QNHCHIP

Product Specification

QNN80N065BX

65V N-Channel SGT MOSFET

FEATURES

- 65V, 95A

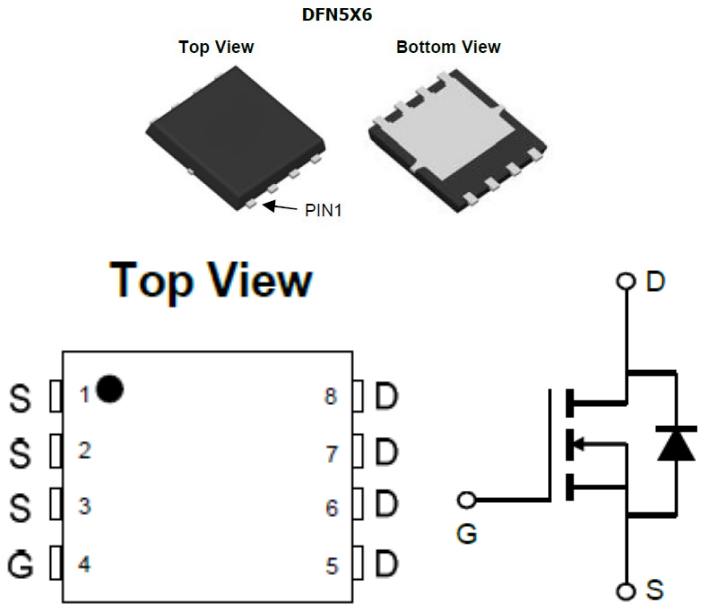
  $R_{DS(ON)}$ Typ = 3.6mΩ @ V_{GS} = 10V

  $R_{DS(ON)}$ Typ = 4.8mΩ @ V_{GS} = 4.5V
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge

Applications

- Load Switch
- PWM Application
- Power Management

Pin Description



NO.	Symbol	Description
1	S	SOURCE
2	S	SOURCE
3	S	SOURCE
4	G	GATE
5	D	DRAIN
6	D	DRAIN
7	D	DRAIN
8	D	DRAIN

Absolute Maximum Ratings

(@ T_C = 25℃ unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{DS}	Drain-to-Source Voltage		65	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	95	A
		T_C = 100℃	57	
I_{DM}	Pulsed Drain Current (1)		380	A
E_{AS}	Single Pulsed Avalanche Energy (2)		138	mJ
P_D	Power Dissipation	T_C = 25℃	78	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.6	℃/W
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	℃

Electrical Characteristics

(T_J = 25℃ unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D=250uA,V_{GS}=0V	65	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V,V_{GS}=0V	-	-	1.0	uA
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1.2	1.6	2.5	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS}=10V, I_D=20A	-	3.6	4.7	mΩ
		V_{GS}=4.5V, I_D=10A	-	4.8	6.2	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=30V, f=1MHz	-	2000	-	pF
C_{oss}	Output Capacitance		-	660	-	pF
C_{rss}	Reverse Transfer Capacitance		-	28	-	pF
Q_g	Total Gate Charge	V_{GS}=0~10V, V_{DS}=30V,I_D=20A	-	35	-	nC
Q_{gs}	Gate Source Charge		-	10	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	7	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS}=10V,V_{DD}=30V I_D= 20A,R_{GEN}=3Ω	-	12	-	ns
t_r	Turn-On Rise Time		-	34	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	25	-	ns
t_f	Turn-Off Fall Time		-	30	-	ns
Body Diode Characteristics						
I_S	Maximum Continuous Body Diode Forward Current		-	-	95	A
I_{SM}	Maximum Pulsed Body Diode Forward Current		-	-	380	A
V_{SD}	Body Diode Forward Voltage	V_{GS}=0V, I_S=20A	-		1.2	V
trr	Body Diode Reverse Recovery Time	I_F=20A, di/dt=100A/us	-	38	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	23	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. E_{AS} condition: Starting T_J=25℃, V_{DD}=30V, V_{GS}=10V, R_G=25Ω, L=0.5mH, I_{AS}=23.5A

