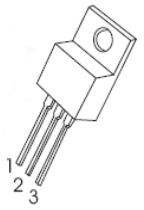
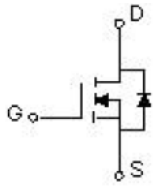
JIANGSU CHANGJIANG ELECTRONICS TECHNOLOGY CO., LTD

TO-220-3L Plastic-Encapsulate MOSFETS

CJP07N60 N-Channel Power MOSFET

TO-220-3L





1. GATE
2. DRAIN
3. SOURCE

General Description

The high voltage MOSFET uses an advanced termination scheme to provide enhanced voltage-blocking capability without degrading performance over time. In addition , this advanced MOSFET is designed to withstand high energy in avalanche and commutation modes . The new energy efficient design also offers a drain-to-source diode with a fast recovery time. Designed for high voltage, high speed switching applications in power suppliers, converters and PWM motor controls , these devices are particularly well suited for bridge circuits where diode speed and commutating safe operating areas are critical and offer additional and safety margin against unexpected voltage transients.

FEATURES

- Robust High Voltage Termination
- Avalanche Energy Specified
- Source-to-Drain Diode Recovery Time Comparable to a Discrete Fast Recovery Diode
- Diode is Characterized for Use in Bridge Circuits
- I_{DSS} and $V_{DS(on)}$ Specified at Elevated Temperature

Maximum ratings (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current	I_D	7	A
Pulsed Drain Current	I_{DM}	20	
Power Dissipation	P_D	2	W
Single Pulsed Avalanche Energy*	E_{AS}	530	mJ
Thermal Resistance, Junction-to-Ambient	R_{thJA}	62.5	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{stg}	-50 ~+150	

*E_{AS} condition: T_j=25℃,V_{DD}=50V,V_{GS}=10V,L=19.5mH,I_L=7A,R_G=0Ω

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Electrical characteristics (T_a=25℃ unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage (V_{GS} = 0 V, I_D = 250 μA)		$V_{(BR)DSS}$	600			V
Drain-Source Leakage Current		I_{DSS}				μA
(V_{DS} = 600 V, V_{GS} = 0 V)					1	
(V_{DS} = 480 V, V_{GS} = 0 V, T_J = 125℃)					100	
Gate-Source Leakage Current-Forward (V_{gsf} = 30 V, V_{DS} = 0 V)		I_{GSSF}			100	nA
Gate-Source Leakage Current-Reverse (V_{gsr} = 30 V, V_{DS} = 0 V)		I_{GSSR}			100	nA
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 250 μA)		$V_{GS(th)}$	2.0		4.0	V
Static Drain-Source On-Resistance (V_{GS} = 10 V, I_D = 3.5A) *		$R_{DS(on)}$			1.3	Ω
Forward Transconductance (V_{DS} = 50 V, I_D = 3.9A) *		g_{FS}	5.0			S
Input Capacitance	(V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz)	C_{iss}		1380	1600	pF
Output Capacitance		C_{oss}		115	190	pF
Reverse Transfer Capacitance		C_{rss}		23	25	pF
Turn-On Delay Time	(V_{DD} = 300 V, I_D = 7.0 A, V_{GS} = 10 V, R_G = 9.1Ω) *	$t_{d(on)}$		30	80	ns
Rise Time		t_r		80	165	ns
Turn-Off Delay Time		$t_{d(off)}$		125	160	ns
Fall Time		t_f		85	120	ns
Total Gate Charge	(V_{DS} = 480 V, I_D = 7.0 A, V_{GS} = 10 V)*	Q_g		38	50	nC
Gate-Source Charge		Q_{gs}		6.4		nC
Gate-Drain Charge		Q_{gd}		15		nC
Internal Drain Inductance (Measured from the drain lead 0.25” from package to center of die)		L_D		4.5		nH
Internal Drain Inductance (Measured from the source lead 0.25” from package to source bond pad)		L_S		7.5		nH
SOURCE-DRAIN DIODE CHARACTERISTICS						
Forward On-Voltage(1)	(I_S =7.0 A, d_{IS}/d_t = 100A/μs)	V_{SD}			1.4	V
Forward Turn-On Time		t_{on}		**		ns
Reverse Recovery Time		t_{rr}		415		ns

