



12V P-Channel Trench Power MOSFET

General Description

The SJV12P120 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as -2.5V. This device is suitable for use as a wide variety of applications.

Features

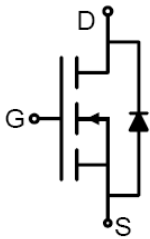
- Low Gate Charge
- High Power and current handing capability
- Lead free product is acquired

Application

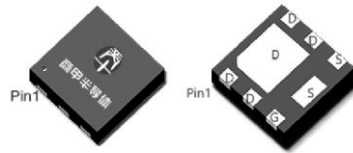
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Key Performance Parametes

Parameter	Value	Unit
V_{DS}	-12	V
$R_{DS(ON_TYP)}$	11.8	m Ω
I_D	-12.5	A
Q_G	8	nC



Schematic Diagram



DFN2020-6L top&bottom view



Package Marking and Ordering Information

Device/Ordering Code	Marking	Package	Packing	Reel Size	Tape width	Quantity
SJV12P120	1208	DFN2020-6L	Tape	\	\	5000 Pcs

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

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage ($V_{GS}=0V$)	-12	V
V_{GS}	Gate-Source Voltage ($V_{DS}=0V$)	± 12	V
I_D	Drain Current-Continuous($T_A=25^\circ\text{C}$)	-12.5	A
	Drain Current-Continuous($T_A=100^\circ\text{C}$)	-7.9	A
$I_{DM} \text{ (pluse)}$	Drain Current-Continuous@ Current-Pulsed (Note 1)	-50	A
P_D	Maximum Power Dissipation($T_A=25^\circ\text{C}$)	3.1	W
	Maximum Power Dissipation($T_A=100^\circ\text{C}$)	1.3	W
E_{AS}	Avalanche energy (Note 2)	56	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		40	$^\circ\text{C/W}$



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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 =250μA	-12			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-12V, V _{GS} =0V T _J =25℃			-1	μA
		V _{DS} =-12V, V _{GS} =0V T _J =125℃			-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	-0.3		-1	V
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-5A		19.7		S
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-4.5V, I _D =-4A T _J =25℃		11.8	14.5	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-2.5V, I _D =-3A T _J =25℃		16.3	21.7	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-6V,V _{GS} =0V, f=1.0MHz		1630		pF
C _{oss}	Output Capacitance			303		pF
C _{rss}	Reverse Transfer Capacitance			280		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1.0MHz		7.7		Ω
Switching Parameters						
t _{d(on)}	Turn-on Delay Time	V _{GS} =-4.5V, V _{DS} =-6V, R _L =1.2Ω, R _{GEN} =3Ω		13		nS
t _r	Turn-on Rise Time			35		nS
t _{d(off)}	Turn-Off Delay Time			32		nS
t _f	Turn-Off Fall Time			10		nS
Q _g	Total Gate Charge	V _{GS} =-4.5V, V _{DS} =-6V, I _D =-5A		8		nC
Q _{gs}	Gate-Source Charge			2		nC
Q _{gd}	Gate-Drain Charge			1.8		nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current (Body Diode)				-12.5	A
V _{SD}	Forward on Voltage (Note 3)	V _{GS} =0V, I _S =-5A			-1.2	V
t _{rr}	Reverse Recovery Time	I _F =-5A, dI/dt=100A/μs		18		ns
Q _{rr}	Reverse Recovery Charge	I _F =-5A, dI/dt=100A/μs		7		nC

