Product Specification

QNM15PD02

20V Dual P-Channel MOSFET

FEATURES

- -20V, -12A

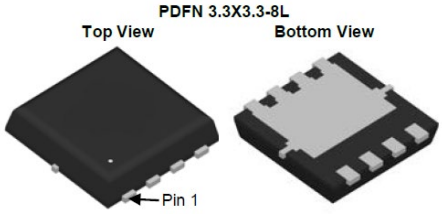
  $R_{DS(ON)}$ =14mΩ @ V_{GS} =-4.5V

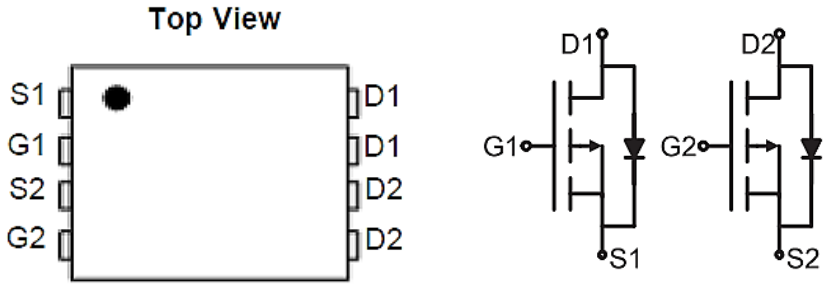
  $R_{DS(ON)}$ =18mΩ @ V_{GS} =-2.5V
- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate charge
- Lead free product is acquired

Applications

- Load Switch
- PWM Application
- Power management

Pin Description





NO.	Symbol	Description
1	S1	SOURCE
2	G1	GATE
3	S2	SOURCE
4	G2	GATE
5	D1	DRAIN
6	D1	DRAIN
7	D2	DRAIN
8	D2	DRAIN

Absolute Maximum Ratings

(@ T_A = 25℃ unless otherwise specified)

Symbol	Parameter	Value	Units
V_{DS}	Drain-to-Source Voltage	-20	V
V_{GS}	Gate-to-Source Voltage	±12	V
I_D	Continuous Drain Current	-12	A
I_{DM}	Pulsed Drain Current [1]	-50	A
P_D	Power Dissipation	15	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient[2]	4.5	℃/W
T_J, T_{STG}	Junction & Storage Temperature Range	-55 to 150	℃

Electrical Characteristics

(T_A = 25℃ unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250uA	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-12V, V_{GS}=0V			-1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V			±100	nA
On Characteristics(3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.4	-0.65	-1.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-6A		14	23	mΩ
		V_{GS}=-2.5V, I_D=-5A		18	28	
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-6A		20		S
Dynamic Characteristics (4)						
nput Capacitance	C_{iss}	V_{DS}=-6V, V_{GS}=0V, F=1.0MHz		1652		PF
Output Capacitance	C_{oss}			135		PF
Reverse Transfer Capacitance	C_{rss}			113		PF
Switching Characteristics (4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-6V, I_D=-1A, R_L=6Ω, V_{GEN}=-4.5V, R_g=6Ω		20		nS
Turn-on Rise Time	t_r			35		nS
Turn-Off Delay Time	$t_{d(off)}$			90		nS
Turn-Off Fall Time	t_f			70		nS
Total Gate Charge	Q_g	V_{DS}=-6V, I_D=-6A, V_{GS}=-4.5V		19.5		nC
Gate-Source Charge	Q_{gs}			4.1		nC
Gate-Drain Charge	Q_{gd}			5.2		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage(3)	V_{SD}	V_{GS}=0V, I_S=-1.0A			-1.2	V
Diode Forward Current(2)	I_S				-12	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.

