



100V N-Channel SGT Power MOSFET

General Description

The SJF049N10 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 handing 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
$R_{DS(ON_TYP)}$	5	m Ω
I_D	128	A
Q_G	57	nC



Package Marking and Ordering Information

Device/Ordering Code	Marking	Package	Packing	Reel Size	Tape width	Quantity
SJF049N10	SJF049N10	TO-220F	Tube	\	\	1000 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($T_C=25^\circ\text{C}$)	128	A
	Drain Current-Continuous($T_C=100^\circ\text{C}$)	81	A
$I_{DM (pluse)}$	Drain Current-Continuous@ Current-Pulsed (Note 1)	512	A
P_D	Maximum Power Dissipation($T_C=25^\circ\text{C}$)	176	W
	Maximum Power Dissipation($T_C=100^\circ\text{C}$)	70	W
E_{AS}	Avalanche energy (Note 2)	650	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_{JC}	Thermal Resistance, Junction-to-Case		0.71	$^\circ\text{C/W}$



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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	$V_{DS}=10V, I_D=20A$		23		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=20A, T_J=25^\circ\text{C}$		5	6.5	m Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=50V, V_{GS}=0V, f=1.0\text{MHz}$		4020		pF
C_{oss}	Output Capacitance			604		pF
C_{rss}	Reverse Transfer Capacitance			24		pF
R_g	Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1.0\text{MHz}$		2.5		Ω
Switching Parameters						
$t_{d(on)}$	Turn-on Delay Time	$V_{GS}=10V, V_{DS}=50V, R_L=2.5\Omega, R_{GEN}=6\Omega$		40		nS
t_r	Turn-on Rise Time			28.5		nS
$t_{d(off)}$	Turn-Off Delay Time			61		nS
t_f	Turn-Off Fall Time			98		nS
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=50V, I_D=20A$		57		nC
Q_{gs}	Gate-Source Charge			18		nC
Q_{gd}	Gate-Drain Charge			14		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current (Body Diode)				128	A
V_{SD}	Forward on Voltage (Note 3)	$V_{GS}=0V, I_S=20A$			1.2	V
t_{rr}	Reverse Recovery Time	$I_F=20A, dI/dt=100A/\text{s}$		54		ns
Q_{rr}	Reverse Recovery Charge	$I_F=20A, dI/dt=100A/\text{s}$		219		nC

