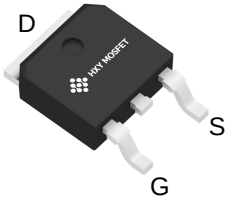
FQD10N20LTM

N-Channel Enhancement Mode MOSFET

Description

The FQD10N20LTM can be used in various power swithching circuit for system miniaturization and higher efficiency.The package form is TO-252-2L, which accords with the RoHS standard.

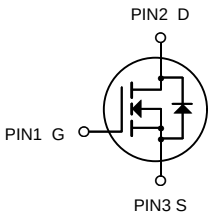


TO-252-2L

General Features

V_{DS} = 200V I_D =9A

$R_{DS(ON)}$ < 270mΩ @ V_{GS}=10V



N-Channel MOSFET

Application

Battery protection

Load switch

Uninterruptible power supply

Ordering Information

Product ID	Pack	Brand	Qty(PCS)
FQD10N20LTM	TO-252-2L	HXY MOSFET	2500

Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	±30	V
I_D@T_C=25°C	Continuous Drain Current, V_{GS} @ 10V	9	A
I_D@T_C=100°C	Continuous Drain Current, V_{GS} @ 10V	5.7	A
I_{AS}	Avalanche Current	9	A
P_D@T_C=25°C	Total Power Dissipation	72	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	200	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=200V, V_{GS}=0V	---	---	1	μA
		V_{DS}=160V, V_{GS}=0V,Tc=125	---	---	10	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±30V, V_{DS}=0A	---	---	±100	nA
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	2	---	4	V
$R_{DS(ON)}$	Drain-Source On Resistanc	V_{GS}=10V,I_D=4.5A	---	0.235	0.27	Ω
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	---	720	920	pF
C_{oss}	Output Capacitance		---	85	110	
C_{rss}	Reverse Transfer Capacitance		---	22	29	
$t_{d(on)}$	Turn-On Delay Time[3,4]	VDD=100V , VGS=10V , RG=25 Ω， I_D=9A	---	10	23	ns
t_r	Rise Time[3,4]		---	69	138	ns
$t_{d(off)}$	Turn-Off Delay Time[3,4]		---	59	118	ns
t_f	Fall Time[3,4]		---	63	128	ns
Q_g	Total Gate Charge[3,4]	V_{GS}=10V, V_{DS}=160V, I_D=9A	---	21	28	nC
Q_{gs}	Gate-Source Charge[3,4]		---	3.8	---	nC
Q_{gd}	Gate-Drain “Miller” Charge[3,4]		---	11	---	nC
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	9	A
I_{SM}	Pulsed Source Current		---	---	36	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=9A , T_J=25°C	---	---	1.45	V
Trr	Reverse Recovery Time	IF=9A , dI/dt=100A/μs , T_J=25℃	---	140	---	ns
Qrr	Reverse Recovery Charge		---	2.2	---	nC

Notes:

