Elektronische Bauelemente

SID04N65J

4A, 650V, $R_{DS(ON)}$ 3 Ω

N-Ch Enhancement Mode Power MOSFET

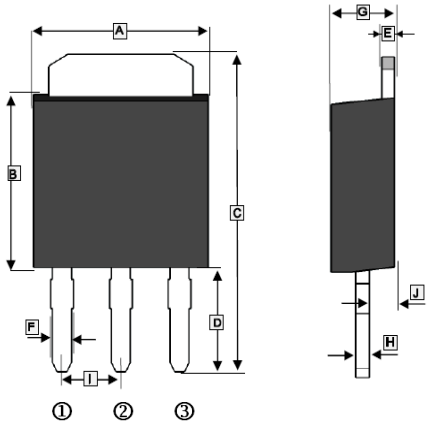
RoHS Compliant Product

A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

This advanced high voltage MOSFET is designed to stand huge energy in the avalanche mode and switch efficiently. This new device also offers a drain-to-source diode fast recovery time. Designed for high voltage, the device has high-speed switching applications such as power supplies, converters, power motor controls and bridge circuits.

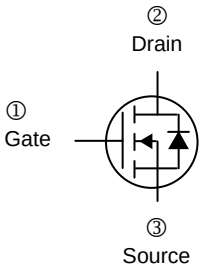
TO-251J



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.5	6.7	F	0.66	0.86
B	6	6.2	G	2.2	2.4
C	10.4	11	H	0.46	0.58
D	3.5 REF		I	2.186	2.386
E	0.46	0.58	J	0.86	1.16

FEATURES

- Lower $R_{DS(on)}$
- High current rating
- Lower capacitance
- Lower total gate charge
- Avalanche energy specified



MAXIMUM RATINGS (T_A=25℃ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current	I_D	4	A
Pulsed Drain Current	I_{DM}	16	A
Single Pulse Avalanche Energy [1]	E_{AS}	280	mJ
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	℃ / W
Maximum Lead Temperature for Soldering Purposes@ 1/8" from case for 5 seconds	T_L	260	℃
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ 150	℃

ELECTRICAL CHARACTERISTICS (T_A=25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	650	-	-	V	V_{GS}=0, I_D=250μA
Zero Gate Voltage Drain Current	I_{DSS}	-	-	25	μA	V_{DS}=600V, V_{GS}= 0V
Gate-Body Leakage Current [2]	I_{GSS}	-	-	±100	nA	V_{DS}=0V, V_{GS}= ±30V
Diode Forward Voltage [2]	V_{SD}	-	-	1.5	V	I_S=4A, V_{GS}=0
On Characteristics [2]						
Gate-Threshold Voltage	$V_{GS(th)}$	2	-	4	V	V_{DS}=V_{GS}, I_D=250μA
Drain-Source On-Resistance [1]	$R_{DS(ON)}$	-	-	3	Ω	V_{GS}=10V, I_D=2A
Dynamic Characteristics						
Input Capacitance	C_{iss}	-	760	-	pF	V_{DS}=25V V_{GS}=0 f=1MHz
Output Capacitance	C_{oss}	-	180	-		
Reverse Transfer Capacitance	C_{rss}	-	20	-		
Switching Characteristics						
Total Gate Charge	Q_g	-	5	-	nC	V_{DS}=480V V_{GS}=10V I_D=4A
Gate-Source Charge	Q_{gs}	-	2.7	-		
Gate-Drain (“Miller”) Charge	Q_{gd}	-	2	-		
Turn-On Delay Time	$T_{d(on)}$	-	20	-	nS	V_{DD}=300V V_{GS}=10V R_G=9.1Ω I_D=4A
Rise Time	T_r	-	10	-		
Turn-Off Delay Time	$T_{d(off)}$	-	40	-		
Fall Time	T_f	-	20	-		

Notes:
1. L=30mH, V_{DD}=100V, R_G=25Ω, I_L=4A, Starting T_J=25℃.
2. Pulse test：Pulse width≦300μs, duty cycle≦2%.

