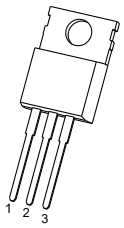
120N10 N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$TYP	I_D
100V	4.6mΩ@10V	120A

TO-220-3L-C



1. GATE
2. DRAIN
3. SOURCE

DESCRIPTION

The CJP120S10 uses shielded gate trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications

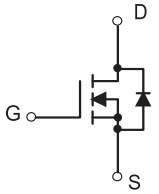
FEATURES

- Low $R_{DS(on)}$
- Low Gate Charge

APPLICATIONS

- High efficiency power supply
- Secondary synchronus rectifier

EQUIVALENT CIRCUIT



MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D①	120	A
Pulsed Drain Current	I_{DM}②	480	A
Single Pulsed Avalanche Energy	E_{AS}③	200	mJ
Power Dissipation	P_D①	185	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	62.5	℃/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$①	0.67	℃/W
Operation Junction and Storage Temperature Range	T_J ,T_{stg}	-55 ~+150	℃

T_a=25℃ unless otherwise specified

Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Off characteristics							
Drain-source breakdown voltage	$V_{(BR)\ DSS}$	V_{GS} = 0V, I_D = 250uA		100			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =100V, V_{GS} =0V	T_J =25℃			1.0	μA
			T_J =125℃			100	
Gate-body leakage current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V				±100	nA
On characteristics ④							
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250uA		2.0	3.0	4.0	V
Static drain-source on-sate resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A			4.6	5.5	mΩ
Dynamic characteristics ④⑤							
Input capacitance	C_{iss}	V_{DS} = 25V,V_{GS} = 0V, f = 1MHz			4190	8380	pF
Output capacitance	C_{oss}				1777	3500	
Reverse transfer capacitance	C_{rss}				34	69	
Gate resistance	R_g	f = 1MHz			1.8		Ω
Switching characteristics ④⑤							
Total gate charge	Q_g	V_{GS} = 10V, V_{DS} = 80V, I_D = 10A			68	140	nC
Gate-source charge	Q_{gs}				15	30	
Gate-drain charge	Q_{gd}				20	42	
Turn-on delay time	$t_{d(on)}$	V_{DS}=80V,I_D=20A V_{GS}=10V,R_G=3.3Ω			13		ns
Turn-on rise time	t_r				60		
Turn-off delay time	$t_{d(off)}$				40		
Turn-off fall time	t_f				64		
Drain-Source Diode Characteristics							
Drain-source diode forward voltage(note1)	V_{SD} ④	V_{GS} = 0V, I_S = 20A				1.2	V
Continuous drain-source diode forward current	I_S ①					120	A
Pulsed drain-source diode forward current	I_{SM} ②					480	A

Notes:

1.T_C=25℃ Limited only by maximum temperature allowed.

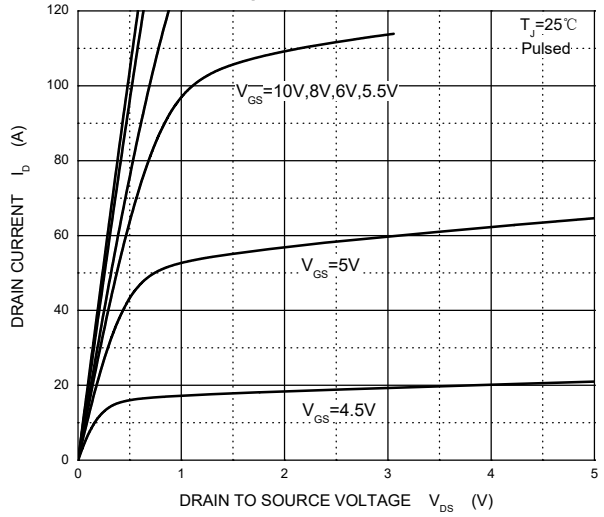
2.P_W≤10μs, Duty cycle≤1%.

3.EAS condition: V_{DD}=50V,V_{GS}=10V, L=0.5mH, R_g=25Ω Starting T_J = 25°℃.