1, L=8mH, IAS=9A, VDD=50V, RG=25Ω, Starting TJ =25°C

2, Repetitive Rating : Pulse width limited by maximum junction temperature

3, Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

4, Essentially Independent of Operating Temperature

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

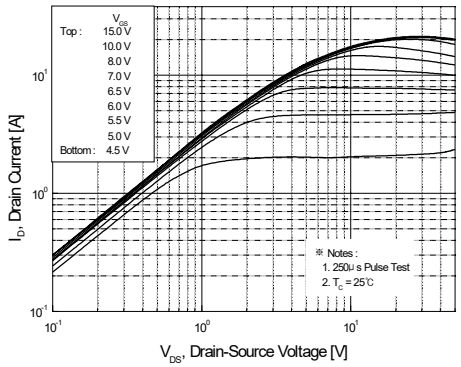


Figure 1. On-Region Characteristics

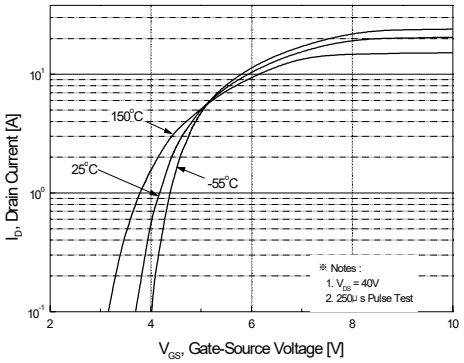


Figure 2. Transfer Characteristics

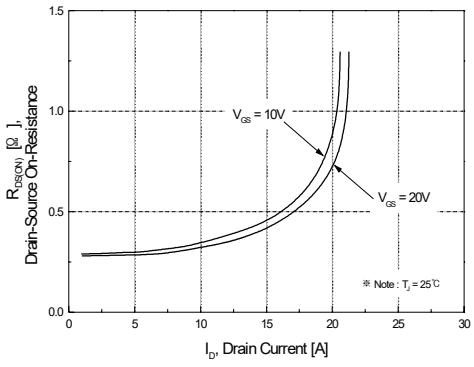


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

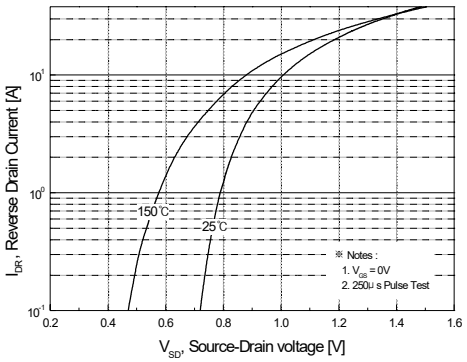


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

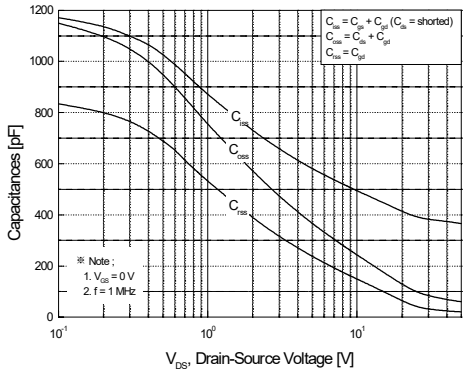


Figure 5. Capacitance Characteristics

