

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

**DESCRIPTION**

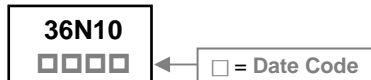
The SSD36N10-C is the highest performance N-Ch MOSFETs with extreme high cell density, which provide excellent R<sub>DS(ON)</sub> and gate charge for most of the synchronous buck converter applications.

The SSD36N10-C meet the RoHS and Green Product requirement with full function reliability approved.

**FEATURES**

- High Speed Power Switching
- Super Low Gate Charge
- Green Device Available

**MARKING**



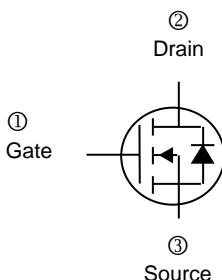
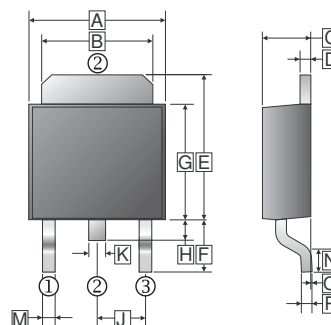
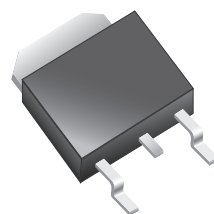
**PACKAGE INFORMATION**

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

**ORDER INFORMATION**

Part Number	Type
SSD36N10-C	Lead (Pb)-free and Halogen-free

**TO-252(D-Pack)**



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.3	6.9	J	2.3	REF.
B	4.95	5.53	K	0.89	REF.
C	2.1	2.5	M	0.45	1.14
D	0.4	0.9	N	1.55	TYP.
E	6	7.7	O	0	0.15
F	2.90	REF.	P	0.58	REF.
G	5.4	6.4			
H	0.6	1.2			

**ABSOLUTE MAXIMUM RATINGS**

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current <sup>1</sup> @V <sub>GS</sub> =10V	I <sub>D</sub>	T <sub>C</sub> =25°C	36
		T <sub>C</sub> =100°C	23
Pulsed Drain Current <sup>3</sup>	I <sub>DM</sub>	110	A
Total Power Dissipation	P <sub>D</sub>	43.1	W
Operating Junction & Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55~150	°C
<b>Thermal Resistance Ratings</b>			
Thermal Resistance Junction-Ambient <sup>1</sup>	R <sub>θJA</sub>	62.5	°C/W
Thermal Resistance Junction-Ambient <sup>2</sup>		110	
Thermal Resistance Junction-Case <sup>1</sup>		R <sub>θJC</sub>	

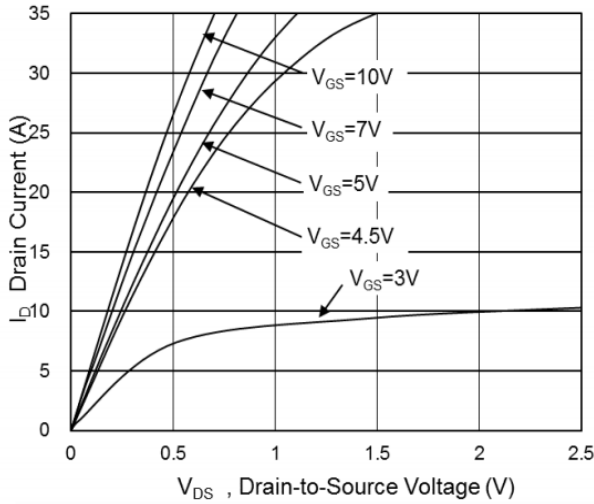
**ELECTRICAL CHARACTERISTICS** ( $T_J=25^\circ C$  unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	$BV_{DSS}$	100	-	-	V	$V_{GS}=0, I_D=250\mu A$	
Gate Threshold Voltage	$V_{GS(th)}$	1.2	-	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu A$	
Gate-Source Leakage Current	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{GS}=\pm 20V$	
Drain-Source Leakage Current	$I_{DSS}$	$T_J=25^\circ C$	-	-	1	$\mu A$	$V_{DS}=80V, V_{GS}=0$
		$T_J=55^\circ C$	-	-	5		$V_{DS}=80V, V_{GS}=0$
Static Drain-Source On-Resistance <sup>4</sup>	$R_{DS(ON)}$	-	-	24	m $\Omega$	$V_{GS}=10V, I_D=15A$	
		-	-	30		$V_{GS}=4.5V, I_D=10A$	
Total Gate Charge	$Q_g$	-	57	-	nC	$I_D=10A$ $V_{DS}=30V$ $V_{GS}=10V$	
Gate-Source Charge	$Q_{gs}$	-	8.7	-			
Gate-Drain Charge	$Q_{gd}$	-	14	-			
Turn-on Delay Time	$T_{d(on)}$	-	16.2	-	nS	$V_{DD}=30V$ $I_D=1A$ $V_{GS}=10V$ $R_G=3.3\Omega$	
Rise Time	$T_r$	-	41.2	-			
Turn-off Delay Time	$T_{d(off)}$	-	56.4	-			
Fall Time	$T_f$	-	16.2	-			
Input Capacitance	$C_{iss}$	-	3307	-	pF	$V_{GS}=0$ $V_{DS}=25V$ $f=1MHz$	
Output Capacitance	$C_{oss}$	-	201	-			
Reverse Transfer Capacitance	$C_{rss}$	-	151	-			
<b>Source-Drain Diode</b>							
Diode Forward Voltage <sup>4</sup>	$V_{SD}$	-	-	1.2	V	$V_{GS}=0, I_S=1A$	
Continuous Source Current <sup>1</sup>	$I_S$	-	-	36	A		
Pulsed Source Current <sup>3</sup>	$I_{SM}$	-	-	110	A		
Reverse Recovery Time	$T_{rr}$	-	44	-	nS	$I_S=10A, V_{GS}=0,$ $di/dt=100A/\mu s$	
Reverse Recovery Charge	$Q_{rr}$	-	25	-	nC		