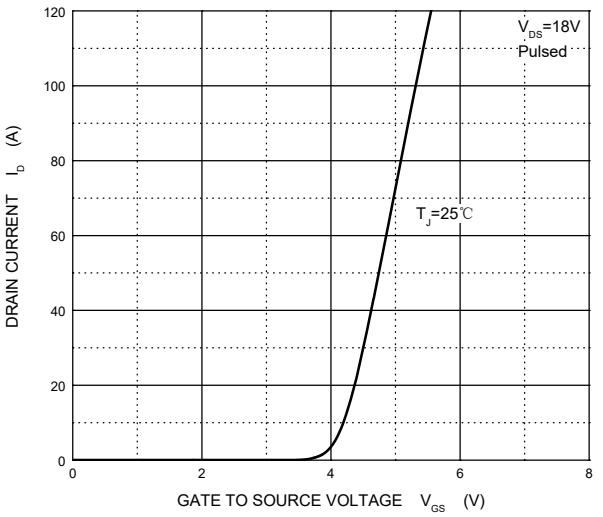
4.Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

5.Guaranteed by design, not subject to production.

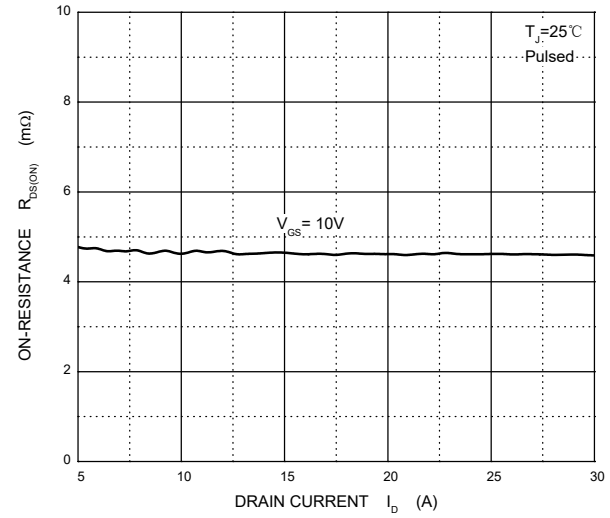
Output Characteristics



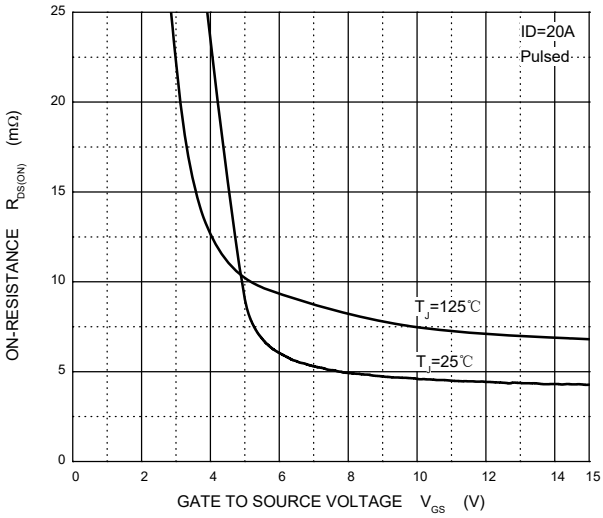
Transfer Characteristics



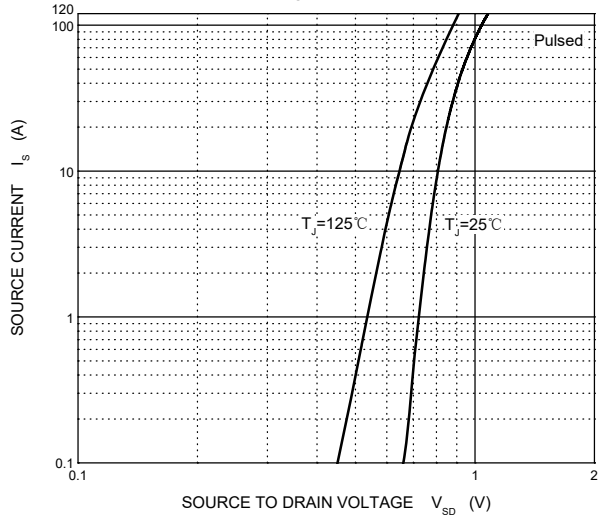
$R_{DS(ON)}$ —— I_D



