

## TO-220-3L Plastic-Encapsulate MOSFETS

### CJP07N60 N-Channel Power MOSFET

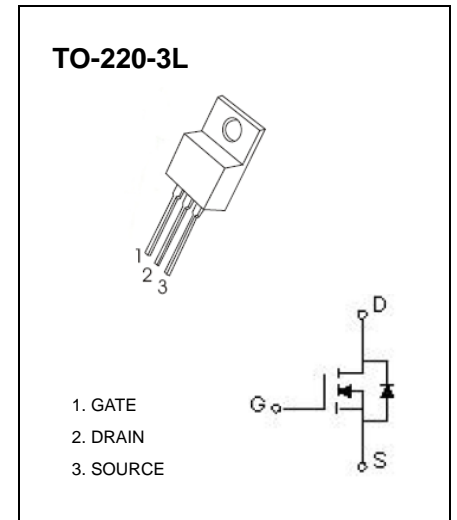
#### GENERAL DESCRIPTION

This advanced high voltage MOSFET is designed to stand high energy in the avalanche mode and switch efficiently. This new high energy device also offers a drain-to-source diode fast

applications such as power supplies, converters, power motor controls and bridge circuits.

#### FEATURE

- High Current Rating
- Lower  $R_{DS(on)}$
- Lower Capacitance
- Lower Total Gate Charge
- Tighter  $V_{SD}$  Specifications
- Avalanche Energy Specified



#### Maximum ratings ( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	600	V
Gate-Source Voltage	$V_{GS}$	$\pm 30$	
Continuous Drain Current	$I_D$	7	A
Pulsed Drain Current	$I_{DM}$	30.8	
Single Pulsed Avalanche Energy (note1)	$E_{AS}$	580	mJ
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	62.5	$^{\circ}\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 ~+150	$^{\circ}\text{C}$
Maximum lead temperature for soldering purposes , Duration 5 seconds	$T_L$	260	

