Elektronische Bauelemente

SSD30N02

30A, 20V, $R_{DS(ON)}$ 21 mΩ

N-Ch Enhancement Mode Power MOSFET

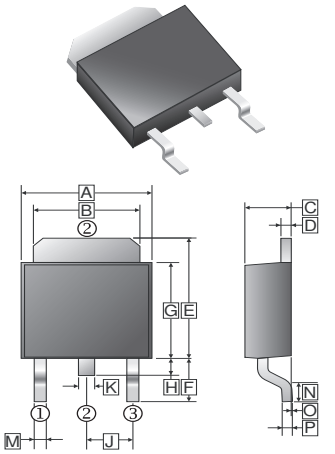
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

SSD30N02 is the highest performance trench N-ch MOSFET with extreme high cell density, which provides excellent $R_{DS(ON)}$ and gate charge for most synchronous buck converter applications.

SSD30N02 meets the RoHS and Green Product requirement with full function reliability approved.

TO-252(D-Pack)

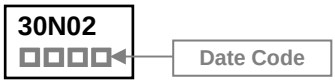


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.35	6.90	J	2.336 REF.	
B	4.95	5.50	K	0.89 REF.	
C	2.10	2.50	M	0.50	1.14
D	0.665 Typ.		N	1.55 Typ.	
E	6.0	7.5	O	0	0.13
F	2.90 REF		P	0.58 REF.	
G	5.40	6.40			
H	0.60	1.20			

FEATURES

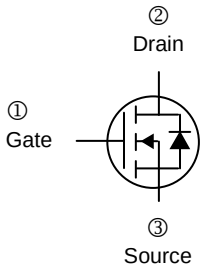
- Advanced high cell density Trench technology
- Super low gate charge
- Excellent CdV/dt effect decline
- Green device available

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch



ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current [1]	T_C=25℃	I_D	30	A
	T_C=100℃		19	
	T_A=25℃		9	
	T_A=70℃		7	
Pulsed Drain Current@ T_C=25℃ [2]		I_{DM}	40	A
Total Power Dissipation@ T_C=25℃ [3]		P_D	27.8	W
Maximum Thermal Resistance from Junction to Ambient [1]		$R_{\theta JA}$	50	℃ / W
Maximum Thermal Resistance from Junction to Case [1]		$R_{\theta JC}$	4.5	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	℃

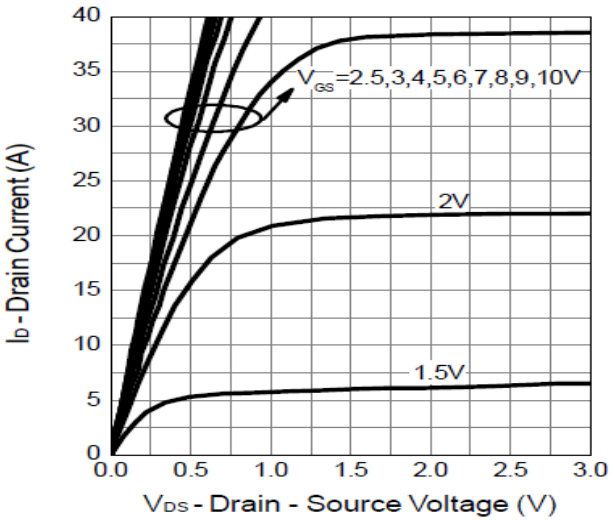
ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage	BV_{DSS}	20	-	-	V	V_{GS}=0, I_D=250μA
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=16V, V_{GS}=0, T_J=25℃
		-	-	30		V_{DS}=16V, V_{GS}=0, T_J=85℃
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{DS}=0V, V_{GS}= ±12V
Gate-Threshold Voltage	$V_{GS(th)}$	0.5	0.7	1	V	V_{DS}=V_{GS}, I_D=250μA
Static Drain-Source On-Resistance [2]	$R_{DS(ON)}$	-	16	21	mΩ	V_{GS}=4.5V, I_D=10A
		-	21	26		V_{GS}=2.5V, I_D=5A
Input Capacitance	C_{iss}	-	600	-	pF	V_{DS}=10V V_{GS}=0 f=1MHz
Output Capacitance	C_{oss}	-	100	-		
Reverse Transfer Capacitance	C_{rss}	-	72	-		
Total Gate Charge	Q_g	-	6.5	-	nC	V_{DS}=10V V_{GS}=4.5V I_D=15A
Gate-Source Charge	Q_{gs}	-	0.9	-		
Gate-Drain (“Miller”) Charge	Q_{gd}	-	2	-		
Turn-on Delay Time	$T_{d(on)}$	-	8.5	-	nS	V_{DD}=10V V_{GS}=10V R_G=6Ω R_L=10Ω I_D=1A
Rise Time	T_r	-	13	-		
Turn-off Delay Time	$T_{d(off)}$	-	23.5	-		
Fall Time	T_f	-	4	-		
Source-Drain Diode Characteristics						
Diode Forward Voltage [2]	V_{SD}	-	-	1.2	V	I_S=1.3A, V_{GS}=0V
Continuous Source Current [1,4]	I_S	-	-	30	A	V_G=V_D=0V, Force Current
Pulsed Source Current [2,4]	I_{SM}	-	-	40	A	
Reverse Recovery Time	T_{RR}	-	9	-	nS	I_F=8A , dI/dt=100A/μs, T_J=25℃
Reverse Recovery Charge	Q_{RR}	-	3	-	nC	

