Features

- 100% EAS Guaranteed
- Low $R_{DS(ON)}$
- Low Gate Charge
- RoHs and Halogen-Free Compliant

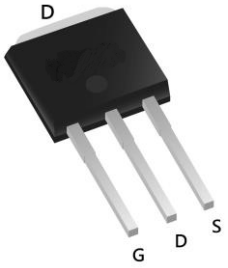
Description

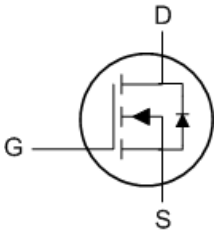
The D75N10N is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the Synchronous Rectification for AC/DC Quick Charger.

Product Summary

BVDSS	RDSON	ID
100V	8.5mΩ	75A

TO-251 Pin Configuration





Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current[1]	75	A
I_D@T_C=70℃	Continuous Drain Current[1]	46	A
I_{DM}	Pulsed Drain Current[2]	290	A
EAS	Single Pulse Avalanche Energy[3]	61	mJ
I_{AS}	Avalanche Current	35	A
P_D@T_C=25℃	Total Power Dissipation[4]	108	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 [1](t≦10s)	---	25	℃/W
	Thermal Resistance Junction-Ambient [1]	---	55	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	1.15	℃/W

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	100	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=13.5A	---	6.6	8.5	mΩ
	Static Drain-Source On-Resistance[2]	V_{GS}=4.5V , I_D=11.5A	---	8.7	11	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.2	---	2.3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=80V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=80V , V_{GS}=0V , T_J=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V , I_D=20A	---	85	---	S
Qg	Total Gate Charge (10V)	V_{DS}=50V , V_{GS}=10V , I_D=13.5A	---	45	---	nC
Qg	Total Gate Charge (4.5V)		---	19.3	---	
Qgs	Gate-Source Charge		---	9.5	---	
Qgd	Gate-Drain Charge		---	4.8	---	
Td(on)	Turn-On Delay Time	V_{DD}=50V , V_{GS}=10V , R_G=3Ω, I_D=13.5A	---	10	---	ns
Tr	Rise Time		---	6.5	---	
Td(off)	Turn-Off Delay Time		---	45	---	
Tf	Fall Time		---	7.5	---	
Ciss	Input Capacitance	V_{DS}=50V , V_{GS}=0V , f=1MHz	---	3320	---	pF
Coss	Output Capacitance		---	605	---	
Crss	Reverse Transfer Capacitance		---	20	---	
Diode Characteristics						
I_S	Continuous Source Current[1,5,]	V_G=V_D=0V , Force Current	---	---	48	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.1	V
t_{rr}	Reverse Recovery Time	I_F=13.5A , di/dt=100A/μs , T_J=25℃	---	33	---	nS
Q_{rr}	Reverse Recovery Charge		---	150	---	nC

Note :
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3.The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.3mH,I_{AS}=35A
4.The power dissipation is limited by 150℃ junction temperature
5.The data is theoretically the same as I_D and I_S , in real applications , should be limited by total power dissipation.

