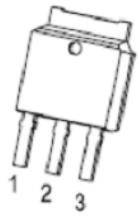
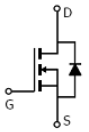
TO-251S Plastic-Encapsulate MOSFETS

CJD04N60B 600V N-Channel Power MOSFET

TO-251S



1. GATE
2. DRAIN
3. SOURCE



General Description

This advanced high voltage MOSFET is designed to wighstand high energy in the avalanche mode and switch efficiently.This new high energy device also offers a drain-to-source diode wigh fast recovery time.Desighed 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℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	±30	
Continuous Drain Current	I_D	4.0	A
Pulsed Drain Current	I_{DM}	16	
Single Pulsed Avalanche Energy (note1)	E_{AS}	260	mJ
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{STG}	-55 ~+150	
Maximum Lead Temperure for Soldering Purposes , 1/8”from Case for 5 Seconds	T_L	260	

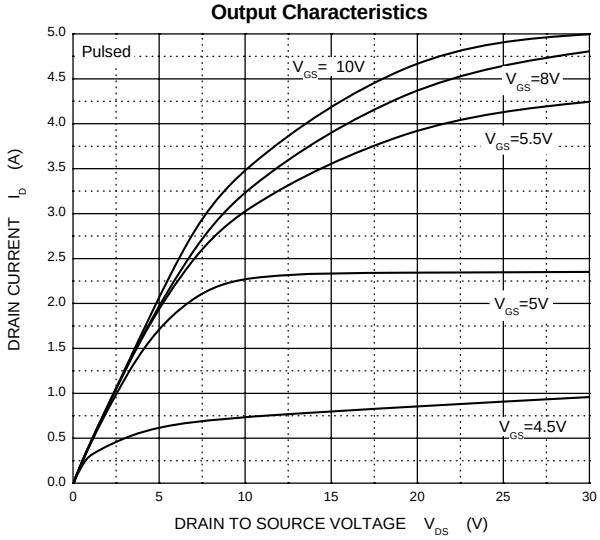
Electrical characteristics (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	600			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =600V, V_{GS} =0V			25	μA
		V_{DS}=0.8xRated$V_{(BR)DSS}$,V_{GS}=0V, T_J=125℃			100	
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±30V			±100	nA
On characteristics (note2)						
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.0		4.0	V
Static drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =2.0A		2.3	3.0	Ω
Forward transconductance	g_{fs}	V_{DS} =50V, I_D =2.0A	2.5			S
Dynamic characteristics (note 3)						
Input capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V,f =1MHz			760	pF
Output capacitance	C_{oss}				180	
Reverse transfer capacitance	C_{rss}				20	
Switching characteristics (note 2,3)						
Turn-on delay time	$t_{d(on)}$	V_{DD}=300V, V_{GS}=10V, R_G=9.1Ω, I_D =4.0A			20	ns
Turn-on rise time	t_r				10	
Turn-off delay time	$t_{d(off)}$				40	
Turn-off fall time	t_f				20	
Total gate charge	Q_G	V_{DS} =480V ,V_{GS}=10V,I_D=4.0A,		5.0	10	nC
Gate to source charge	Q_{GS}			2.7		
Gate to drain “miller” charge	Q_{GD}			2.0		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage(note2)	V_{SD}	V_{GS} = 0V, I_S =4.0A			1.5	V
Continuous drain-source diode forward current(note4)	I_S				10	A
Pulsed drain-source diode forward current	I_{SM}				40	A

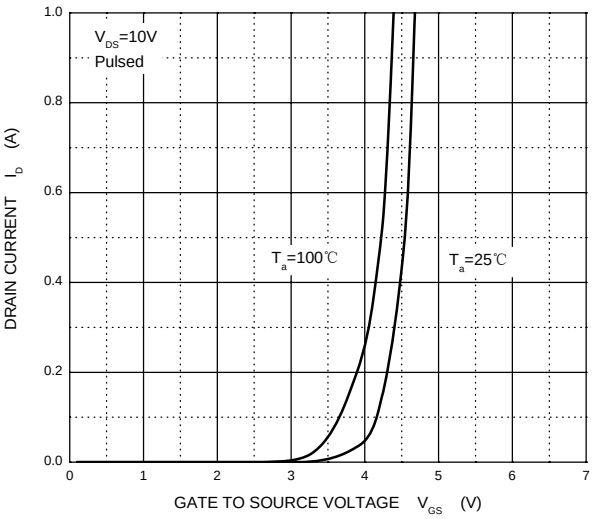
Notes :

