

**TO-251S Plastic-Encapsulate MOSFETS****CJD30N10 N-Channel Power MOSFET**

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	31mΩ@10V	30A

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.

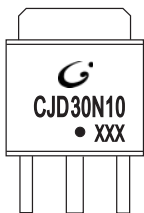
Designed for high voltage, high speed switching applications such as power supplies, converters, power motor controls and bridge circuits.

FEATURES

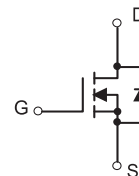
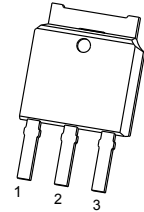
- High density cell design for ultra low $R_{DS(on)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Special process technology for high ESD capability
- Excellent package for good heat dissipation

APPLICATIONS

- Hard switched and high frequency circuits
- Uninterruptible power supply
- Power switching application

MARKING

CJD30N10= Device code
Solid dot = Green molding compound device,
if none, the normal device
XXX=Code

EQUIVALENT CIRCUIT**TO-251S**

1. GATE
2. DRAIN
3. SOURCE

MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	30	A
Pulsed Drain Current	I_{DM}	120	A
Single Pulsed Avalanche Energy	$E_{AS}^{(1)}$	156	mJ
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	$^{\circ}\text{C/W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55 ~ +150	$^{\circ}\text{C}$
Lead Temperature for Soldering Purposes(1/8" from case for 10s)	T_L	260	$^{\circ}\text{C}$

(1). E_{AS} condition: $V_{DD}=50\text{V}$, $L=0.5\text{mH}$, $R_G=25\Omega$, Starting $T_J = 25^{\circ}\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS

