.General Description

The SJF68N058 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a wide variety of applications.

Features

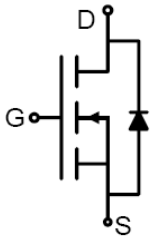
- Low Gate Charge
- 100% UIS Tested, 100% DVDS Tested
- High Power and current handing capability
- Lead free product is acquired

Application

- 48V E-bike controller
- Uninterruptible power supply
- Hard switched and high frequency circuits

Key Performance Parametes

Parameter	Value	Unit
V_{DS}	68	V
$R_{DS(ON)\_TYP}$	5.3	mΩ
I_D	105	A
Q_G	76	nC



Schematic Diagram

TO-220 top view

RoHS

Package Marking and Ordering Information

Device/Ordering Code	Marking	Package	Packing	Reel Size	Tape width	Quantity
SJF68N058	SJF68N058	TO-220F	Tube	\	\	1000 Pcs

Table 1. Absolute Maximum Ratings (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage (V_{GS}=0V)	68	V
V_{GS}	Gate-Source Voltage (V_{DS}=0V)	±20	V
I_D	Drain Current-Continuous(T_C=25℃)	105	A
	Drain Current-Continuous(T_C=100℃)	74	A
$I_{DM\ (pluse)}$	Drain Current-Continuous@ Current-Pulsed (Note 1)	420	A
P_D	Maximum Power Dissipation(T_C=25℃)	136	W
	Maximum Power Dissipation(T_C=100℃)	68	W
E_{AS}	Avalanche energy (Note 2)	400	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 175	℃

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case		1.1	℃/W

Table 3. Electrical Characteristics (T_J=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	68			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=68V, V_{GS}=0V T_J=25℃			1	μA
		V_{DS}=68V, V_{GS}=0V T_J=125℃			100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	2		4	V
g_{FS}	Forward Transconductance	V_{DS}=10V, I_D=20A		33		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=40A T_J=25℃		5.3	6.1	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=34V,V_{GS}=0V, f=1.0MHz		4723		pF
C_{oss}	Output Capacitance			225		pF
C_{rss}	Reverse Transfer Capacitance			207		pF
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1.0MHz		0.7		Ω
Switching Parameters						
$t_{d(on)}$	Turn-on Delay Time	V_{GS}=10V, V_{DS}=34V, R_L=1.7Ω, R_{GEN}=6Ω		14.8		nS
t_r	Turn-on Rise Time			33.2		nS
$t_{d(off)}$	Turn-Off Delay Time			59.2		nS
t_f	Turn-Off Fall Time			12		nS
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=34V, I_D=20A		76		nC
Q_{gs}	Gate-Source Charge			16		nC
Q_{gd}	Gate-Drain Charge			20		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current (Body Diode)				105	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/μs		29		ns
Q_{rr}	Reverse Recovery Charge	I_F=20A, dI/dt=100A/μs		35		nC

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
Notes 2.E_{AS} condition: T_J=25℃,V_{DD}=40V,V_G=10V, Rg=25Ω, L=0.5mH.
Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Electrical And Thermal Characteristics (Curves)