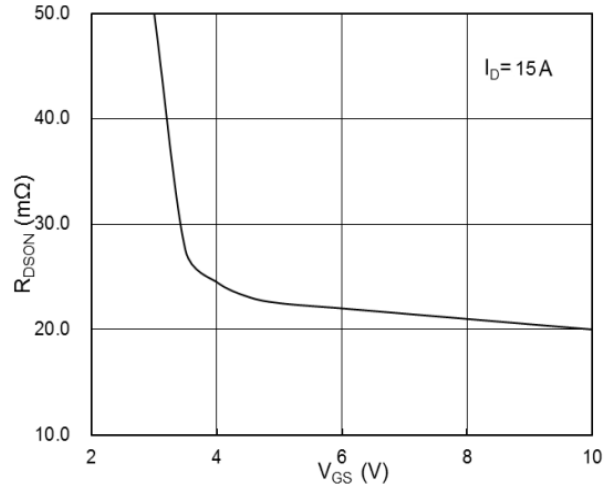
Notes:

- Surface mounted on 1inch<sup>2</sup> FR-4 Board with 20Z copper.
- When mounted on Min. copper pad.
- Pulse width limited by maximum junction temperature, pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$
- The data tested by pulsed, Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

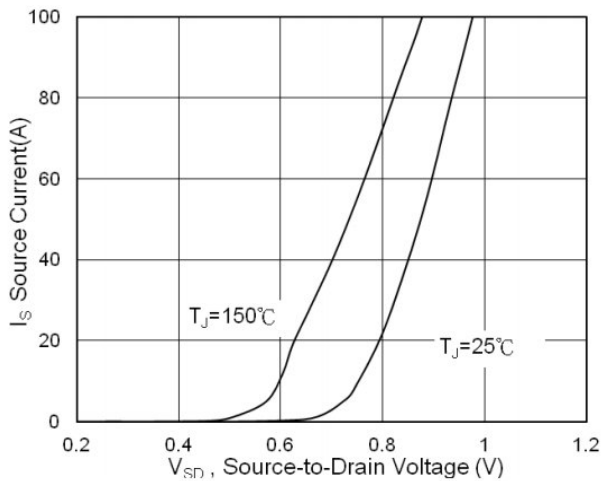
**TYPICAL CHARACTERISTICS CURVE**



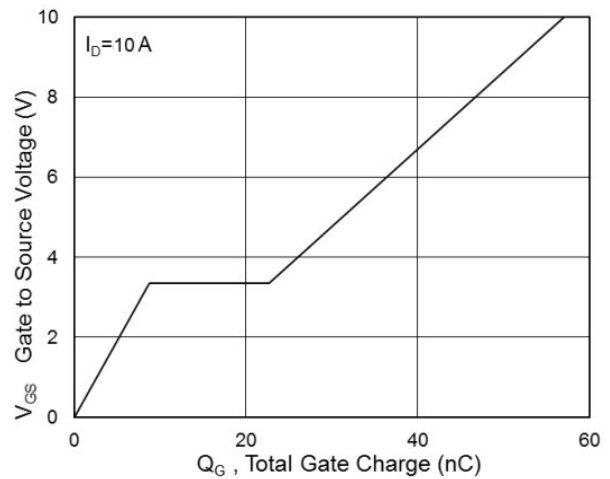
**Fig.1 Typical Output Characteristics**