1. L=30mH,I_L=4A, V_{DD}=100V,V_{GS}=10V, R_G=25Ω,Starting T_J=25℃.
2. Pulse Test : Pulse width≤300μs, duty cycle ≤2%.
3. Guaranteed by design, not subject to production
4. Surface mounted on FR4 board, t≤10s

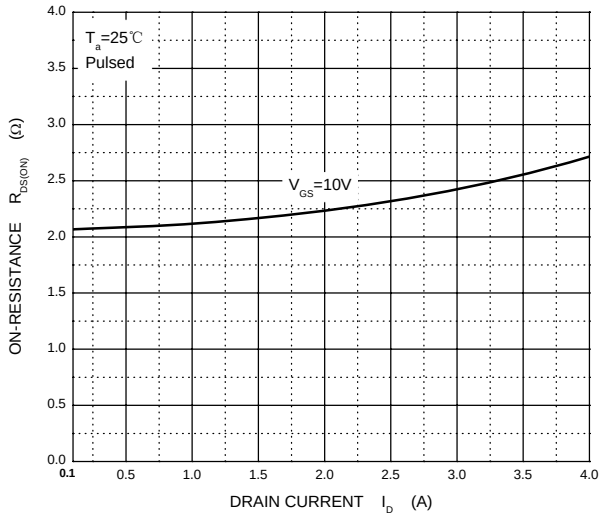
Output Characteristics



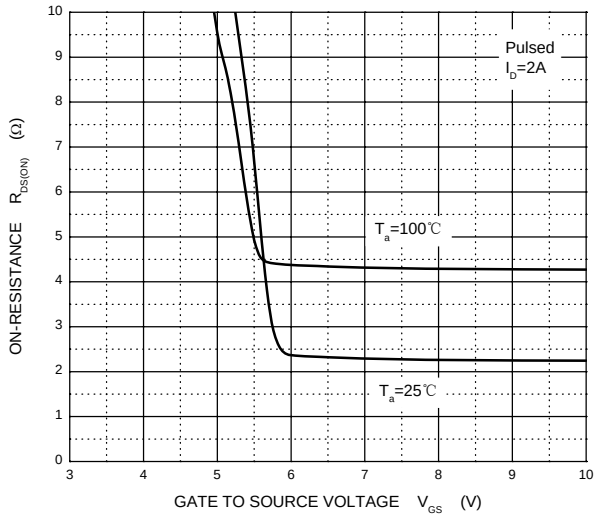
Transfer Characteristics



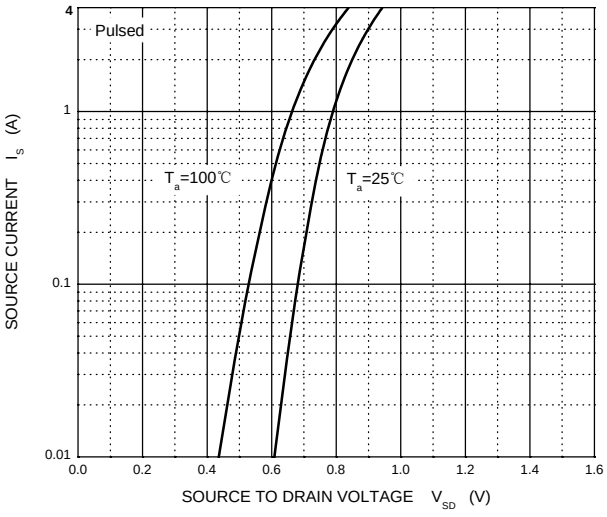
$R_{DS(ON)}$ —— I_D



$R_{DS(ON)}$—— V_{GS}



I_S —— V_{SD}



Threshold Voltage