- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology
- ★ 100% EAS Guaranteed

Product Summary

RoHS

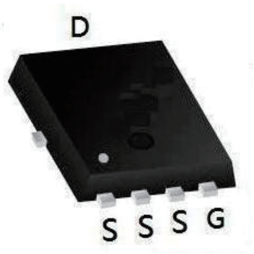
BVDSS	RDSON	ID
30V	5.2mΩ	80A

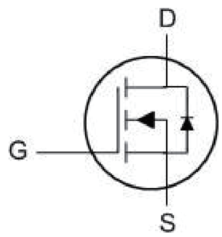
Description

The 80N03D is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The 80N03D meet the RoHS and Green Product, requirement 100% EAS guaranteed with full function reliability approved.

PDFN3*3 Pin Configuration





Absolute Maximum Ratings

Symbol	Parameter	Rating		Units
		10s	Steady State	
V_{DS}	Drain-Source Voltage	30		V
V_{GS}	Gate-Source Voltage	±20		V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current, V_{GS} @ 10V[1]	80		A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current, V_{GS} @ 10V[1]	50		A
I_{DM}	Pulsed Drain Current[2]	192		A
EAS	Single Pulse Avalanche Energy[3]	306		mJ
I_{AS}	Avalanche Current	53.8		A
$P_D@T_C=25^{\circ}C$	Total Power Dissipation[4]	82.5		W
T_{STG}	Storage Temperature Range	-55 to 175		℃
T_J	Operating Junction Temperature Range	-55 to 175		℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance Junction-Case[2]	---	1.8	℃/W

Electrical Characteristics (T_J =25 °C unless otherwise specified)

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V,V_{GS}=0V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1	1.6	3	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=30A	-	5.2	6.5	mΩ
		V_{GS}=5V, I_D=24A	-	7.5	10	
g_{FS}	Forward Transconductance	V_{DS}=5V,I_D=24A	20	-	-	S
Dynamic Characteristics (Note4)						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, F=1.0MHz	-	2016	-	PF
C_{oss}	Output Capacitance		-	251	-	PF
C_{rss}	Reverse Transfer Capacitance		-	230	-	PF
Switching Characteristics (Note 4)						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=10V,I_D=30A V_{GS}=10V,R_{GEN}=2.7Ω	-	20	-	nS
t_r	Turn-on Rise Time		-	15	-	nS
$t_{d(off)}$	Turn-Off Delay Time		-	60	-	nS
t_f	Turn-Off Fall Time		-	10	-	nS
Q_g	Total Gate Charge	V_{DS}=10V,I_D=30A, V_{GS}=10V	-	60.5	-	nC
Q_{gs}	Gate-Source Charge		-	8.1	-	nC
Q_{gd}	Gate-Drain Charge		-	7.8	-	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage (Note 3)	V_{GS}=0V,I_S=24A	-	-	1.2	V
I_S	Diode Forward Current (Note 2)		-	-	80	A
t_{rr}	Reverse Recovery Time	TJ = 25°C, IF = 80A di/dt = 100A/μs (Note3)	-	32	50	nS
Q_{rr}	Reverse Recovery Charge		-	12	20	nC
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Note :
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition：T_j=25°C,V_{DD}=15V,V_G=10V,L=0.5mH,Rg=25Ω，IAS=35A