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

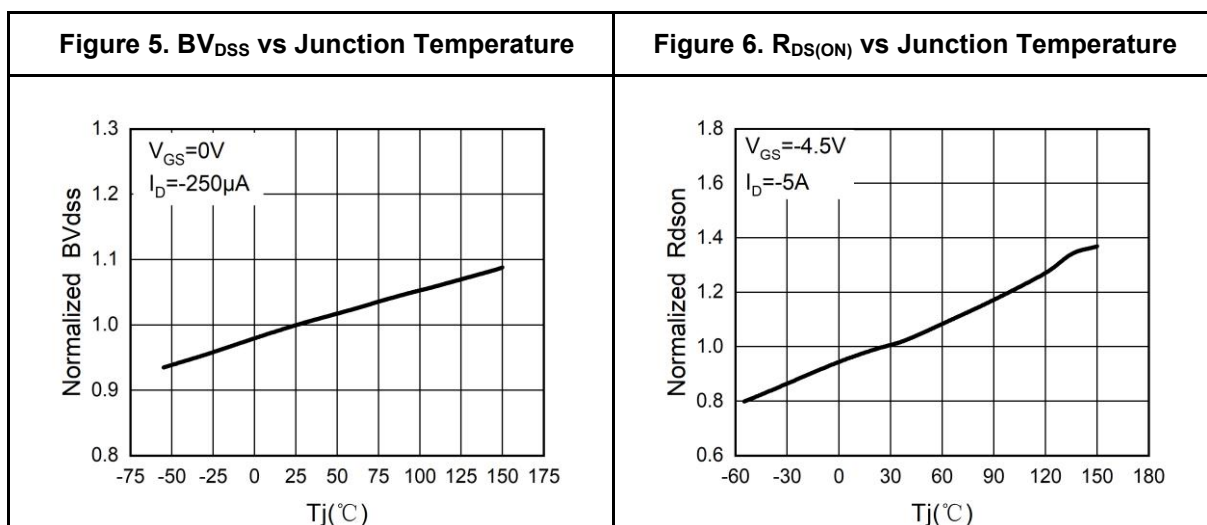
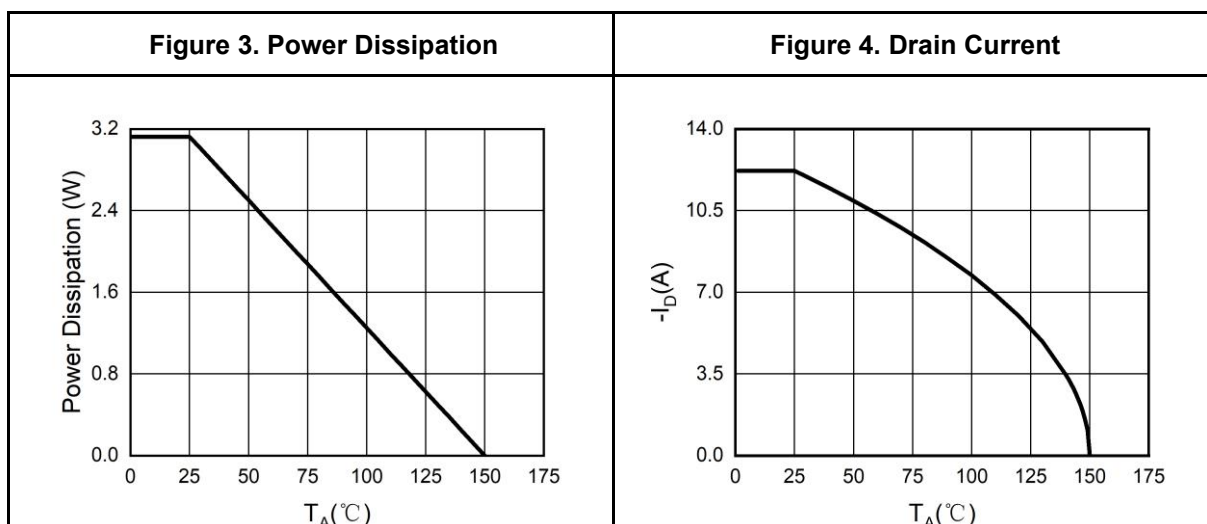
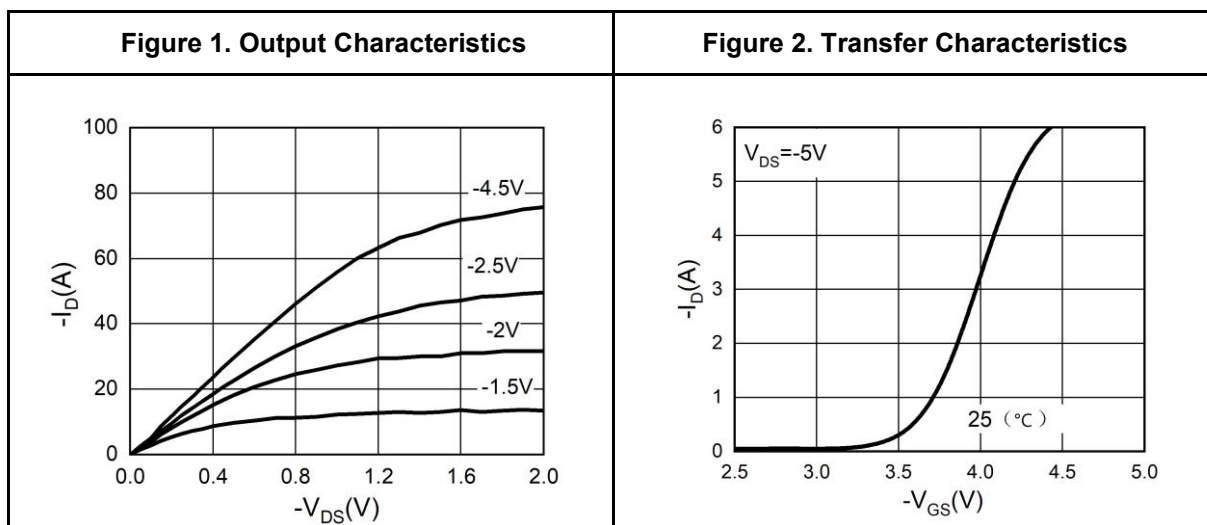
Notes 2.EAS condition: $T_J=25^{\circ}\text{C}, V_{DD}=-12V, V_G=-10V, R_g=25\Omega, L=0.5\text{mH}$.

