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

Product Summary

RoHS

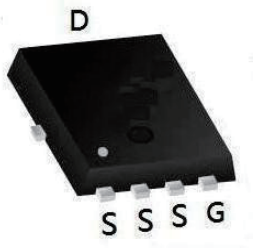
BVDSS	RDSON	ID
30V	8mΩ	30A

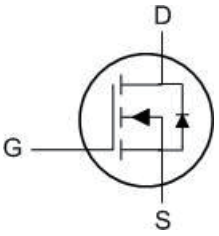
Description

The 30N03D 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 30N03D 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
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25°C	Continuous Drain Current, VGS @ 10V[1]	30	A
I_D@T_C=100°C	Continuous Drain Current, VGS @ 10V[1]	20	A
I_{DM}	Pulsed Drain Current[2]	90	A
E_{AS}	Single Pulse Avalanche Energy[3]	39	mJ
I_{AS}	Avalanche Current	30	A
P_D@T_C=25°C	Total Power Dissipation[4]	15	W
T_{STG}	Storage Temperature Range	−55 to 150	°C
T_J	Operating Junction Temperature Range	−55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance Junction-Case1	---	85	°C/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	30	-	–	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	-	0.034	–	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance2	V_{GS}=10V , I_D=7A	-	8	12	mΩ
		V_{GS}=4.5V , I_D=4A	-	11	18	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.2	1.5	2.5	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		-	-3.84	–	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=24V , V_{GS}=0V , T_J=25℃	-	-	1	uA
		V_{DS}=24V , V_{GS}=0V , T_J=55℃	-	-	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	-	-	±100	nA
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	-	1.04	2.1	Ω
Q_g	Total Gate Charge (4.5V)	V_{DS}=15V , V_{GS}=4.5V , I_D=7A	-	8.4	–	nC
Q_{gs}	Gate-Source Charge		-	3.1	–	
Q_{gd}	Gate-Drain Charge		-	2.8	–	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=10V , R_G=3.3Ω I_D=7A	-	2.4	–	ns
T_r	Rise Time		-	72	–	
$T_{d(off)}$	Turn-Off Delay Time		-	36	–	
T_f	Fall Time		-	14.4	–	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	-	816	–	pF
C_{oss}	Output Capacitance		-	107.8	–	
C_{rss}	Reverse Transfer Capacitance		-	82.6	–	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	-	-	30	A
I_{SM}	Pulsed Source Current [2,5]		-	-	30	A
V_{SD}	Diode Forward Voltage [2]	V_{GS}=0V , I_S=1A , T_J=25℃	-	-	1.2	V

Note :
1.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3.The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=20A
4.The power dissipation is limited by 150°C junction temperature
5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Performance Characteristics