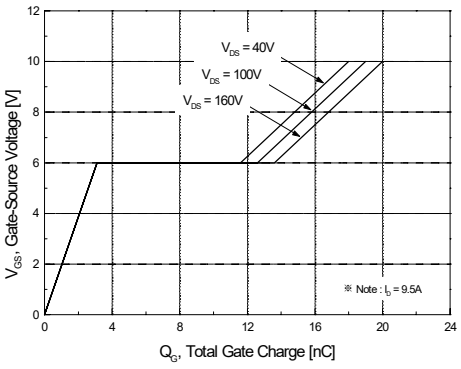


Figure 6. Gate Charge Characteristics

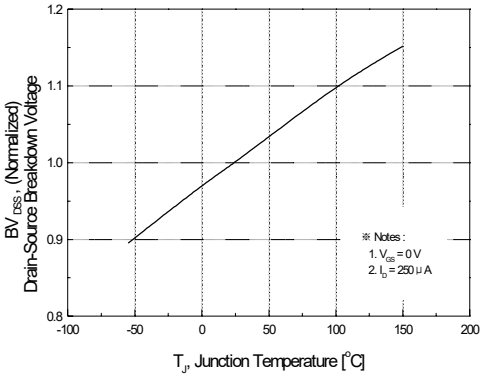


Figure 7. Breakdown Voltage Variation vs Temperature

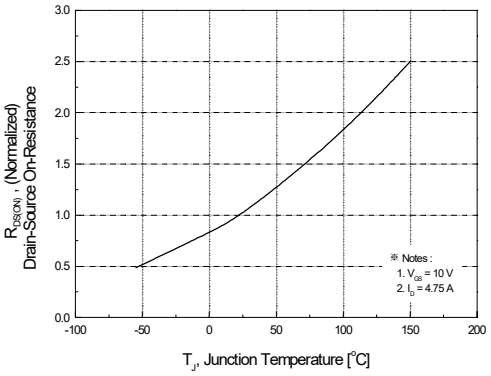


Figure 8. On-Resistance Variation vs Temperature

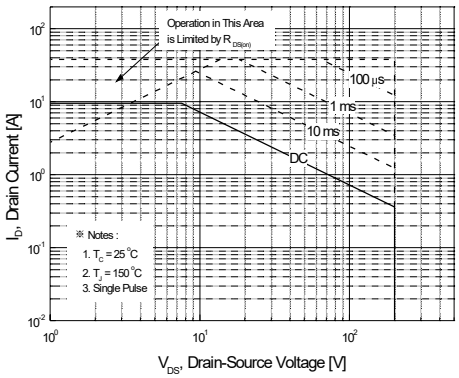


Figure 9-1. Maximum Safe Operating Area

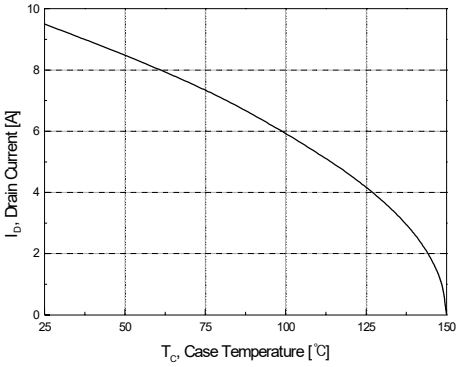


Figure 10. Maximum Drain Current vs Case Temperature

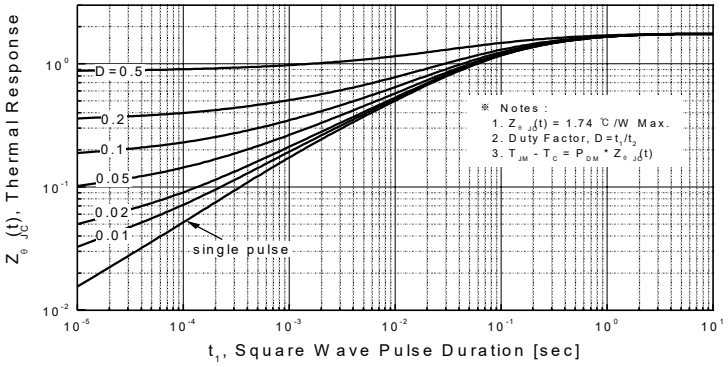
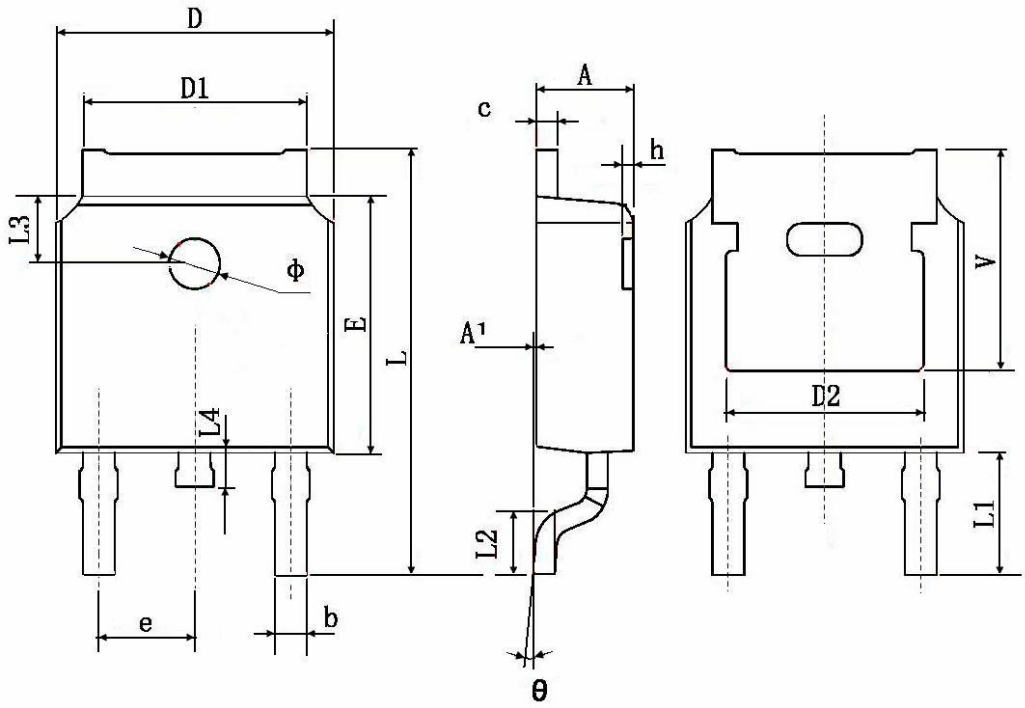


Figure 11-1. Transient Thermal Response Curve

TO-252-2L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	0.483 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	

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