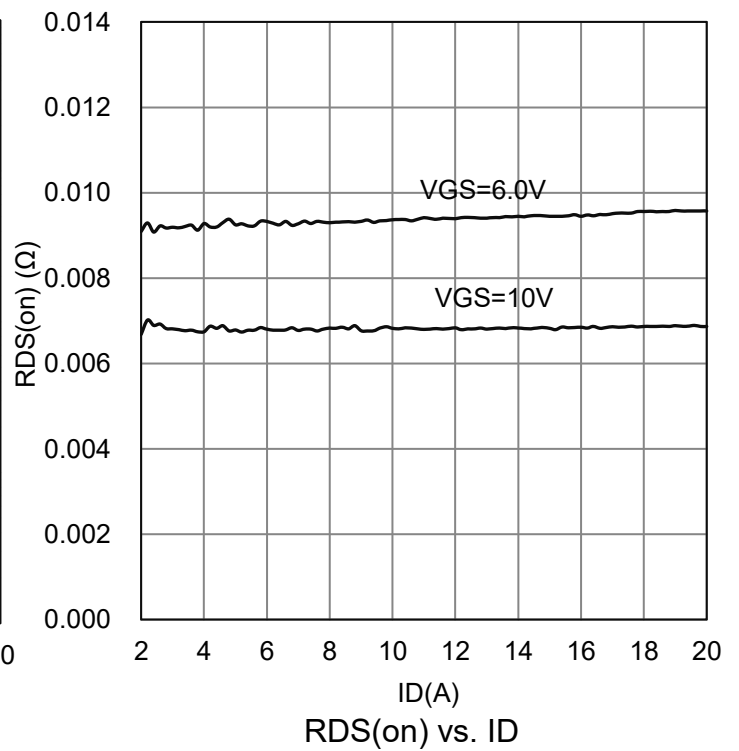
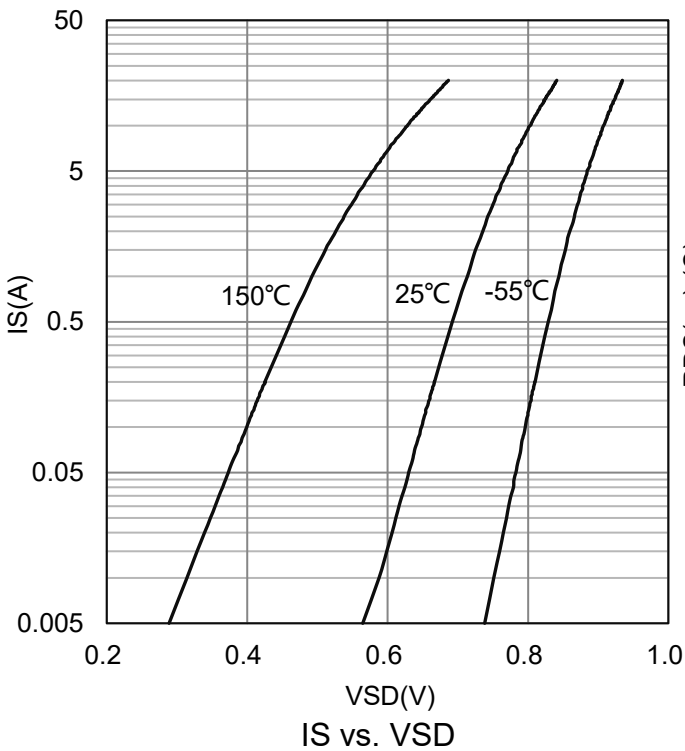
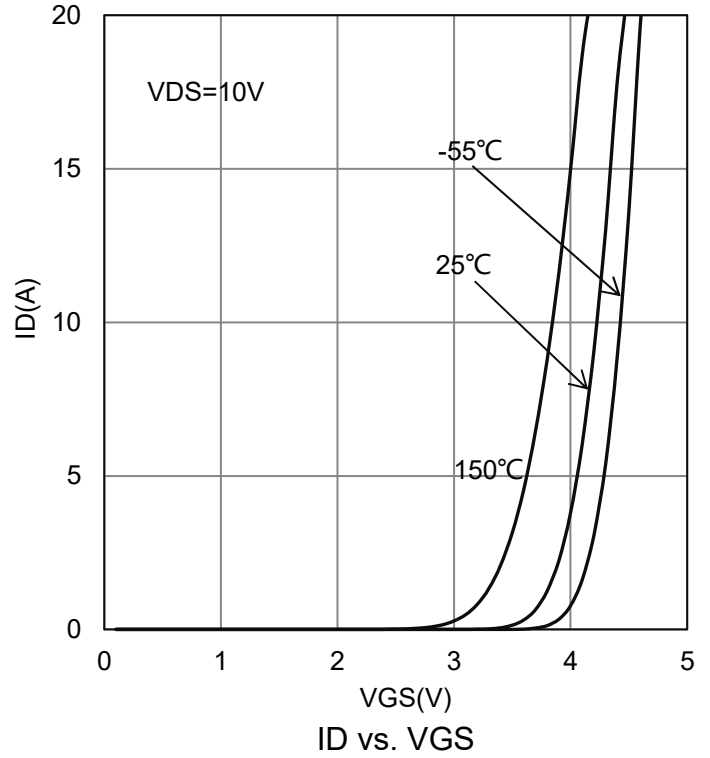
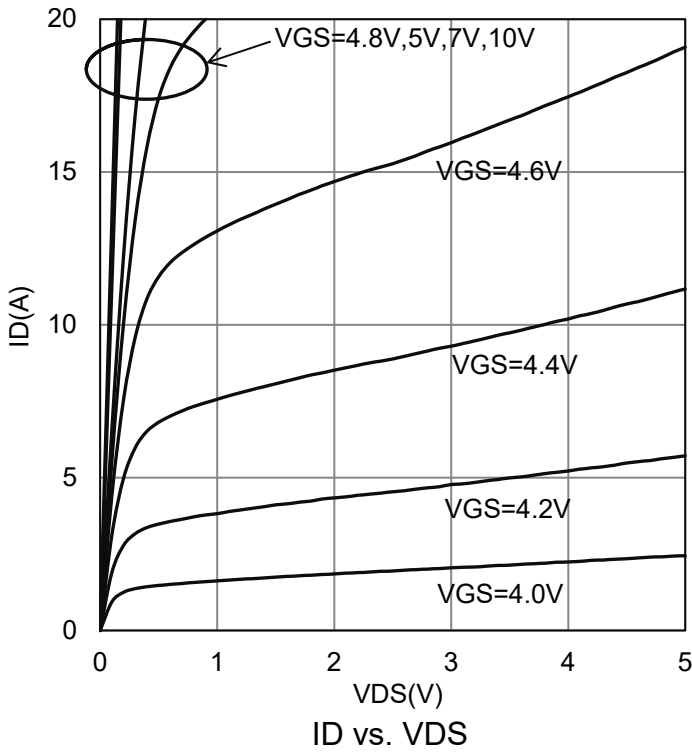
Parameter	Symbol	Limits	Unit
Maximum Junction-to-Ambient(Note 1)	$R_{\theta JA}$	$t \leq 10\text{s}$	35
		Steady State	81

