

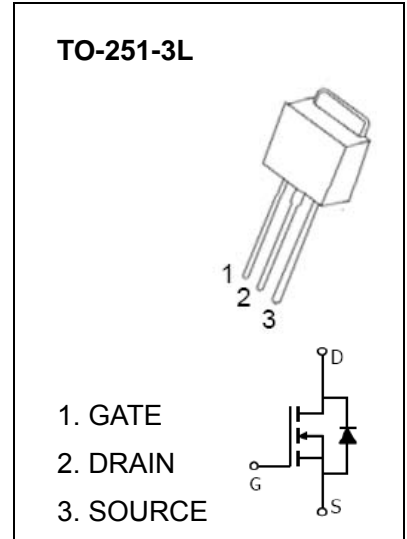


TO-251-3L Plastic-Encapsulate MOSFETS

CJD02N60 N-Channel Power MOSFET

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.



FEATURE

- 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 ($T_a=25^{\circ}C$ 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}	8	
Single Pulsed Avalanche Energy*	E_{AS}	128	mJ
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	$^{\circ}C/W$
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{stg}	-50 ~+150	

* E_{AS} condition: $T_J=25^{\circ}C, V_{DD}=50V, L=64mH, I_{AS}=2A, R_G=25\Omega$, Starting $T_J = 25^{\circ}C$

Electrical characteristics (T_a=25°C 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} =480V, V _{GS} =0V, T _j =125°C			100	
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	2.0		4.0	V
Static drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =1A		3.6	4.4	Ω
Forward transconductance	g _{FS}	V _{DS} =50V, I _D =1A	1			S
Dynamic characteristics (note 2)						
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz		435		pF
Output capacitance	C _{oss}			56		
Reverse transfer capacitance	C _{rss}			9.2		
Switching characteristics (note 2)						
Total gate charge	Q _g	V _{DS} =480V, V _{GS} =10V, I _D =2.4A		40	50	nC
Gate-source charge	Q _{gs}			4.2		
Gate-drain charge	Q _{gd}			8.4		
Turn-on delay time	t _{d(on)}	V _{DD} =300V, I _D =2A, V _{GS} =10V, R _G =18Ω		12		ns
Turn-on rise time	t _r			21		
Turn-off delay time	t _{d(off)}			30		
Turn-off fall time	t _f			24		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage(note1)	V _{SD}	V _{GS} =0V, I _S =2A			1.6	V
Continuous drain-source diode forward current	I _S				2	A
Pulsed drain-source diode forward current	I _{SM}				8	A

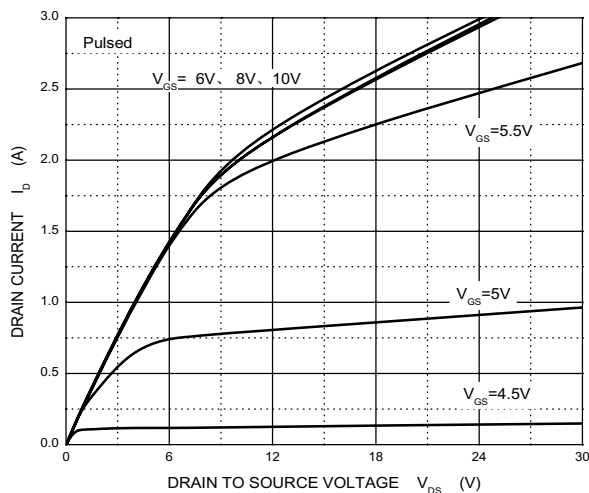
Notes:

1. Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.
2. Guaranteed by design, not subject to production.

