

Description

The SXJ7N65D protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events. They feature large cross-sectional area junctions for conducting high transient currents, offer desirable electrical characteristics for board level protection, such as fast response time, low operating voltage. It gives designer the flexibility to protect one bi-directional line in applications where arrays are not practical.

General Features

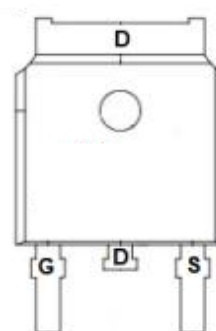
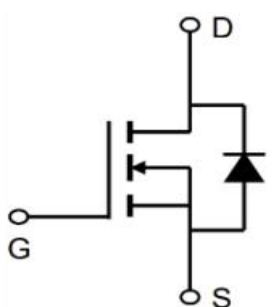
$V_{DS} = 650V$ (Type: 700V) $IDM = 7A$

$R_{DS(ON)} < 1100m\Omega$ @ $V_{GS}=10V$

Application

Uninterruptible Power Supply(UPS)

Power Factor Correction (PFC)



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

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-Source Voltage ($V_{GS} = 0V$)	600	V
I_D	Continuous Drain Current	4	A
IDM	Pulsed Drain Current (note1)	7	A
V_{GS}	Gate-Source Voltage	± 30	V
E_{AS}	Single Pulse Avalanche Energy (note2)	30	mJ
P_D	Power Dissipation ($T_c = 25^{\circ}C$)	28.5	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	$-55 \sim +150$	$^{\circ}C$
R_{thJC}	Thermal Resistance, Junction-to-Case	4.4	$^{\circ}C/W$
R_{thJA}	Thermal Resistance, Junction-to-Ambient	62	$^{\circ}C/W$

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
BVDSS	Drain to source breakdown voltage	V _{GS} =0V, I _D =250uA	650	--	--	V
ΔBV _{DSS} / ΔT _J	Breakdown voltage temperature coefficient	I _D =250uA, referenced to 25°C	--	0.7	--	V/°C
IDSS	Drain to source leakage current	V _{DS} =650V, V _{GS} =0V	--	--	1	uA
		V _{DS} =520V, T _C =125°C	--	--	10	uA
IGSS	Gate to source leakage current, forward	V _{GS} =30V, V _{DS} =0V	--	--	100	nA
	Gate to source leakage current, reverse	V _{GS} =-30V, V _{DS} =0V	--	--	-100	nA
VGS(TH)	Gate threshold voltage	V _{DS} =V _{GS} , I _D =250uA	2.5	3.5	4.5	V
RDS(ON)	Drain to source on state resistance	V _{GS} =10V, I _D =2A	--	1.0	1.2	Ω
Gfs	Forward Transconductance	V _{DS} =10V, I _D =2A	--	3.4	--	S
Ciss	Input capacitance	V _{GS} =0V V _{DS} =100V f=1MHz	--	246	--	pF
Coss	Output capacitance		--	12	--	
Crss	Reverse transfer capacitance		--	0.6	--	
td(on)	Turn on delay time	V _{DS} =325V I _D =4A R _G =25Ω, V _{GS} =10V	--	11.6	--	ns
tr	Rising time		--	10.5	--	
td(off)	Turn off delay time		--	36	--	
tf	Fall time		--	8.4	--	
Qg	Total gate charge	V _{DS} =325V, V _{GS} =10V, I _D =4A	--	6.48	--	nC
Qgs	Gate-source charge		--	1.42	--	
Qgd	Gate-drain charge		--	2.78	--	
Rg	Gate Resistance	V _{DS} =0V, Scan F mode	--	18	--	Ω
IS	Continuous source current	Integral reverse p-n Junction diode in the MOSFET	--	--	4	A
ISM	Pulsed source current		--	--	12	A
VSD	Diode forward voltage drop.	I _S =4A, V _{GS} =0V	--	0.9	1.3	V
Trr	Reverse recovery time	I _S =4A, V _{GS} =0V, dI _F /dt=100A/us	--	147	--	ns
Qrr	Reverse recovery Charge		--	0.96	--	uC

Note :

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2、The EAS data shows Max. rating : L=0.5mH, I_{AS}=2A, V_{DD}=50V, R_G=25Ω
- 3、The test condition is Pulse Test: I_{SD} ≤ I_D, di/dt = 100A/us, V_{DD} ≤ BVDSS, Starting at T_J=25°C
- 4、The power dissipation is limited by 150°C junction temperature
- 5、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

