Product Specification

QND30N03LJ

30V N-Channel MOSFET

FEATURES

- 30V, 12A

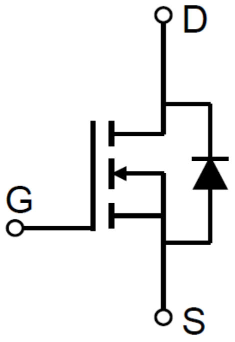
  $R_{DS(ON)}$ Typ= 19mΩ @ V_{GS} = 10V

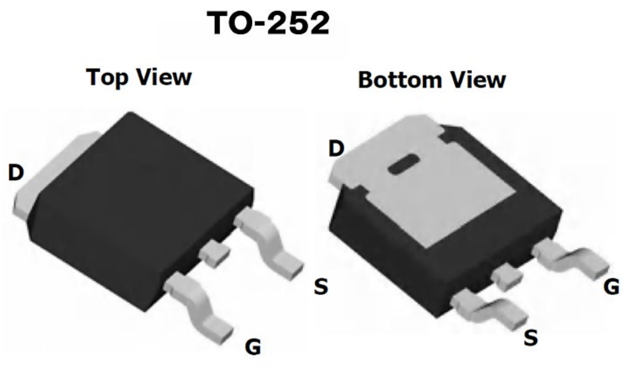
  $R_{DS(ON)}$ Typ= 27mΩ @ V_{GS} = 4.5V
- Advanced Trench Technology
- l Excellent $R_{DS(ON)}$ and Low Gate Charge

Applications

- Load Switch
- PWM Application
- Power Management

Pin Description





NO.	Symbol	Description
1	G	GATE
2	D	DRAIN
3	S	SOURCE

Absolute Maximum Ratings

(@ T_C = 25℃ unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		30	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	12	A
		T_C = 100℃	8	
I_{DM}	Pulsed Drain Current (1)		40	A
E_{AS}	Single Pulsed Avalanche Energy (2)		30	mJ
P_D	Power Dissipation	T_C = 25℃	26	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		4.9	℃/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=250mA, V_{GS}=0V	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V, V_{GS}=0V	-	-	1.0	mA
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=VGS, I_D=250mA	1.2	1.8	2.1	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance[3]	V_{GS}=10V,I_D=4A	-	19.0	25.0	mW
		V_{GS}=4.5V,I_D=3A	-	27.0	42.0	mW
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=15V, f=1MHz	-	376	-	pF
C_{oss}	Output Capacitance		-	53	-	pF
C_{rss}	Reverse Transfer Capacitance		-	42	-	pF
Q_g	Total Gate Charge	V_{GS}=0~10V, V_{DS}=15V,I_D=15A	-	16	-	nC
Q_{gs}	Gate Source Charge		-	3.6	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	3.4	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS}=10V,V_{DD}=15V I_D= 15A,R_{GEN}=3W	-	6	-	ns
t_r	Turn-On Rise Time		-	16	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	17	-	ns
t_f	Turn-Off Fall Time		-	5	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	12	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	40	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V,I_S=10A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F=13A,di/dt=100 A/us	-	9.4	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	3.3	-	nC

Notes:

