

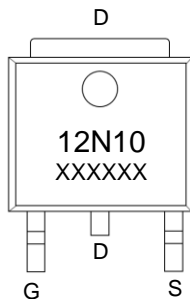
100V/12A N-Channel MOSFET

Features

- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

Application

- Power Management in Note book
- DC/DC Converter
- Load Switch
- LCD Display inverter

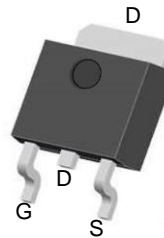


12N10 : Device code
xxxxxx : Code

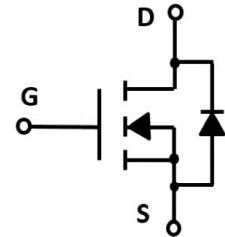
Marking and pin assignment

Product Summary

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
100V	160m Ω @10V	12A
	180m Ω @4.5V	



TO-252 top view



Schematic diagram

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Rating	Unit
Common Ratings ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)			
V_{DS}	Drain-Source Breakdown Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
T_J	Maximum Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-50 to 155	$^\circ\text{C}$
I_S	Diode Continuous Forward Current	12	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	40	A
I_D	Continuous Drain Current@GS=10V	$T_C=25^\circ\text{C}$ 12	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 50	W

Electrical Characteristics (T_J=25 °C unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
BV _{(BR)DSS}	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	100	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	VDS=100V, VGS=0V	--	--	1.0	uA
I _{GSS}	Gate-Body Leakage Current	VGS=±20V, VDS=0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	VDS=VGS, ID=250μA	1.0	2	3	V
R _{DS(on)}	Drain-Source On-State Resistance	VGS=10V, ID=10A	--	130	160	mΩ
		VGS=4.5V, ID=5A	--	140	180	
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	VDS=50V, VGS=0V, f=1MHz	--	650	--	pF
C _{OSS}	Output Capacitance		--	25	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	20	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	VDD=50V, ID=3A, VGS=10V	--	20	--	nC
Q _{gs}	Gate Source Charge		--	2	--	nC
Q _{gd}	Gate Drain Charge		--	3	--	nC
t _{d(on)}	Turn-on Delay Time	VDD=50V, RL=19Ω, VGS=10V, RG=3Ω	--	6	--	nS
t _r	Turn-on Rise Time		--	4	--	nS
t _{d(off)}	Turn-Off Delay Time		--	20	--	nS
t _f	Turn-Off Fall Time		--	4	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	T _J =25°C, I _s =3A	--	--	1.2	V