**Electrical characteristics (T<sub>a</sub>=25°C unless otherwise noted)**

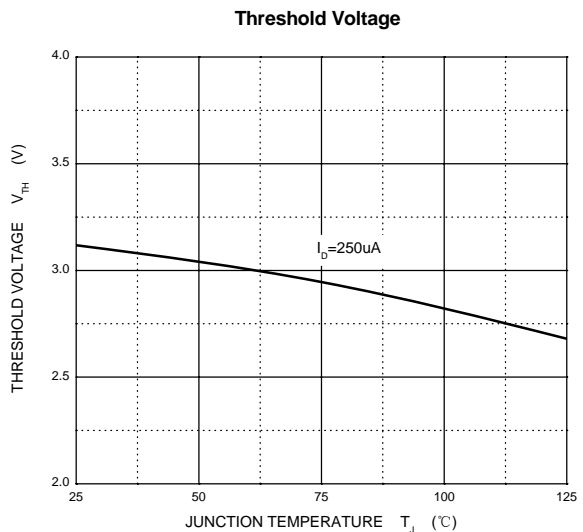
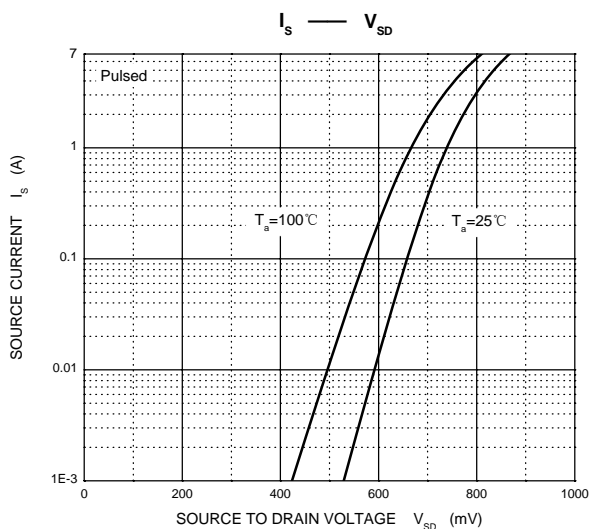
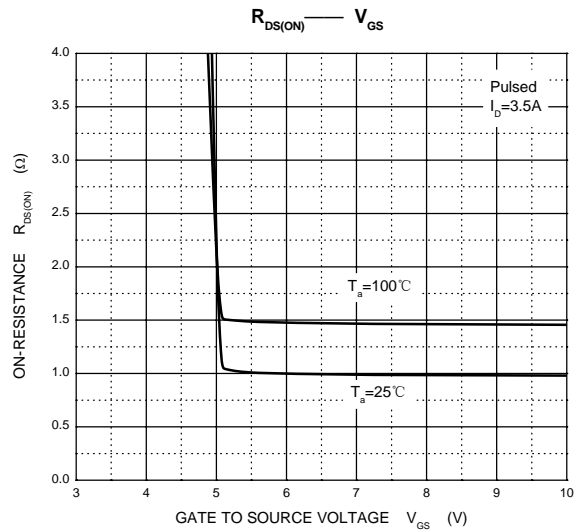
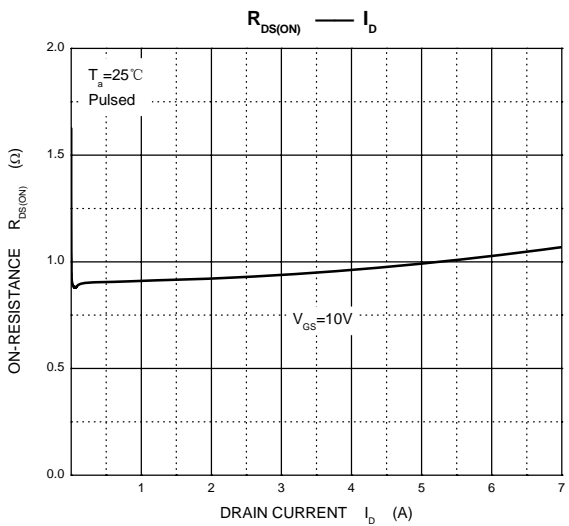
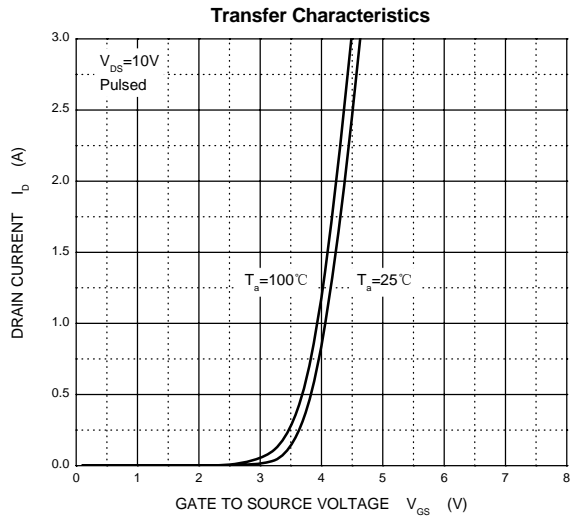
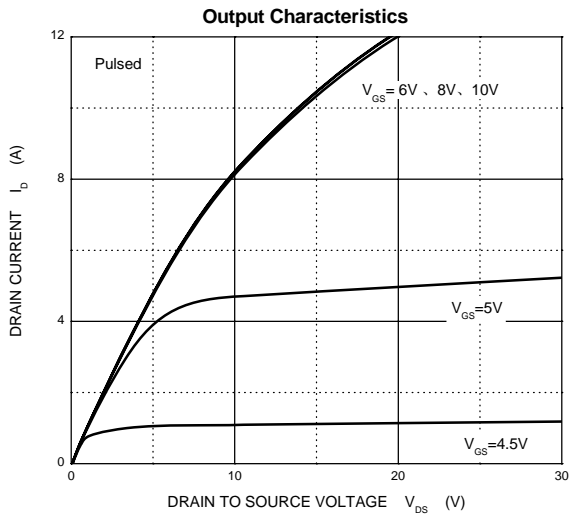
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Off characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	600			V
Drain-source diode forward voltage(note2)	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> =7A			1.4	
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =600V, V <sub>GS</sub> =0V			1	μA
Gate-body leakage curren (note2)	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±30V			±100	nA
<b>On characteristics (note2)</b>						
Gate-threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	2.0		4.0	V
Static drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =3.5A			1.3	Ω
Forward transconductance	g <sub>FS</sub>	V <sub>DS</sub> =50V, I <sub>D</sub> =3.9A	5			S
<b>Dynamic characteristics (note 3)</b>						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f =1MHz			1600	pF
Output capacitance	C <sub>oss</sub>				190	
Reverse transfer capacitance	C <sub>riss</sub>				25	
<b>Switching characteristics (note 3)</b>						
Turn-on delay time (note3)	t <sub>d(on)</sub>	V <sub>DD</sub> =300V, V <sub>GS</sub> =10V, R <sub>G</sub> =25Ω, I <sub>D</sub> =7A			80	ns
Turn-on rise time (note3)	t <sub>r</sub>				165	
Turn-off delay time (note3)	t <sub>d(off)</sub>				160	
Turn-off fall time (note3)	t <sub>f</sub>				120	