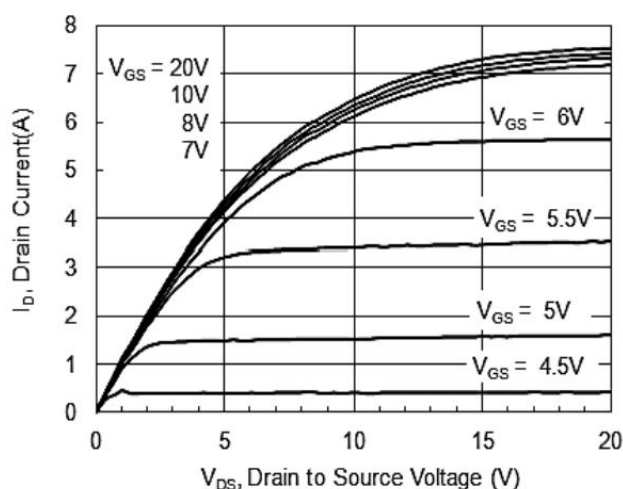


Figure1. Typical Output Characteristics

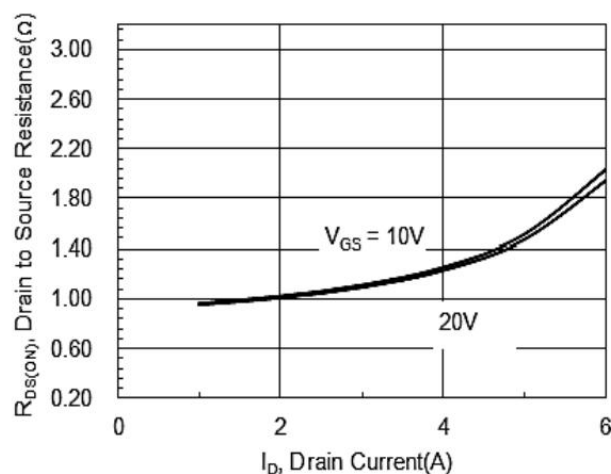


Figure2. Drain-source on-state resistance

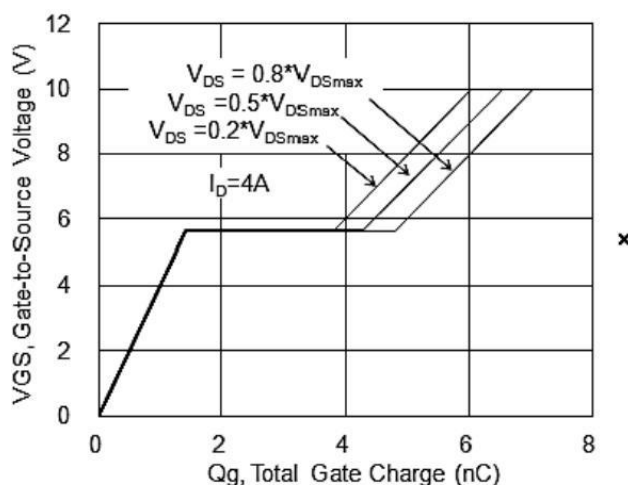


Figure3. Gate charge characteristics

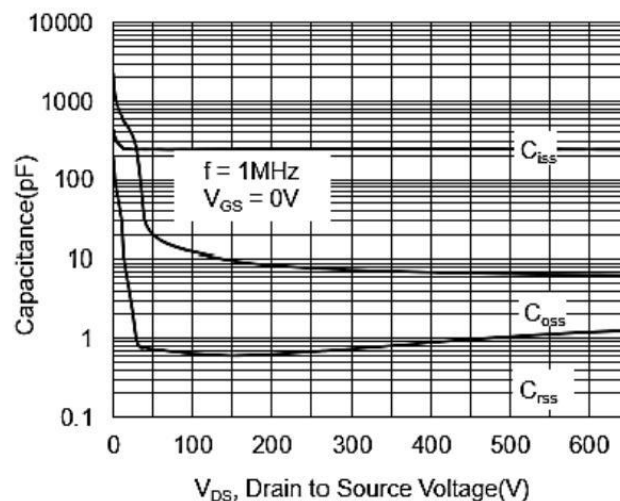


Figure4. Capacitance Characteristics

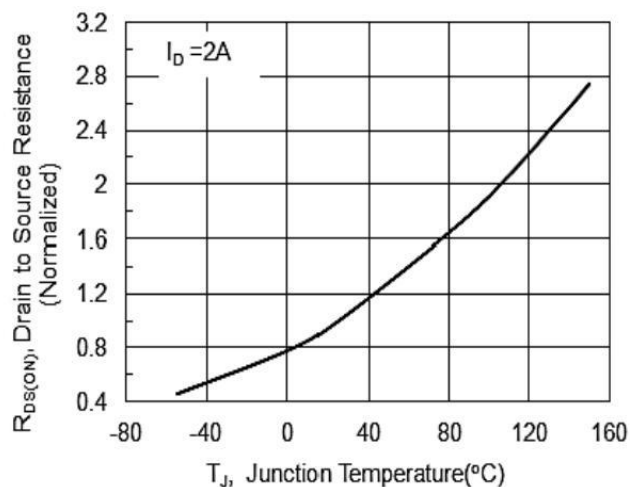