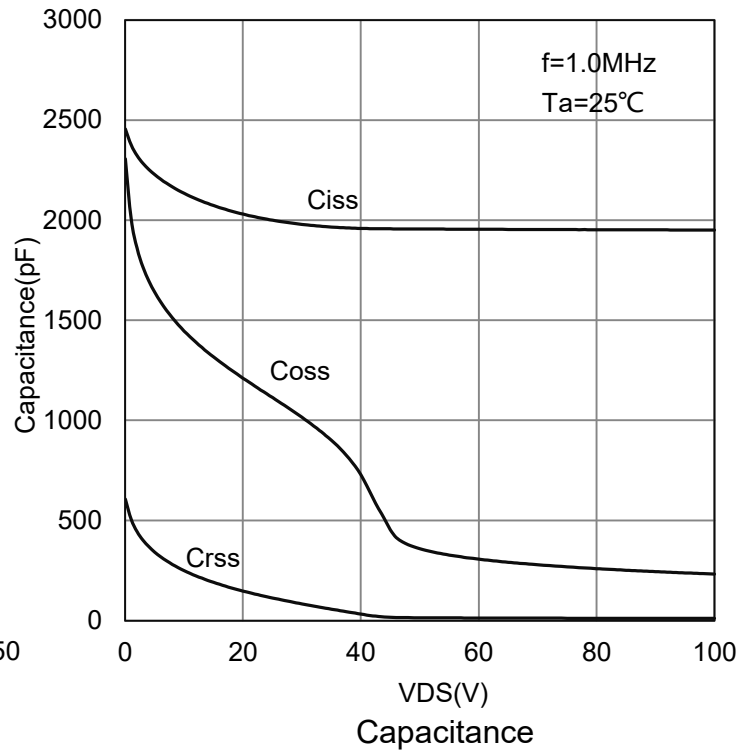
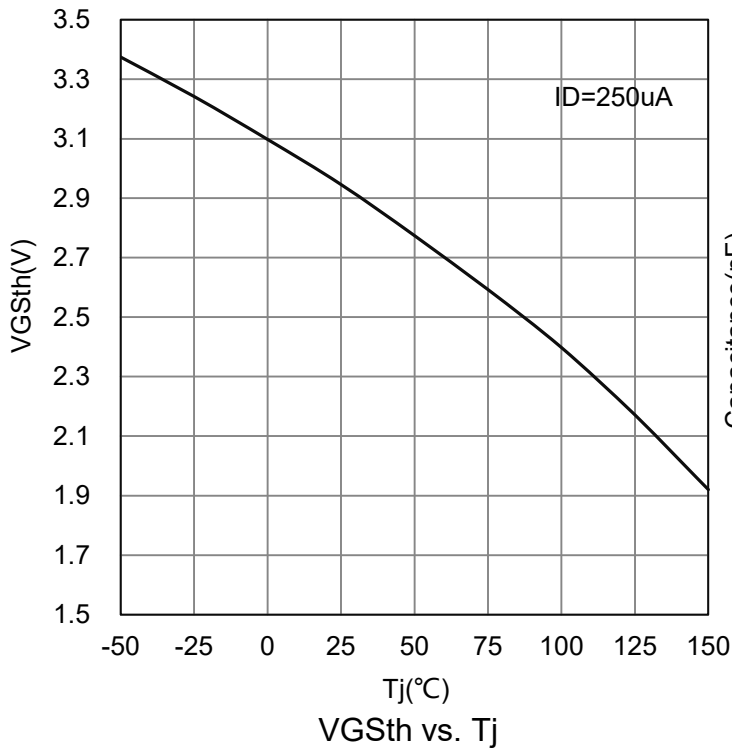
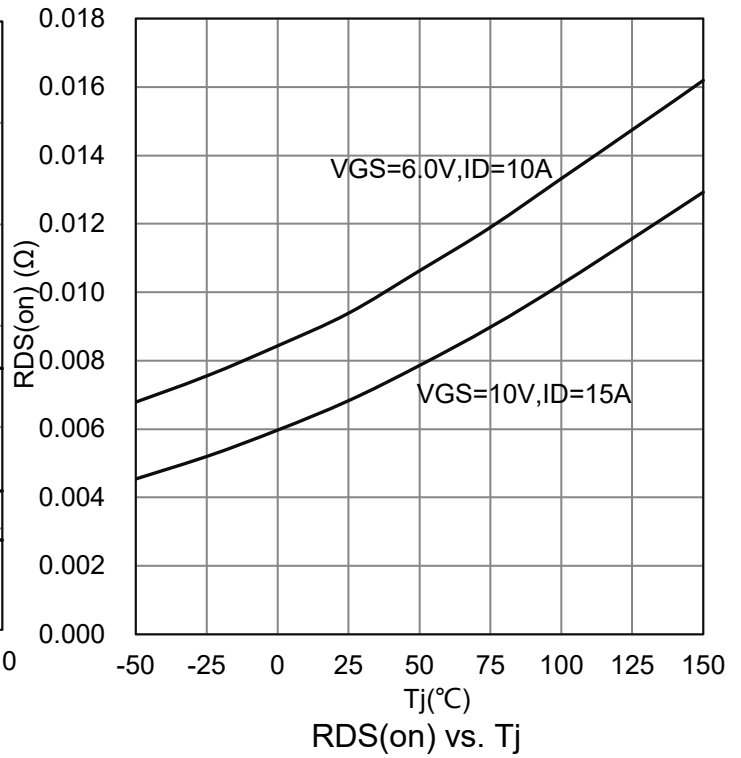
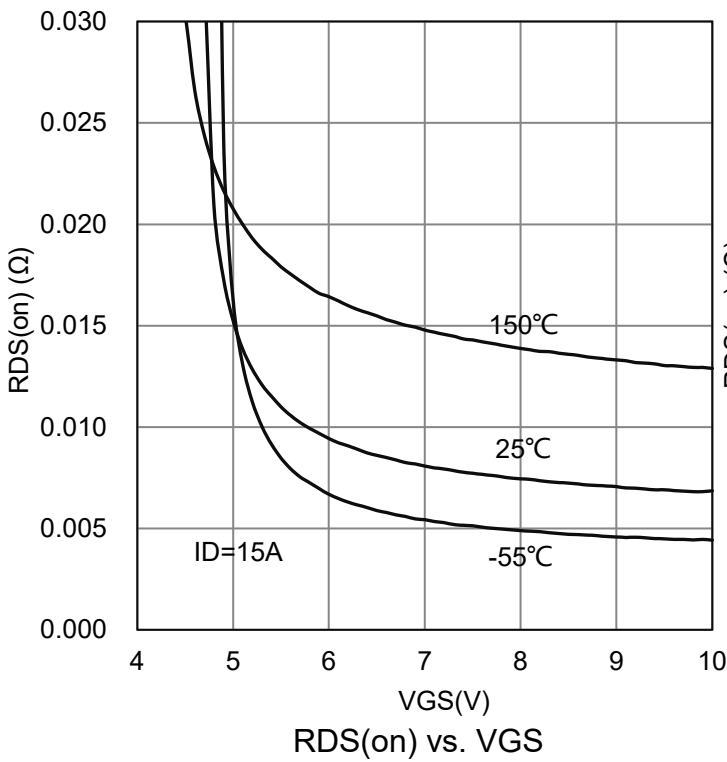