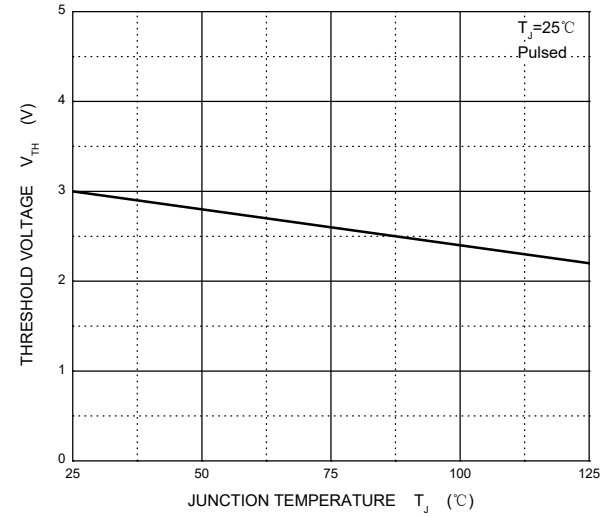
$R_{DS(ON)}$—— V_{GS}



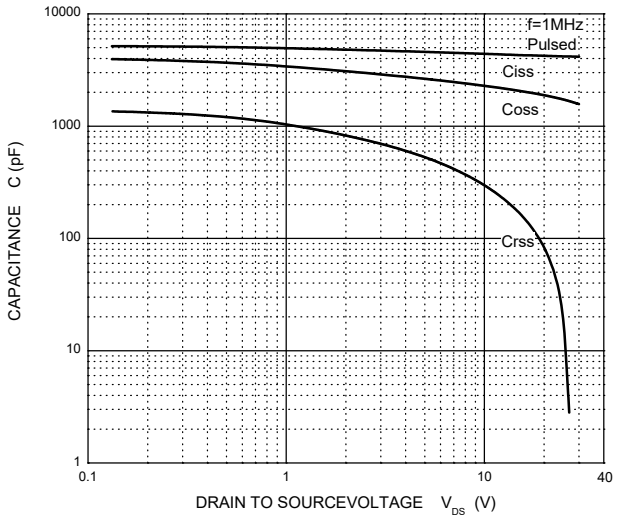
I_S —— V_{SD}



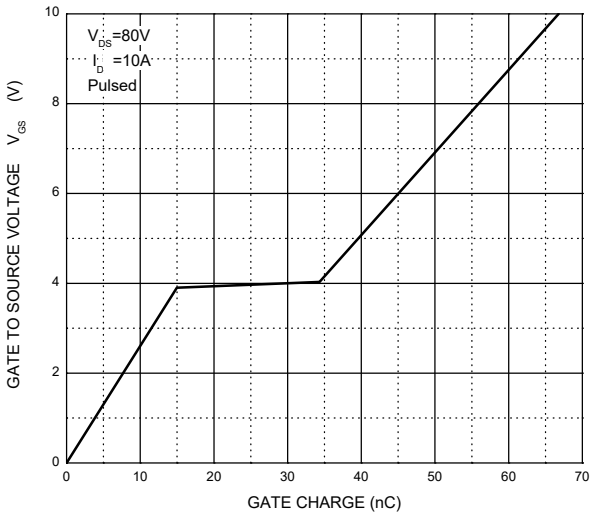
Threshold Voltage

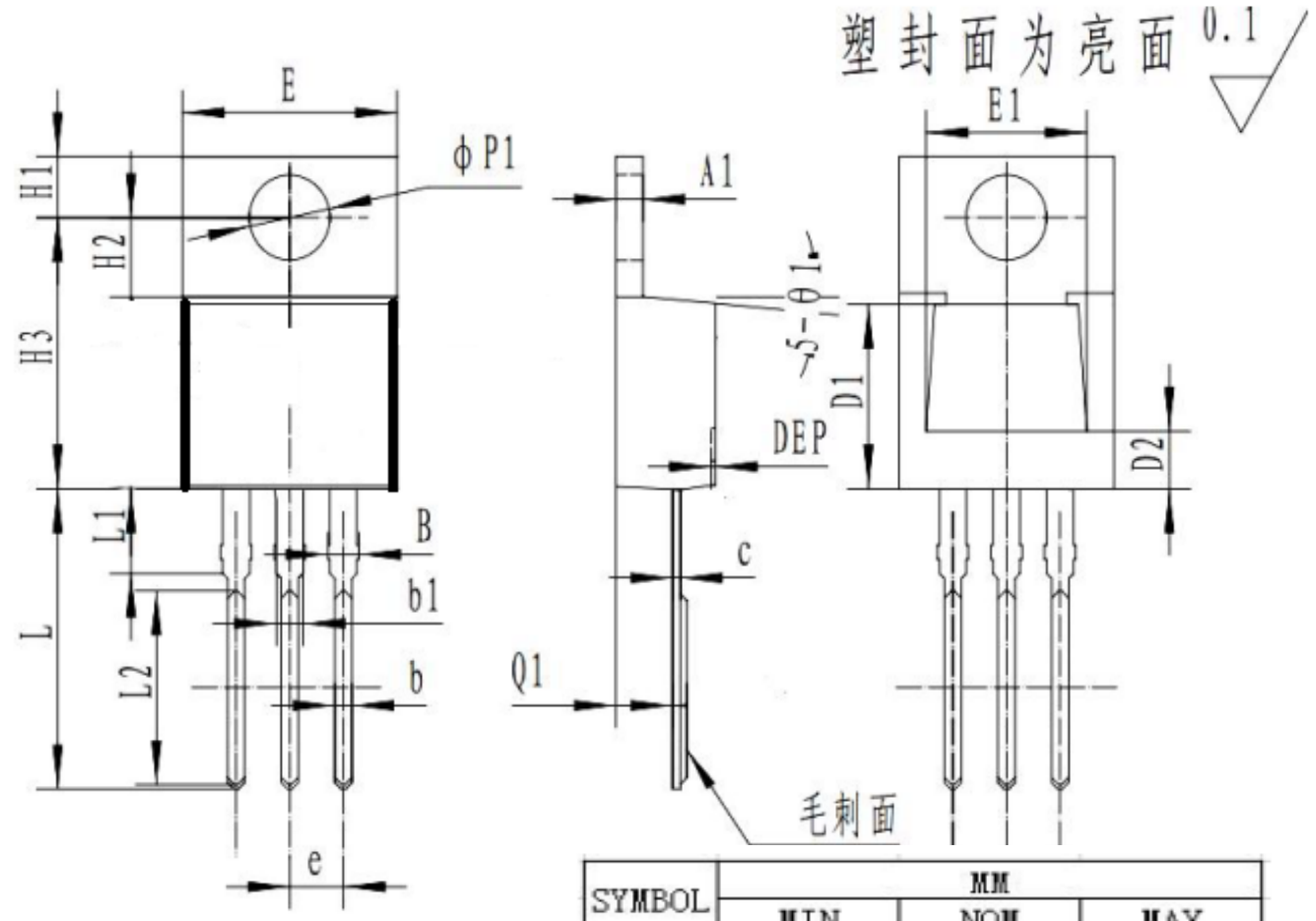


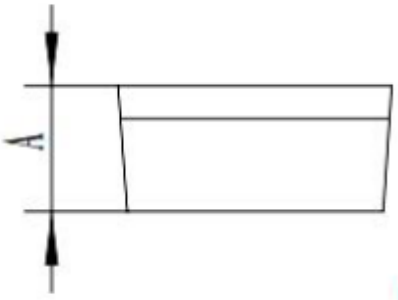
Capacitances



Gate Charge







SYMBOL	MM		
	MIN	NOM	MAX
*A	4.60	4.70	4.80
A1	1.22	1.27	1.32
*b	0.76	0.81	0.86
b1	1.22	1.27	1.32
*B	1.27	1.37	1.45
*c	0.33	0.38	0.43
D1	7.60	7.75	7.90
D2	2.50	2.60	2.70
*E	10.00	10.10	10.20
E1	7.70	7.80	7.90
H1	2.64	2.74	2.84
H2	3.46	3.56	3.66
*H3	12.10	12.20	12.30
H4	1.90	2.00	2.10
*e	2.49	2.54	2.59
*L	13.45	3.85	13.85
L1	3.58	3.78	3.98
L2	8.66	8.76	8.86
*Q1	2.59	2.69	2.79
θ1	3°	5°	7°
ØP1	3.85	3.90	3.95
DEP	0.05	0.10	0.20
带*为检验尺寸			