$T_a = 25^\circ\text{C}$ unless otherwise specified

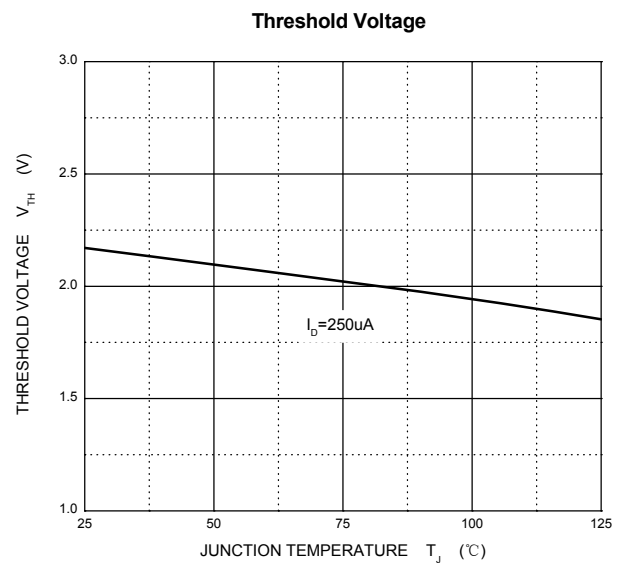
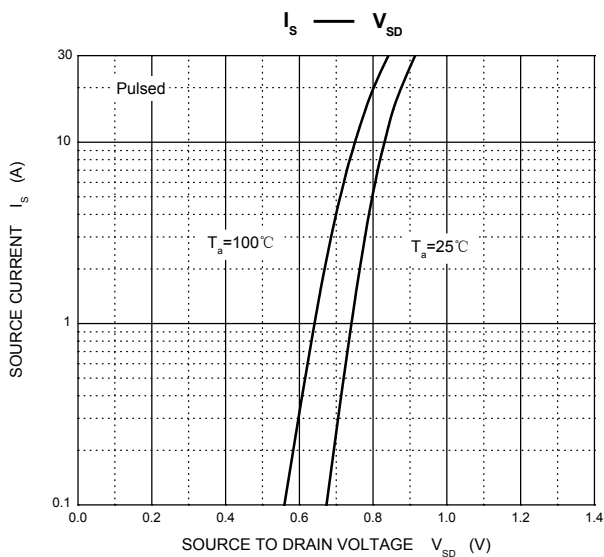
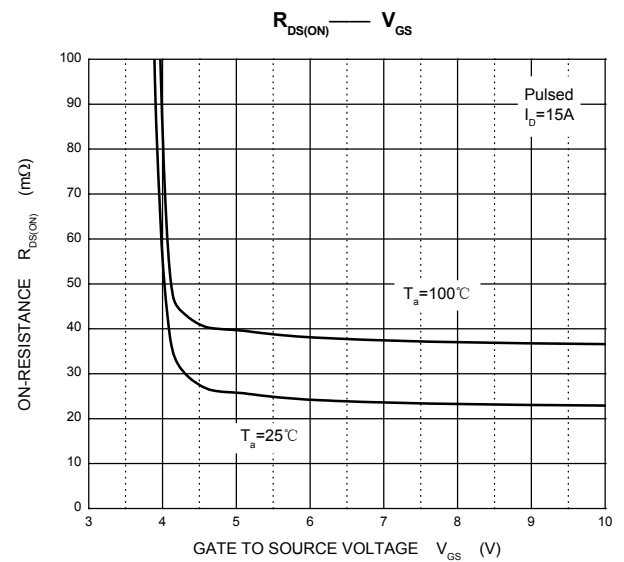
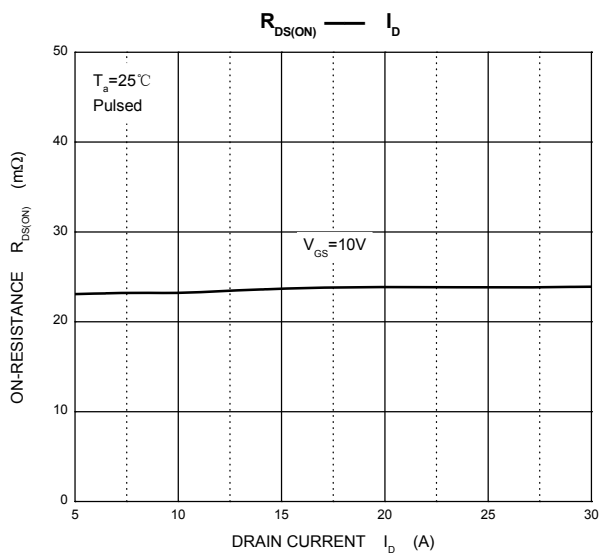
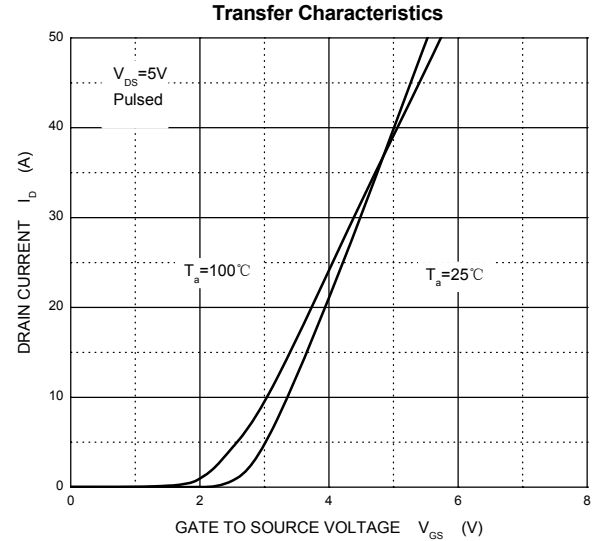
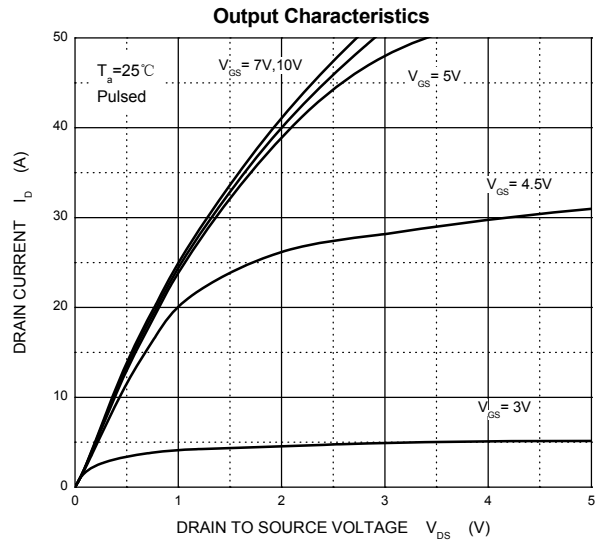
ELECTRICAL CHARACTERISTICS($T_a = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	V _{(BR) DSS}	V _{GS} = 0V, I _D =250μA	100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
On characteristics (note1)						
Gate-threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.3	2.1	2.5	V
Static drain-source on-sate resistance	R _{DS(on)}	V _{GS} =10V, I _D =15A		24	31	mΩ
Forward transconductance	g _{FS}	V _{DS} =5V, I _D =10A		15		S
Dynamic characteristics (note 2)						
Input capacitance	C _{iSS}	V _{DS} =25V,V _{GS} =0V, f =1MHz		2000		pF
Output capacitance	C _{oss}			300		
Reverse transfer capacitance	C _{rSS}			250		
Switching characteristics (note 2)						
Total gate charge	Q _g	V _{DS} =50V, V _{GS} =10V, I _D =10A		39		nC
Gate-source charge	Q _{gs}			8		
Gate-drain charge	Q _{gd}			12		
Turn-on delay time	t _{d(on)}	V _{DD} =30V,V _{GS} =10V,R _G = 3.0Ω, I _D =2A, R _L =5Ω		7		ns
Turn-on rise time	t _r			7		
Turn-off delay time	t _{d(off)}			29		
Turn-off fall time	t _f			7		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage(note1)	V _{SD}	V _{GS} =0V, I _S =15A			1.2	V
Continuous drain-source diode forward current	I _S				30	A
Pulsed drain-source diode forward current	I _{SM}				120	A