Typical Performance Characteristics

Figure1: Output Characteristics

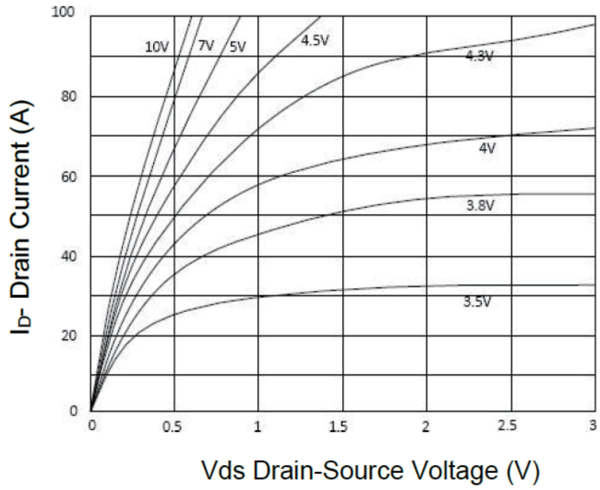


Figure 4: Rdson-JunctionTemperature

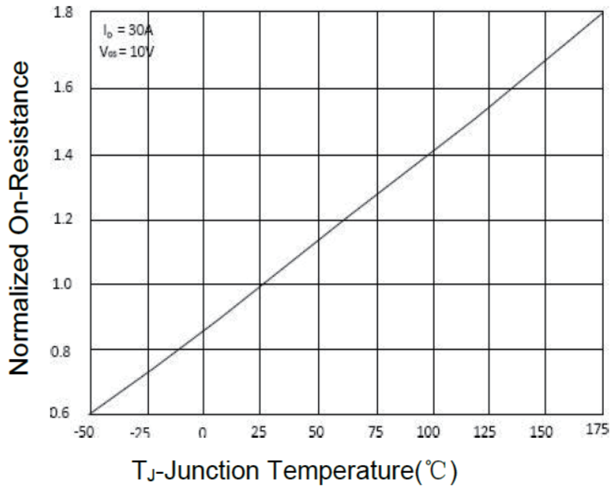


Figure 2:Transfer Characteristics

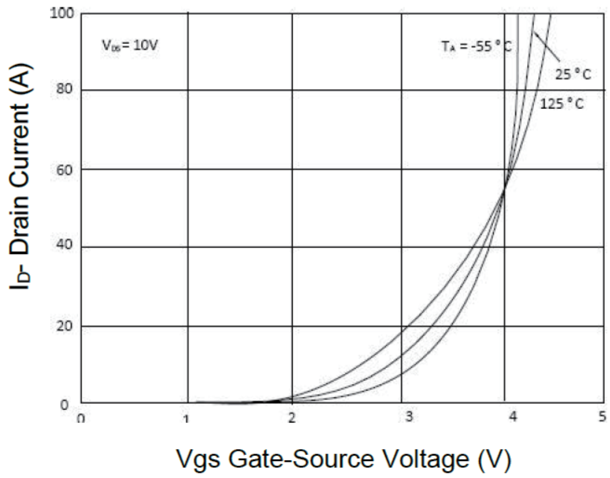


Figure 5: Gate Charge

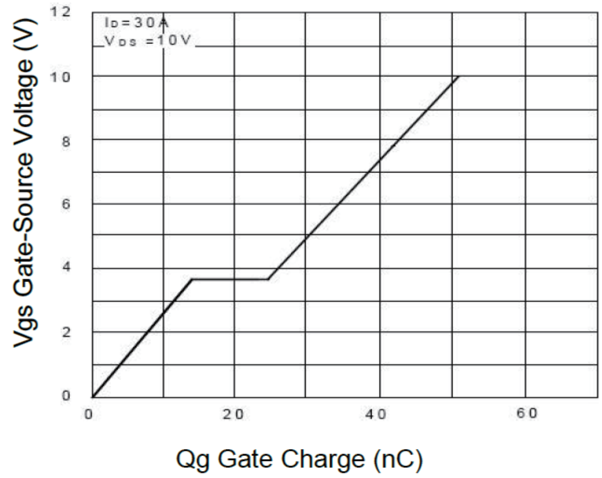


Figure 3: Rdson- Drain Current

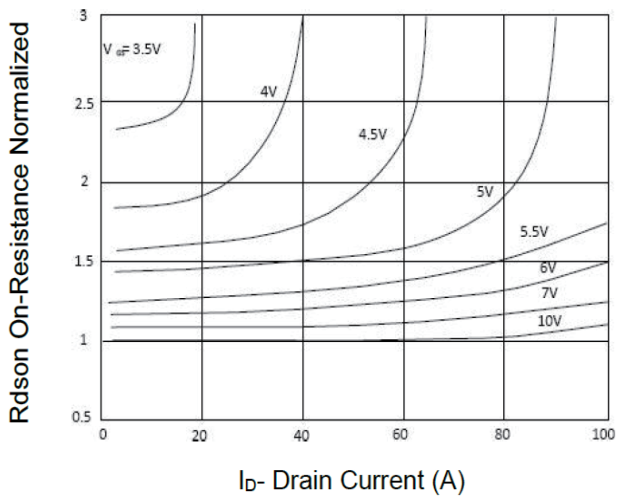
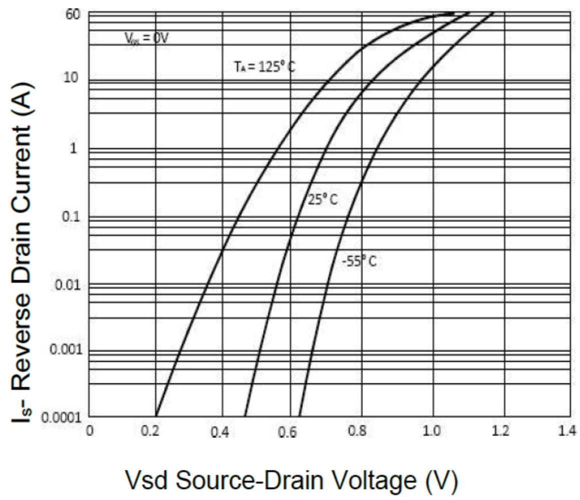


