QL24N50

500V N-Channel MOSFET

General Description

The 24N50 is fabricated using an advanced high voltage MOSFET process that is designed to provide excellent RDS(ON) . These devices are well suited for high efficient switched mode power suppliesand active power factor correction.

Product Summary

BVDSS	RDSON	ID
500V	0.2Ω	24A

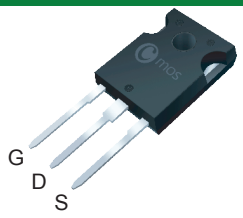
Applications

- DC-AC converters
- SMPS Power
- UPS (Uninterruptible Power Supply)

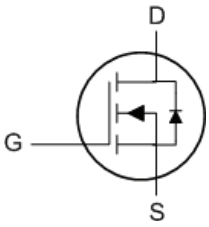
Features

- Low on-resistance
- Fast Switching
- RoHS Compliant

TO247 Pin Configuration



TO-247
QL24N50



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	500	V
V_{GS}	Gate-Source Voltage	±30	V
I_D@T_C=25℃	Continuous Drain Current	24	A
I_D@T_C=100℃	Continuous Drain Current	15	A
I_{DM}	Pulsed Drain Current[1]	96	A
EAS	Single Pulse Avalanche Energy[2]	810	mJ
P_D@T_C=25℃	Total Power Dissipation	290	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	40	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.43	℃/W

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Electrical Characteristics (T_J=25℃ , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	500	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=12A	---	---	0.2	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=500V, V_{GS}=0V	---	---	1	uA
		V_{DS}=400V , V_{GS}=0V , TC=125℃	---	---	10	
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±30V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance [3]	V_{DS}=15V , I_D=13A	---	31	---	S
Q_g	Total Gate Charge	I_D =24A V_{DS} =400V V_{GS} =10V (Note 3, 4)	---	90	---	nC
Q_{gs}	Gate-Source Charge		---	22	---	
Q_{gd}	Gate-Drain Charge		---	45	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=250V I_D =24A R_G=25Ω (Note 3, 4)	---	100	---	ns
T_r	Rise Time		---	250	---	
$T_{d(off)}$	Turn-Off Delay Time		---	200	---	
T_f	Fall Time		---	150	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	6300	---	pF
C_{oss}	Output Capacitance		---	600	---	
C_{rss}	Reverse Transfer Capacitance		---	65	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	24	A
I_{SM}	Pulsed Source Current		---	---	72	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=24 A, T_J=25℃	---	---	1.4	V

Note :
1.Repetitive Rating: Pulse width limited by maximum junction temperature
2.L = 5mH, I_D = 18A, V_{DD} = 50V, Starting T_J = 25 ℃
3.Pulse Test: Pulse width≤300μs, Duty Cycle≤2%
4.Essentially Independent of Operating Temperature

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