Figure1: Output Characteristics

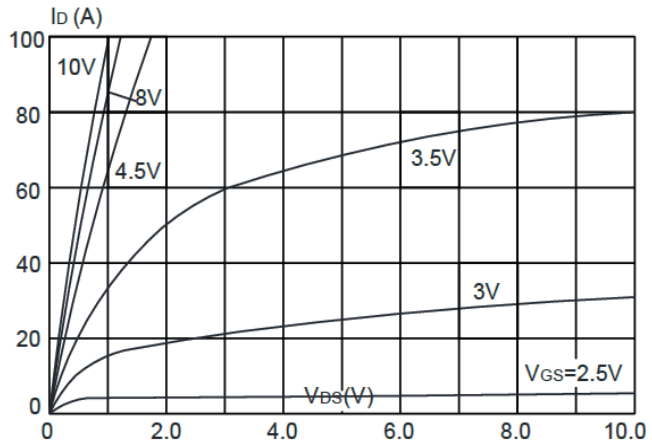


Figure 2: Typical Transfer Characteristics

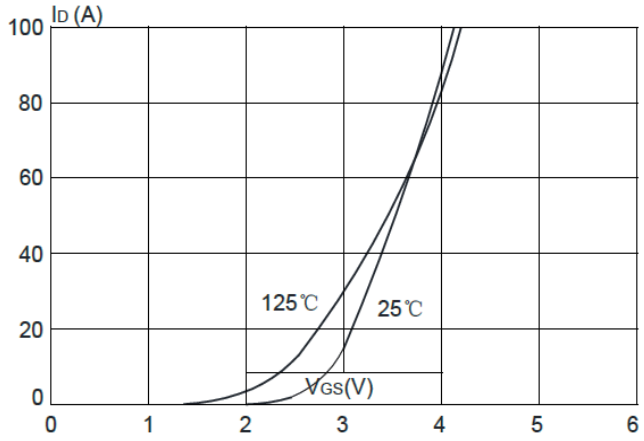


Figure 3:On-resistance vs. Drain Current

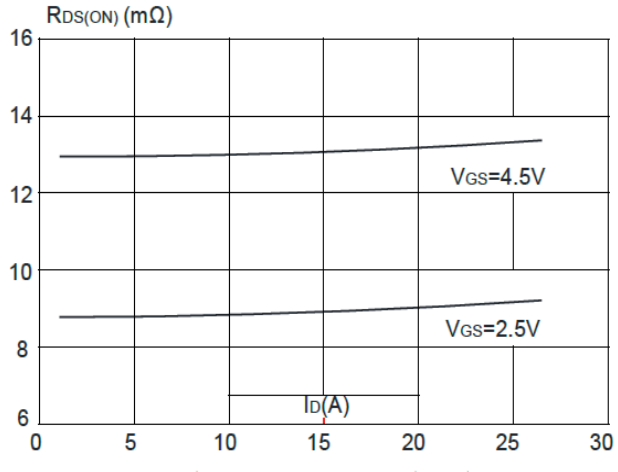


Figure 4: Body Diode Characteristics

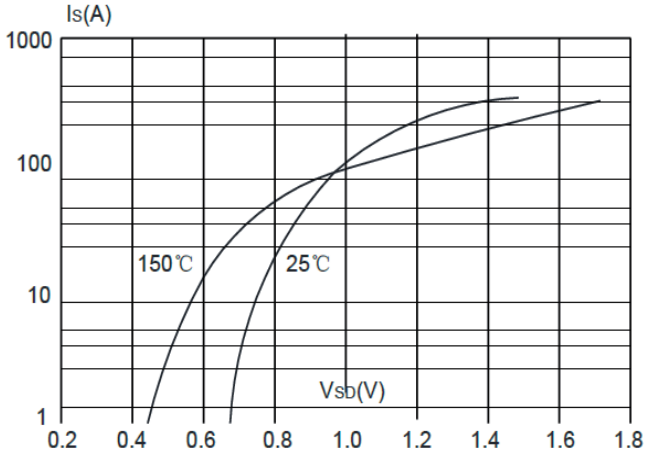


Figure 5: Gate Charge Characteristics

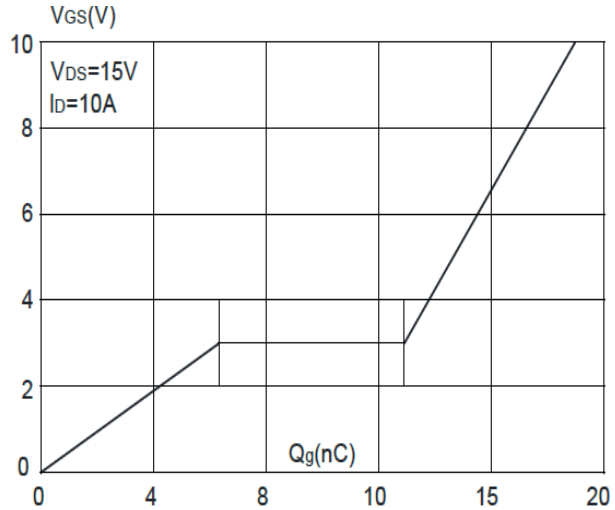
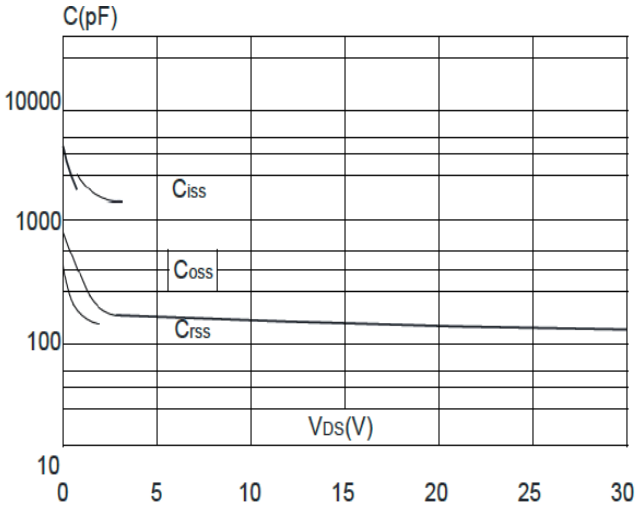


