BORN SEMICONDUCTOR

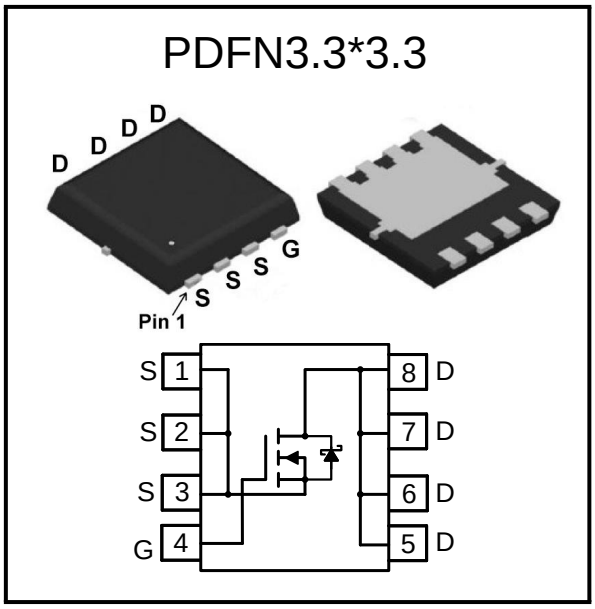
BMQ03N530

30V N-channel enhancement mode MOSFET

Features

- BV_{DSS}=30V
- I_D=63A
- Typ.$R_{DS(on)}$ = 3.9mΩ @V_{GS} =10V
- Good stability and uniformity with high E_{AS}

Package



General Description

The BMQ03N530 uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.It can be used in a wide variety of applications.

Aplication

- SMPS and general purpose applications
- Hard switched and high frequency circuits

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate - Source Voltage	±20	
I_D	Drain Current(Note1)	63	A
I_{DM}	Drain Current-Pulse (Note2)	240	A
E_{AS}	Single Pulse Avalanche Energy (Note3)	120	mJ
P_D	Power Dissipation(Note6)	40	W
T_J	Junction Temperature(Max)	-55 to 150	°C
T_{stg}	Storage Temperature	-55 to 150	

Thermal Characteristics

Parameter	Symbol	Conditions	Value.	Units
Thermal Resistance from Junction to Case	$R_{\Theta JC}$(Note6)	–	3.1	°C/W
Thermal Resistance From Junction to Ambient	$R_{\Theta JA}$(Note6)	–	83.3	

Specifications are subject to change without notice.
Please refer to http://*www.born-tw.com* for current information. **Revision: 2022-Jan-1-A**

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Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D=250uA	30	–	–	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_{DS}=250uA	1	1.5	2	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS}=0V	–	–	1	uA
Gate- Source Leakage Current,Forward	I_{GSSF}	V_{GS} = +20V, V_{DS}=0V	–	–	100	nA
Gate- Source Leakage Current,Reverse	I_{GSSR}	V_{GS} = -20V, V_{DS}=0V	–	–	-100	
Static Drain-source On Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=30A	–	3.9	5.3	mΩ
		V_{GS}=4.5V, I_D=25A	–	6.8	9.5	
Forward Transconductance	g_{fs}	V_{DS}=10V, I_D=20A	–	10	–	S
Input capacitance	C_{iss}	V_{DS} = 15V,	–	2800	–	pF
Output capacitance	C_{oss}	V_{GS} =0V,	–	295	–	
Reverse transfer capacitance	C_{rss}	f = 1MHz	–	240	–	
Gate resistance	R_g	f = 1MHz	–	2.7	–	Ω
Turn-on delay time	$T_{d(on)}$	V_{DS}=15V,	–	12	–	nS
Turn-on Rise time	T_r	V_{GS}=10V,	–	36	–	
Turn -Off Delay Time	$T_{d(off)}$	R_L =0.75Ω,	–	49	–	
Turn -Off Fall time	T_f	R_G =3Ω(Note4,5)	–	12	–	
Gate to Source Charge	Q_{gs}	V_{DS}=25V,	–	6.2	–	nC
Gate to Drain Charge	Q_{gd}	V_{GS}=10V,	–	11	–	
Gate to Drain Charge	Q_g	I_D=14A(Note4,5)	–	50	–	
Max. Diode ForwardCurrent	I_S	–	–	–	63	A
Max. Pulsed Forward Current	I_{SM}	–	–	–	240	
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=20A,	–	–	1.2	V

Note:

(1) TC=25 °C Limited only by maximum temperature allowed.

(2) P_W≤10μs, Duty cycle≤1%.

(3) E_{AS} condition:V_{DD}=20V,V_{GS}=10V, L=0.5mH, R_G=25Ω , Starting T_j =25°C.

(4) Pulse Test : Pulse width ≤300us, Duty cycle 2%.

(5) Guaranteed by design, not subject to production.