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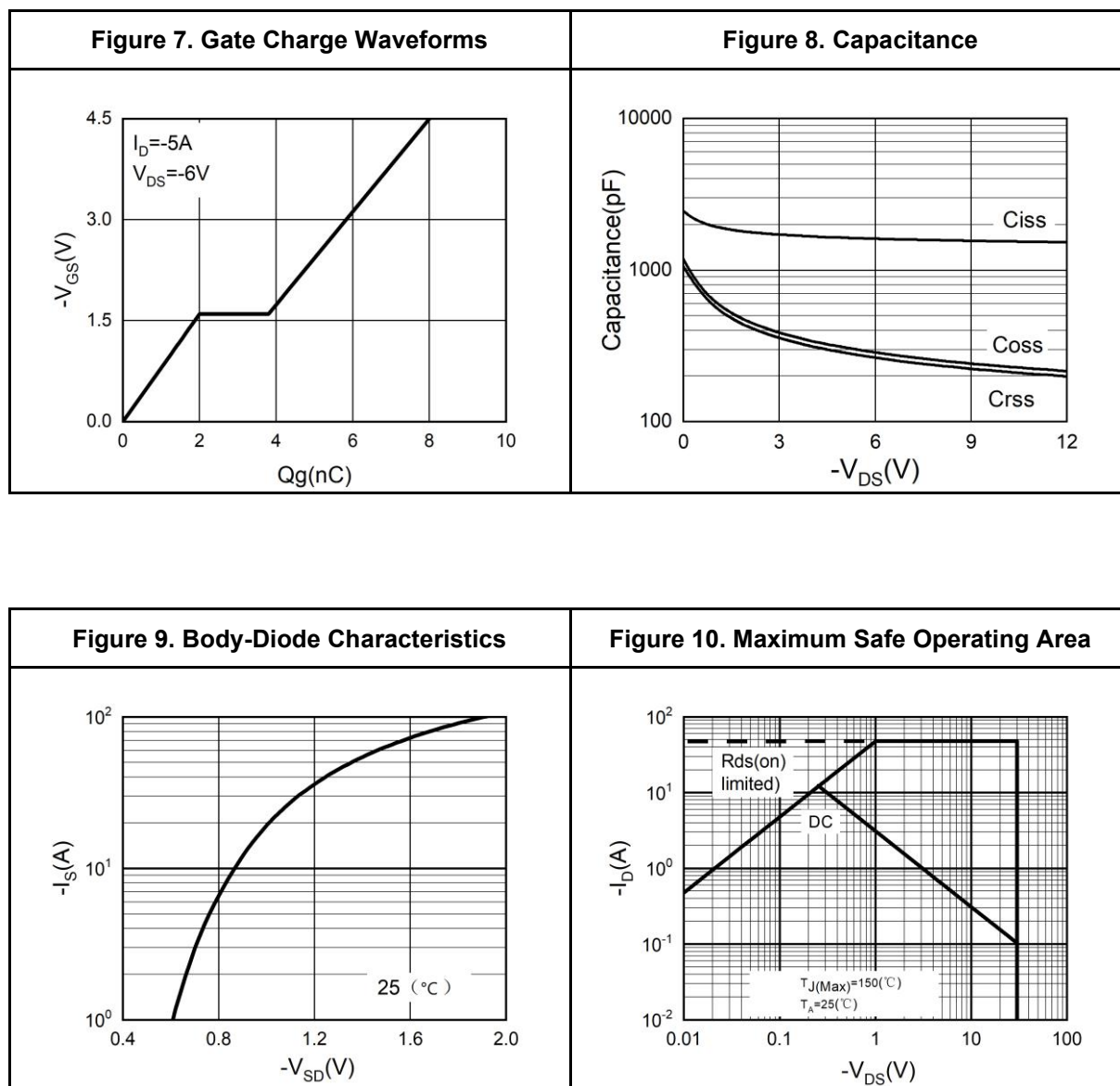
Typical Electrical And Thermal Characteristics (Curves)





