Elektronische Bauelemente

SSD14N02E

14.7A, 20V, $R_{DS(ON)}$ 19.5 mΩ
N-Ch Enhancement Mode Power MOSFET

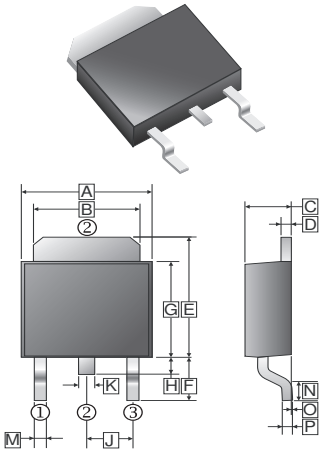
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

SSD14N02E is the best-performance trench N-ch MOSFETs with extreme high cell density, which provides excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

SSD14N02E meets the RoHS and Green Product requirement with full function reliability approved.

TO-252(D-Pack)

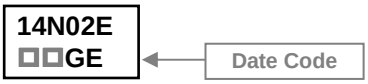


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.35	6.90	J	2.336 REF.	
B	4.95	5.50	K	0.89 REF.	
C	2.10	2.50	M	0.50	1.14
D	0.43	0.9	N	1.3	1.8
E	6.0	7.5	O	0	0.13
F	2.90 REF		P	0.58 REF.	
G	5.40	6.40			
H	0.60	1.20			

FEATURES

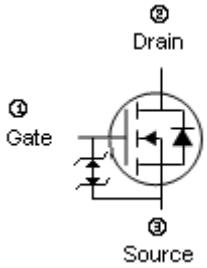
- Advanced high cell density Trench technology
- Super low gate charge
- Excellent CdV/dt effect decline
- ESD protection
- Green device available

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@ V_{GS}=4.5V [1]	T_A=25℃	I_D	14.7	A
	T_A=70℃		11.6	
Pulsed Drain Current [3]		I_{DM}	20	A
Total Power Dissipation@ T_A=25℃		P_D	6.3	W
Thermal Resistance from Junction to Ambient [1]	t≦10sec	$R_{\theta JA}$	20	℃ / W
	Steady State		62.5	
Thermal Resistance from Junction to Ambient			110	
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}	-	-	±10	μA	V_{DS}=0V, V_{GS}= ±10V
Gate-Threshold Voltage	$V_{GS(th)}$	0.5	0.7	1.2	V	V_{DS}=V_{GS}, I_D=250μA
Static Drain-Source On-Resistance [2]	$R_{DS(ON)}$	-	-	19.5	mΩ	V_{GS}=4.5V, I_D=10A
		-	-	26.5		V_{GS}=2.5V, I_D=5A
Input Capacitance	C_{iss}	-	630	-	pF	V_{DS}=15V V_{GS}=0 f=1MHz
Output Capacitance	C_{oss}	-	105	-		
Reverse Transfer Capacitance	C_{rss}	-	100	-		
Total Gate Charge	Q_g	-	12	-	nC	V_{DS}=10V V_{GS}=4.5V I_D=10A
Gate-Source Charge	Q_{gs}	-	1.4	-		
Gate-Drain (“Miller”) Charge	Q_{gd}	-	4.4	-		
Turn-on Delay Time	$T_{d(on)}$	-	5	-	nS	V_{DD}=10V V_{GS}=4.5V R_G=6Ω R_L=10Ω I_D=1A
Rise Time	T_r	-	9	-		
Turn-off Delay Time	$T_{d(off)}$	-	25	-		
Fall Time	T_f	-	5	-		
Source-Drain Diode Characteristics						
Diode Forward Voltage [2]	V_{SD}	-	-	1.3	V	I_S=1.3A, V_{GS}=0
Continuous Source Current [1,4]	I_S	-	-	14.7	A	V_G=V_D=0V, Force Current
Pulsed Source Current [2,4]	I_{SM}	-	-	20	A	
Reverse Recovery Time	T_{RR}	-	16	-	nS	I_F=10A, dI/dt=100A/μs, T_J=25℃
Reverse Recovery Charge	Q_{RR}	-	10	-	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.