Typical Operating Characteristics

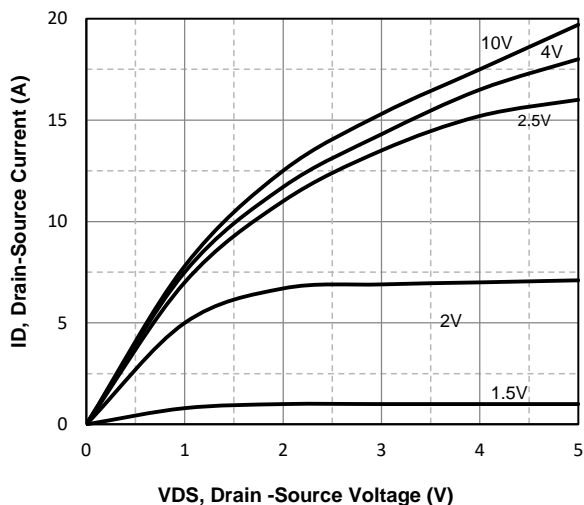


Fig1. Typical Output Characteristics

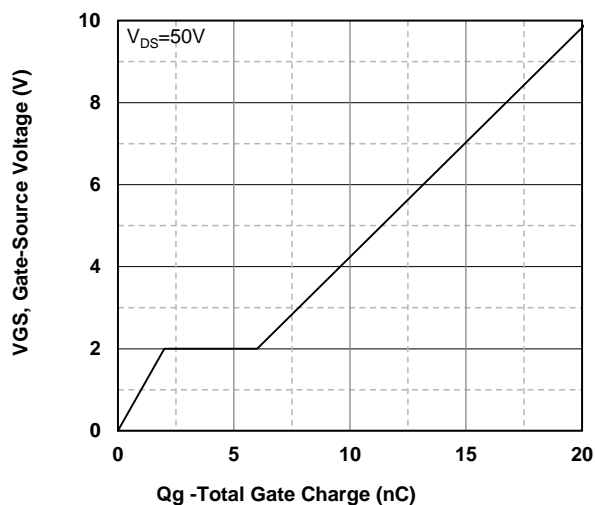


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

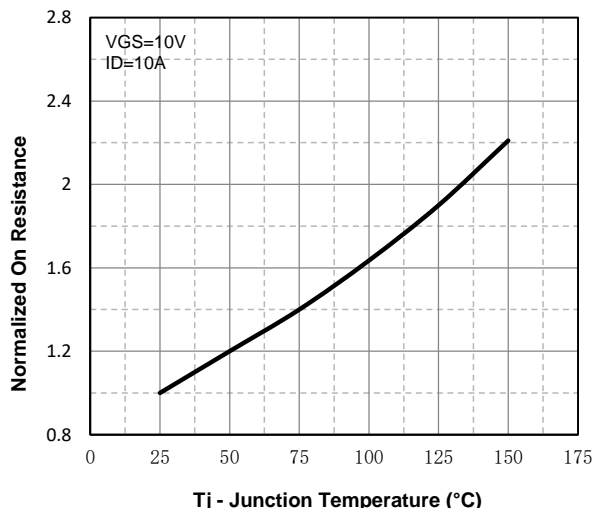


Fig3. Normalized On-Resistance Vs. Temperature

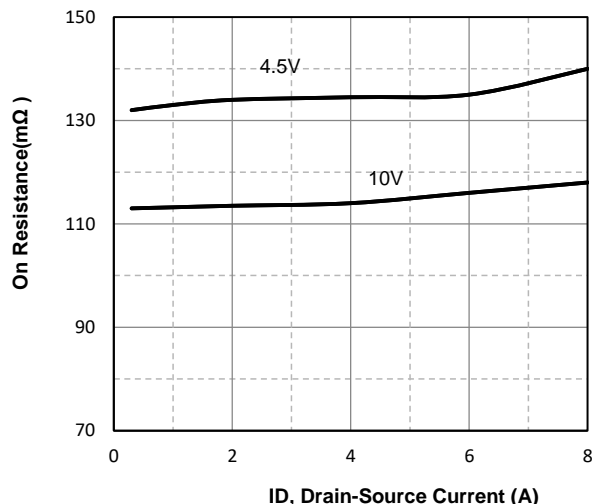


Fig4. On-Resistance Vs. Drain-Source Current

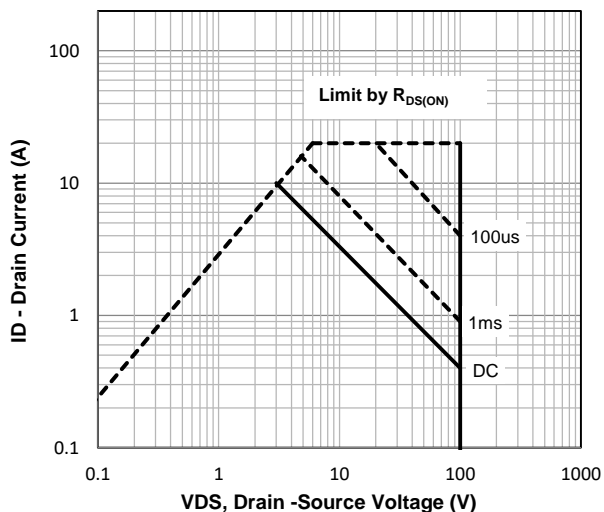


Fig5. Maximum Safe Operating Area

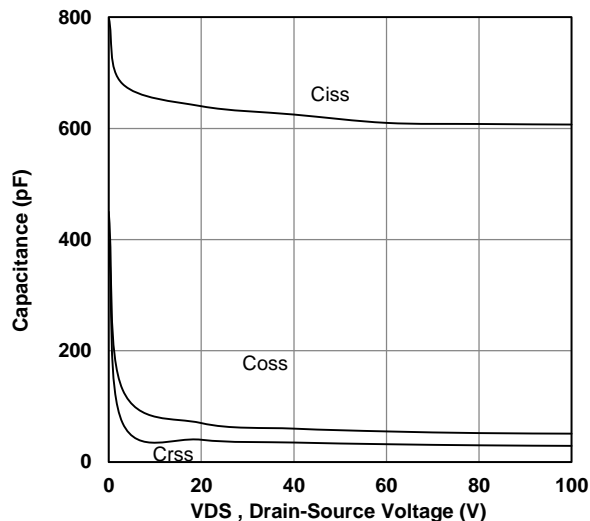
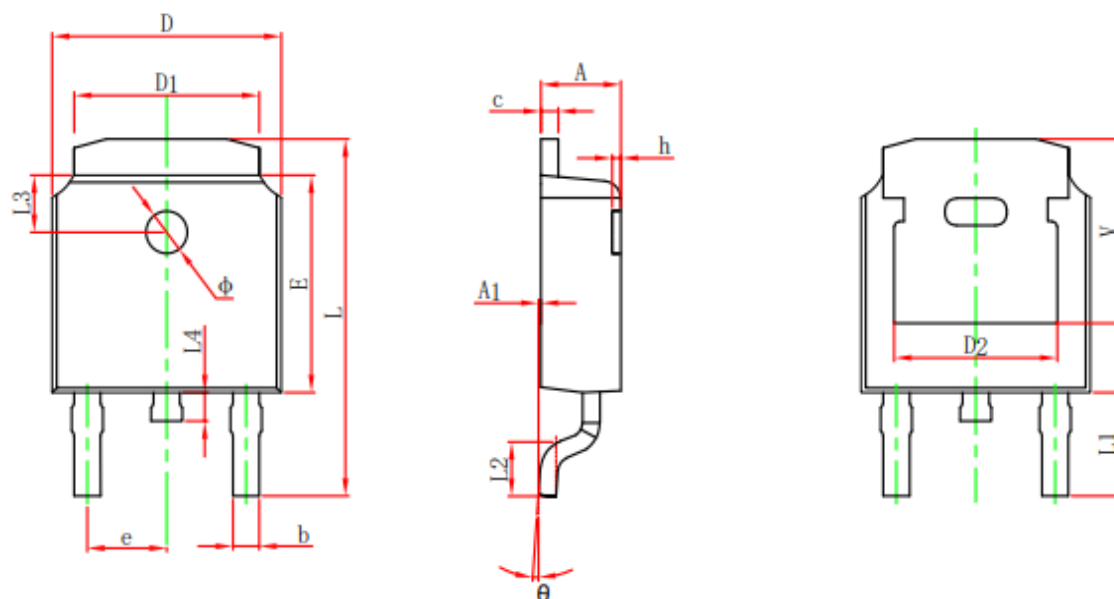


Fig6. Typical Capacitance Vs. Drain-Source Voltage

TO-252 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	0.635	0.770	0.025	0.030
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	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
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	5.250 REF.		0.207 REF.	

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