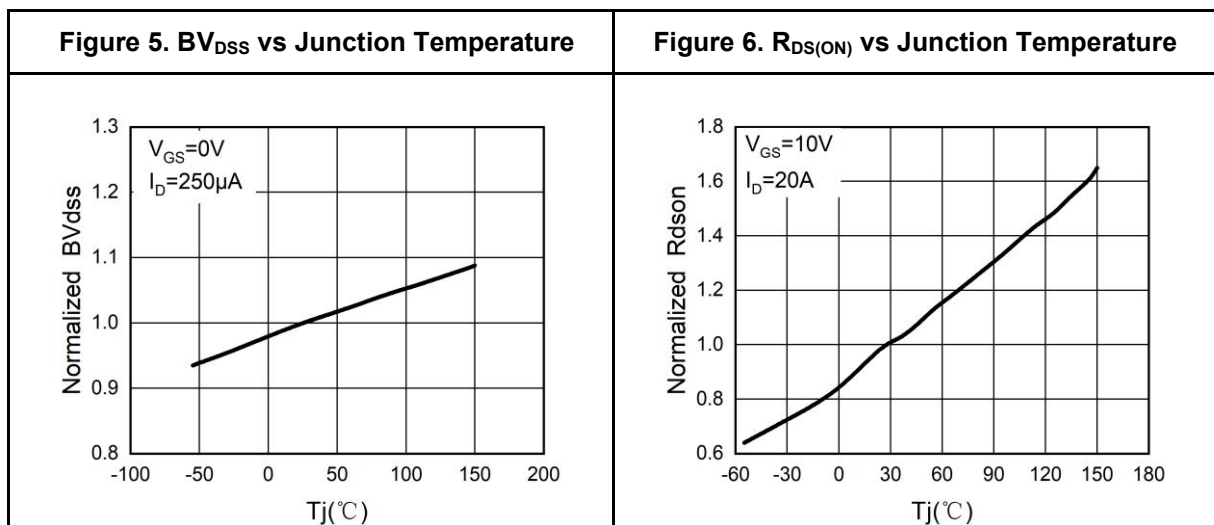
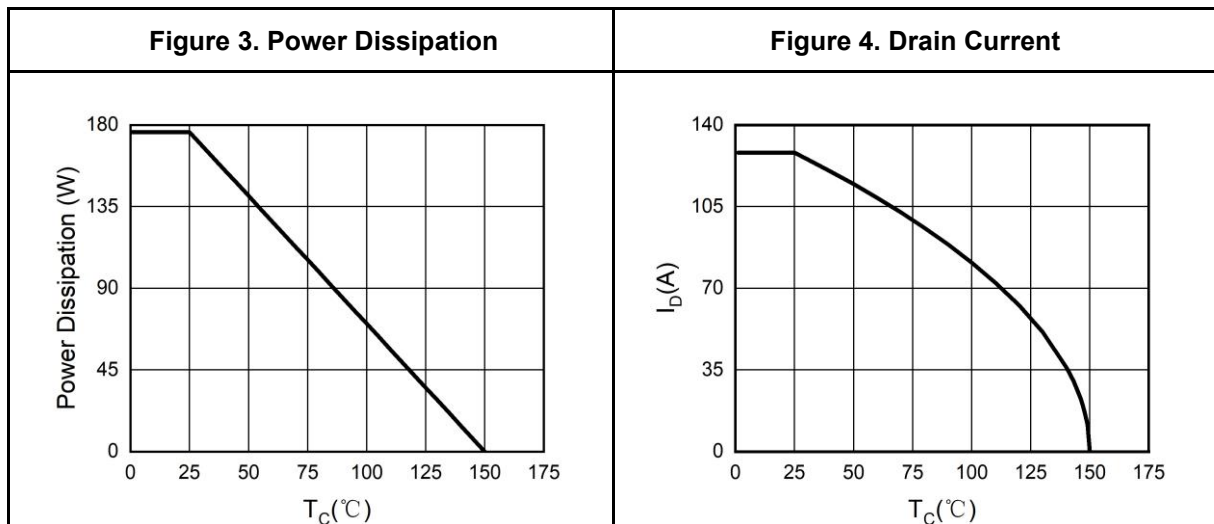
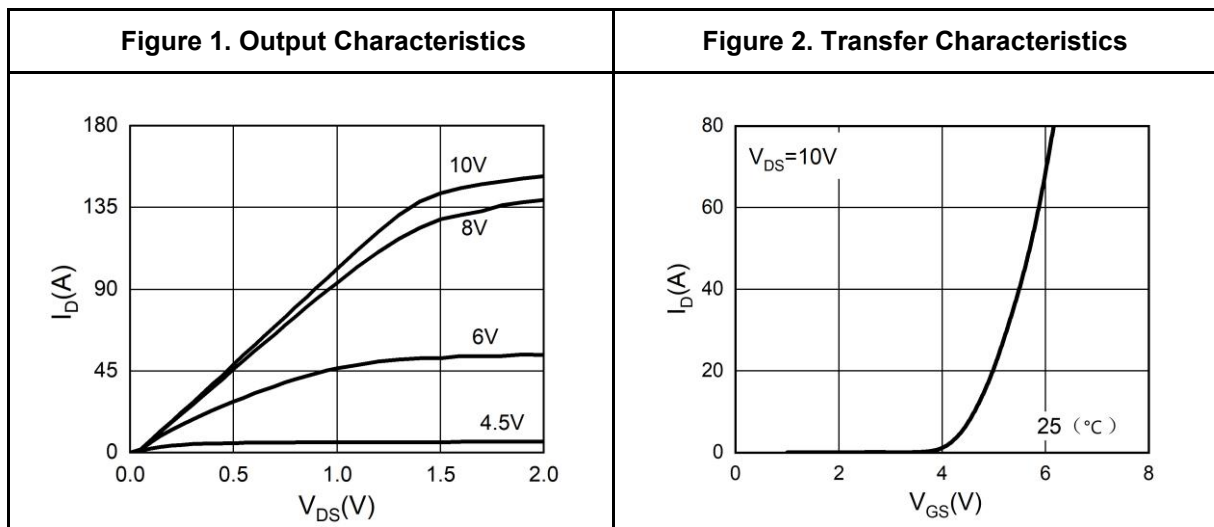
Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.