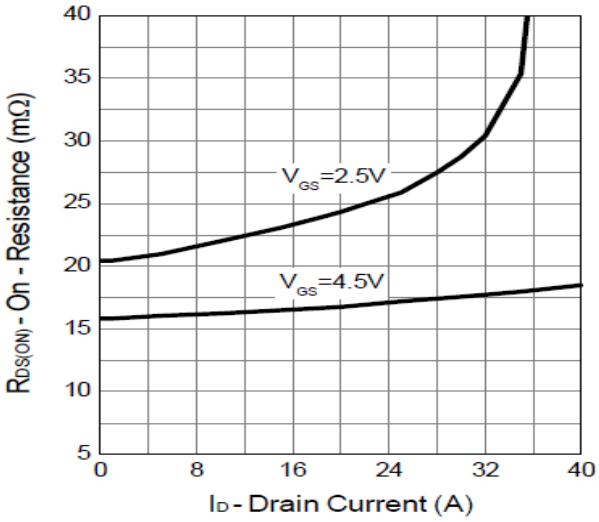
Notes:
1. The data is tested when the surface of the device is mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. The data is tested by the pulse: Pulse width≦300μs, duty cycle≦2%.
3. The power dissipation is limited by 150℃ juncti on temperature.
4. The data is theoretically the same as I_D and I_{DM}, in real applications, the data should be limited by the total power dissipation.