Figure 1. Output Characteristics

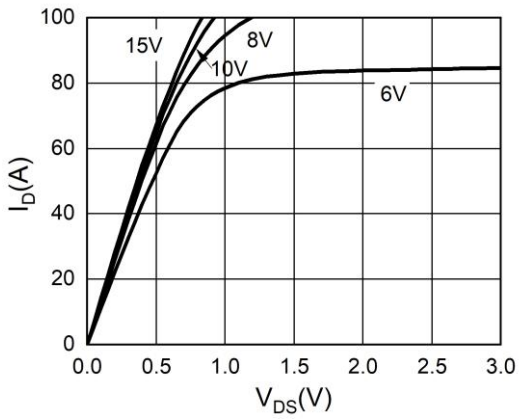


Figure 2. Transfer Characteristics

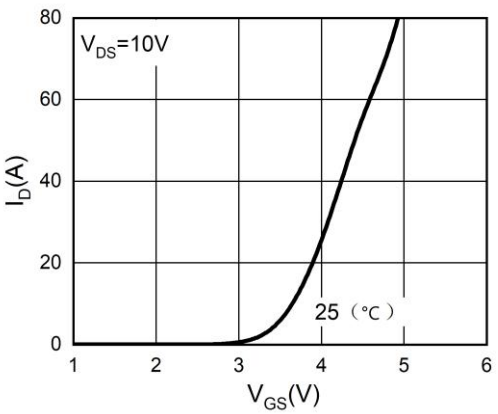


Figure 3. Power Dissipation

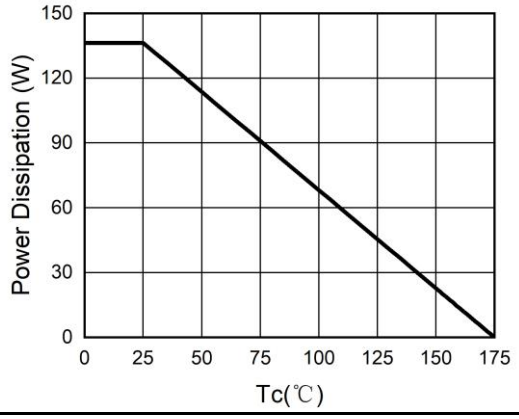


Figure 4. Drain Current

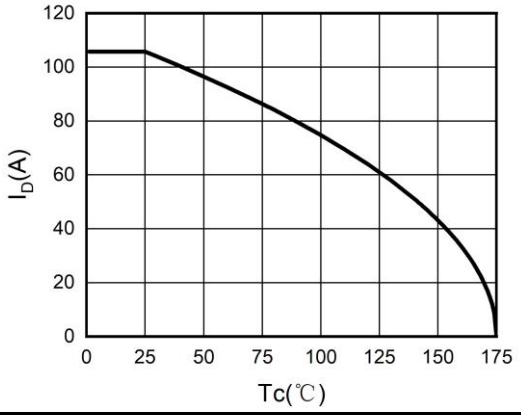


Figure 5. BV_{DSS} vs Junction Temperature

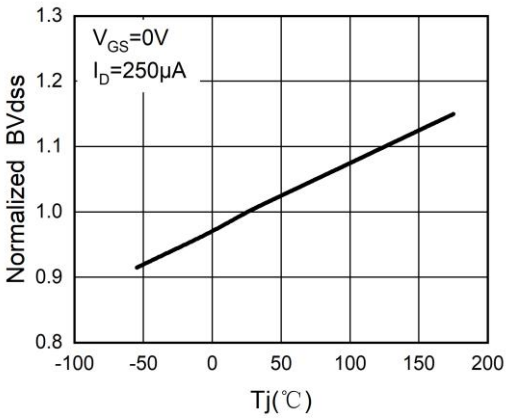
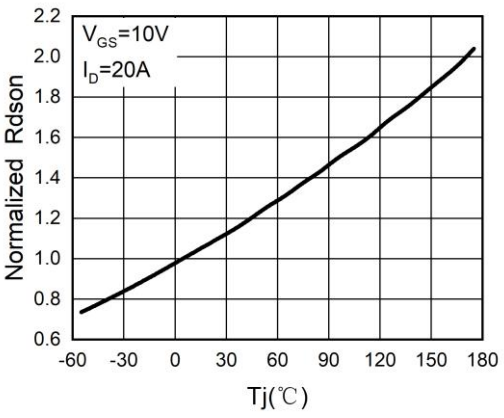


Figure 6. $R_{DS(ON)}$ vs Junction Temperature



Typical Electrical And Thermal Characteristics (Curves)