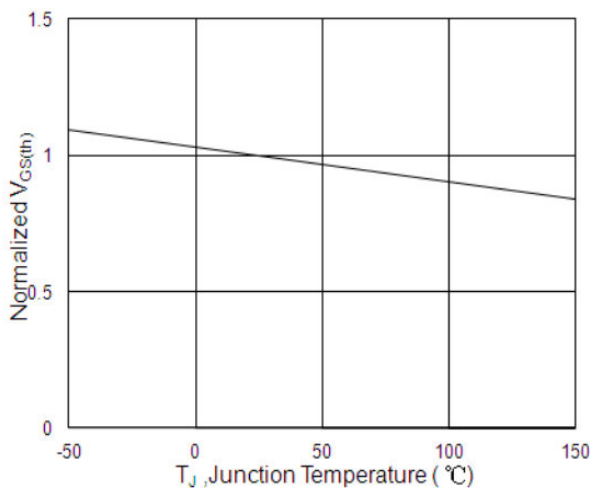
**Fig.2 On-Resistance vs. G-S Voltage**



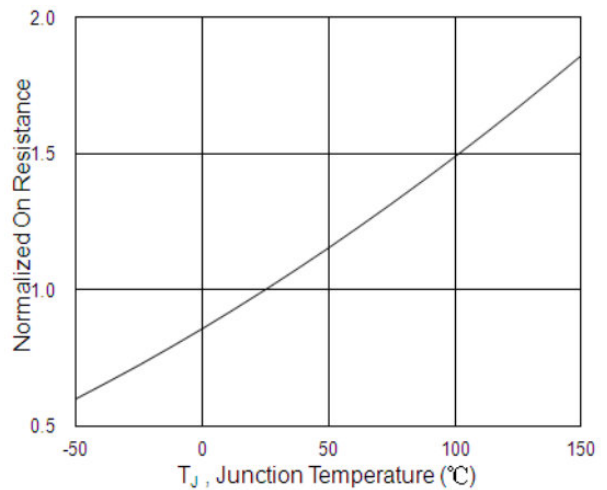
**Fig.3 Source-Drain Diode Forward Voltage**