CHARACTERISTIC CURVE

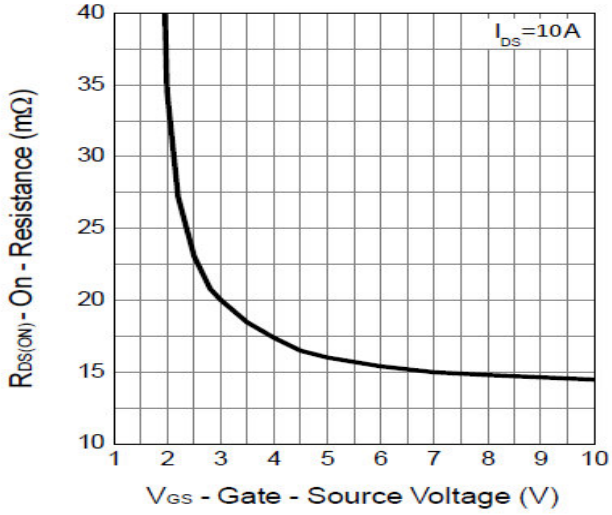
Output Characteristics



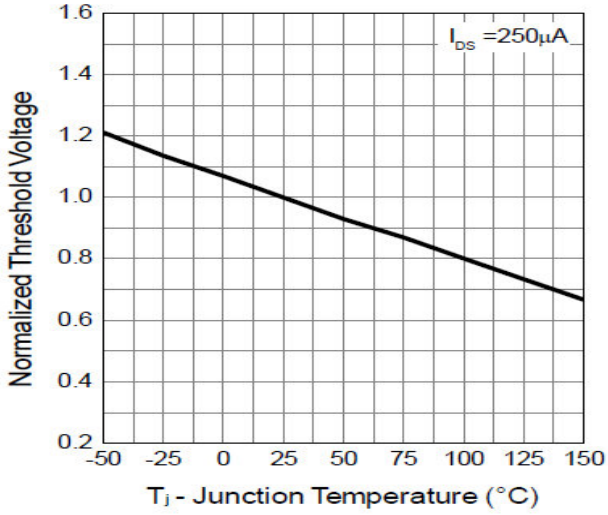
Drain-Source On Resistance



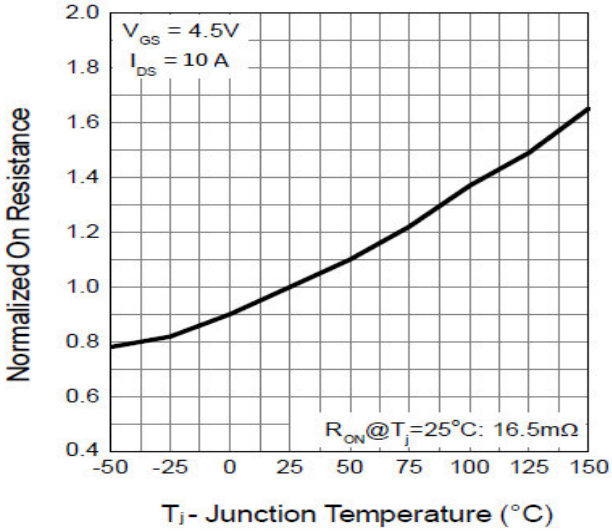
Gate-Source On Resistance



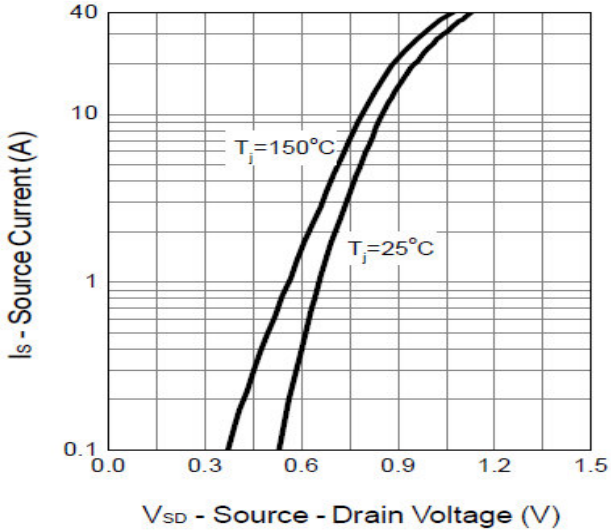
Gate Threshold Voltage



Drain-Source On Resistance



Source-Drain Diode Forward



Elektronische Bauelemente

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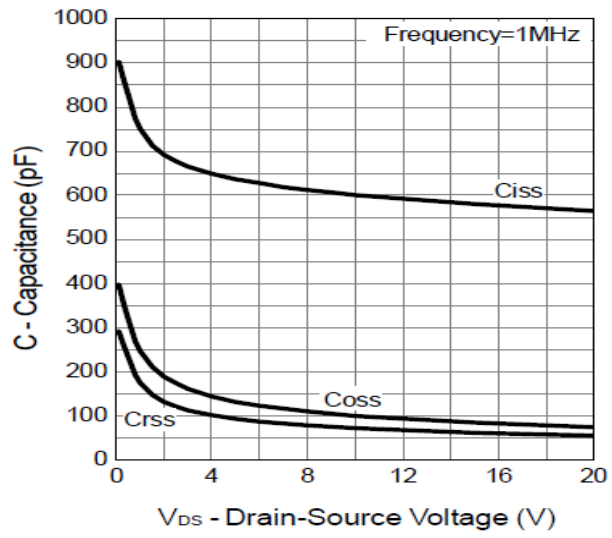
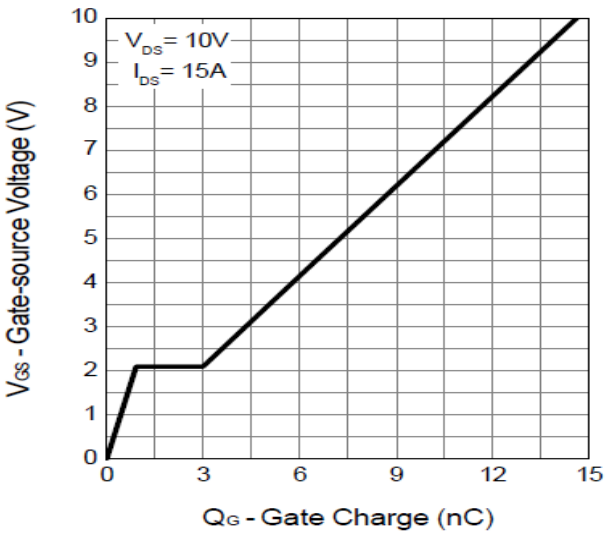
CHARACTERISTIC CURVE

