



30V N-Channel Trench Power MOSFET

General Description

The SJL30N180 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a wide variety of applications.

Features

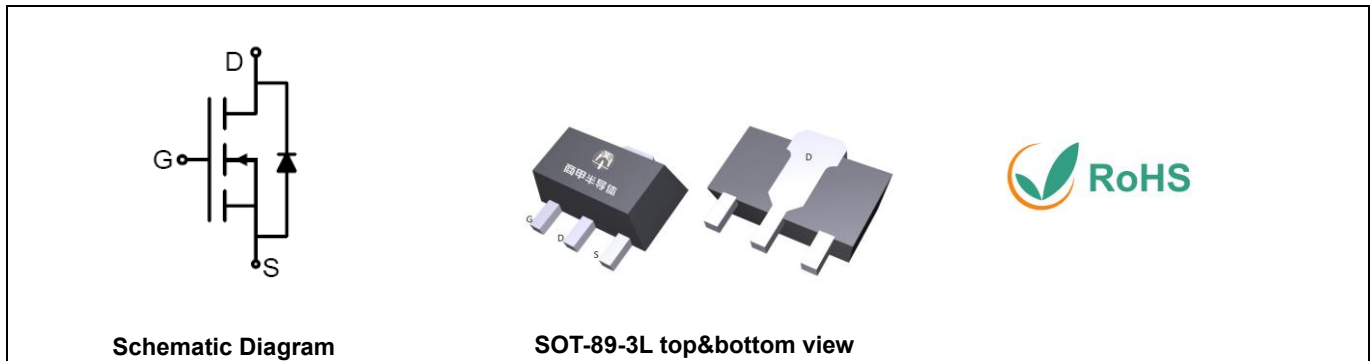
- Low Gate Charge
- High Power and current handing capability
- Lead free product is acquired

Application

- PWM Applications
- Load Switch
- Power Management

Key Performance Parametes

Parameter	Value	Unit
V_{DS}	30	V
$R_{DS(ON_TYP)}$	16.7	m Ω
I_D	8.5	A
Q_G	8.6	nC



Package Marking and Ordering Information

Device/Ordering Code	Marking	Package	Packing	Reel Size	Tape width	Quantity
SJL30N180	SJL30N180	SOT-89-3L	Tape	\	\	1000 Pcs

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

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage ($V_{GS}=0V$)	30	V
V_{GS}	Gate-Source Voltage ($V_{DS}=0V$)	± 20	V
I_D	Drain Current-Continuous($T_A=25^\circ\text{C}$)	8.5	A
	Drain Current-Continuous($T_A=100^\circ\text{C}$)	5.4	A
I_{DM} (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 1)	34	A
P_D	Maximum Power Dissipation($T_A=25^\circ\text{C}$)	2.4	W
	Maximum Power Dissipation($T_A=100^\circ\text{C}$)	0.96	W
E_{AS}	Avalanche energy (Note 2)	20	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
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient		52	$^\circ\text{C}/\text{W}$



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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
B _{VDSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =250μA	30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V T _J =25°C			1	μA
		V _{DS} =30V, V _{GS} =0V T _J =125°C			100	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±12V, V _{DS} =0V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.45		1.25	V
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =3A		5.7		S
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =3A T _J =25°C		16.7	20.9	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =2A T _J =25°C		24	31.9	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1.0MHz		154		pF
C _{oss}	Output Capacitance			26		pF
C _{rss}	Reverse Transfer Capacitance			21		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1.0MHz		2.2		Ω
Switching Parameters						
t _{d(on)}	Turn-on Delay Time	V _{GS} =4.5V, V _{DS} =15V, R _L =5Ω, R _{GEN} =3Ω		8		nS
t _r	Turn-on Rise Time			29		nS
t _{d(off)}	Turn-Off Delay Time			16		nS
t _f	Turn-Off Fall Time			4		nS
Q _g	Total Gate Charge	V _{GS} =4.5V, V _{DS} =15V, I _D =3A		8.6		nC
Q _{gs}	Gate-Source Charge			1.1		nC
Q _{gd}	Gate-Drain Charge			1.8		nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current (Body Diode)				8.5	A
V _{SD}	Forward on Voltage ^(Note 3)	V _{GS} =0V, I _S =3A			1.2	V
t _{rr}	Reverse Recovery Time	I _F =3A, dI/dt=100A/μs		14.5		ns
Q _{rr}	Reverse Recovery Charge	I _F =3A, dI/dt=100A/μs		3.1		nC

