



100V N-Channel SGT Power MOSFET

General Description

The SJZ020N10 uses SGT technology to provide excellent $R_{ds(on)}$, low gate charge and fast switching characteristics. This device is suitable for use as a wide variety of applications.

Features

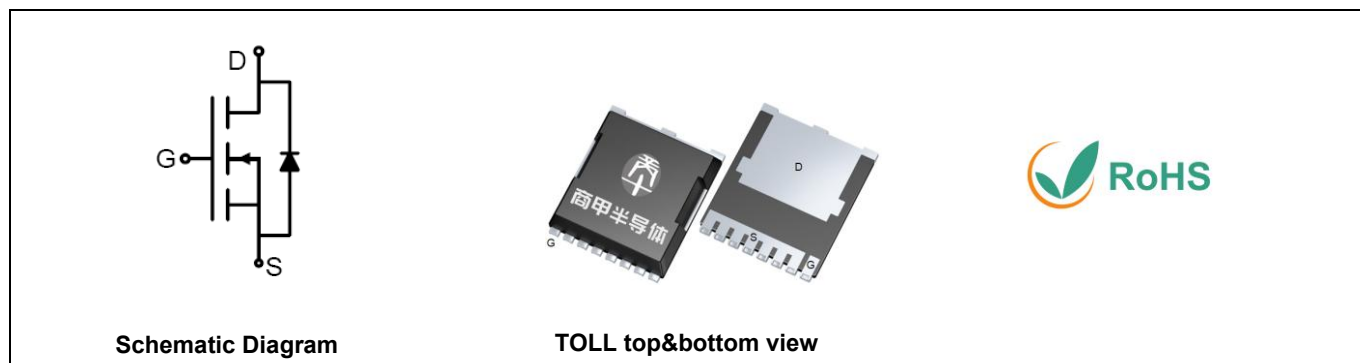
- Low Gate Charge
- 100% UIS Tested, 100% DVDS Tested
- High Power and current handling capability
- Lead free product is acquired

Application

- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Key Performance Parametes

Parameter	Value	Unit
V_{DS}	100	V
$R_{DS(ON_TYP)}$	2	$m\Omega$
I_D	240	A
Q_G	173	nC



Package Marking and Ordering Information

Device/Ordering Code	Marking	Package	Packing	Reel Size	Tape width	Quantity
SJZ020N10	SJZ020N10	TOLL	Tape	\	\	2000 Pcs

Table 1. Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage ($V_{GS}=0V$)	100	V
V_{GS}	Gate-Source Voltage ($V_{DS}=0V$)	± 20	V
I_D	Drain Current-Continuous($T_C=25^\circ\text{C}$)	240	A
	Drain Current-Continuous($T_C=100^\circ\text{C}$)	152	A
I_{DM} (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 1)	960	A
P_D	Maximum Power Dissipation($T_C=25^\circ\text{C}$)	245	W
	Maximum Power Dissipation($T_C=100^\circ\text{C}$)	98	W
E_{AS}	Avalanche energy (Note 2)	2304	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ\text{C}$

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case		0.51	$^\circ\text{C/W}$



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Table 3. Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ\text{C}$			1	μA
		$V_{DS}=100V, V_{GS}=0V, T_J=125^\circ\text{C}$			100	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2		4	V
g_{FS}	Forward Transconductance	$V_{DS}=10V, I_D=20A$		60		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=20A, T_J=25^\circ\text{C}$		2	2.6	m Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=50V, V_{GS}=0V, f=1.0\text{MHz}$		11900		pF
C_{oss}	Output Capacitance			1530		pF
C_{rss}	Reverse Transfer Capacitance			50		pF
R_g	Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1.0\text{MHz}$		1.8		Ω
Switching Parameters						
$t_{d(on)}$	Turn-on Delay Time	$V_{GS}=10V, V_{DS}=50V, R_L=2.5\Omega, R_{GEN}=6\Omega$		25		nS
t_r	Turn-on Rise Time			42		nS
$t_{d(off)}$	Turn-Off Delay Time			102		nS
t_f	Turn-Off Fall Time			60		nS
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=50V, I_D=20A$		173		nC
Q_{gs}	Gate-Source Charge			46		nC
Q_{gd}	Gate-Drain Charge			47		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current (Body Diode)				240	A
V_{SD}	Forward on Voltage (Note 3)	$V_{GS}=0V, I_S=20A$			1.2	V
t_{rr}	Reverse Recovery Time	$I_F=20A, dI/dt=500A/\mu s$		90		ns
Q_{rr}	Reverse Recovery Charge	$I_F=20A, dI/dt=500A/\mu s$		220		nC