Typical Characteristics

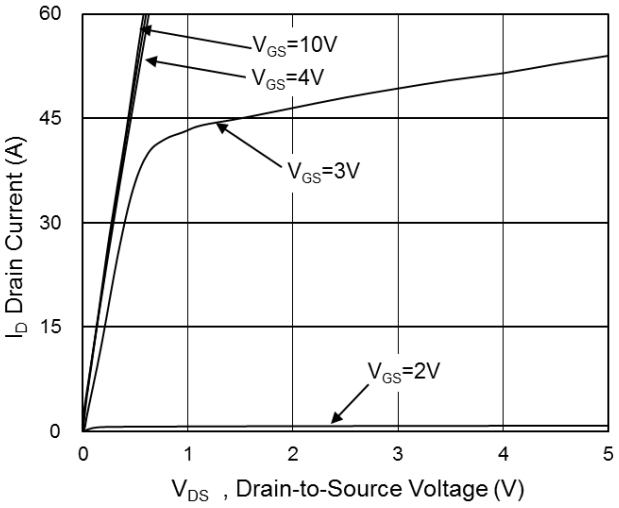


Fig.1 Typical Output Characteristics

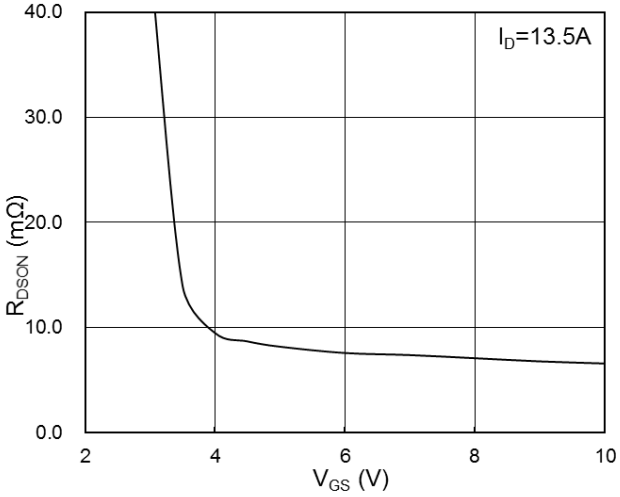


Fig.2 On-Resistance vs G-S Voltage

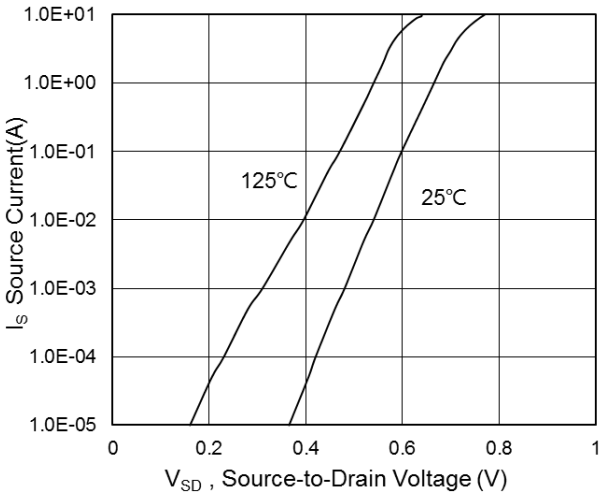


Fig.3 Source-Drain Forward Characteristics

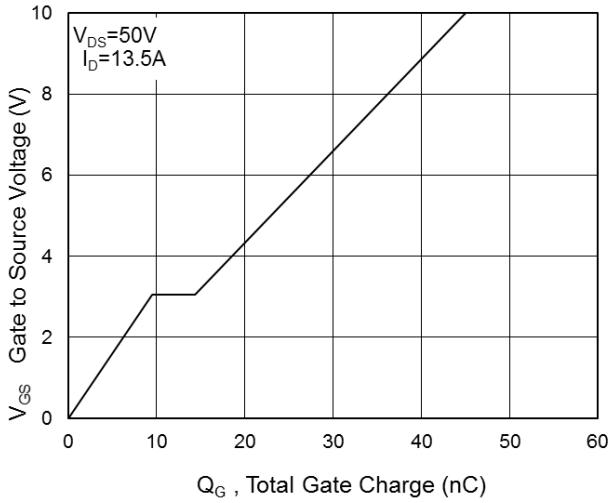


Fig.4 Gate-Charge Characteristics

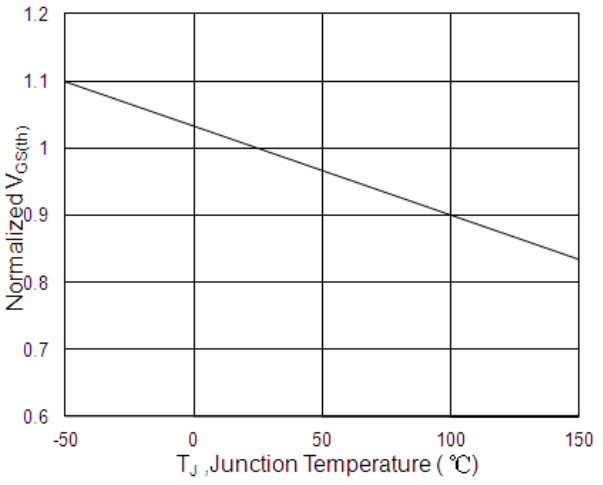


Fig.5 Normalized $V_{GS(th)}$ vs T_J

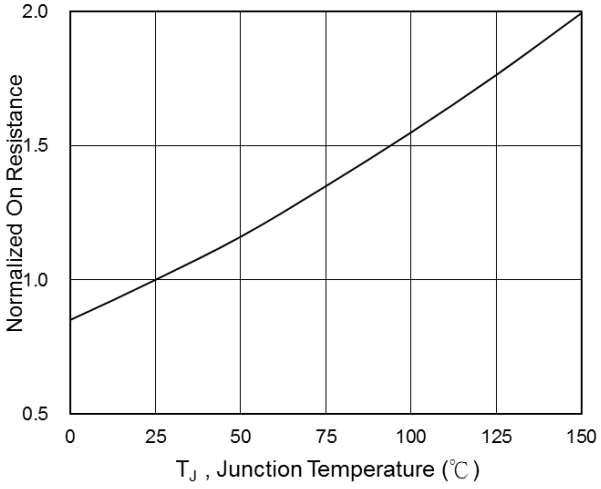


Fig.6 Normalized R_{DSON} vs T_J

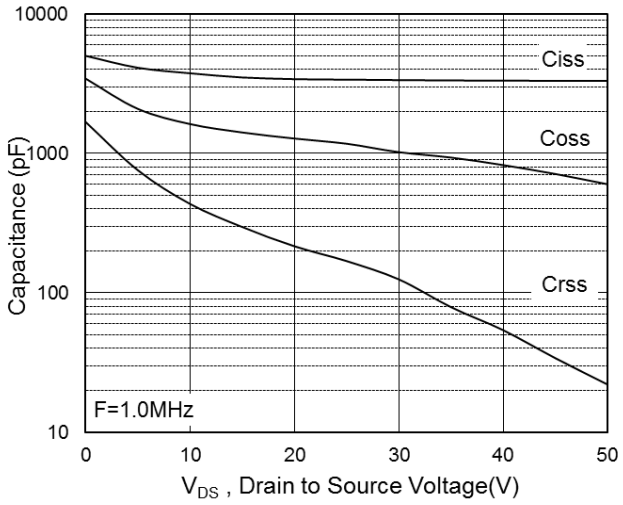


Fig.7 Capacitance

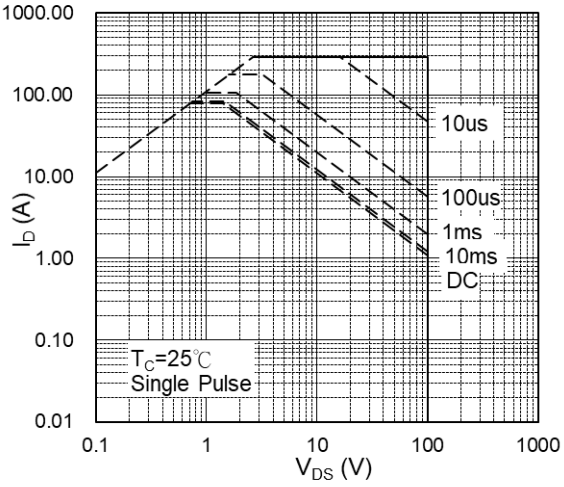


Fig.8 Safe Operating Area

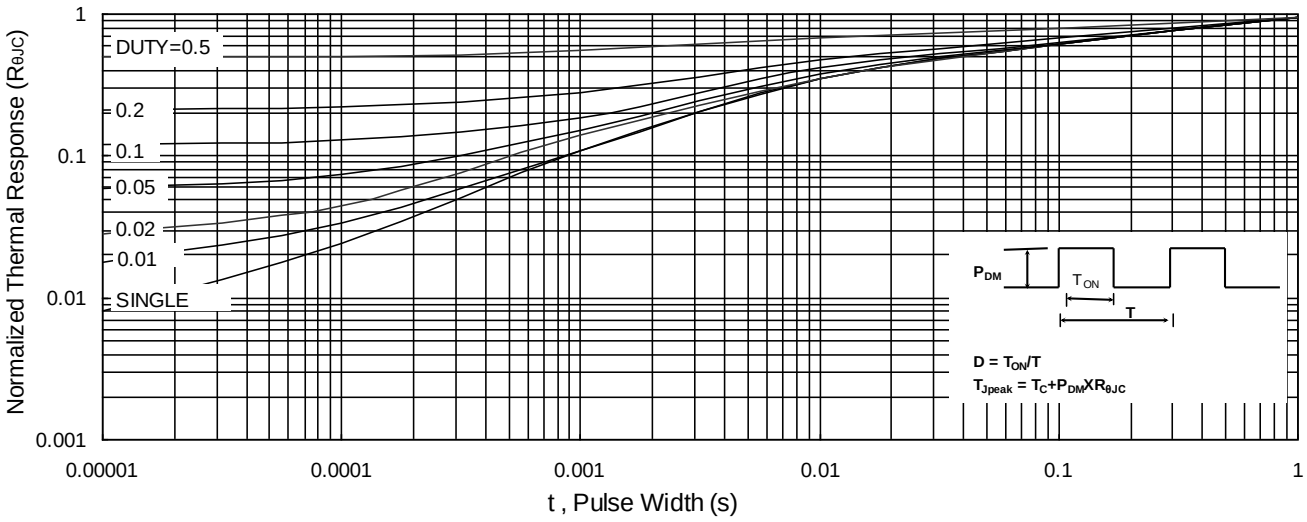