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

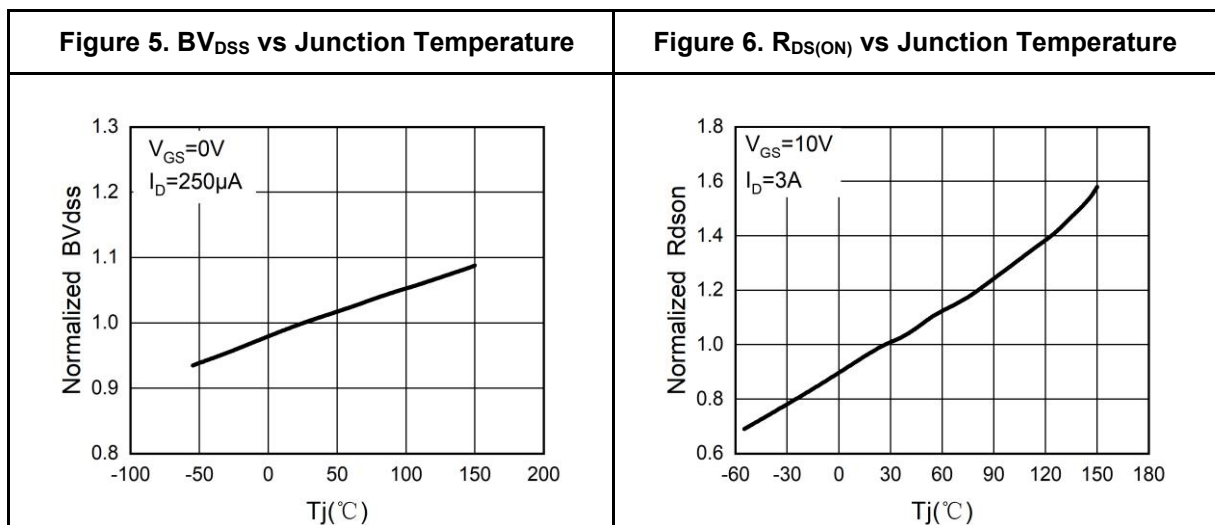
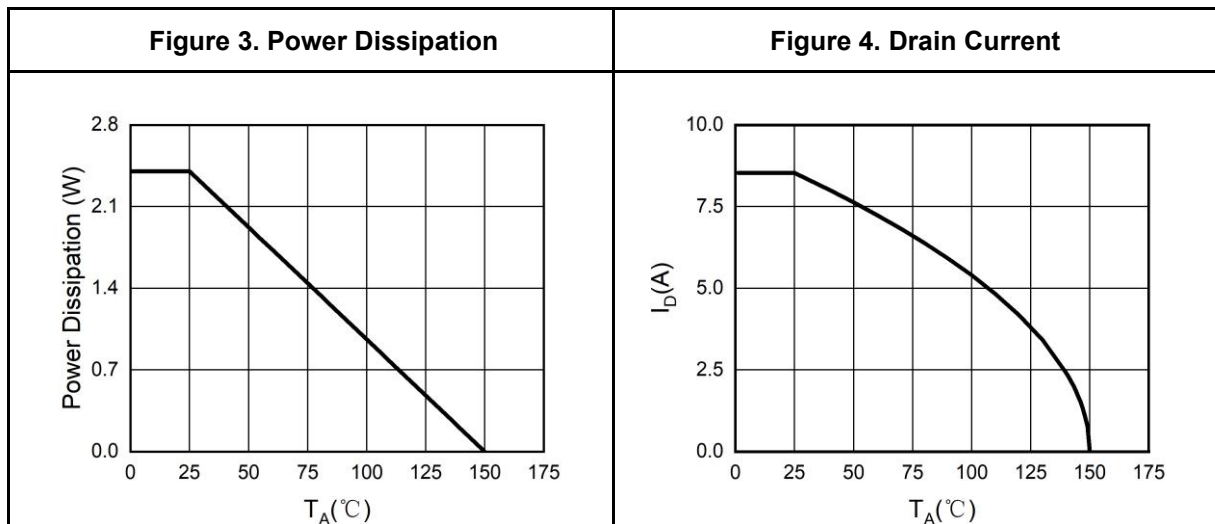
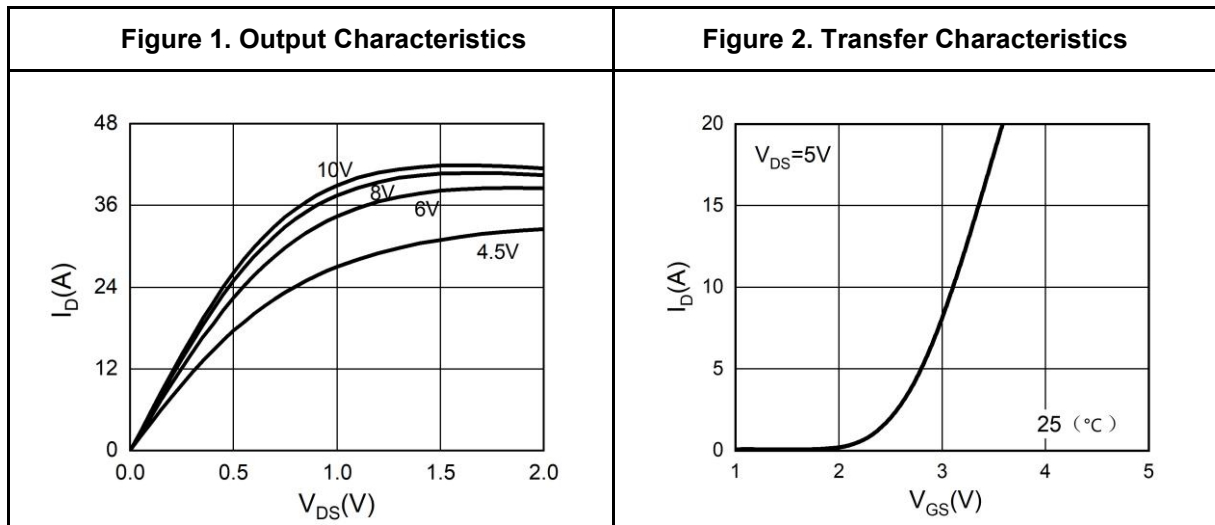
Notes 2.EAS condition: T_J=25°C, V_{DD}=30V, V_G=10V, R_g=25Ω, L=0.5mH.