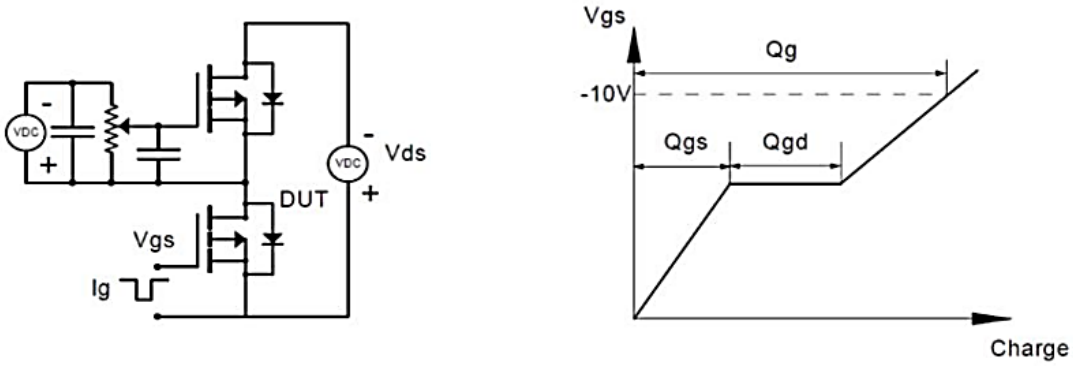
2. Surface Mounted on FR4 Board, t ≤ 10 sec.

3. Pulse Test: Pulse Width s 300us, Duty Cycle s 2%.

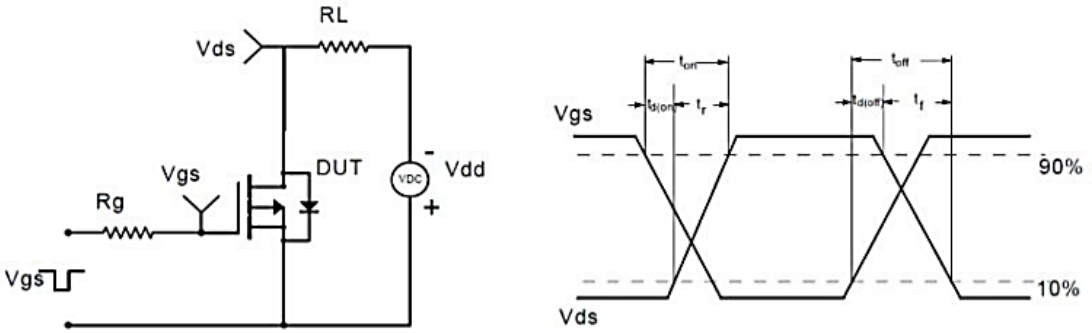
4. Guaranteed by design, not subject to production

Test Circuit

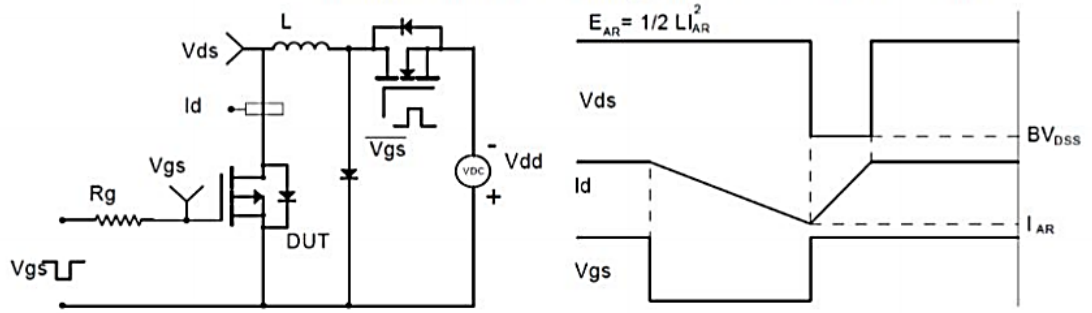
Gate Charge Test Circuit & Waveform



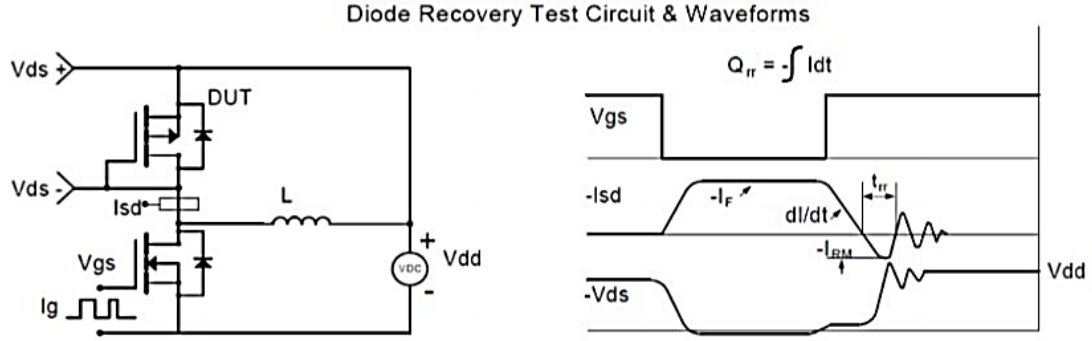
Resistive Switching Test Circuit & Waveforms