3. Pulse Test: Pulse Width≤300us, Duty Cycle≤0.5%.

Typical Performance Characteristics

Figure 1: Output Characteristics

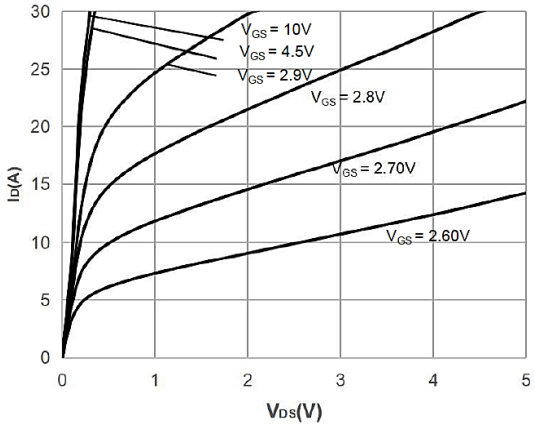


Figure 2: Typical Transfer Characteristics

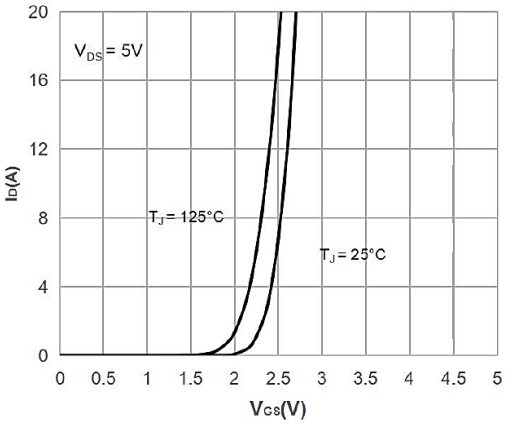


Figure 3: On-resistance vs. Drain Current

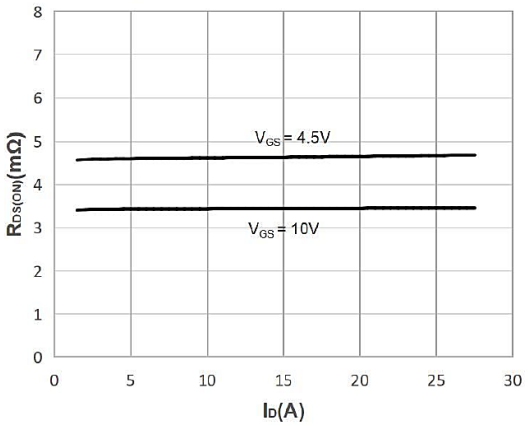


Figure 4: Body Diode Characteristics

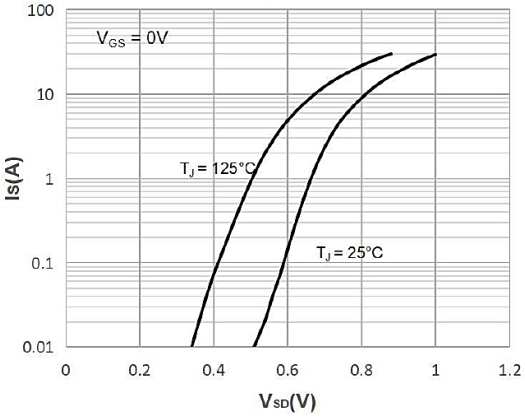


Figure 5: Gate Charge Characteristics

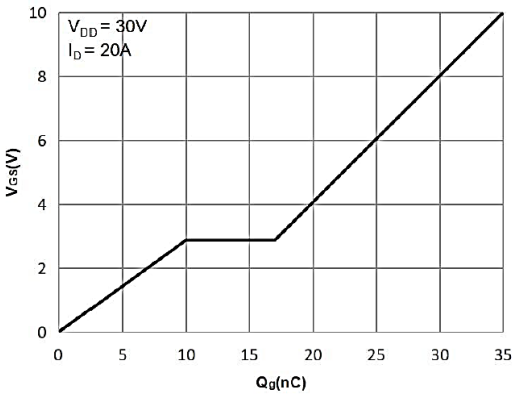


Figure 6: Capacitance Characteristics