(6) The value of $R_{\theta JA}$ is measured with the device mounted on 1 in2 FR-4 board with 2oz. Copper, in a still air environment with Ta=25°C.

Typical Performance Characteristics

Figure 1: Output Characteristics

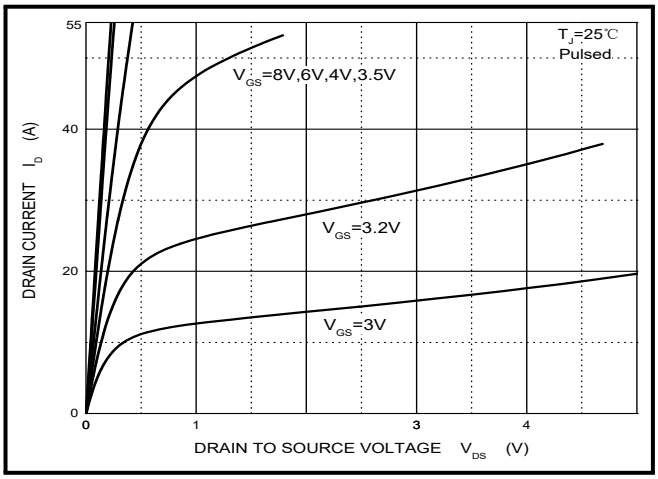


Figure 2: Transfer Characteristics

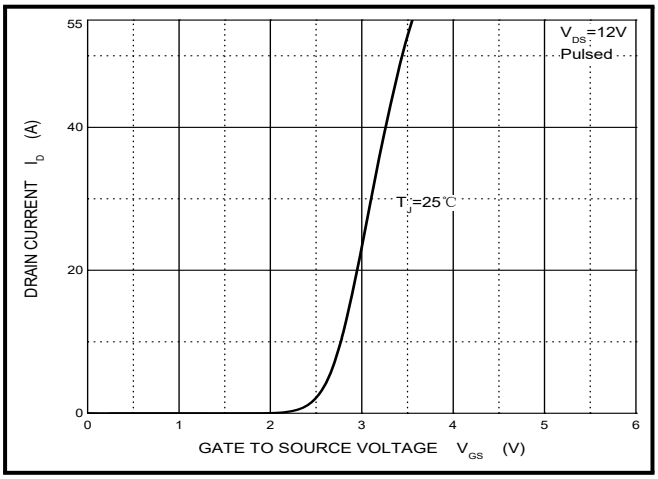


Figure 3: $R_{DS(on)}$ vs. I_D

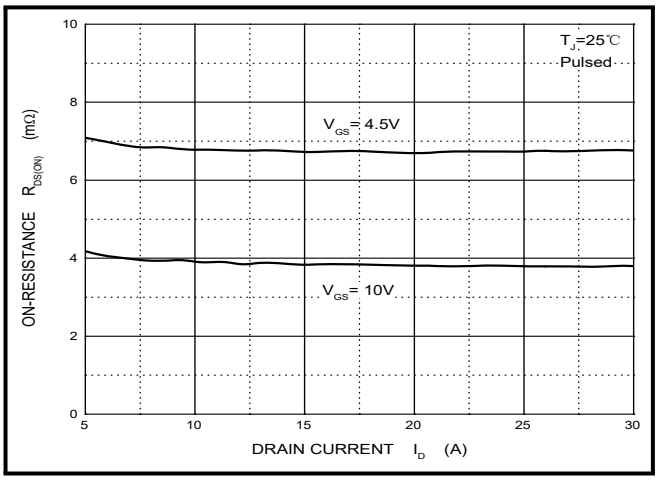


Figure 4: $R_{DS(on)}$ vs. V_{GS}

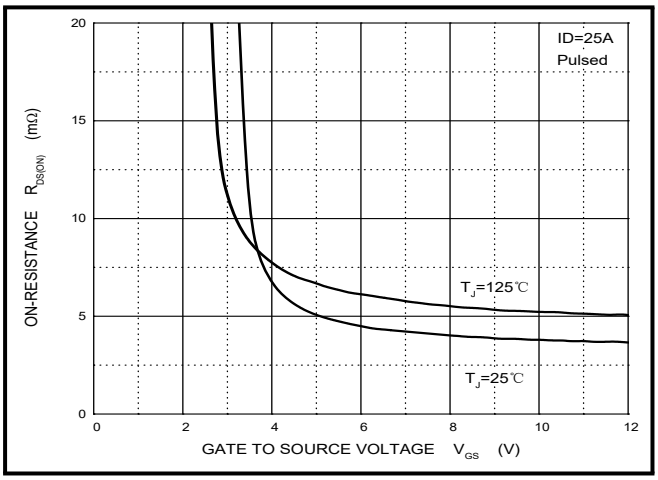


Figure 5: I_S vs. V_{SD}

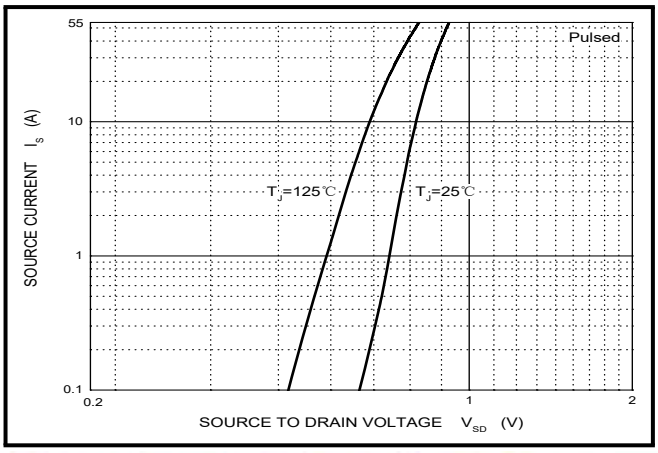
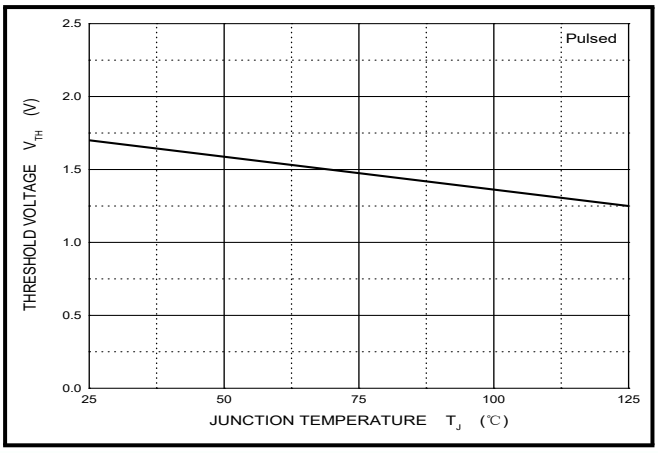