Notes 2.EAS condition: $T_J=25^\circ\text{C}, V_{DD}=100V, V_G=10V, R_g=25\Omega, L=0.5\text{mH}$.

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

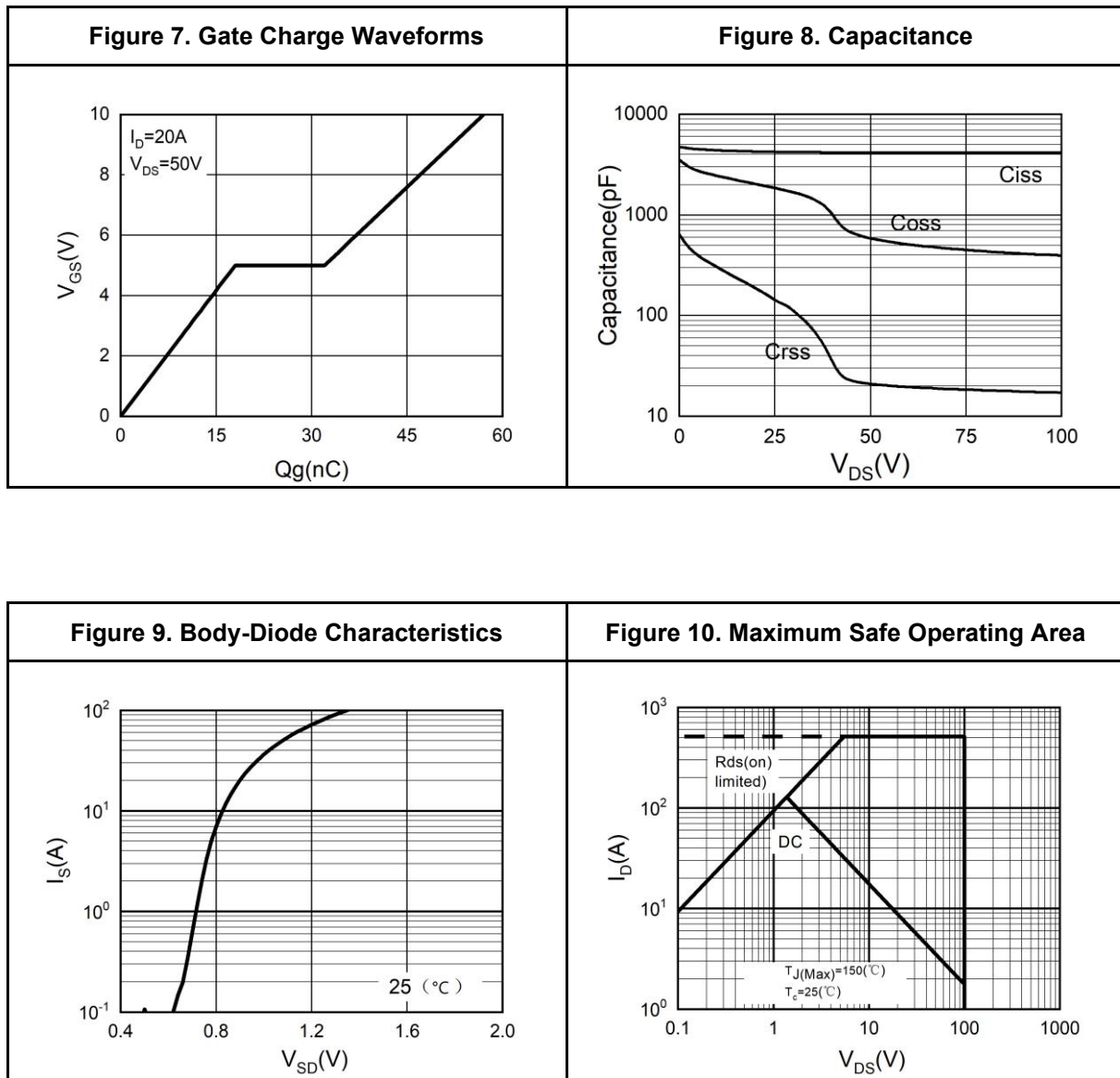


Typical Electrical And Thermal Characteristics (Curves)



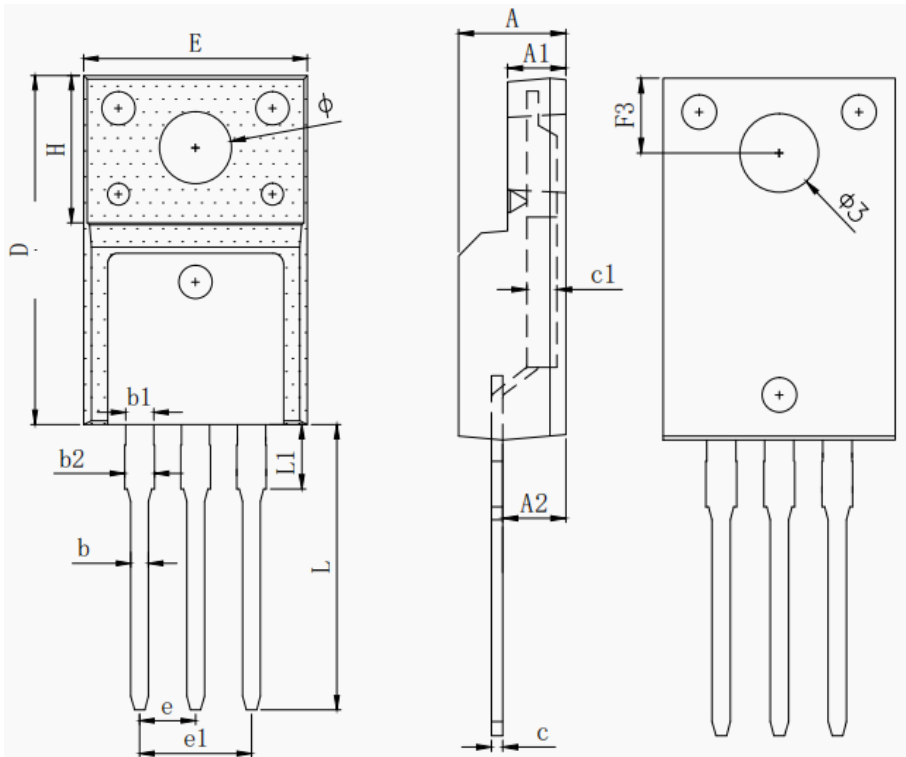


Typical Electrical And Thermal Characteristics (Curves)





TO-220F Package Information



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	4.500	4.700	4.900
A1	2.340	2.540	2.740
A2	2.560	2.760	2.960
b	0.700	0.800	0.950
b1	1.180	1.280	1.430
b2	1.250	1.350	1.550
c	0.400	0.500	0.650
c1	1.200	1.300	1.350
D	15.570	15.870	16.170
H	6.700 REF		
E	9.960	10.160	10.360
e	2.540 BSC		
e1	5.080 BSC		
L	12.680	12.980	13.280
L1	2.780	2.930	3.080
F3	3.150	3.300	3.450
phi	3.030	3.180	3.450
phi3	3.150	3.450	3.650



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