Fig.9 Normalized Maximum Transient Thermal Impedance

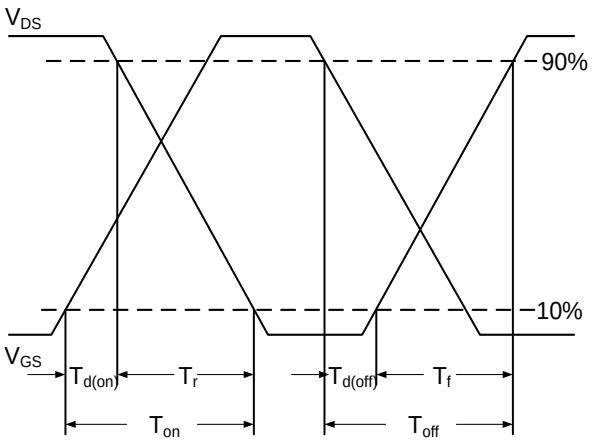


Fig.10 Switching Time Waveform

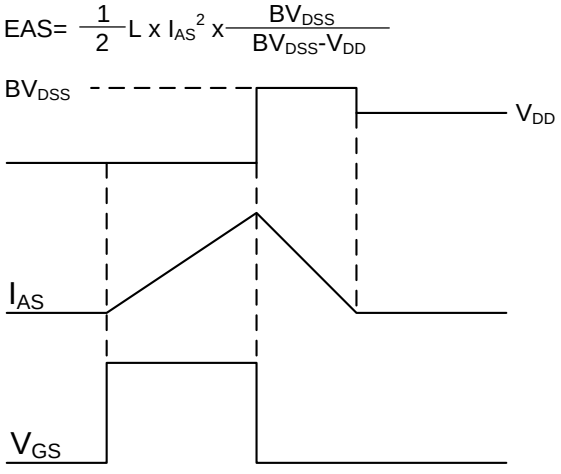
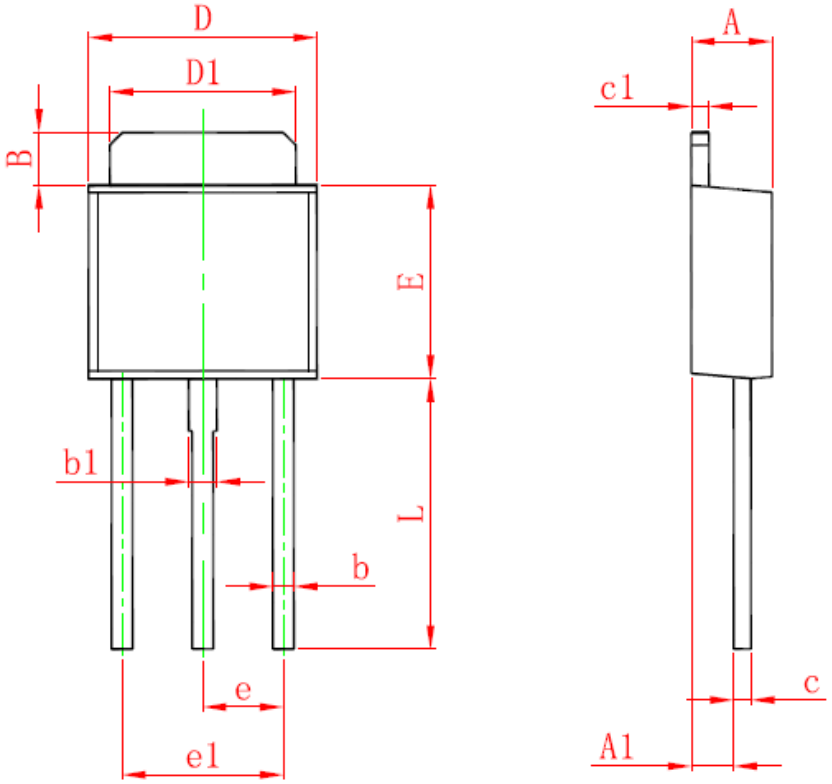


Fig.11 Unclamped Inductive Switching Waveform

TO-251 Package Outline



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.20	2.40	0.087	0.094
A1	0.95	1.35	0.037	0.054
B	0.85	1.65	0.033	0.065
b	0.50	0.90	0.020	0.035
b1	0.60	1.10	0.023	0.043
c	0.43	0.61	0.017	0.024
c1	0.43	0.85	0.017	0.033
D	6.35	6.73	0.250	0.265
D1	5.2	5.46	0.205	0.215
E	5.4	6.22	0.213	0.245
e	2.30 BSC		0.091 BSC	
e1	4.50	4.70	0.177	0.185
L	7.50	9.65	0.295	0.380

Friendship Reminder

■ JiNan JingHeng（hereinafter referred to as JH） reserves the right to make changes to this document and its products and specifications at anytime without notice.

■ Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.

■ JH makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does JH assume any liability for application assistance or customer product design.

■ JH does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application.

■ No license is granted by implication or otherwise under any intellectual property rights of JH.

■ JH's products are not authorized for use as critical components in life support devices or systems without express written approval of JH.