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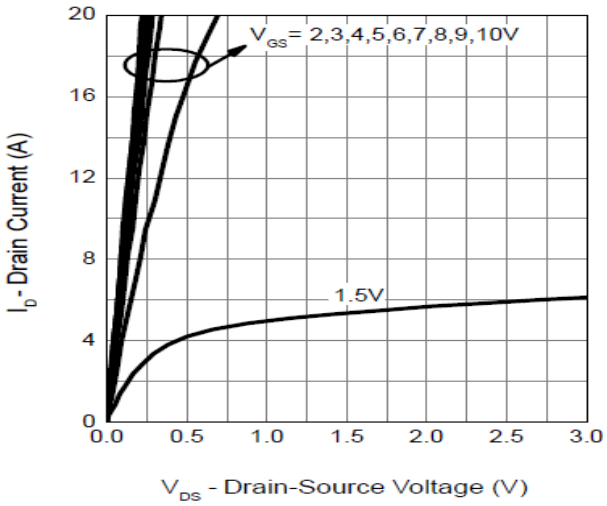
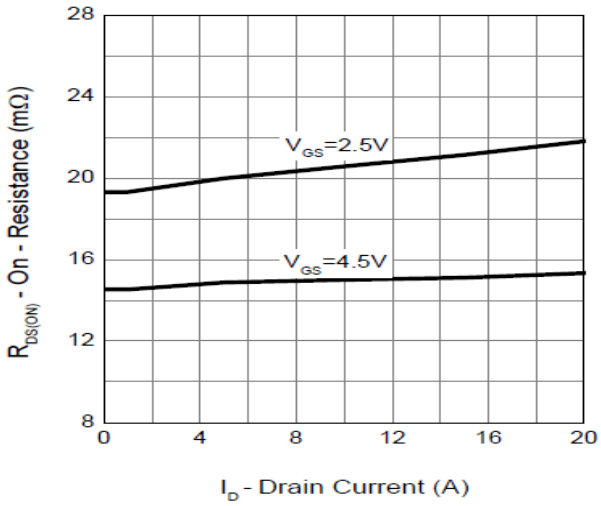
CHARACTERISTIC CURVE