* Pulse Test: Pulse Width ≦300μs, Duty Cycle ≦2%

** Negligible, Dominated by circuit inductance

Typical Characteristics

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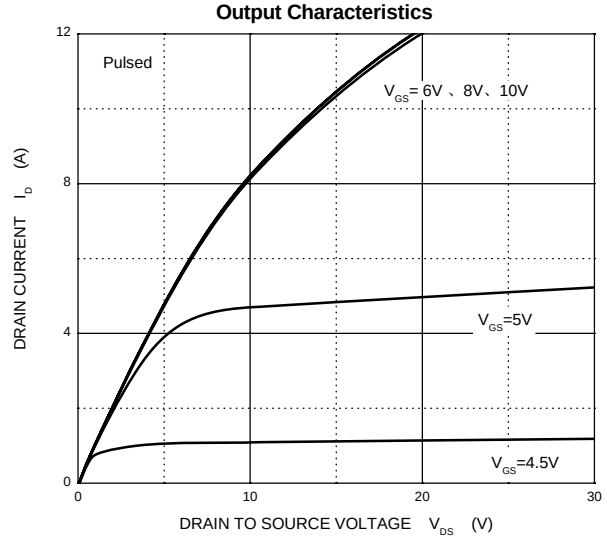
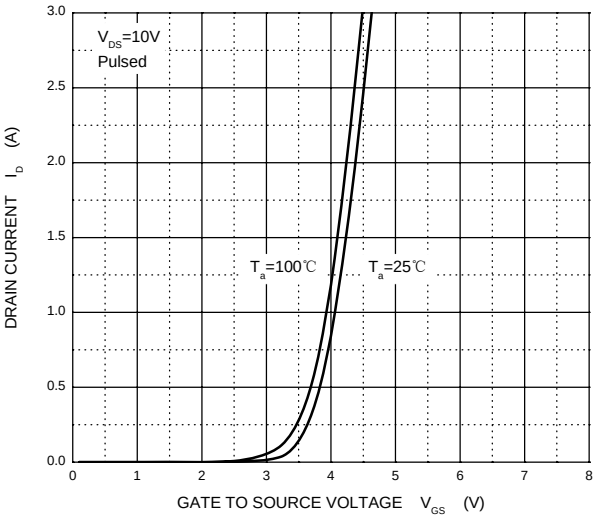
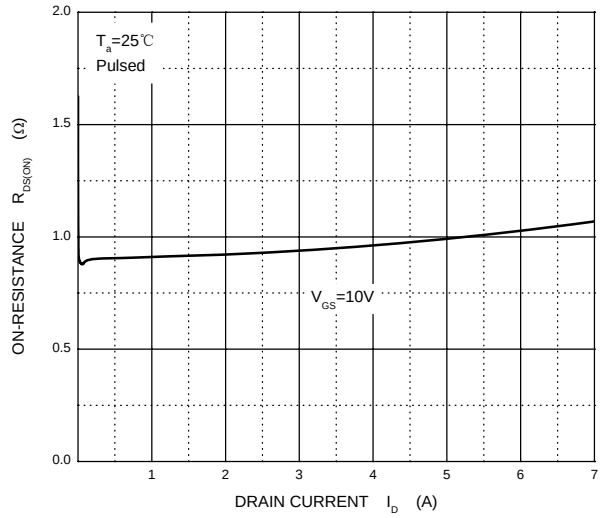
Output Characteristics



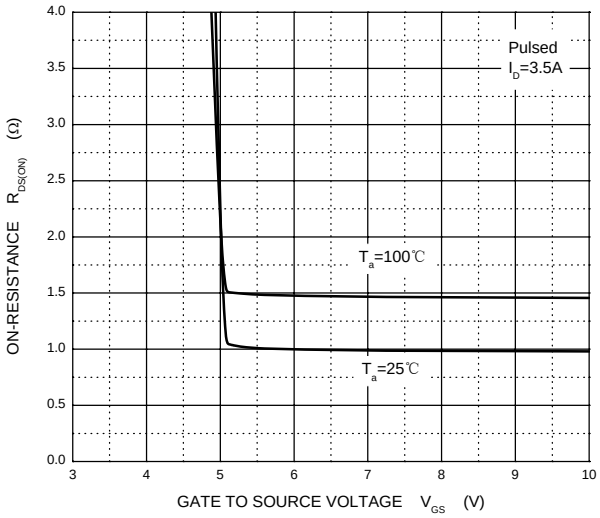
Transfer Characteristics



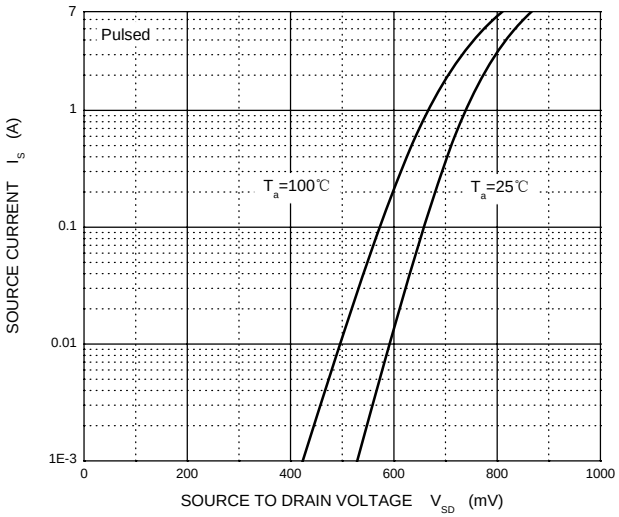
$R_{DS(ON)}$ —— I_D



$R_{DS(ON)}$—— V_{GS}



I_S —— V_{SD}



Threshold Voltage