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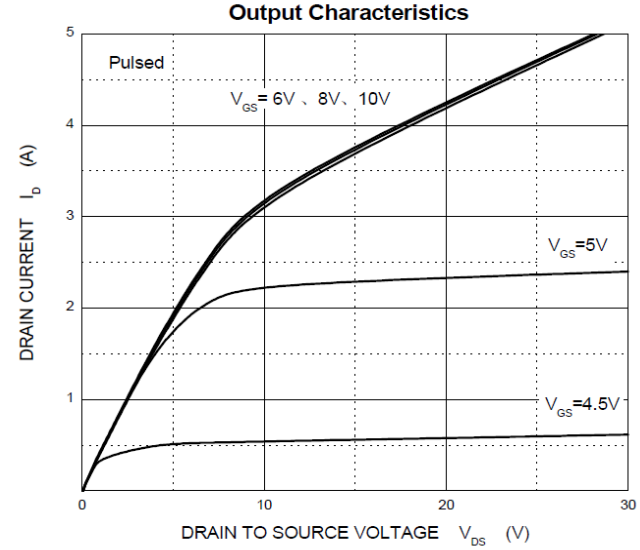
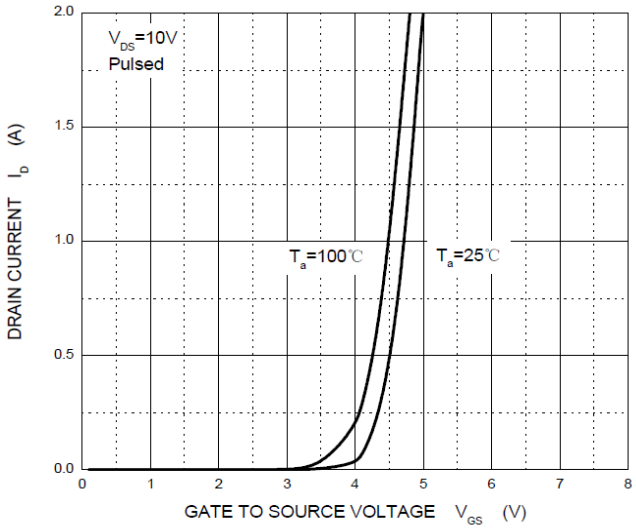
CHARACTERISTIC CURVES

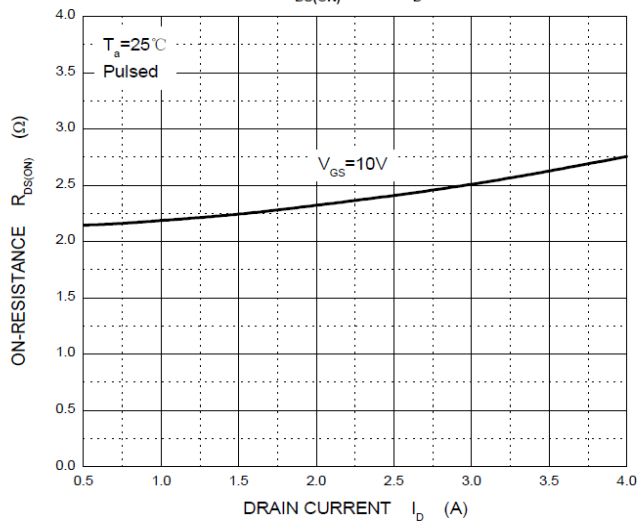
Output Characteristics



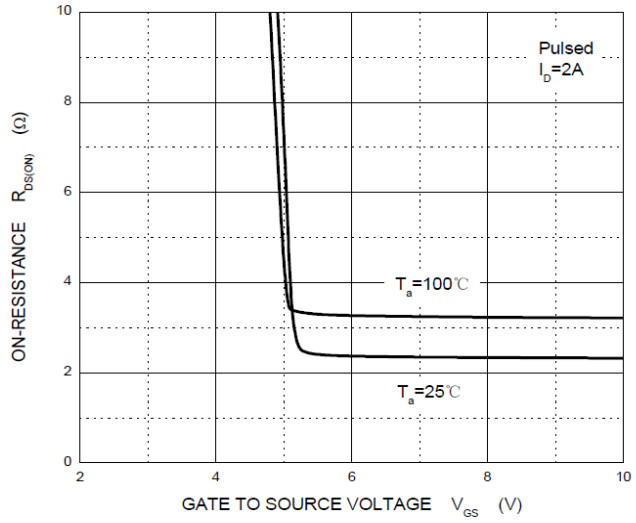
Transfer Characteristics



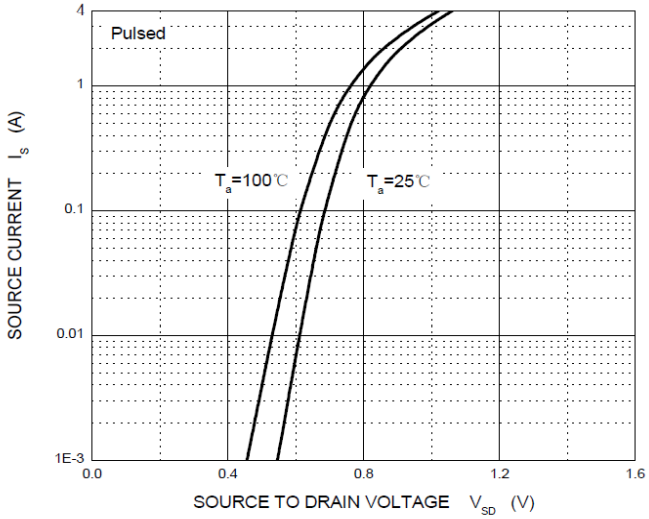
$R_{DS(ON)}$ —— I_D



$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}



Threshold Voltage