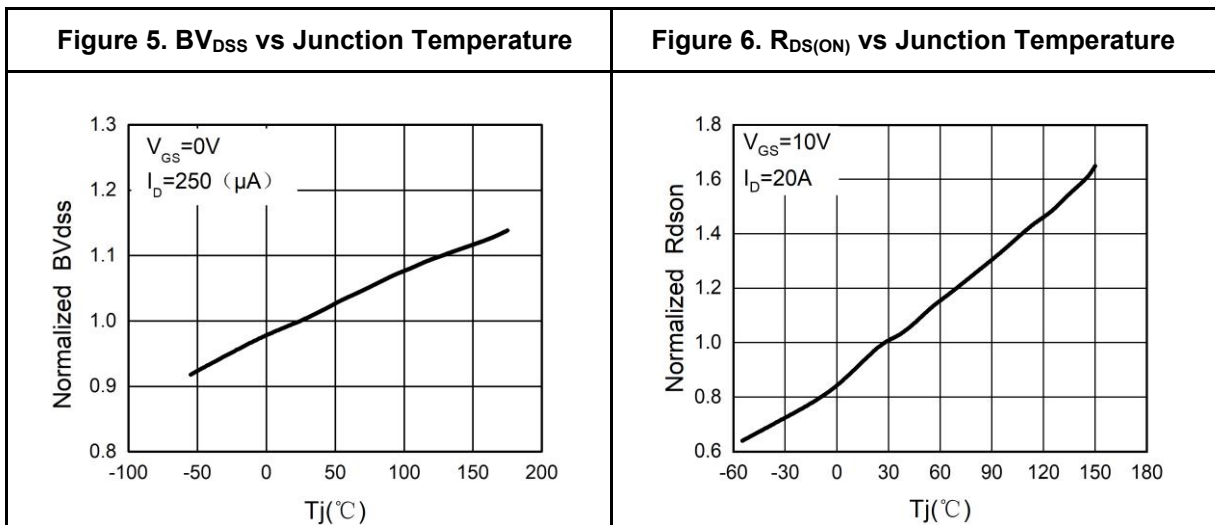
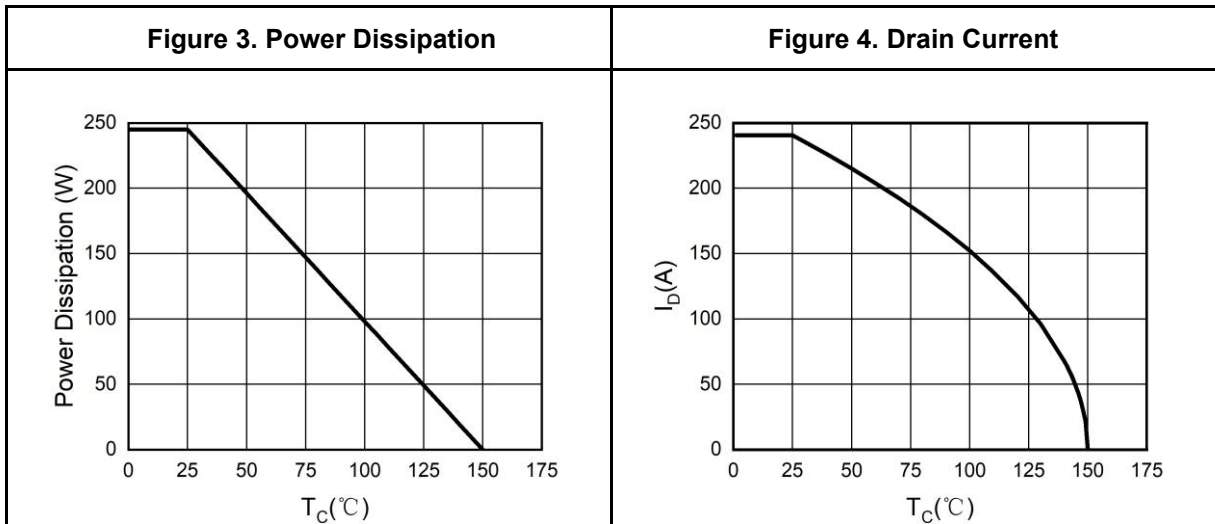
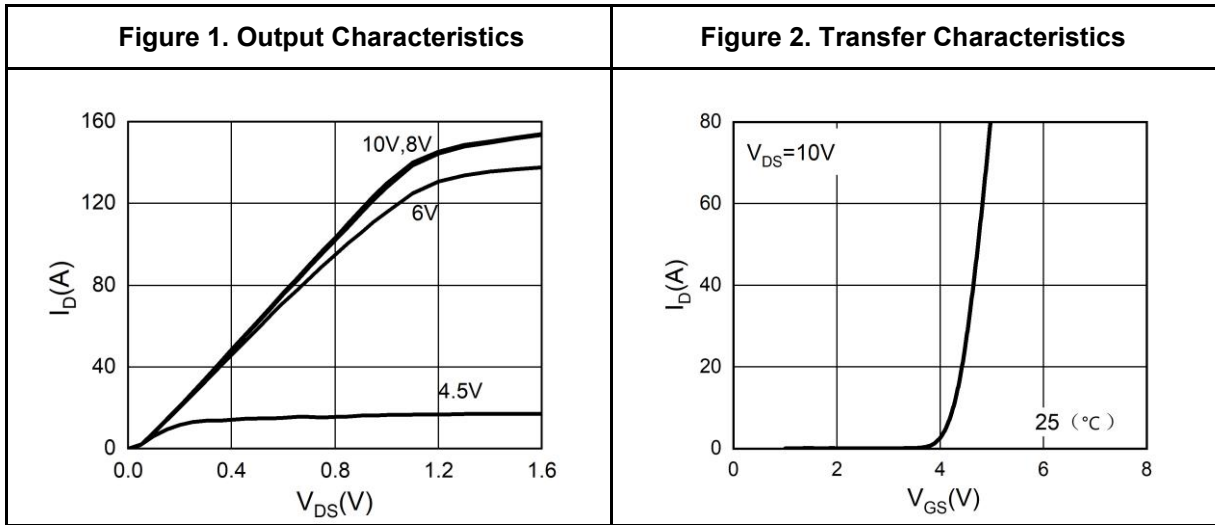
Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.