Figure 7. Gate Charge Waveforms

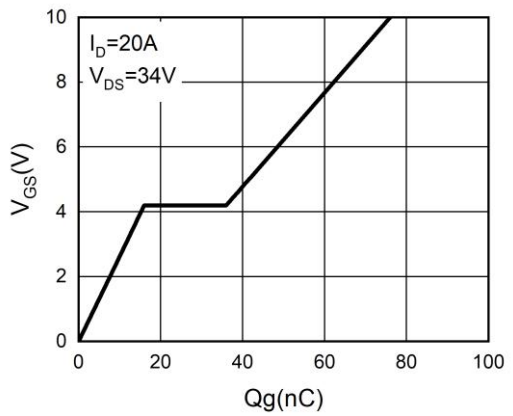


Figure 8. Capacitance

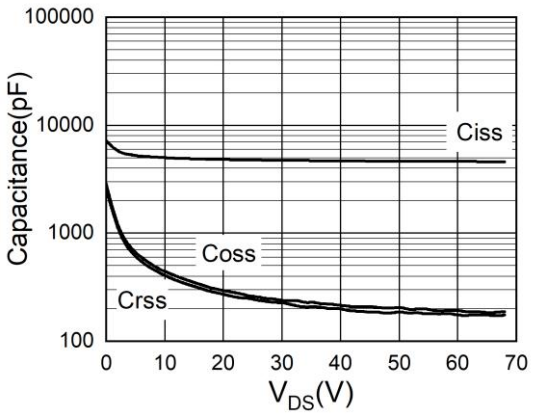


Figure 9. Body-Diode Characteristics

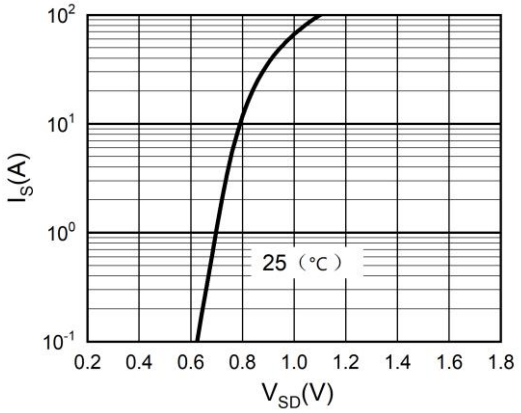
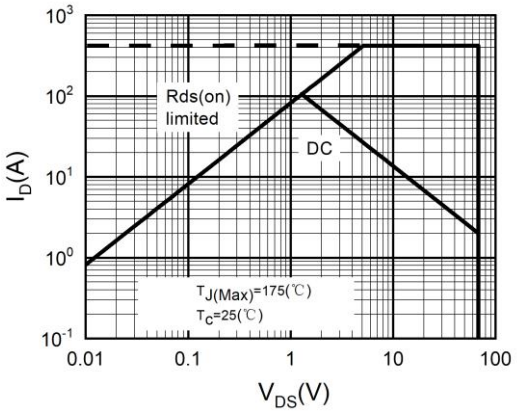
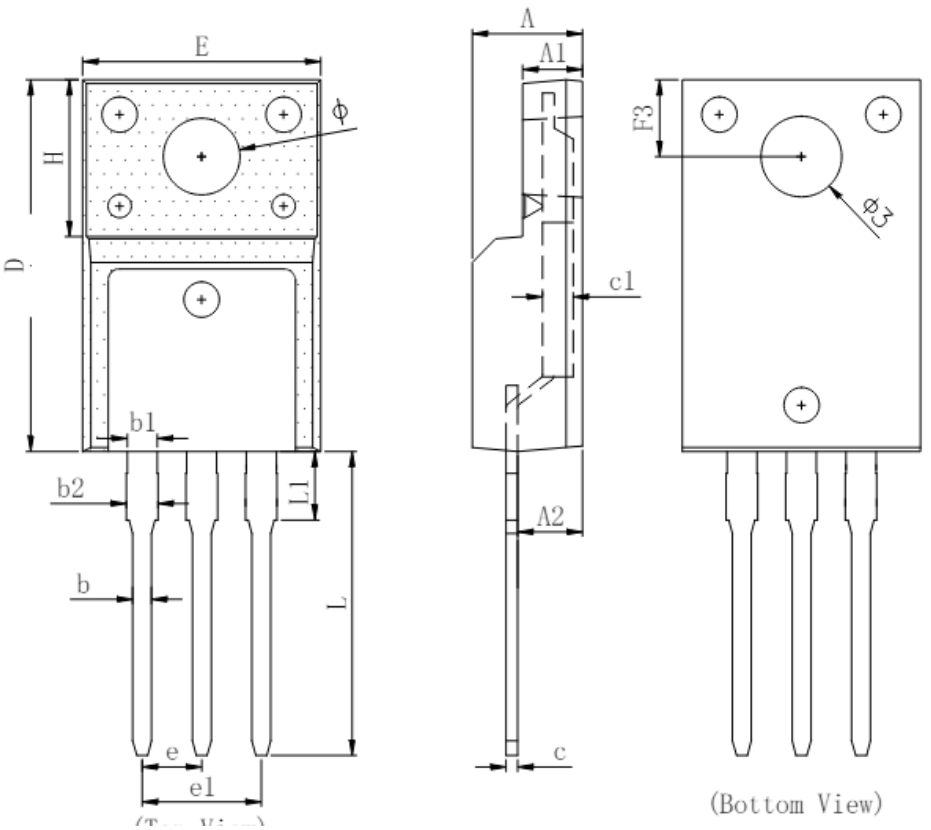


Figure 10. Maximum Safe Operating Area



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
ϕ	3.030	3.180	3.450
ϕ3	3.150	3.450	3.650

(注：全尺寸测量时c1不测)

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