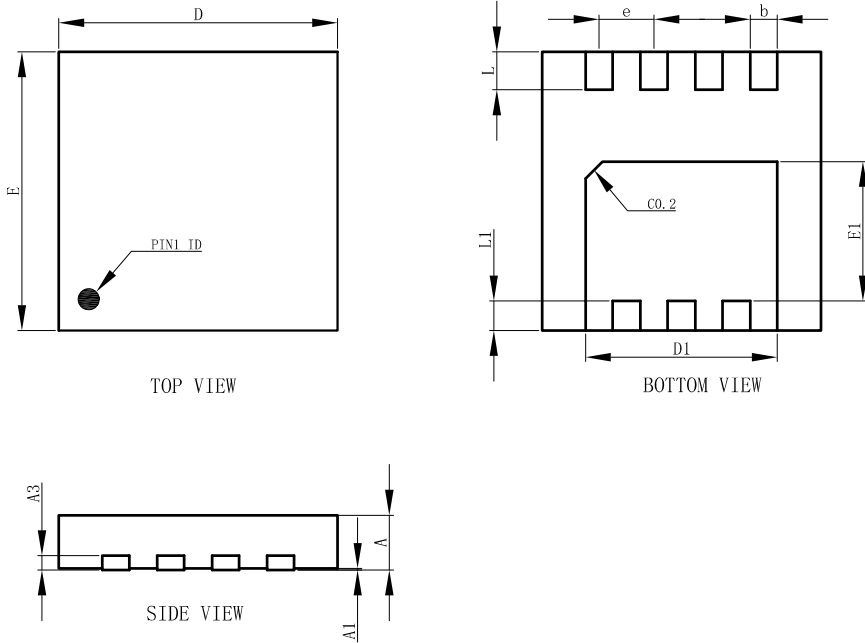
**6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)**

