SEMICONDUCTOR

D150N15

152A 150V N-Channel Enhancement Mode Power MOSFET

FEATURES

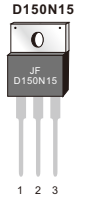
- N-Channel,Low $R_{DS(on)}$@V_{GS}=10V
- 10V Logic Level Control
- 100% UIS Tested
- Green Device Available

Product Summary			
V_{DS}	$R_{DS(on)}$ (mΩ) Typ	I_D (A)	Qg (Typ)
150V	6.4 @ 10V	152	93nc

MECHANICAL DATA

- Case:TO-220 Package
- Terminals:Plated solderable per MIL-STD-750,method 2026
- Mounting Position: Any

TO-220



APPLICATIONS

- Quick Charger
- Load Switch
- Industrial power supplies
- Telecom Power

ORDERING INFORMATION

Part No.	Package Type	Package	Quality(box)
D150N15	TO-220	Tube	1000

Block Diagram

Pin Definition:

1. Gate
2. Drain
3. Source

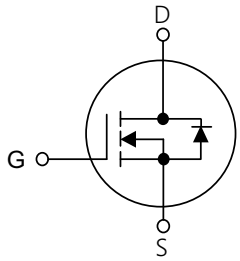


Table1 Absolute Maximum Ratings (T_C=25°C, unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	TC=25°C	I_D	152	A
	TC=70°C		121	
Pulsed Drain Current TC=25℃, Single pulse,tp≤10μS (Note 1)		I_{DM}	450	A
Single Pulse Avalanche Energy(Note 2)		E_{AS}	675	mJ
Maximum Power Dissipation @TA=25℃		P_D	375	W
Junction and Storge Temperature Range		T_J/T_{STG}	-50~+150	°C

Table 2.Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance Junction to Case	$R_{\theta JC}$	0.40	°C/W

Table 3. Electrical Characteristics (T_J=25°C, unless otherwise specified)

Parameter		Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V,I_D=250μA	150	-	-	V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=150V,V_{GS}=0V	-	-	1	μA
Gate- Source Leakage Current	Forward	I_{GSS}	V_{GS}=20V,V_{DS}=0V	-	-	100	nA
	Reverse		V_{GS}=-20V,V_{DS}=0V	-	-	-100	nA
On Characteristics(Note 4)							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250μA	2.0	3.0	4.5	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V,I_D=80A	-	6.4	7.5	mΩ
			V_{GS}=6V,I_D=20A	-	7.2	10	mΩ
Dynamic Characteristics(Note 5)							
Input Capacitance		C_{ISS}	V_{DS}=75V,V_{GS}=0V,f=1MHz	-	8500	-	pF
Output Capacitance		C_{OSS}		-	531	-	pF
Reverse Transfer Capacitance		C_{RSS}		-	3.9	-	pF
Switching Characteristics (Note 5)							
Turn-On Delay Time		td(on)	V_{DS}=75V,I_D=10A, V_{GS}=10V,R_G=2Ω	-	18.6	-	ns
Turn-On Rise Time		t_R		-	21.5	-	ns
Turn-Off Delay Time		td(off)		-	78	-	ns
Turn-Off Fall Time		tf		-	18	-	ns
Gate Resistance		Rg	f=1MHZ	-	2.2	-	Ω
Total Gate Charge		Q_G	V_{DS}=75V,I_D=50A, V_{GS}=10V	-	93	-	nC
Gate-Source Charge		Q_{GS}		-	19.5	-	nC
Gate-Drain Charge		Q_{GD}		-	18	-	nC
Drain-Source Diode Characteristics and Maximum Ratings							
Drain-Source Diode Forward Voltage		V_{SD}	V_{GS}=0V, I_S=80A	-	0.93	1.2	V
Maximum Continuous Drain-Source Diode Forward Current		I_S		-	-	152	A

Notes : 1 Repetitive Rating:Pulse width limited by maximum junction temperature
2 L=0.5mH, I_{AS}=50A,R_G=25Ω,V_{GS}=10V,Starting T_J=25°C
4 Pulse Test: Pulse width ≤300μS,Duty cycle≤2%
5 Guaranteed by design,not subject to production