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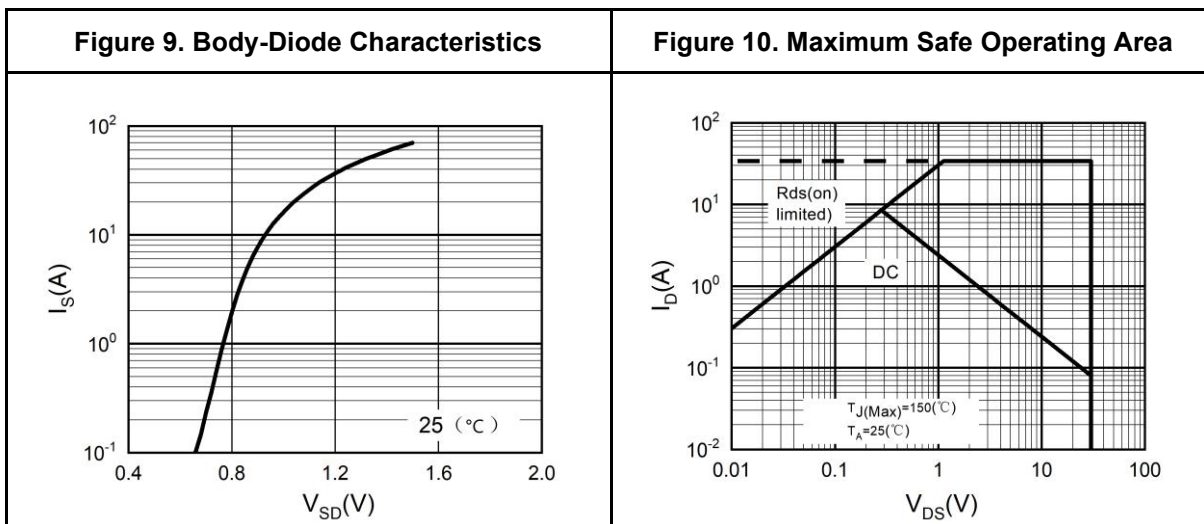
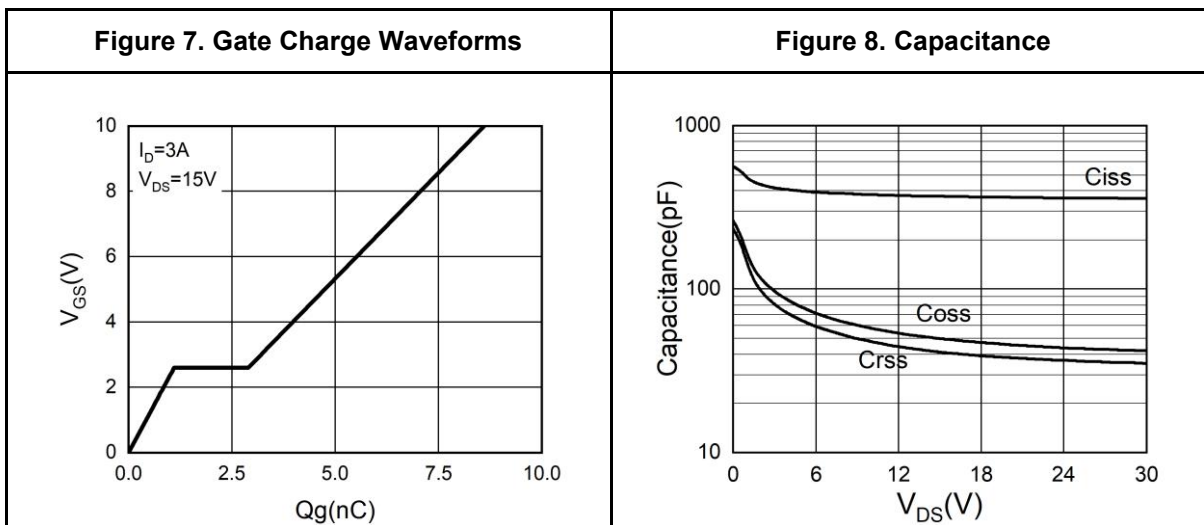
Typical Electrical And Thermal Characteristics (Curves)





