

## TO-220F Plastic-Encapsulate MOSFETS

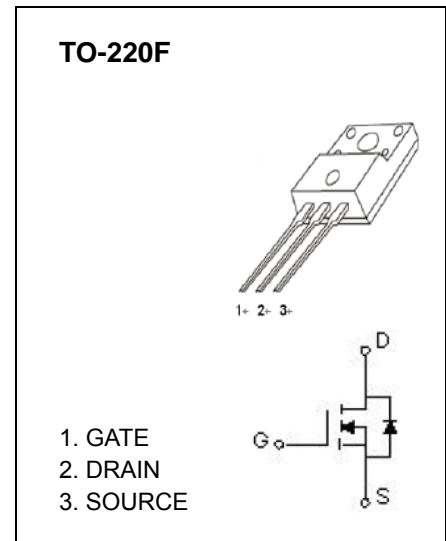
### CJPF05N60B      N-Channel Power MOSFET

#### 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 recovery time. Designed for high voltage, high speed switching 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	$I_D$	5	A
Pulsed Drain Current	$I_{DM}$	20	
Single Pulsed Avalanche Energy (note1)	$E_{AS}$	250	mJ
Power Dissipation	$P_D$	2	W
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	

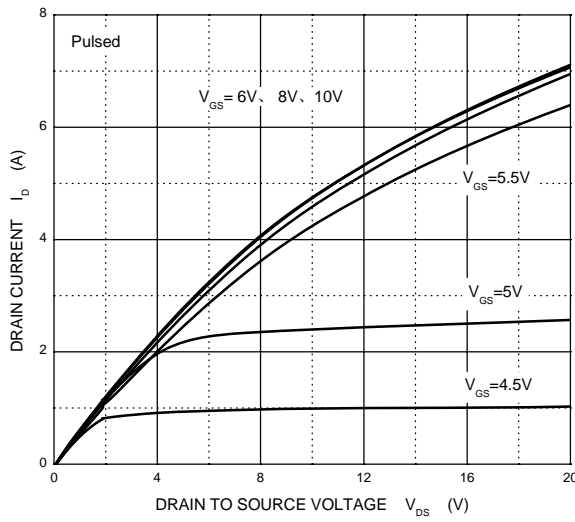
**Electrical characteristics (T<sub>a</sub>=25°C unless otherwise noted)**

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> =4.5A			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> =2.25A			2.5	Ω
<b>Dynamic characteristics (note 3)</b>						
Input capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f =1MHz			670	pF
Output capacitance	C <sub>OSS</sub>				72	
Reverse transfer capacitance	C <sub>RSS</sub>				8.5	
<b>Switching characteristics (note 3)</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =300V, V <sub>GS</sub> =10V, R <sub>G</sub> =25Ω, I <sub>D</sub> =4.5A			30	ns
Turn-on rise time	t <sub>r</sub>				90	
Turn-off delay time	t <sub>d(off)</sub>				85	
Turn-off fall time	t <sub>f</sub>				100	

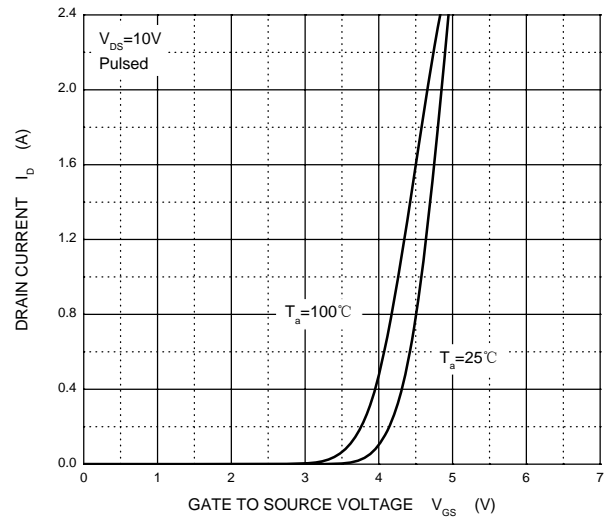
**Notes :**

- L=16mH, I<sub>L</sub>=5A, V<sub>DD</sub>=50V, R<sub>G</sub>=25Ω, Starting T<sub>J</sub>=25°C.
- Pulse Test : Pulse width≤300μs, duty cycle ≤2%.
- These parameters have no way to verify.

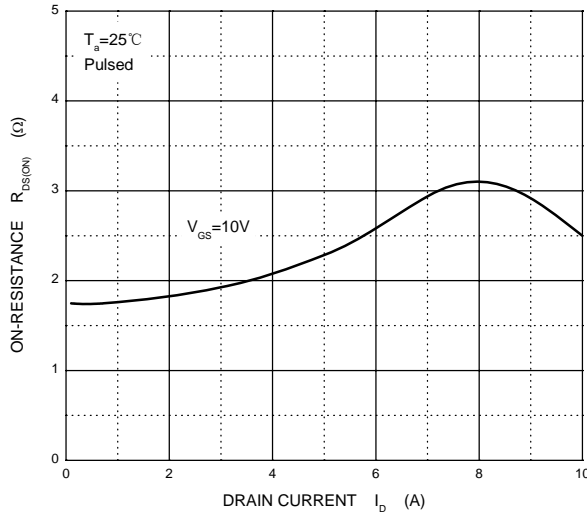
Output Characteristics



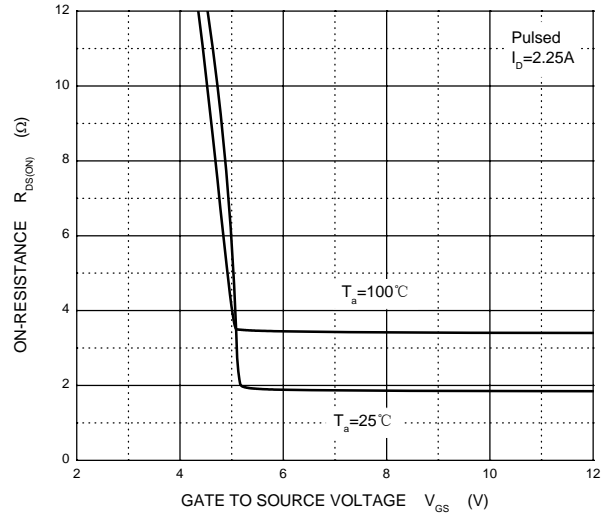
Transfer Characteristics



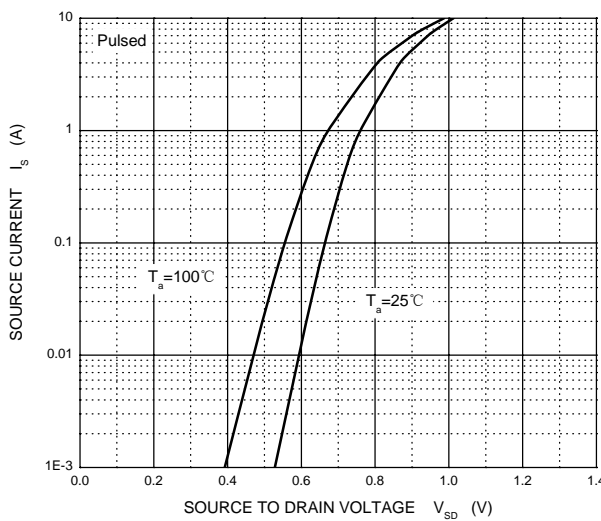
$R_{DS(ON)}$  —  $I_D$



$R_{DS(ON)}$  —  $V_{GS}$



$I_S$  —  $V_{SD}$



Threshold Voltage