Typical Characteristics Diagrams

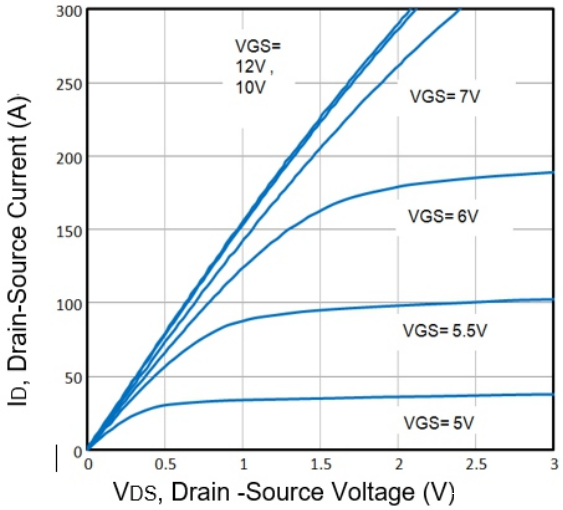


Fig1. Typical Output Characteristics

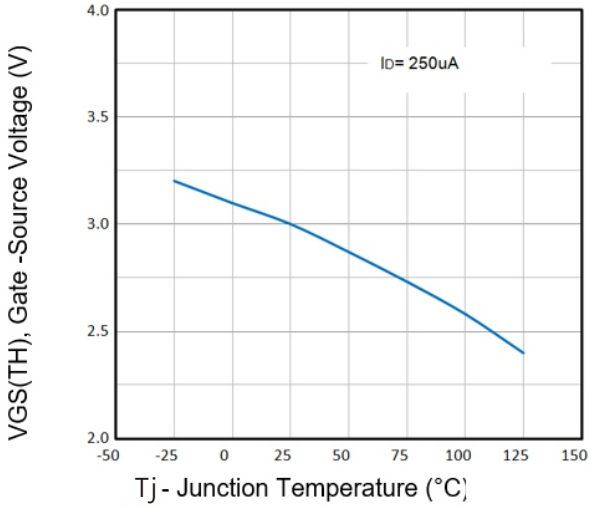


Fig2. VGS(TH) Voltage Vs. Temperature

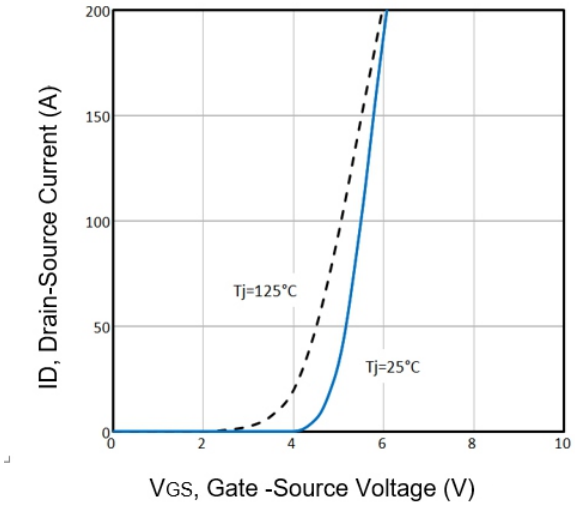


Fig3. Typical Transfer Characteristics

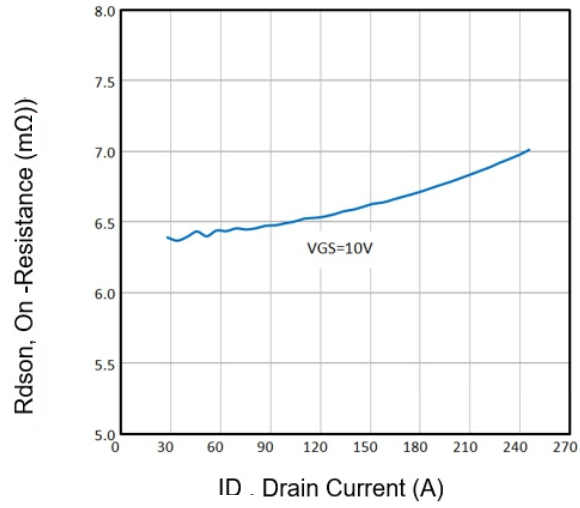


Fig4. On-Resistance vs. Drain Current and Gate Voltage

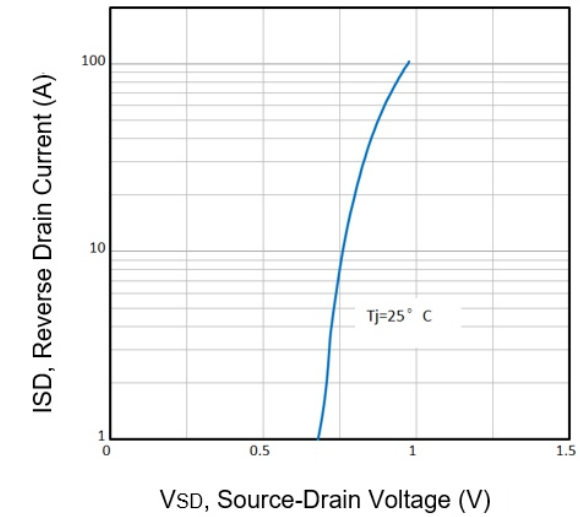