Figure 6: Source- Drain Diode Forward



Typical Performance Characteristics

Figure 7: Capacitance vs Vds

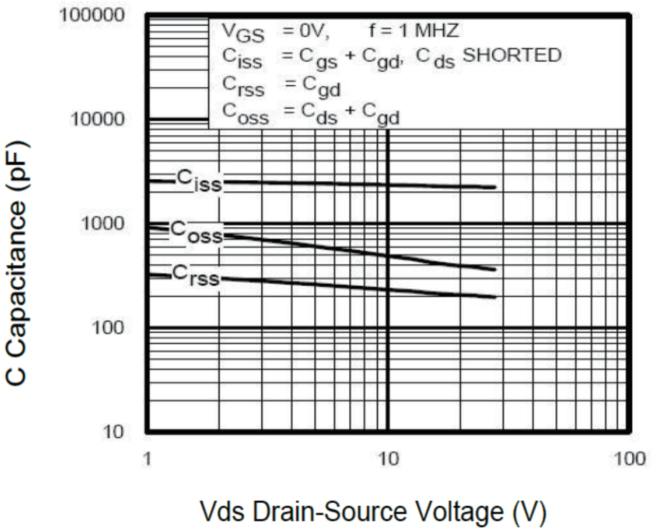


Figure 9: BVDSS vs Junction Temperature

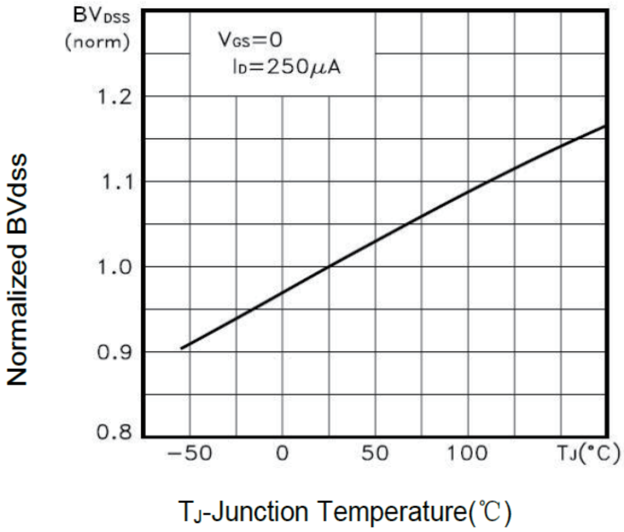


Figure 8: Safe Operation Area

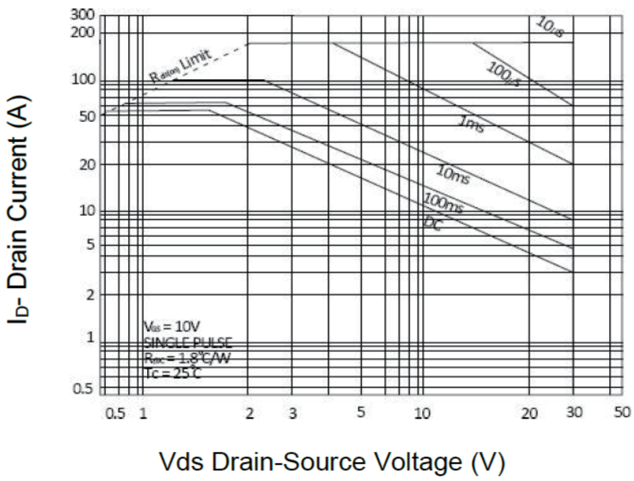


Figure 10: VGS(th) vs Junction Temperature

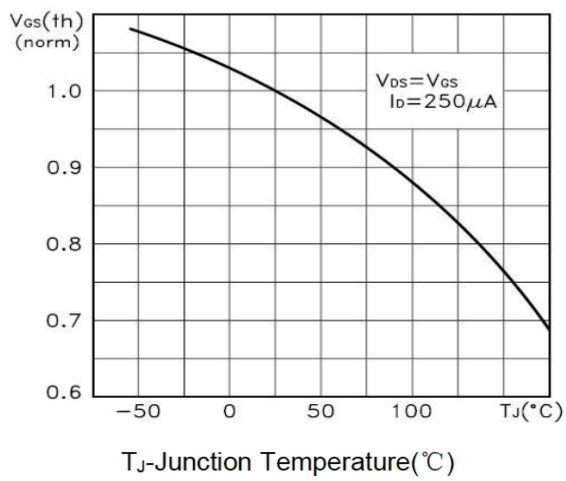
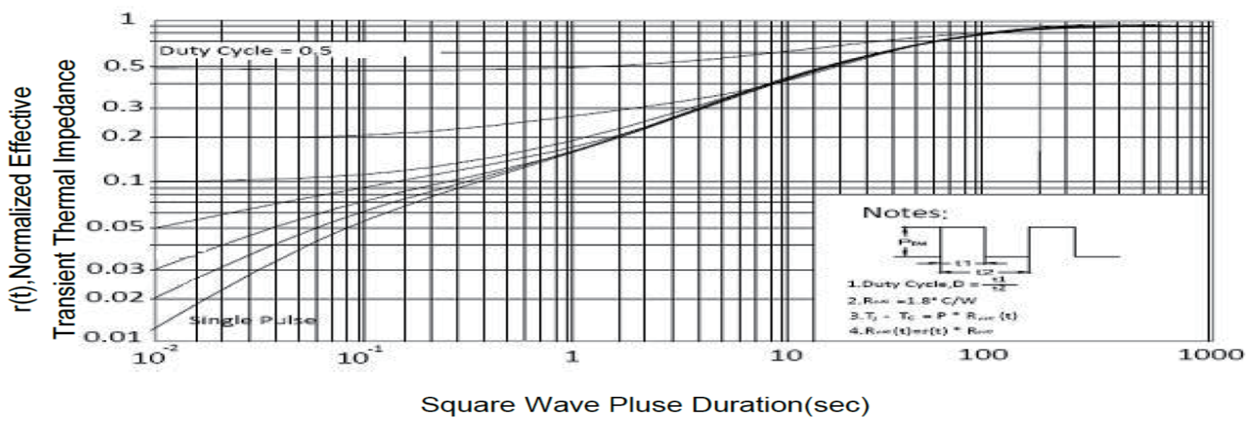