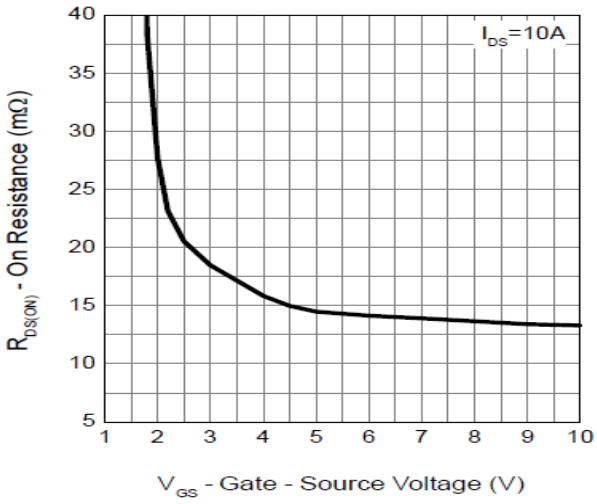
Output Characteristics



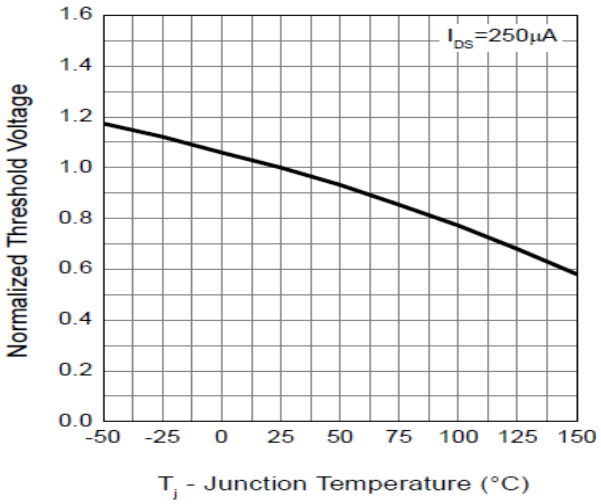
Drain-Source On Resistance



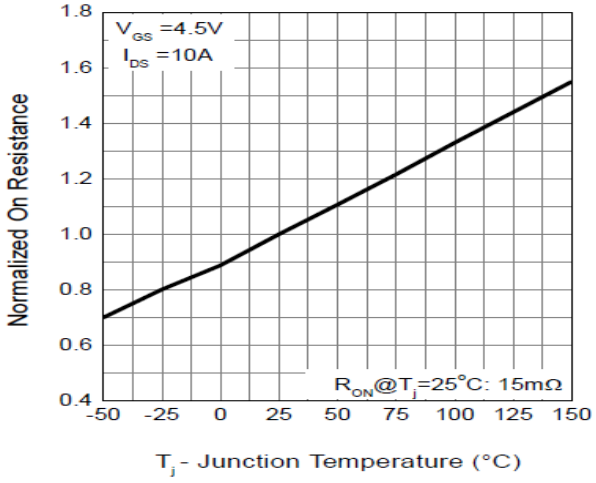
Gate-Source On Resistance



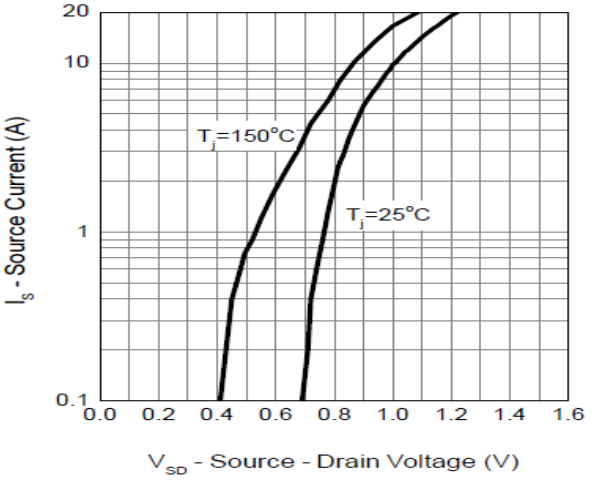
Gate Threshold Voltage



Drain-Source On Resistance

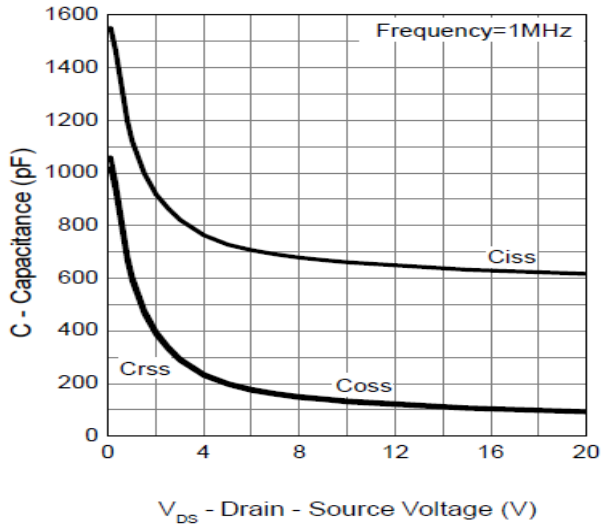