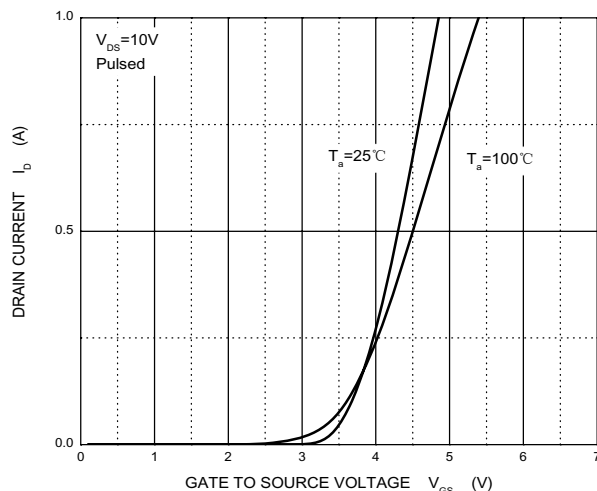
Typical Characteristics

CJD02N60

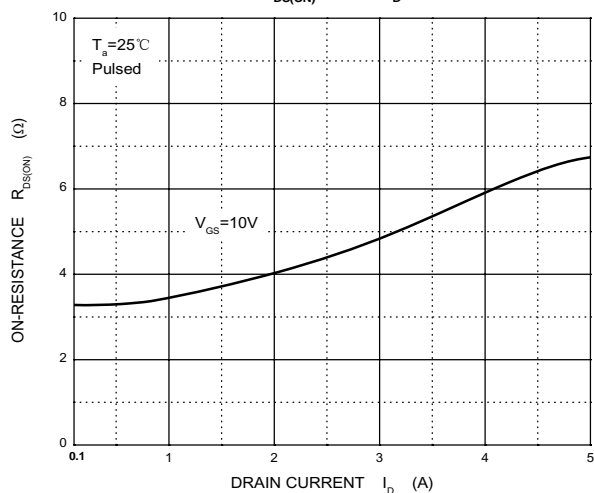
Output Characteristics



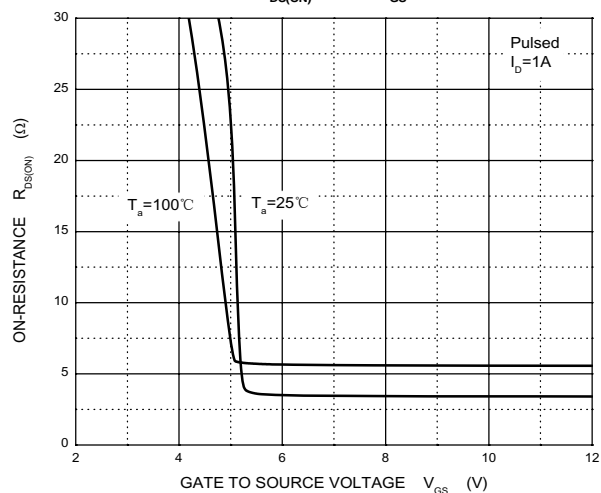
Transfer Characteristics



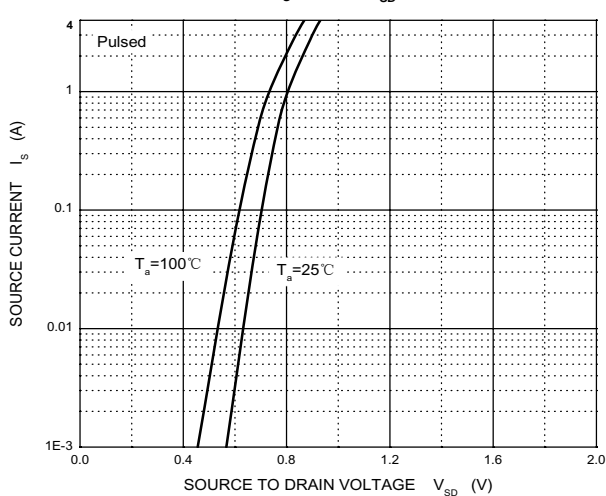
$R_{DS(ON)}$ — I_D