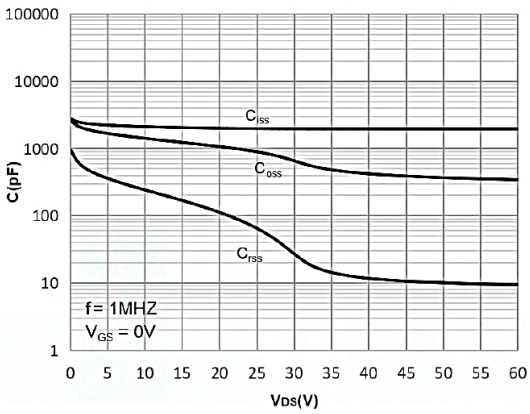


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

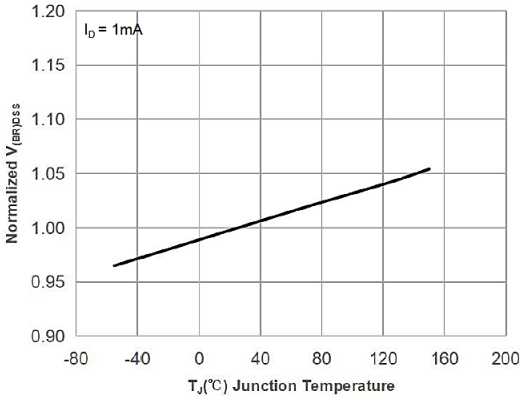


Figure 8: Normalized on Resistance vs. Junction Temperature

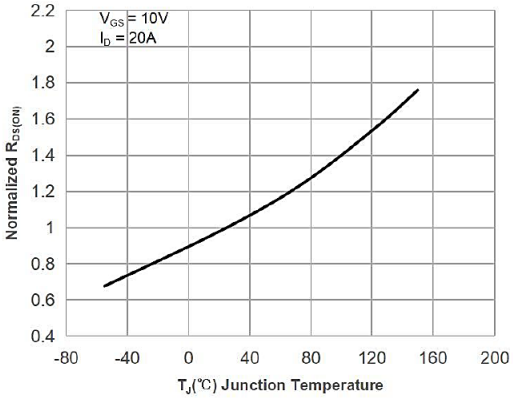


Figure 9: Maximum Safe Operating Area

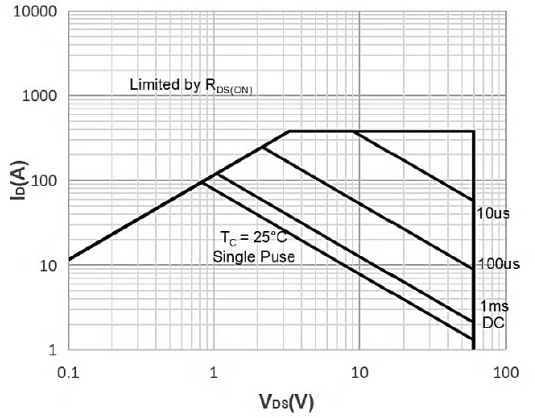


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

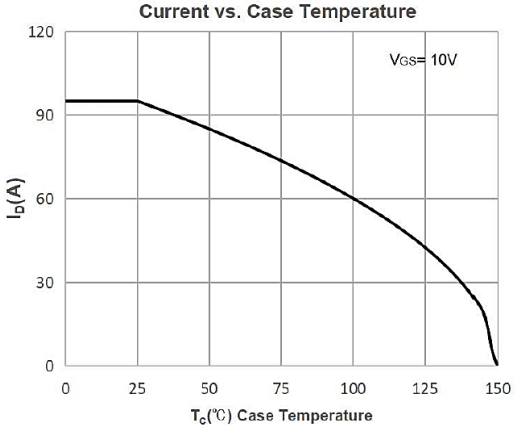


Figure 11: Normalized Maximum Transient Thermal Impedance

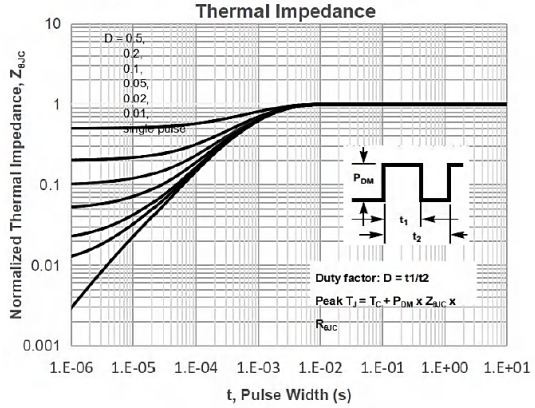
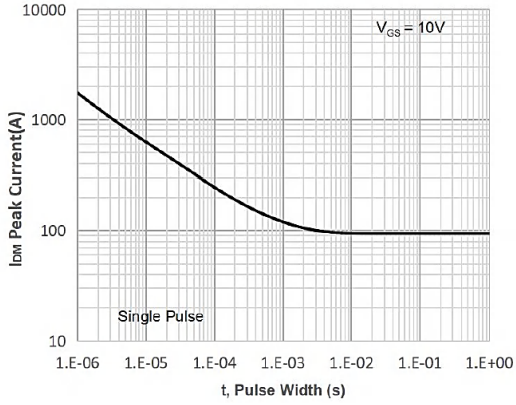