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	-	-	800	nA	
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 = 15 A) (VGS = 6 V, ID = 10 A)	RDS(ON)	- -	6.5 10	8.5 13	mΩ	
Gate Resistance (VDS=0V, VGS=0V, f=1.0MHz)	Rg	-	1.5	-	Ω	
Forward Transconductance (VDS = 10V, ID = 13A)	gfs	-	45	-	S	
Total Gate Charge VGS(0 ~10 V)	(ID = 13A, VDD = 50V)	Qg	-	33.4	-	nC
Total Gate Charge VGS(0 ~5 V)		Qg	-	21	-	
Gate to Source Charge		Qgs	-	7.9	-	
Gate to Drain Charge		Qgd	-	11	-	
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	-	1956	-	pF
Output Capacitance		Coss	-	359	-	
Reverse Transfer Capacitance		Crss	-	14	-	
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	-	nS	
Reverse Recovery Charge (IF = 13 A, di/dt = 100 A/μs)	Qrr	-	80	-	nC	

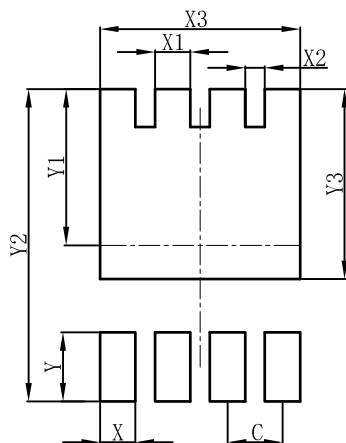


**7.ELECTRICAL CHARACTERISTICS CURVES**


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


**8.OUTLINE AND DIMENSIONS**
**DFN3333-8A**


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**


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