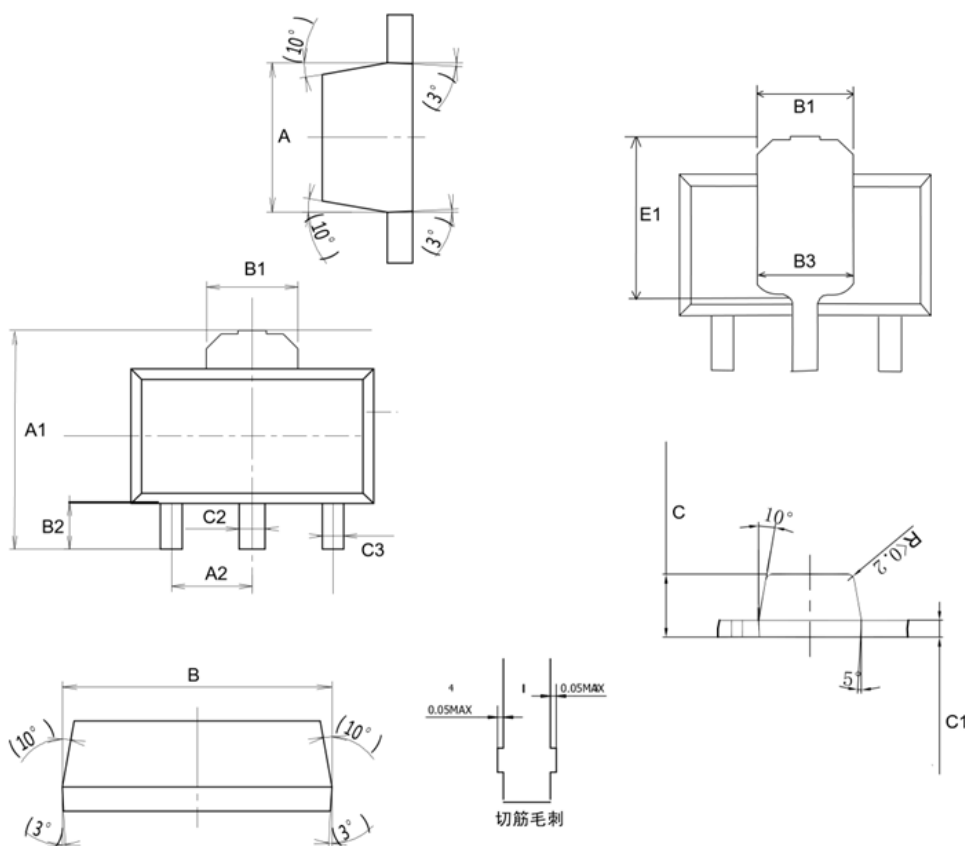
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Typical Electrical And Thermal Characteristics (Curves)





SOT-89-3L Package Information



COMMON DIMENSIONS			
UNITS: MEASURE=MILLIMETER			
SYMBOL	MIN	MID	MAX
A	2.35	2.45	2.55
A1	4.135	4.235	4.335
A2	1.45	1.50	1.55
B	4.40	4.50	4.60
B1		1.55 REF	
B2	0.95	1.00	1.05
B3		1.63 REF	
C	1.45	1.50	1.55
C1	0.39	0.40	0.41
C2	0.4	0.48	0.55
C3	0.35	0.4	0.45
E1	2.65	2.75	2.85



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