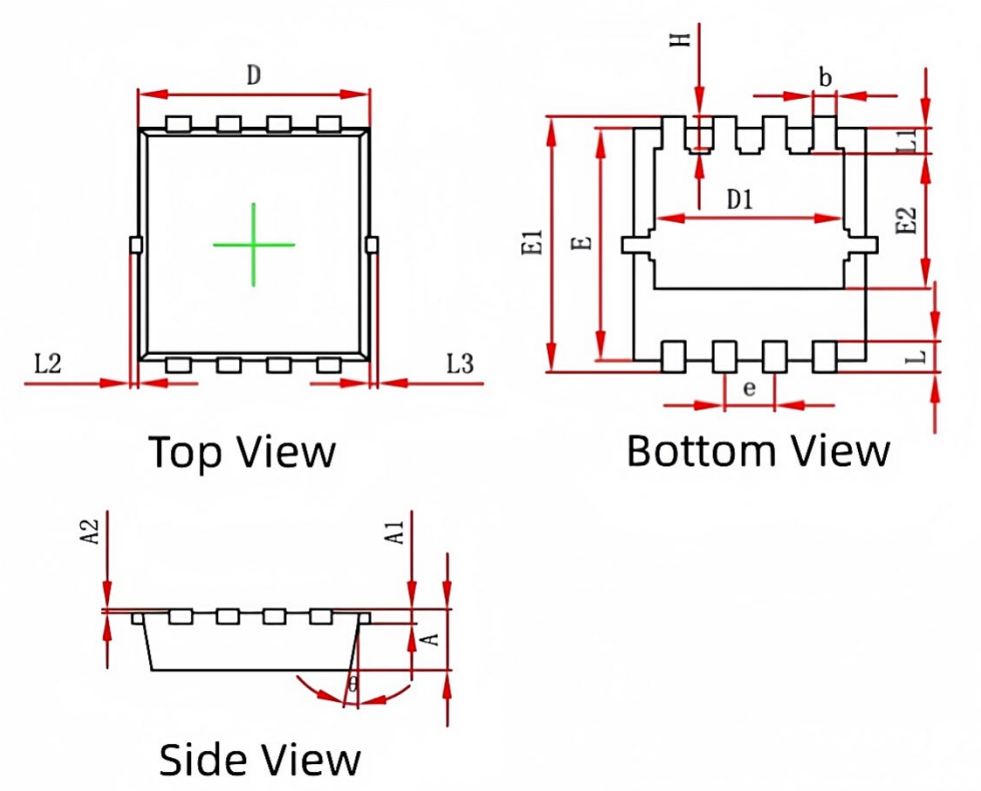
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



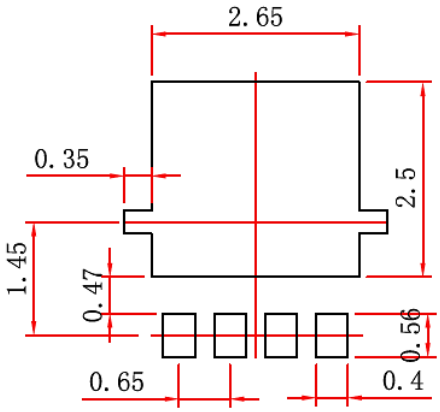
Diode Recovery Test Circuit & Waveforms



Package Mechanical Data(PDFN 3.3x3.3-8)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°



Note:

1.Controlling dimension: in millimeters.

2.General tolerance: ±0.05mm.

3.The pad layout is for reference purposes only.

Ordering information

Order Code	Package	V_{DS}(V)	I_D(A)	$R_{DS(ON)}$(mΩ)	
QNM15PD02	PDFN 3.3x3.3-8	-20	-12	V_{GS}=-4.5V	14
				V_{GS}=-2.5V	18