Source-Drain Diode Forward

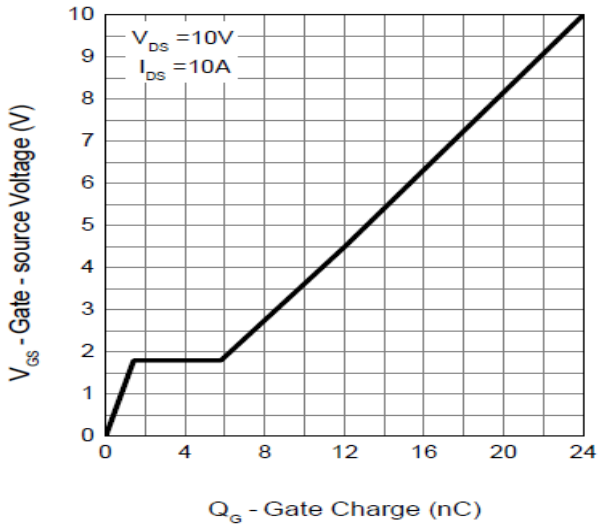


CHARACTERISTIC CURVE

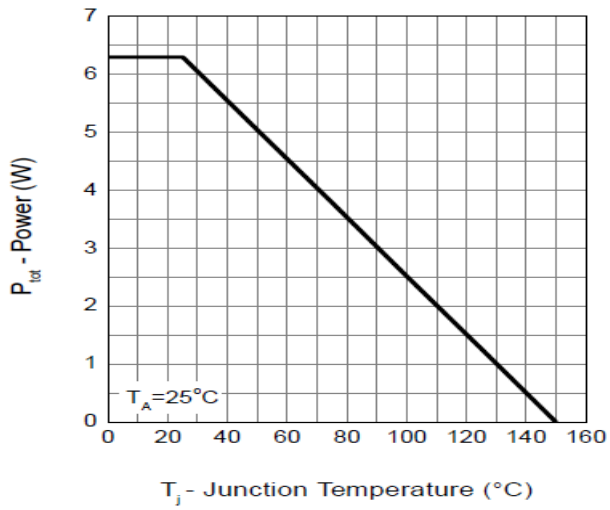
Capacitance



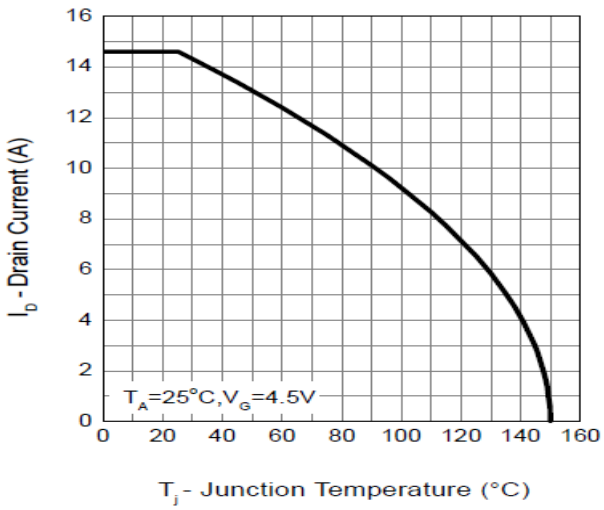
Gate Charge



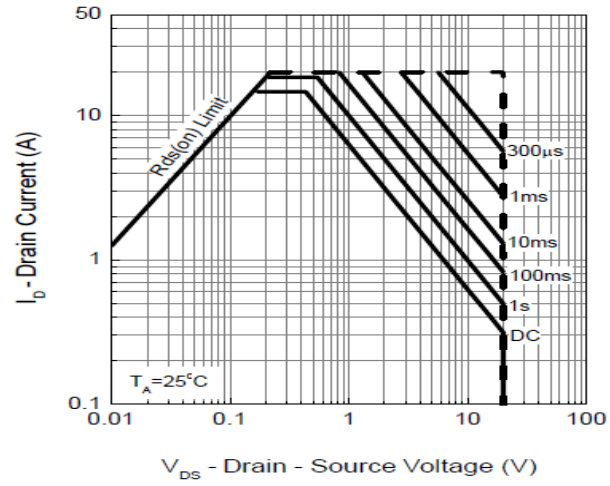
Power Dissipation



Drain Current



Safe Operation Area



Thermal Transient Impedance