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

2. E_{AS} condition: Starting T_J=25C, V_{DD}=15V, V_G=10V, R_G=25 Ω, L=0.5mH, I_{AS}=11A

3. Pulse Test: Pulse Width⩽300μs, Duty Cycle⩽0.5%.

Typical Performance Characteristics

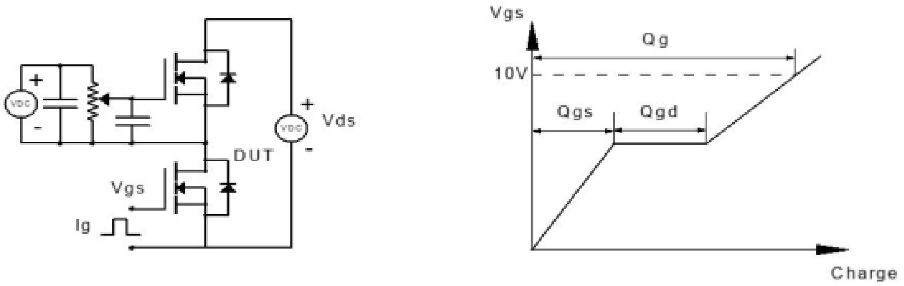


Figure 1: Gate Charge Test Circuit & Waveform

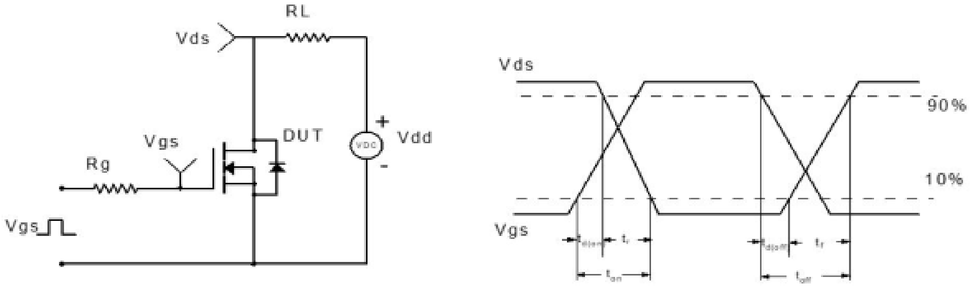


Figure 2: Resistive Switching Test Circuit & Waveform

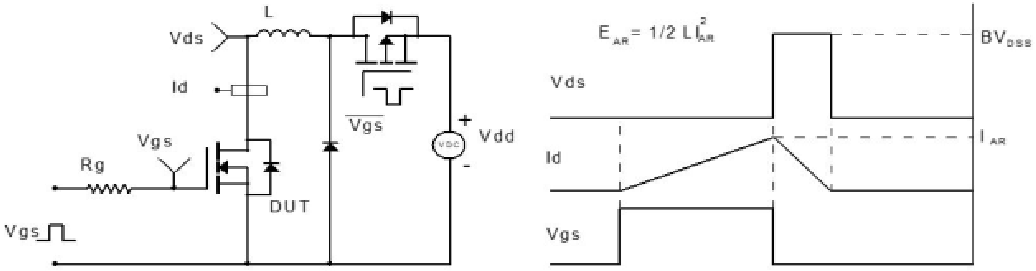


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

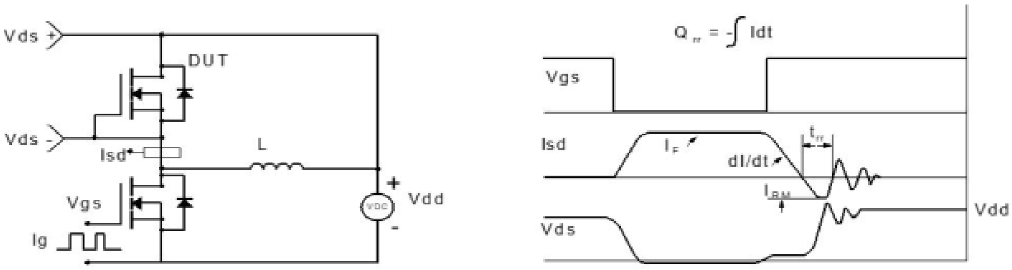
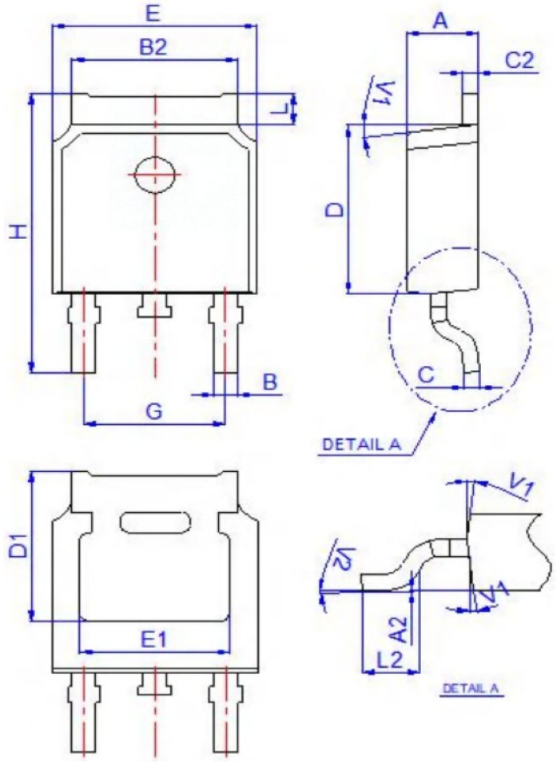


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(TO-252-3L)



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.10	2.50	0.083	0.098
A2	0	0.10	0	0.004
B	0.66	0.86	0.026	0.034
B2	5.18	5.48	0.202	0.216
C	0.40	0.60	0.016	0.024
C2	0.44	0.58	0.017	0.023
D	5.90	6.30	0.232	0.248
D1	5.30 REF		0.209 REF	
E	6.40	6.80	0.252	0.268
E1	4.63		0.182	
G	4.47	4.67	0.176	0.184
H	9.50	10.70	0.374	0.421
L	1.09	1.21	0.043	0.048
L2	1.35	1.65	0.053	0.065
V1	7°		7°	
V2	0°	6°	0°	6°

Ordering information

Order Code	Package	V_{DS}(V)	I_D(A)	$R_{DS(ON)}$(mΩ)	
QND30N03LJ	TO-252	30	12	V_{GS}=10V	19
				V_{GS}=4.5V	27