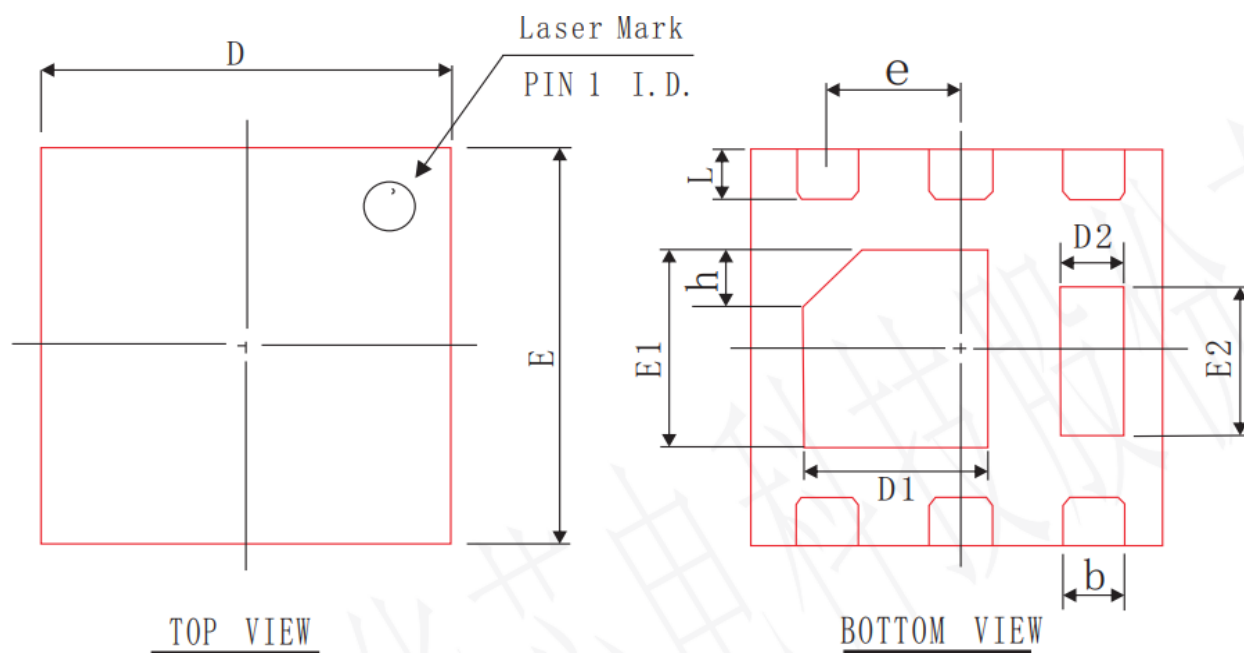
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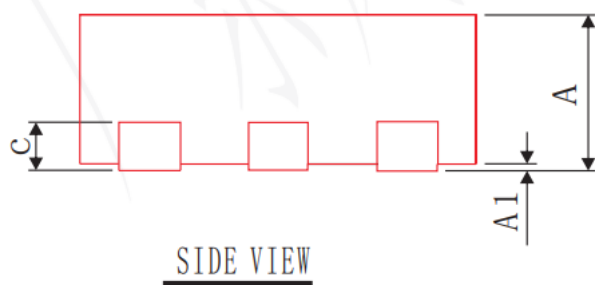




DFN2020-6L Package Information



SYMBOL	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
b	0.20	0.25	0.30
D	1.95	2.00	2.07
E	1.95	2.00	2.07
D1	0.80	0.90	1.00
E1	0.90	1.00	1.10
D2	0.20	0.30	0.40
E2	0.65	0.75	0.85
L	0.20	0.25	0.35
h	0.20	0.25	0.30
c	0.203 REF		
e	0.65 BSC		



其它厚度尺寸如下

A	0.55	0.60	0.65
A	0.50	0.55	0.60



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Attention

This product described in this document can not be used in life support devices or systems, aircraft's control systems, and other applications whose failure can be reasonably expected to result in serious physical and/or material damage, apart from that when an application agreement is signed between customer and Wuxi Shangjia Semiconductor.

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