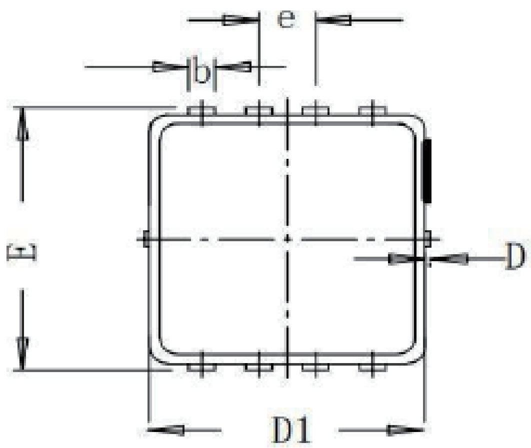
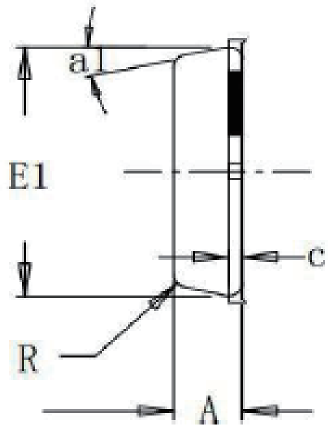


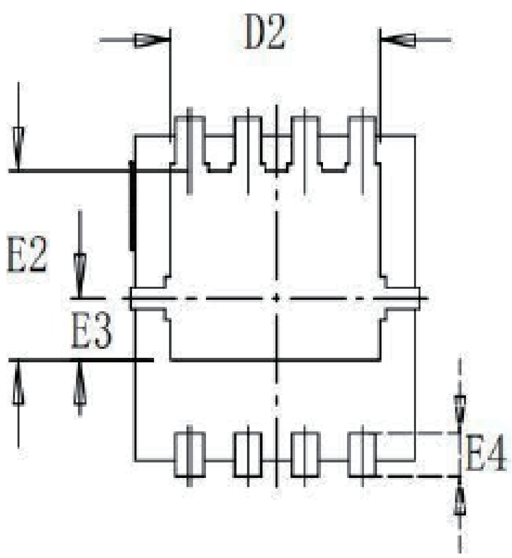
Figure 11: Normalized Maximum Transient



PDFN3X3-Package-Information







SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.75	0.78	0.81
b	0.297	0.3	0.35
c	—	0.152	—
D	0.00	0.05	0.1
D1	3.12	3.15	3.18
D2	—	2.35	—
E	3.2	3.3	3.4
E1	3.09	3.12	3.15
E2	—	1.75	—
E3	—	0.575	—
E4	—	0.4	—
R	—	0.15	—
e	0.65BSC		
a1°	—	12°	—