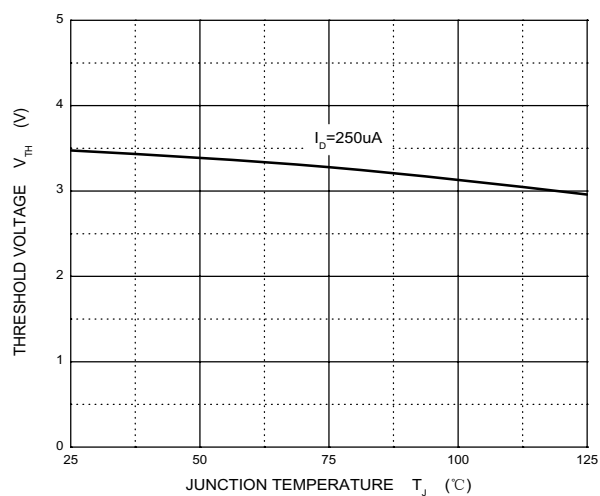
$R_{DS(ON)}$ — V_{GS}



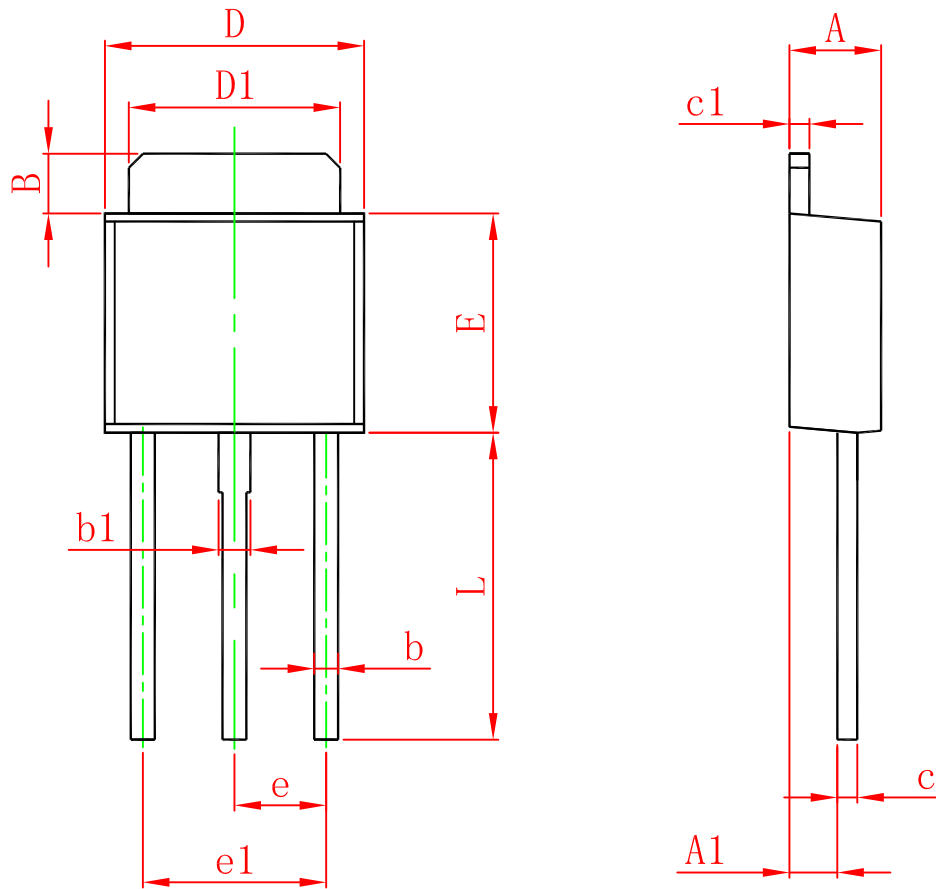
I_S — V_{SD}



Threshold Voltage



TO-251-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	1.050	1.350	0.042	0.054
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
L	7.500	7.900	0.295	0.311