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown Voltage

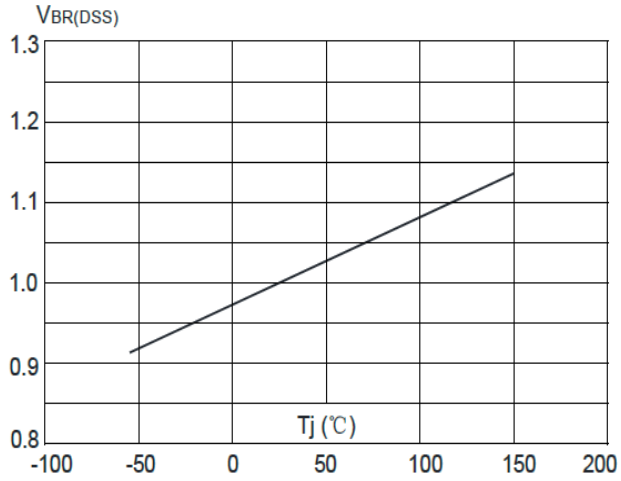


Figure 8: Normalized on Resistance vs. Ju

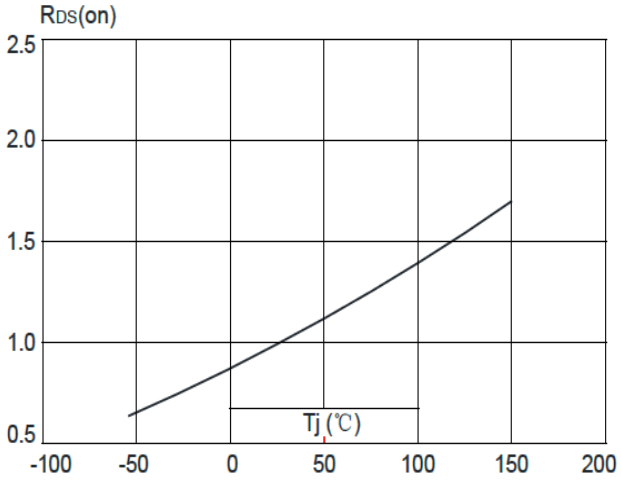
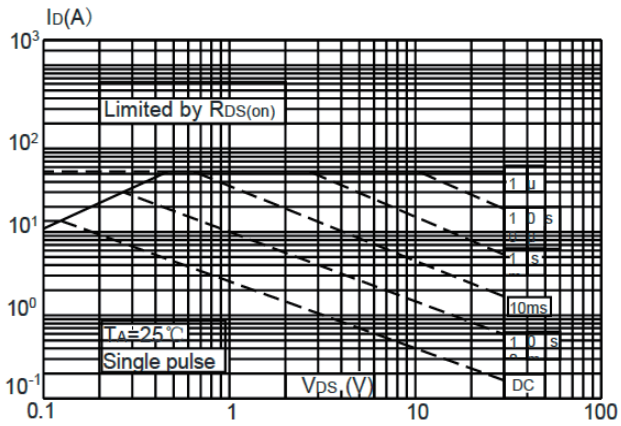