Figure5. $R_{DS(ON)}$ vs junction temperature

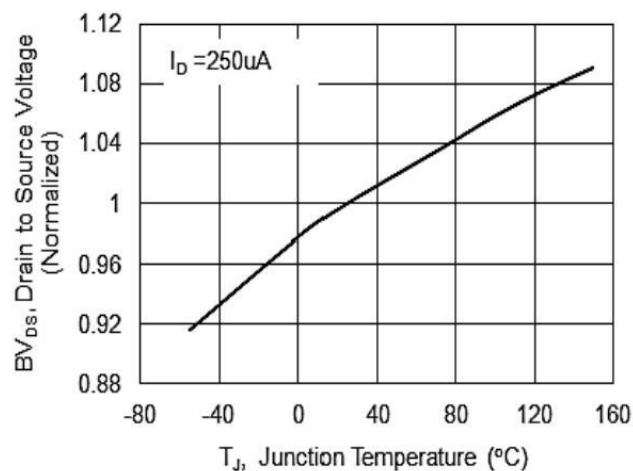


Figure6. BV_{DSS} vs junction temperature

Typical Characteristics

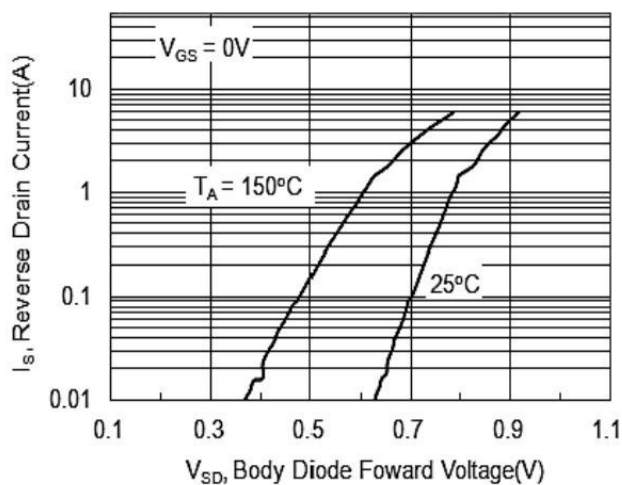


Figure7.Forward characteristics of reverse diode

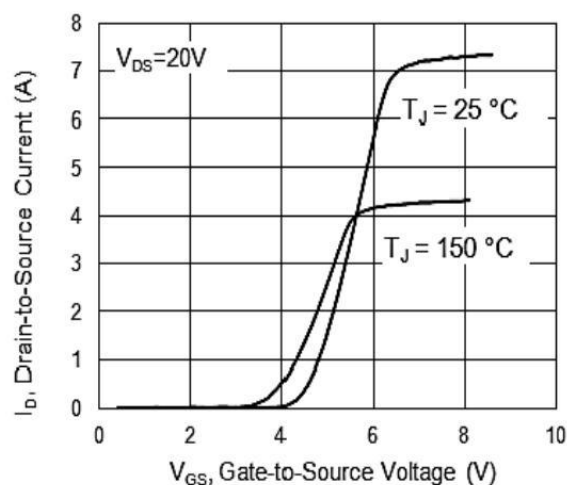


Figure8.Transfer characteristics

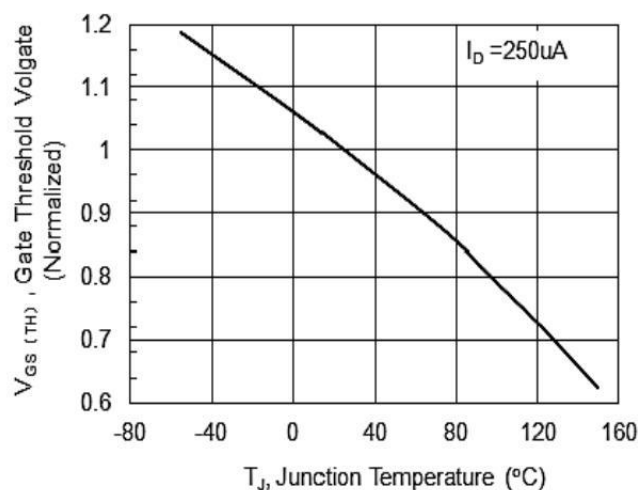