Figure 12: Peak Current Capacity



Test Circuit

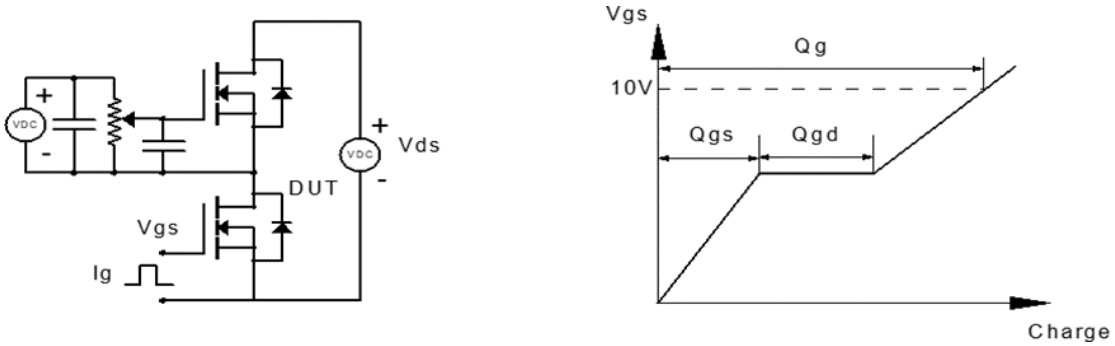


Figure 1: Gate Charge Test Circuit & Waveform

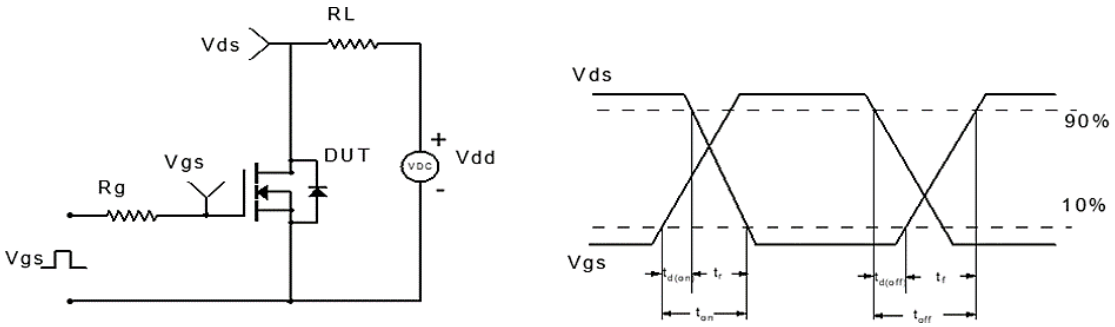


Figure 2: Resistive Switching Test Circuit & Waveform

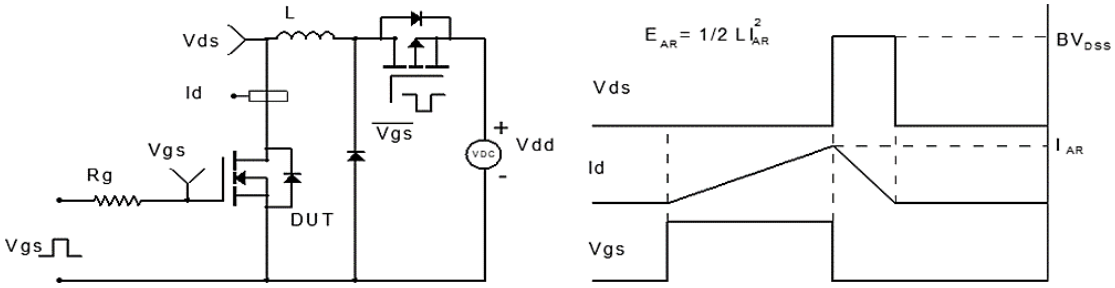


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

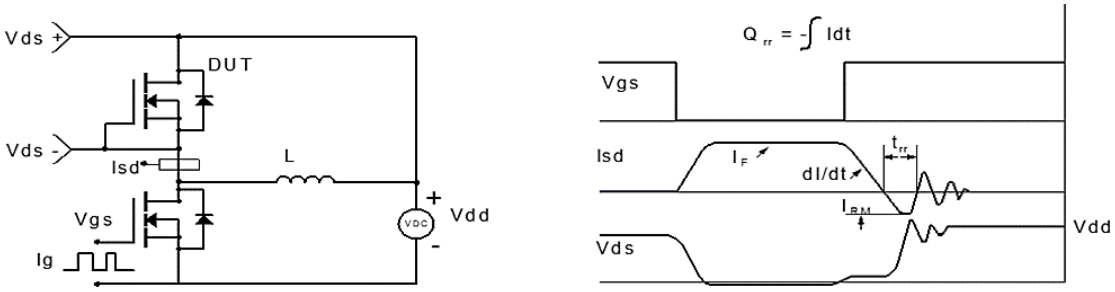
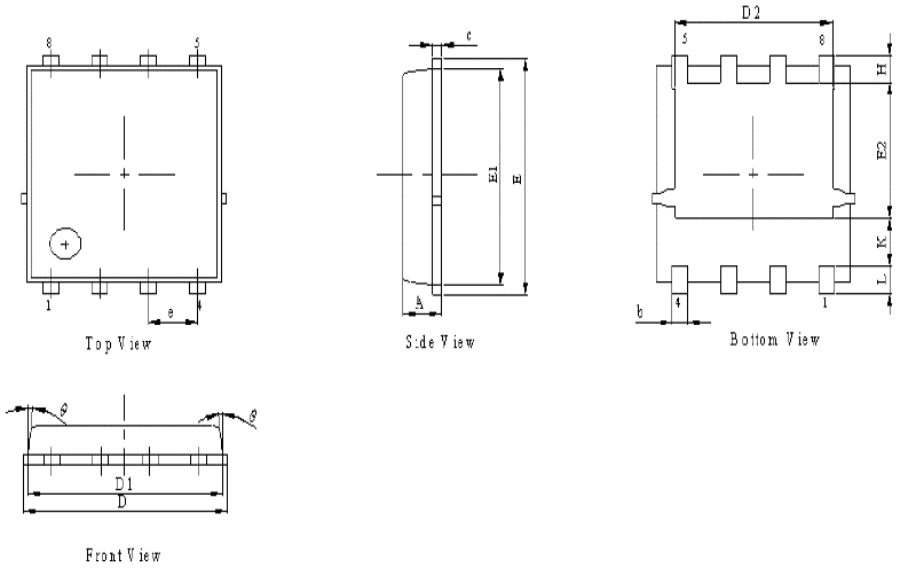
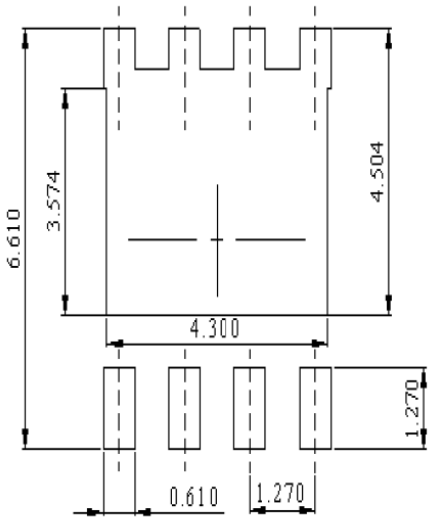


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(PDFN 5x6-8L)



Symbol	Dimensions In Millimeters		
	Min.	NOM.	Max.
A	0.9	1	1.15
b	0.31	0.41	0.51
C	0.24	0.32	0.4
D	5	5.2	5.4
D1	4.95	5.05	5.15
D2	4	4.1	4.2
E	6.05	6.15	6.25
E1	5.5	5.6	5.7
E2	3.42	3.53	3.63
e		1.27 BSC	
H	0.6	0.7	0.8
L	0.5	0.7	0.8
K		1.23 BEF	
O			10



DIMENSIONS:MILLIMETERS

Ordering information

Order Code	Package	V_{DS}(V)	I_D(A)	$R_{DS(ON)}$(m Ω)	
QNN80N065BX	PDFN 5x6-8	65	95	V_{GS}=10V	3.6
				V_{GS}=4.5V	4.8