Fig5. Typical Source-Drain Diode Forward Voltage

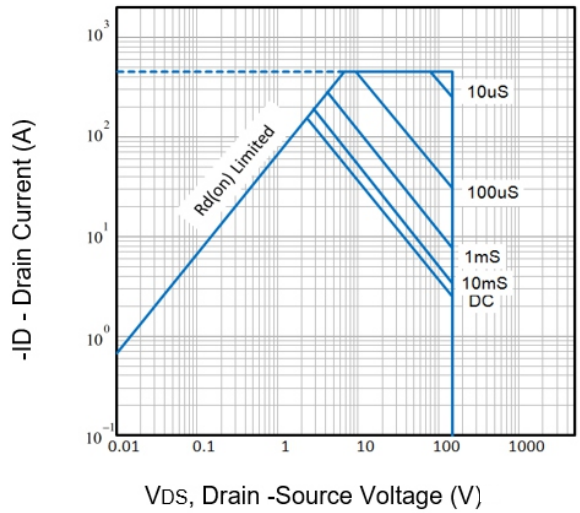


Fig6. Maximum Safe Operating Area

Typical Characteristics Diagrams

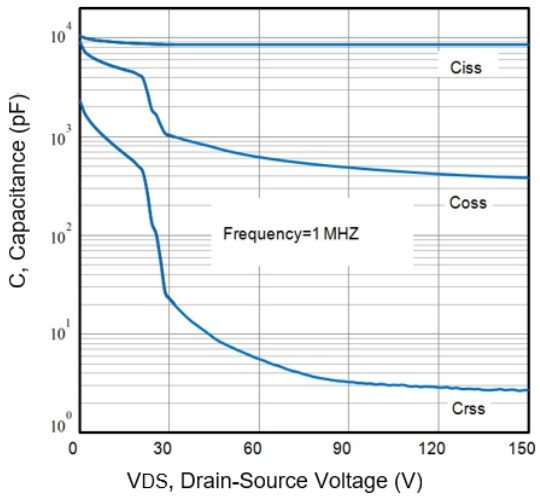


Fig7. Typical Capacitance Vs. Drain-Source Voltage

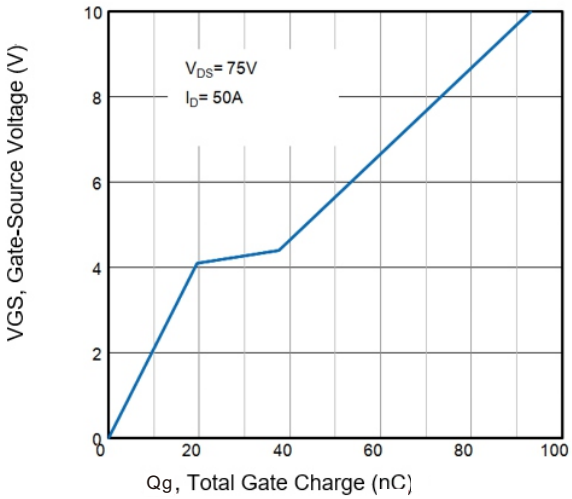


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

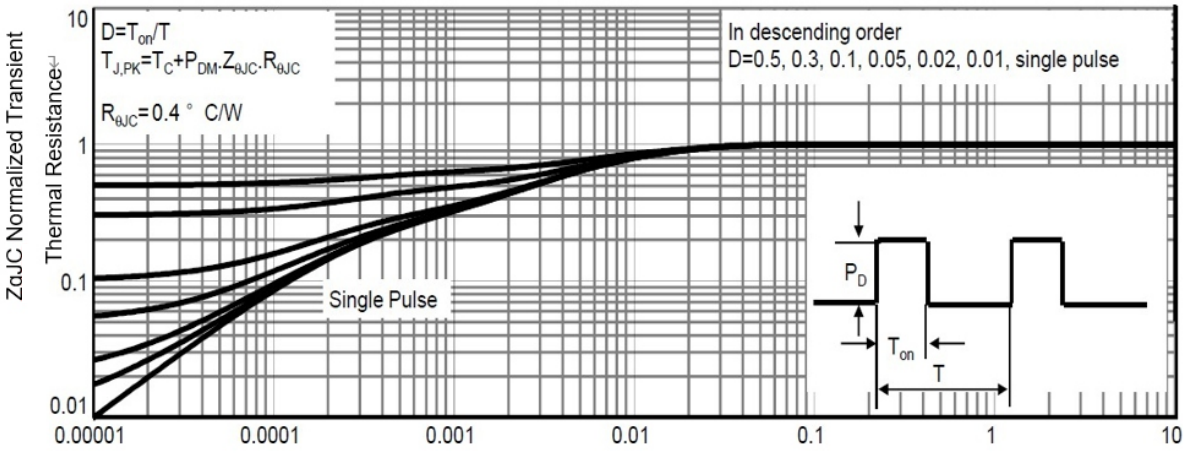


