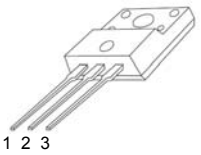
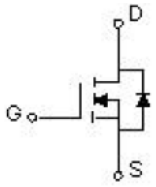
TO-220F Plastic-Encapsulate MOSFETS

CJPF02N60 N-Channel Power MOSFET

TO-220F

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	2	A
Pulsed Drain Current	I_{DM}	9	
Power Dissipation	P_D	2	W
Single Pulsed Avalanche Energy	E_{AS}*	128	mJ
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	62.5	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~+150	

*E_{AS} condition: T_j=25℃,V_{DD}=50V,L=64mH,I_L=2A,R_G=25Ω

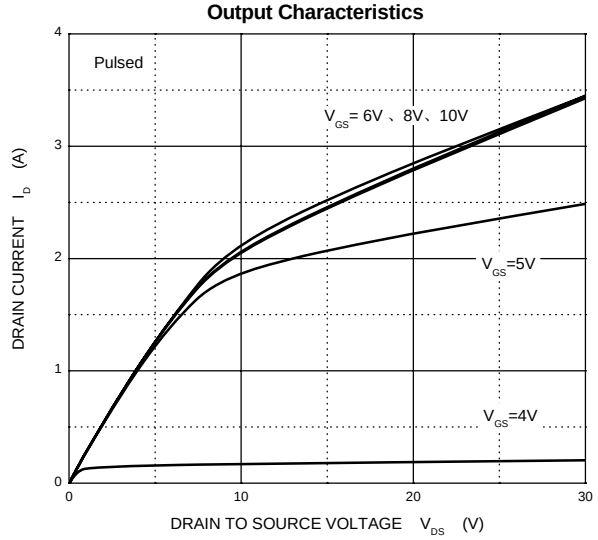
Electrical characteristics (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)\ DSS}$	V_{GS} = 0V, I_D =250μA	600			V
Gate-Threshold Voltage (note1)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.0		4.0	
Gate-Body Leakage Current (note1)	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =600V, V_{GS} =0V			25	μA
Drain-Source On-State Resistance (note1)	$R_{DS(on)}$	V_{GS} =10V, I_D =1A			4.4	Ω
Forward Transconductance (note1)	g_{fs}	V_{DS} =50V, I_D =1A	1			S
Input Capacitance (note 2)	C_{iss}	V_{DS} =25V,V_{GS} =0V, f =1MHz		435		pF
Output Capacitance (note 2)	C_{oss}			56		
Reverse Transfer Capacitance (note 2)	C_{rss}			9.2		
Turn-On Delay Time (note 2)	$t_{d(on)}$	V_{DD}=300V,I_D=2A, V_{GS}=10V,R_G=18Ω		12		ns
Rise Time (note 2)	t_r			21		
Turn-Off Delay Time (note 2)	$t_{d(off)}$			30		
Fall Time (note 2)	t_f			24		
Forward on Voltage(note1)	V_{SD}	V_{GS} =0V, I_S=2A			1.6	V

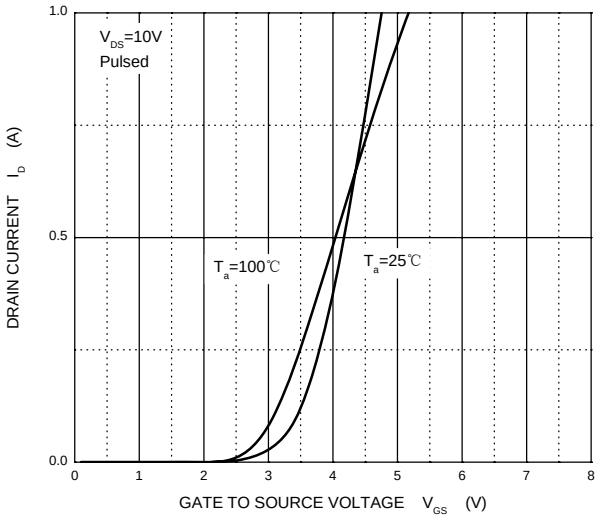
Notes:

1. Pulse Test : Pulse width≤300μs, duty cycle ≤2%.
2. These parameters have no way to verify.

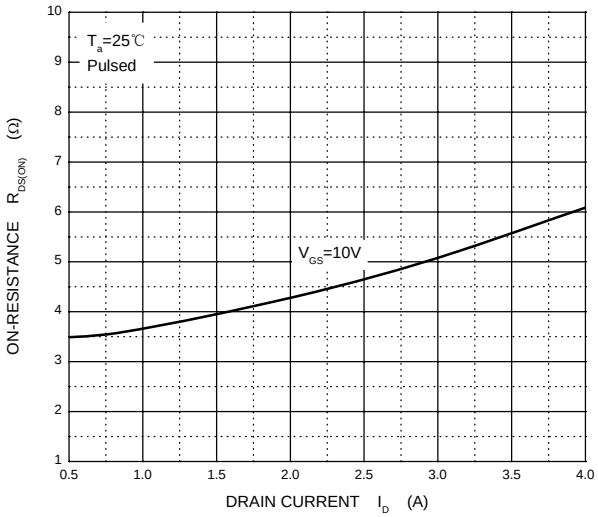
Output Characteristics



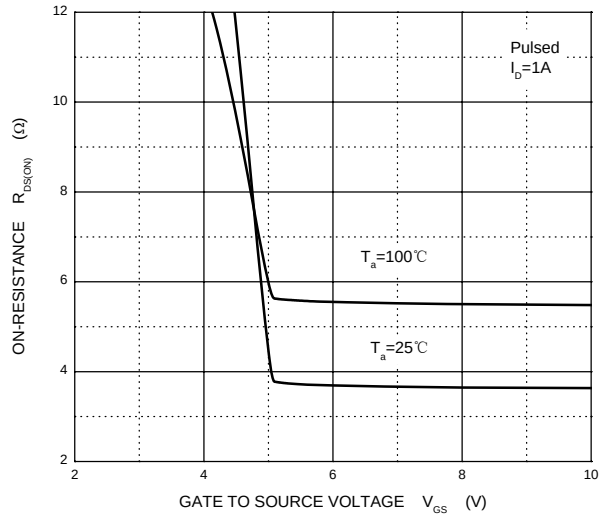
Transfer Characteristics



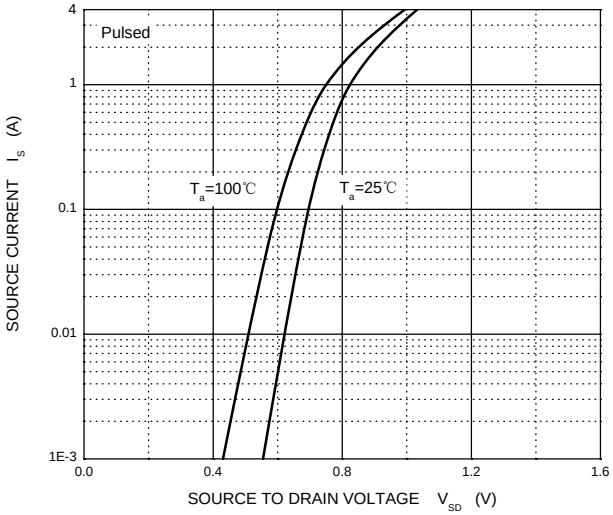
$R_{DS(ON)}$ —— I_D



$R_{DS(ON)}$—— V_{GS}



I_S —— V_{SD}



Threshold Voltage