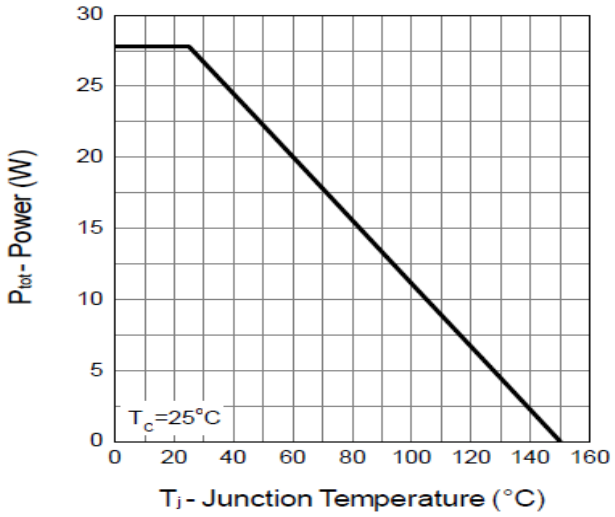
Capacitance



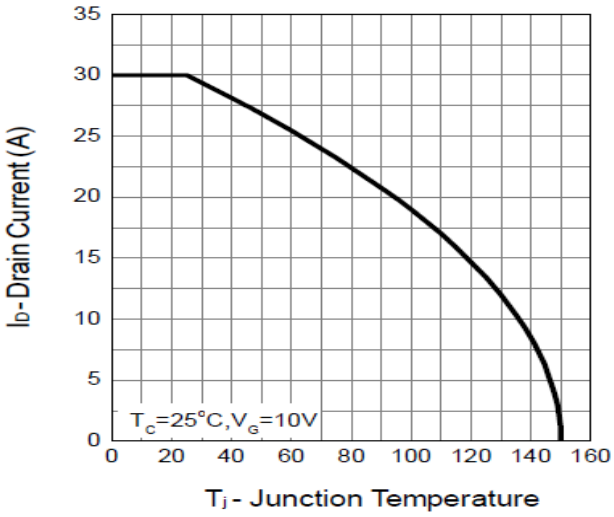
Gate Charge



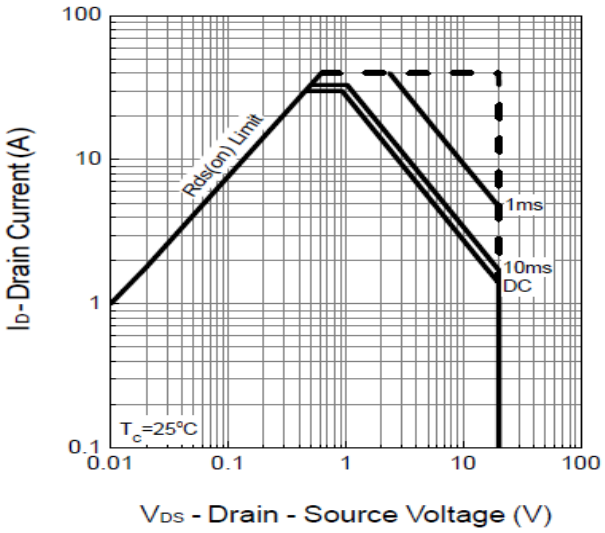
Power Dissipation



Drain Current



Safe Operation Area



Thermal Transient Impedance