Notes 2.EAS condition: $T_J=25^\circ\text{C}, V_{DD}=50V, V_G=10V, R_g=25\Omega, L=0.5\text{mH}$.

Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

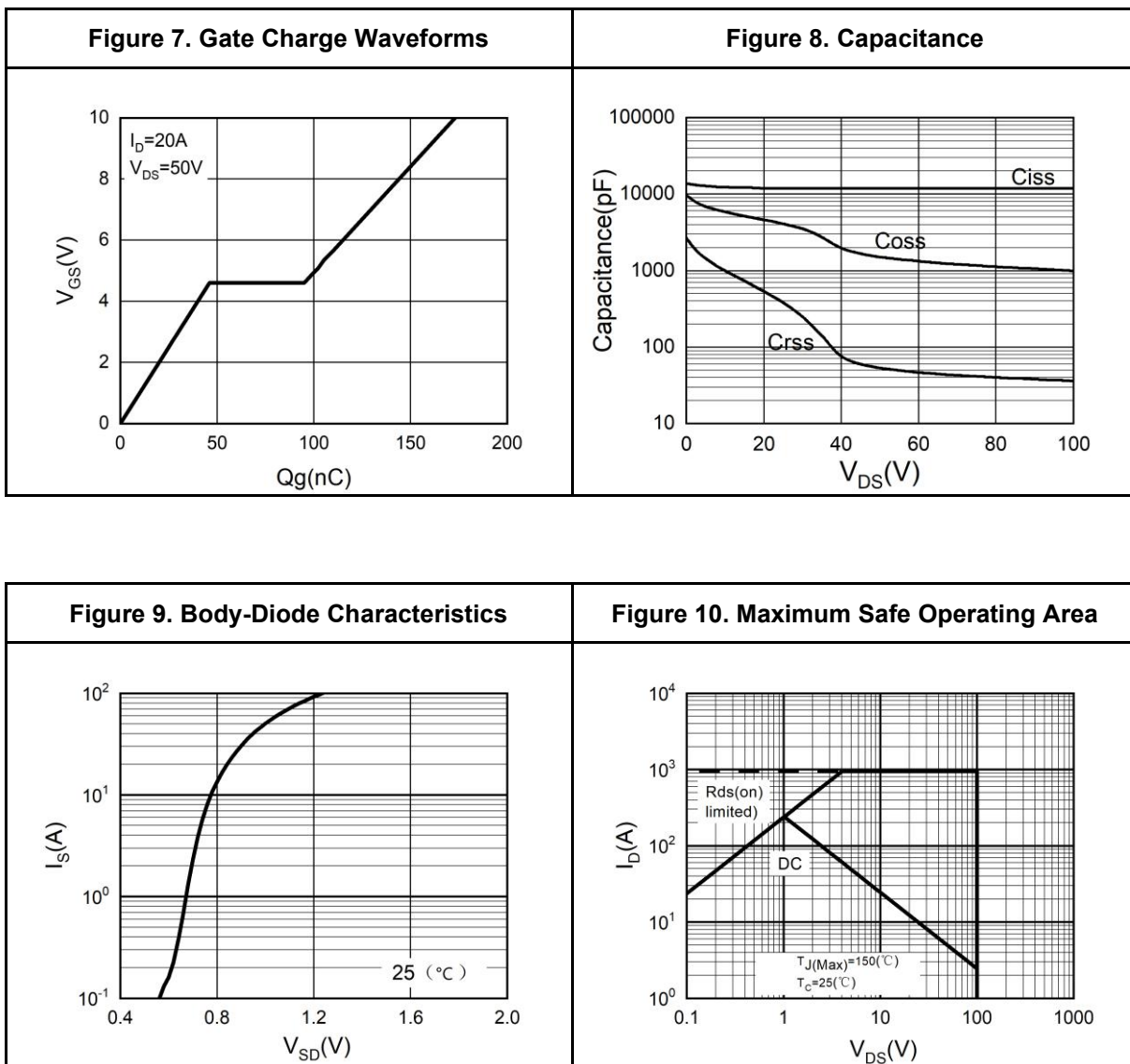


Typical Electrical And Thermal Characteristics (Curves)



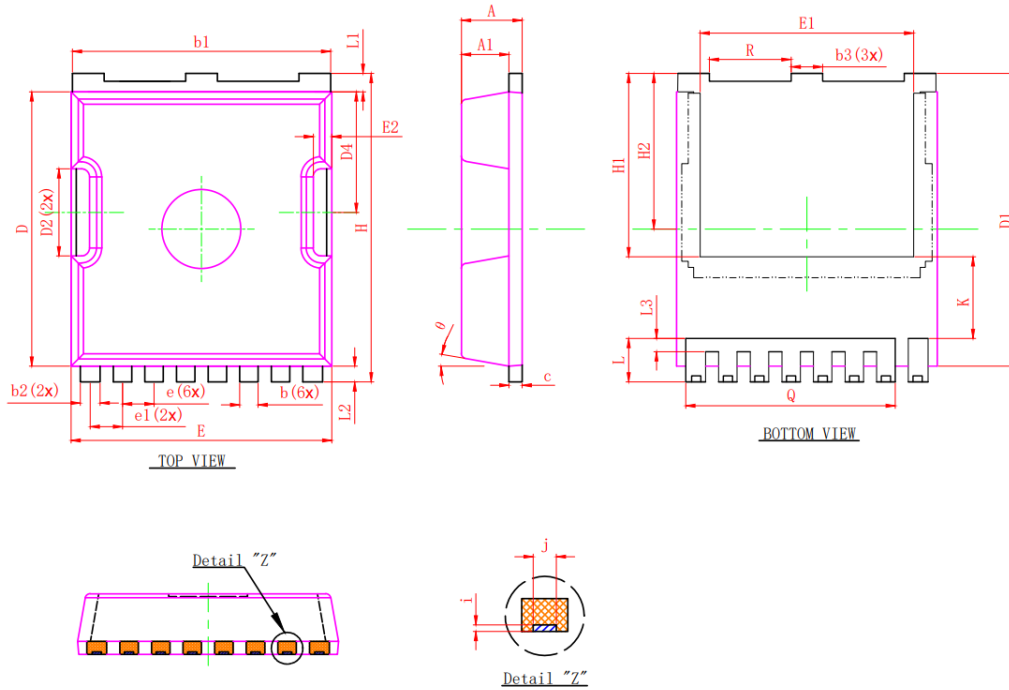


Typical Electrical And Thermal Characteristics (Curves)





TOLL Package Information



SYMBOL	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.200	2.300	2.400
A1	1.700	1.800	1.900
b	0.600	0.700	0.800
b1	9.700	9.800	9.900
b2	0.650	0.750	0.850
b3	1.100	1.200	1.300
c	0.400	0.500	0.600
D	10.300	10.400	10.500
D1	11.000	11.100	11.200
D2	3.200	3.300	3.400
D4	4.470	4.570	4.670
E	9.800	9.900	10.000
E1	8.000	8.100	8.200
E2	0.500	0.600	0.700
e	1.200 BSC		
e1	1.225 BSC		
H	11.600	11.700	11.800
H1	6.950 BSC		
H2	5.900 BSC		
i	0.100 REF.		
j	0.350 REF.		
K	3.100 REF.		
L	1.550	1.650	1.750
L1	0.600	0.700	0.800
L2	0.500	0.600	0.700
L3	0.400	0.500	0.600
Q	7.950 REF.		
R	3.000	3.100	3.200
θ	10° REF.		



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