Figure 6: Threshold Voltage



Typical Performance Characteristics

Figure 7: Capacitances

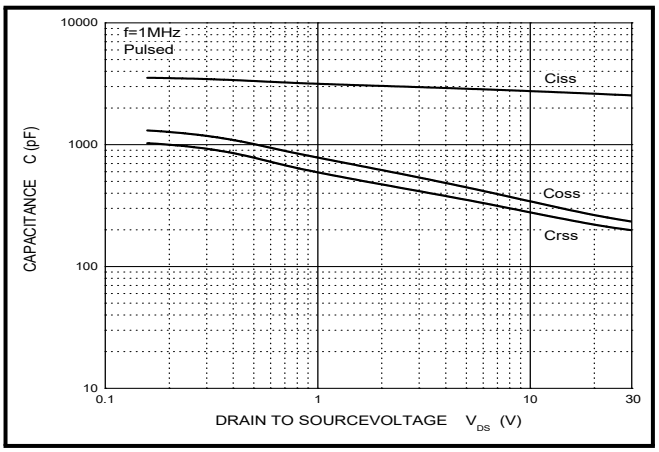


Figure 8: Gate Charge

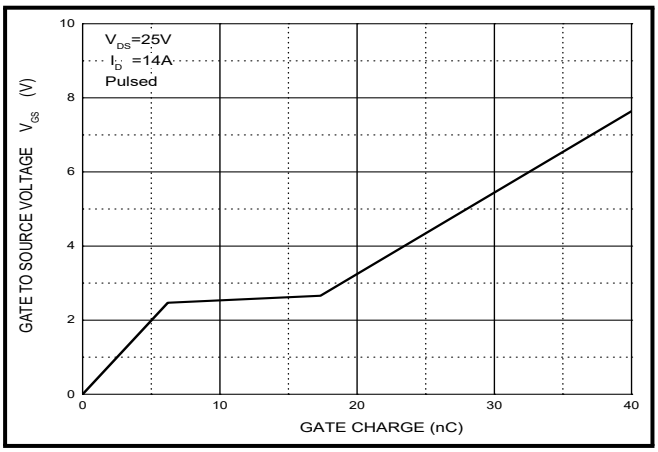


Figure 9: MAXIMUM FORWARD BIASED SAFE OPERATING AREA

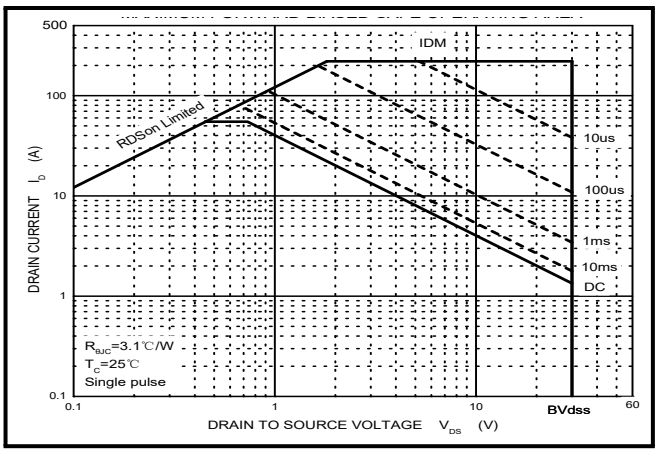
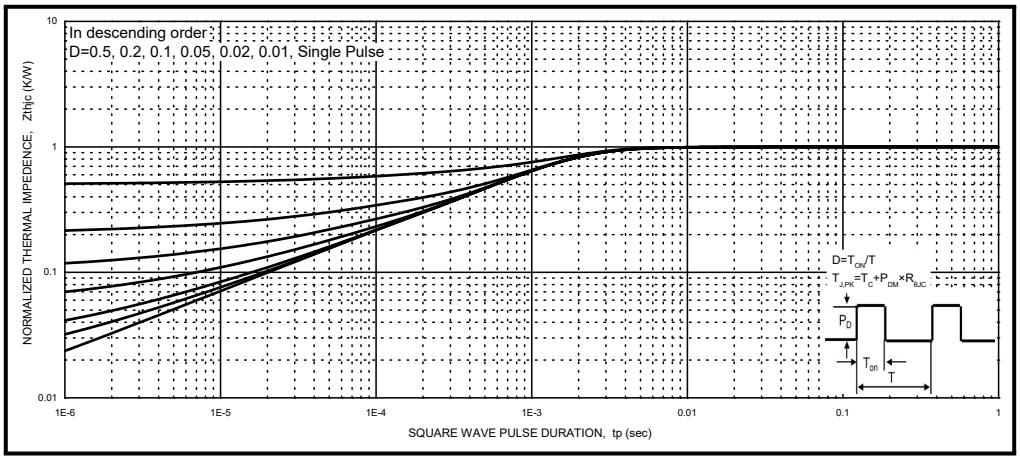
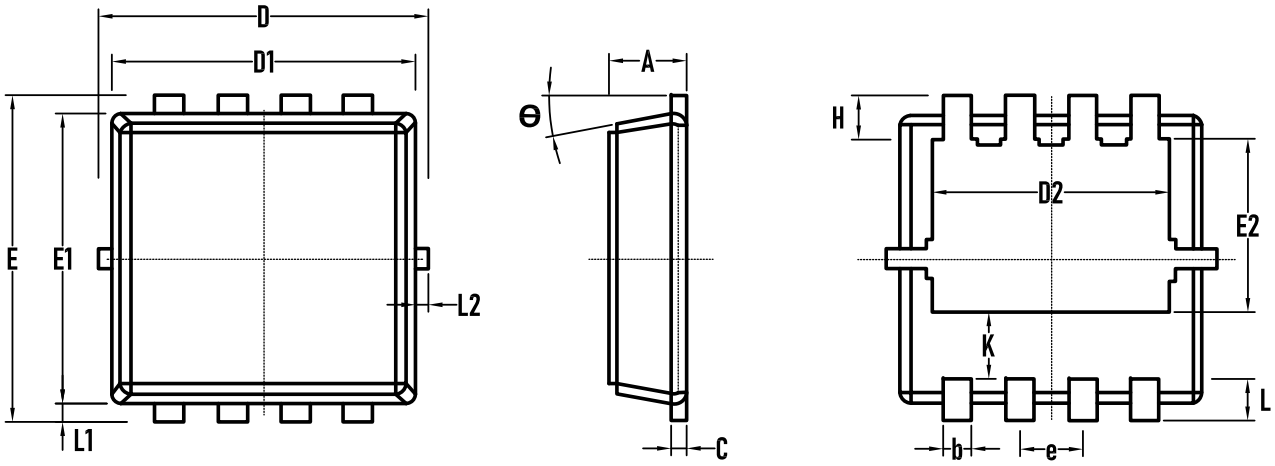


Figure 10: NORMALIZED TRAISIENT THERMAL IMPENDANCE



Packaging Tape -PDFN 3.3*3.3 PACKAGE



SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.70	0.80	0.90
b	0.25	0.30	0.39
C	0.14	0.15	0.25
D	3.20	3.30	3.40
D1	3.00	3.15	3.30
D2	2.35	2.45	2.55
e	0.65BSC		
E	3.25	3.35	3.45
E1	2.85	3.00	3.15
E2	1.635	1.735	1.835
H	0.33	0.48	0.63
K	0.585	0.685	0.785
L	0.30	0.40	0.50
L1	0.05	0.15	0.25
L2	–	–	0.15
Θ	8°	10°	12°