Fig9. Normalized Maximum Transient Thermal Impedance

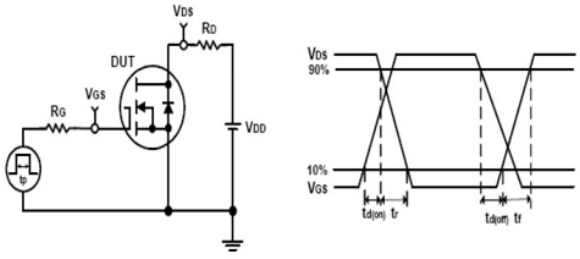


Fig10. Switching Time Test Circuit and waveforms

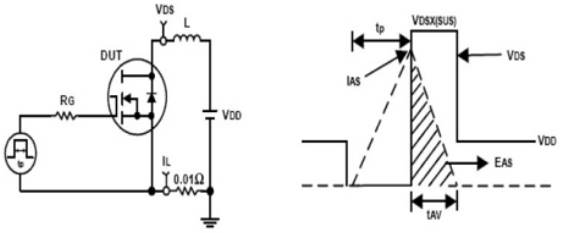
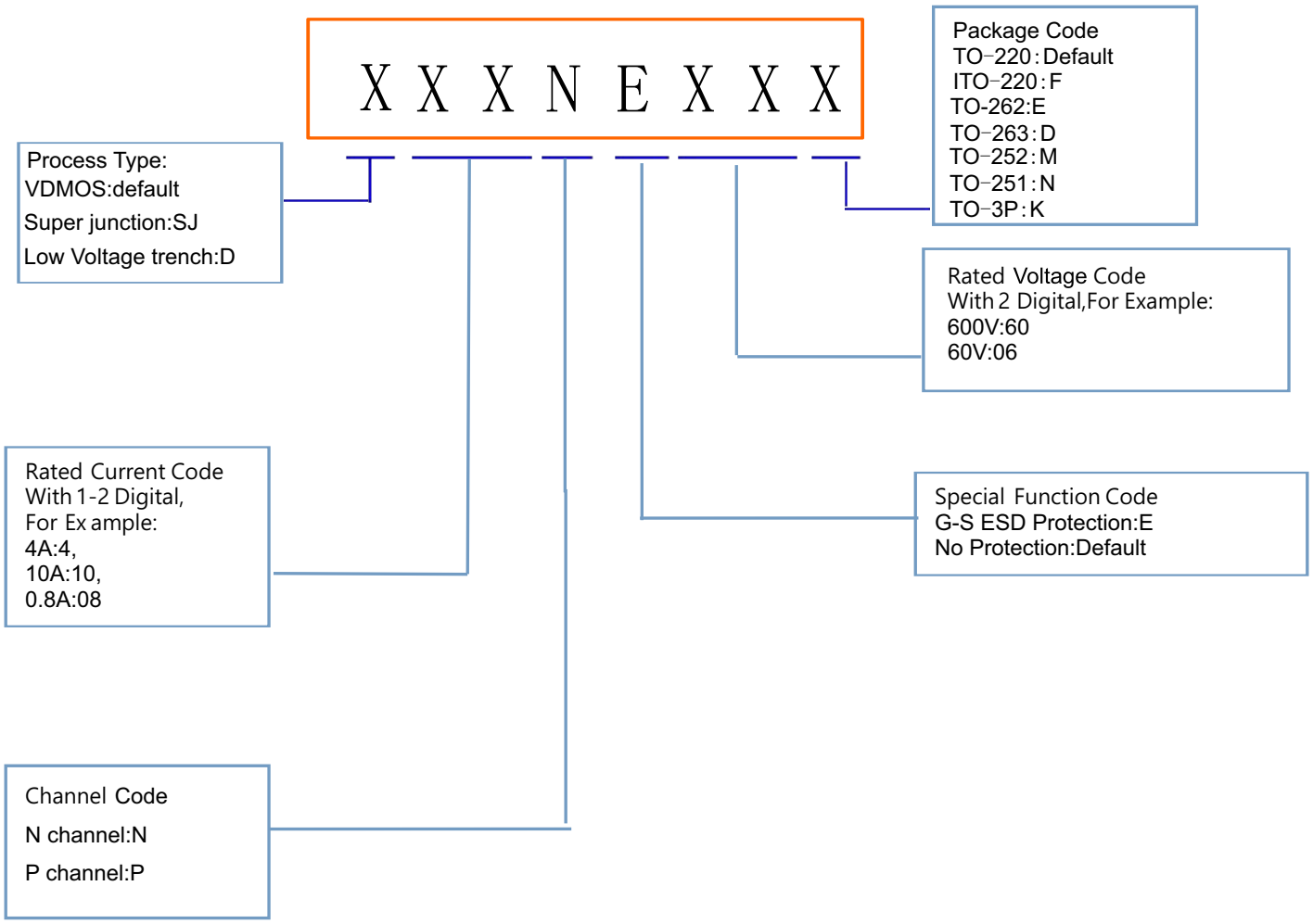


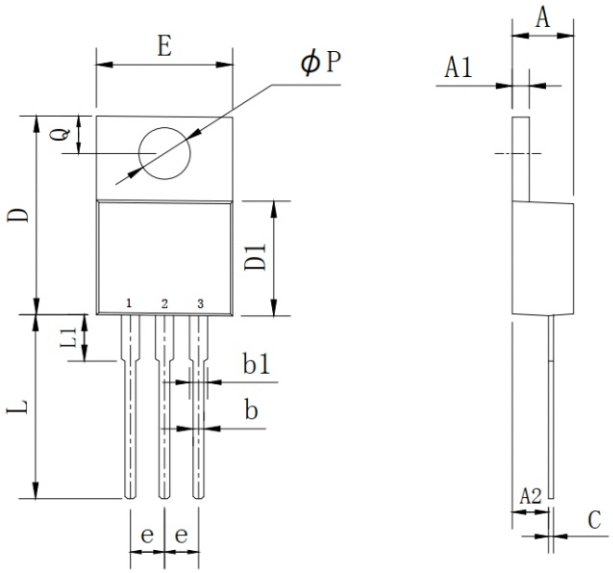
Fig11. Unclamped Inductive Test Circuit and waveforms

Product Names Rules



Dimensions

TO-220 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	4.25	4.87	0.167	0.192
A1	1.07	1.47	0.042	0.058
A2	2.03	2.92	0.080	0.115
b	0.51	1.11	0.020	0.044
b1	0.97	1.6	0.038	0.063
C	0.3	0.7	0.012	0.028
D	14.6	15.9	0.575	0.626
D1	8.04	9.3	0.317	0.366
E	9.57	10.57	0.377	0.416
e	2.34	2.74	0.092	0.108
L	12.58	14.3	0.495	0.563
L1	2.8	4.2	0.110	0.165
P	3.4	4.14	0.134	0.163
Q	2.45	3	0.096	0.118

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