**Notes :**

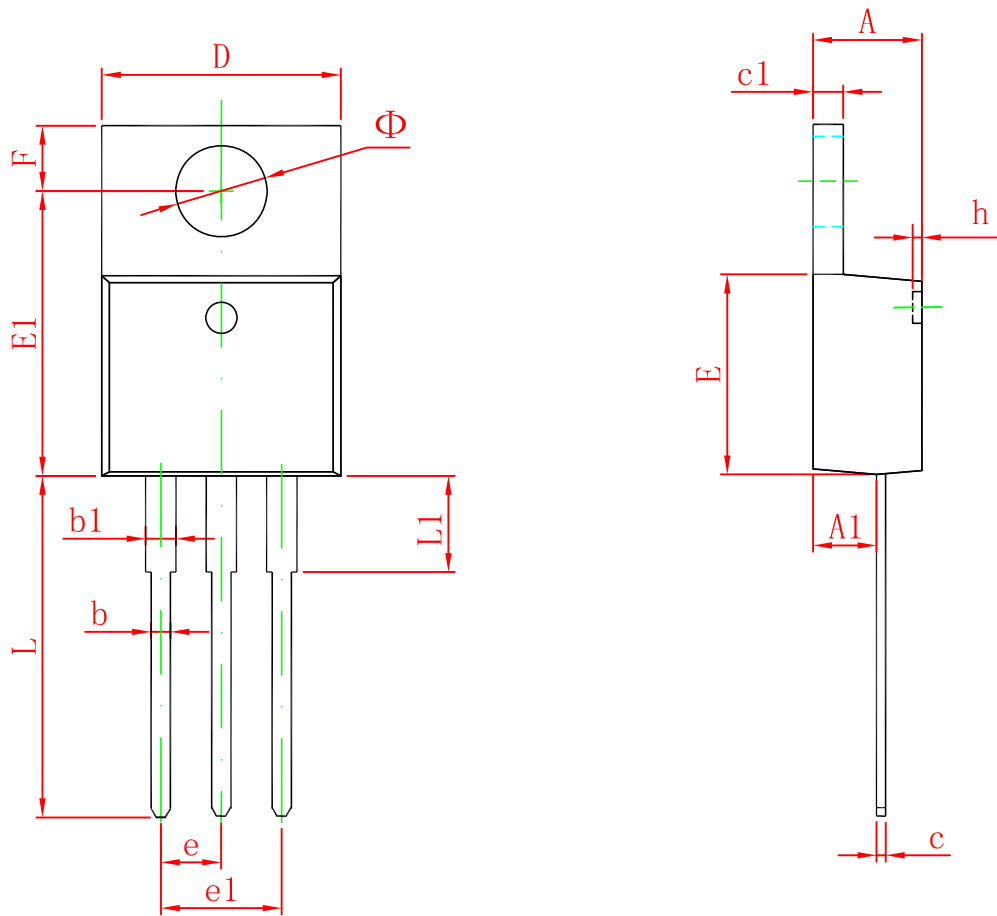
1. L=19.5mH, I<sub>L</sub>=7A, V<sub>DD</sub>=50V, V<sub>GS</sub>=10V, R<sub>G</sub>=0Ω, Starting T<sub>J</sub>=25°C.
2. Pulse Test : Pulse width≤300μs, duty cycle ≤2%.
3. These parameters have no way to verify.

# Typical Characteristics

# CJP07N60



# TO-220-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
$\Phi$	3.735	3.935	0.147	0.155