**Fig.4 Gate-Charge Characteristics**

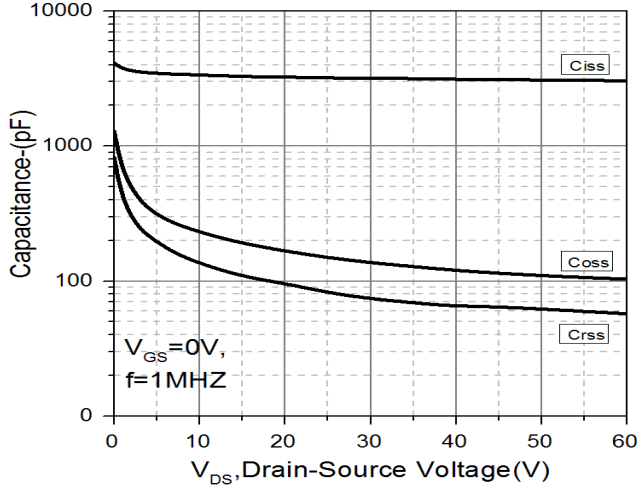


**Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$**

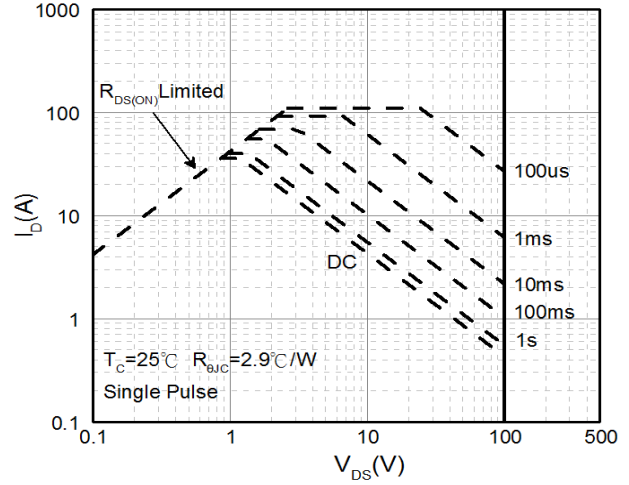


**Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$**

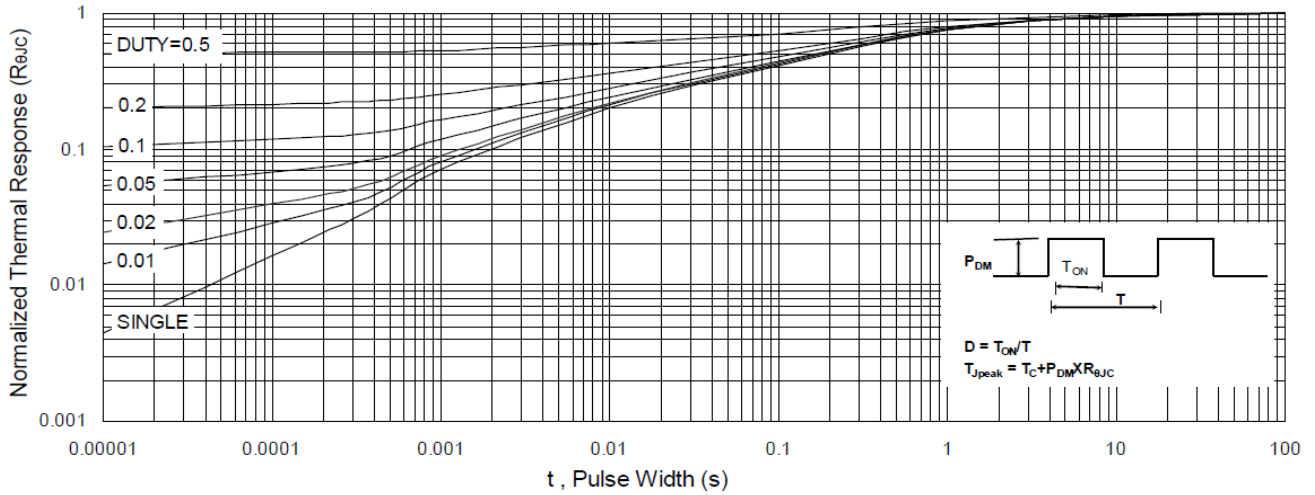
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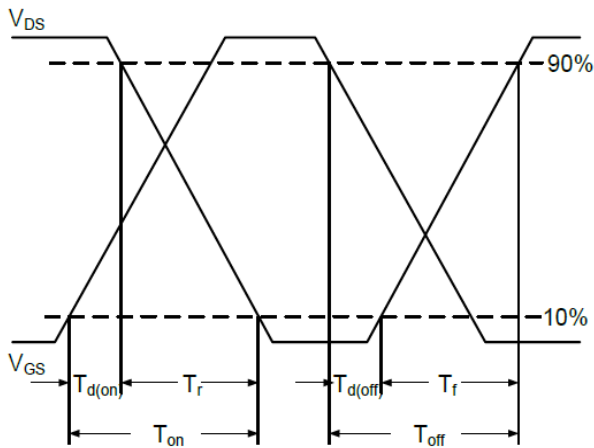
**Fig.7 Capacitance**



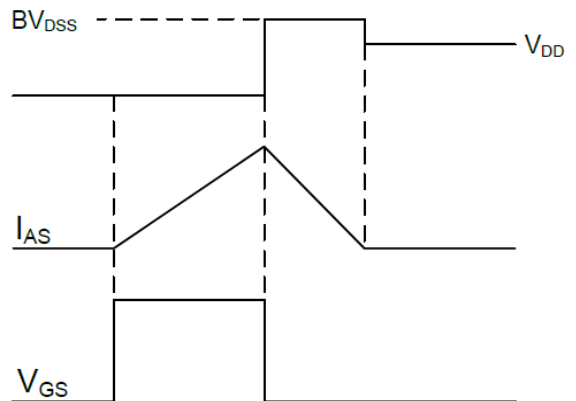
**Fig.8 Safe Operating Area**



**Fig.9 Normalized Maximum Transient Thermal Impedance**



**Fig.10 Switching Time Waveform**



**Fig.11 Unclamped Inductive Waveform**