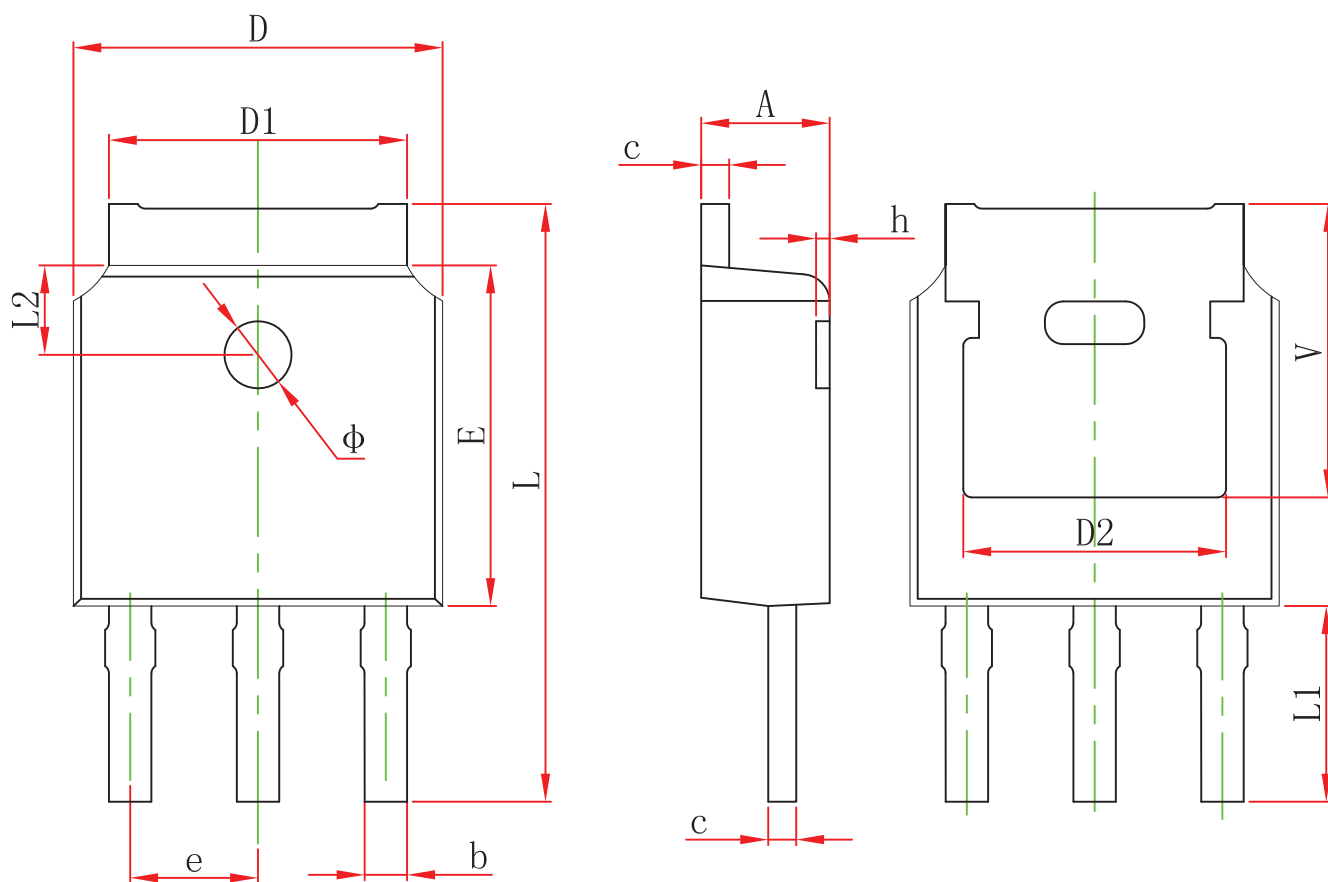
Notes:

1. Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production.

Typical Characteristics



TO-251S Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	10.400	11.000	0.409	0.433
L1	3.500 REF.		0.138 REF.	
L2	1.600 REF.		0.063 REF.	
ϕ	1.100	1.300	0.043	0.051
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	