Figure 9: Maximum Safe Operating Area



FFigure 10: Maximum Continuous Drain C

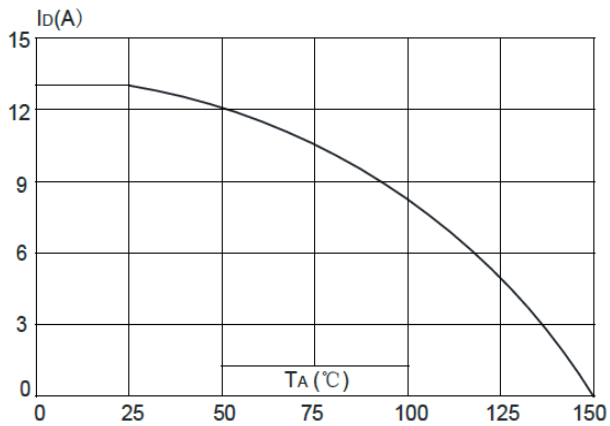
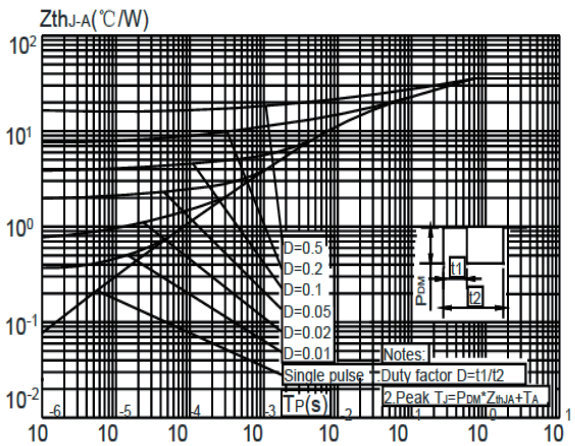