Figure9.VGS(TH) vs junction temperature

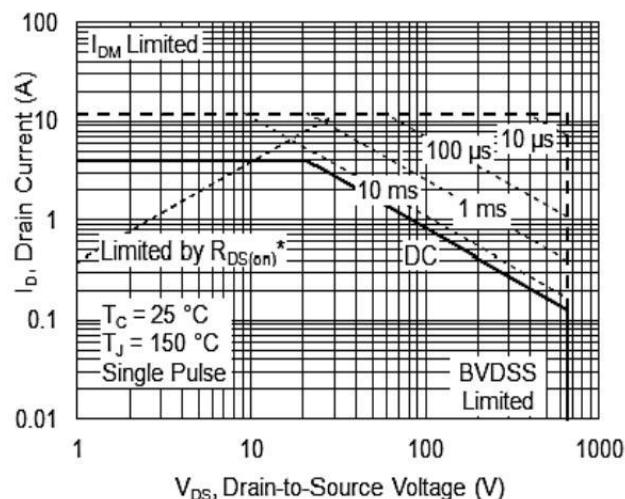


Figure10. Safe operating area

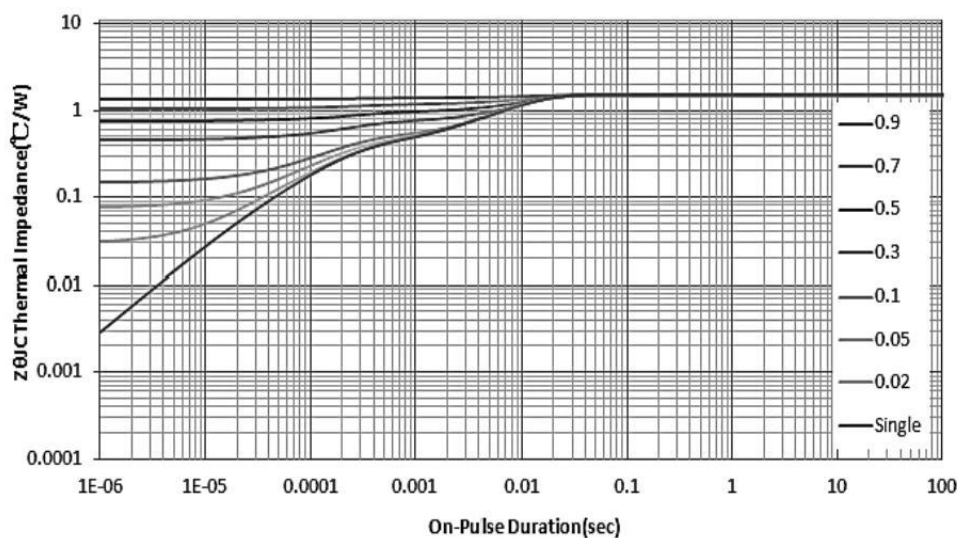
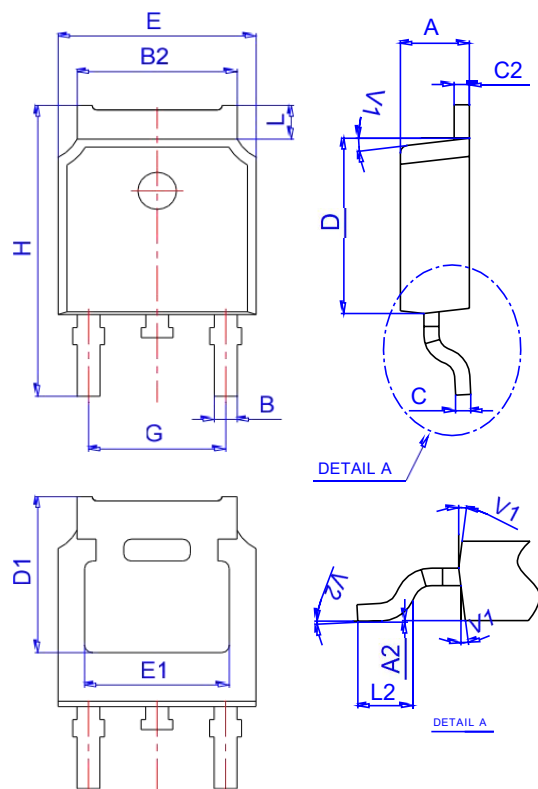


Figure11.Transient thermal impedance

Package Mechanical Data: TO-252-3L



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	TO-252-3L		2500