Figure.11: Maximum Effective Transient T



Test Circuit

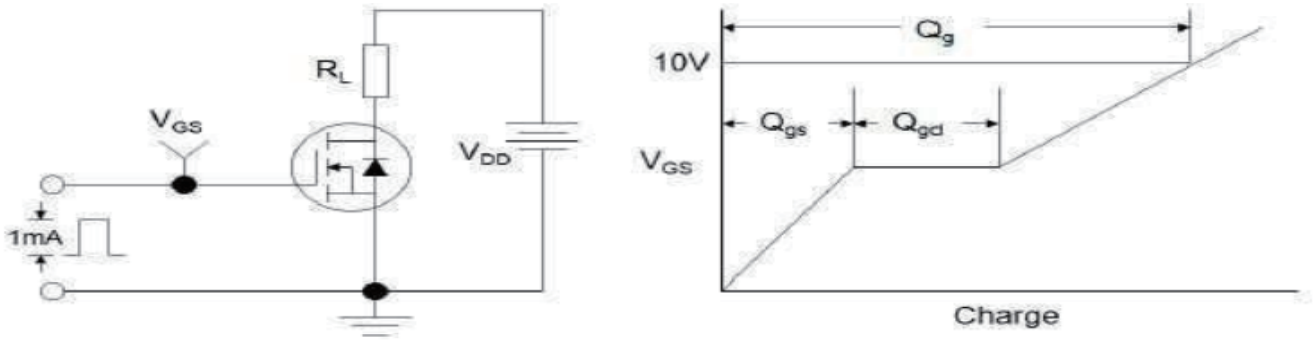


Figure1:Gate Charge Test Circuit & Waveform

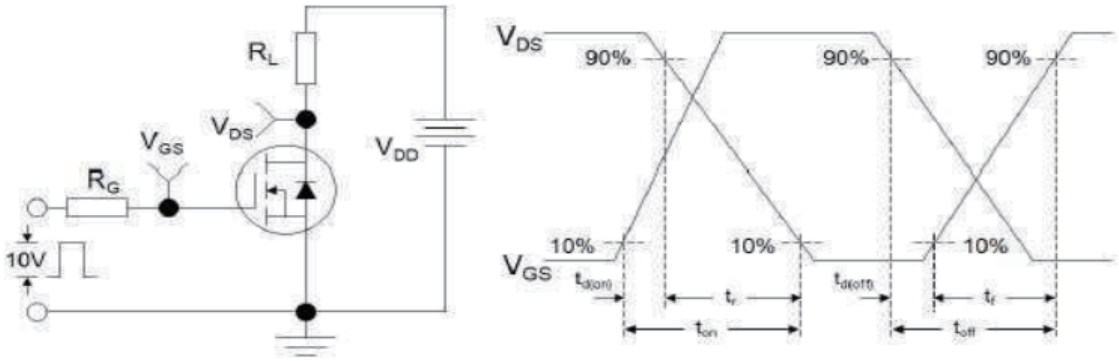


Figure 2: Resistive Switching Test Circuit & Waveforms

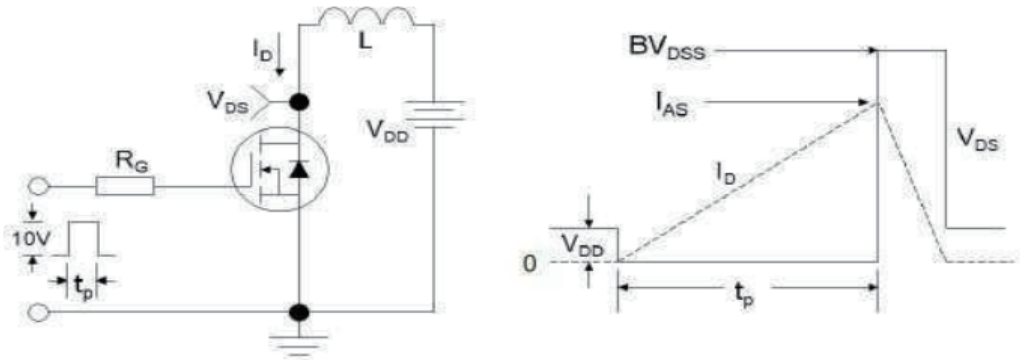
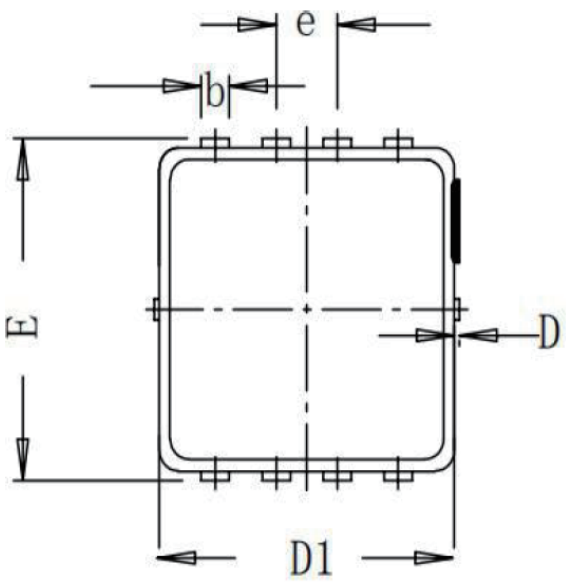
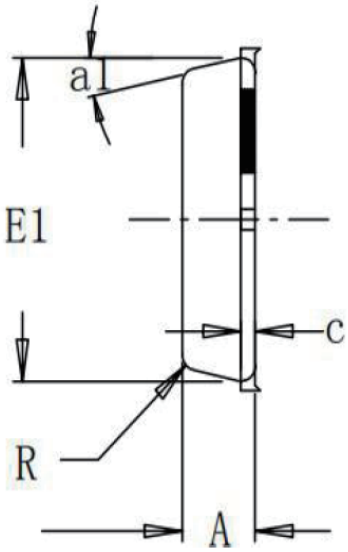
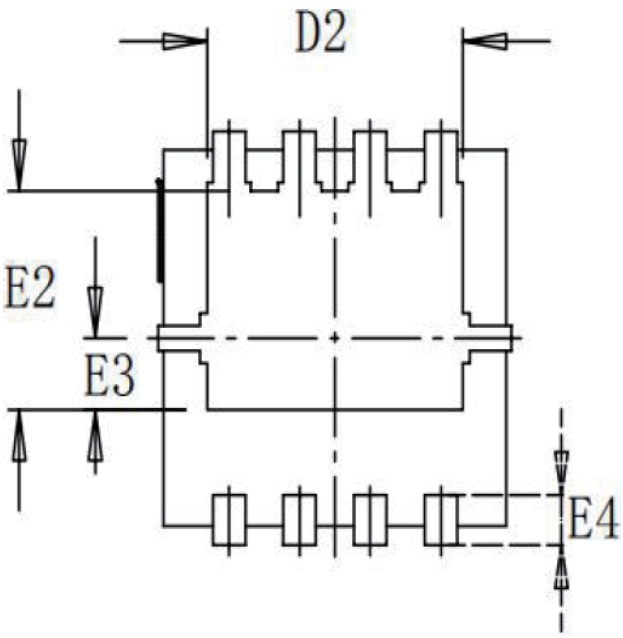


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

PDFN3X3-Package-Information







Symbol	MILLMETER		
	MIN	MON	MAX
A	0.75	0.78	0.81
b	0.297	0.30	0.35
c	–	0.152	–
D	0.00	0.05	0.10
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	–	0.40	–
R	–	0.15	–
e	0.65BSC		–
a1°	–	12°	–