

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

DESCRIPTION

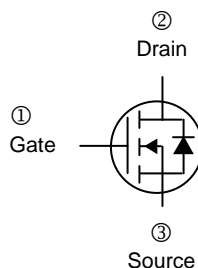
SSA85N80J uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It has good stability and uniformity with high E_{AS} . This device is suitable for the use in PWM, load switching and general purpose applications.

FEATURES

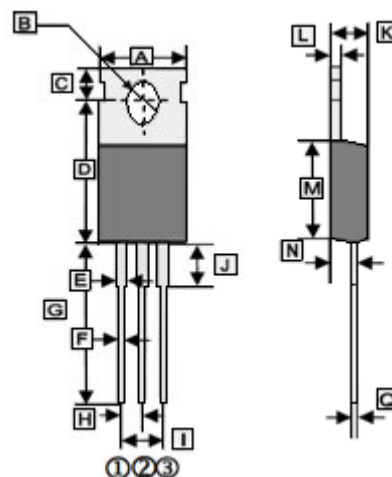
- High density cell design for ultra low $R_{DS(on)}$
- Lead free product is acquired
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Special processing technology for high ESD capability
- Specially designed for convertors and power controls
- Fully characterized avalanche voltage and current
- Fast switching

APPLICATION

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply



TO-220J-A



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	9.91	10.25	I	4.98	5.18
B	3.4	3.8	J	2.85	3.25
C	2.65	2.95	K	4.4	4.6
D	12.65	12.95	L	1.2	1.4
E	1.17	1.37	M	8.95	9.75
F	0.71	0.91	N	2.25	2.55
G	12.9	13.4	Q	0.33	0.65
H	2.540 TYP.				

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	85	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	80	A
Pulsed Drain Current ¹	I_{DM}	320	A
Power Dissipation	P_D	$T_A=25^\circ\text{C}$, without heat sink	W
		$T_C=25^\circ\text{C}$, with heat sink	
Single Pulsed Avalanche Energy ³	E_{AS}	620	mJ
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	T_J, T_{STG}	150, -55~150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

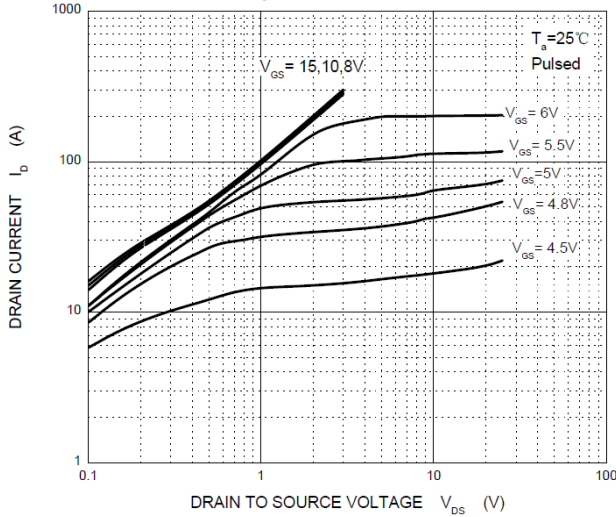
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	85	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$
Gate-Threshold Voltage ²	$V_{GS(th)}$	2	-	4	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	$V_{DS}=85\text{V}, V_{GS}=0$
Gate-Body Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	-	-	8.5	m Ω	$V_{GS}=10\text{V}, I_D=40\text{A}$
Forward Transconductance ²	g_{FS}	-	60	-	S	$V_{DS}=10\text{V}, I_D=40\text{A}$
Dynamic Characteristics						
Input Capacitance	C_{iss}	-	4400	-	pF	$V_{DS}=25\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$
Output Capacitance	C_{oss}	-	340	-		
Reverse Transfer Capacitance	C_{rss}	-	260	-		
Switching Characteristics						
Total Gate Charge	Q_g	-	100	-	nC	$V_{DS}=30\text{V}$ $V_{GS}=10\text{V}$ $I_D=30\text{A}$
Gate-Source Charge	Q_{gs}	-	20	-		
Gate-Drain Charge	Q_{gd}	-	30	-		
Turn-on Delay Time	$T_{d(on)}$	-	18	-	nS	$V_{DD}=30\text{V}$ $V_{GS}=10\text{V}$ $R_G=2.5\Omega$ $R_L=15\Omega$ $I_D=2\text{A}$
Rise Time	T_r	-	12	-		
Turn-off Delay Time	$T_{d(off)}$	-	56	-		
Fall Time	T_f	-	15	-		
Source-Drain Diode Characteristics						
Diode Forward Current	I_S	-	-	80	A	
Diode Pulsed Forward Current	I_{SM}	-	-	320	A	
Diode Forward Voltage ²	V_{SD}	-	-	1.2	V	$V_{GS}=0, I_S=20\text{A}$
Body Diode Reverse Recovery Time	T_{RR}	-	-	88.3	A	$I_F=75\text{A}, di/dt=100\text{A}/\mu\text{s}$
Body Diode Reverse Recovery Charge	Q_{RR}	-	-	65.9	A	$I_F=75\text{A}, di/dt=100\text{A}/\mu\text{s}$

Notes:

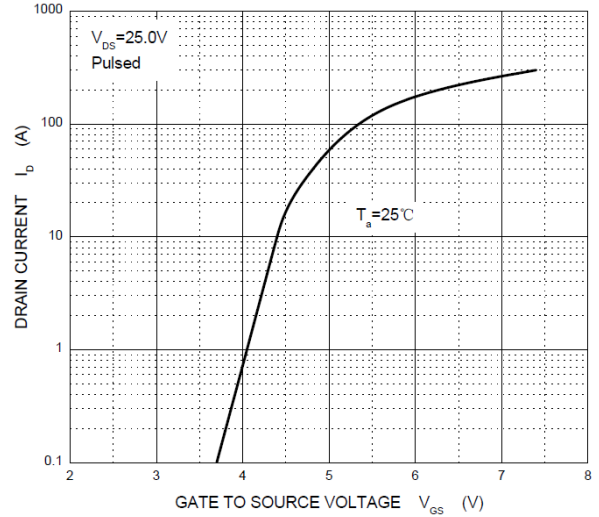
1. Repetitive rating: The pulse width is limited by the junction temperature.
2. Pulse test : Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. E_{AS} condition: $V_{DD}=40\text{V}$, $L=0.5\text{mH}$, $V_{GS}=10\text{V}$, $R_g=25\Omega$, $T_J=25^\circ\text{C}$.

RATINGS AND CHARACTERISTIC CURVES

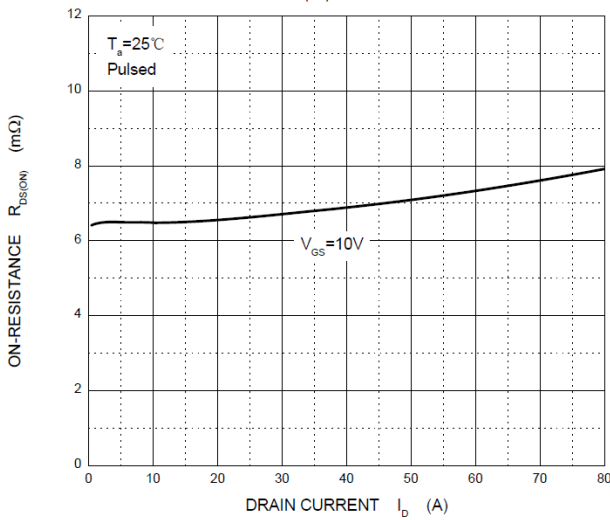
Output Characteristics



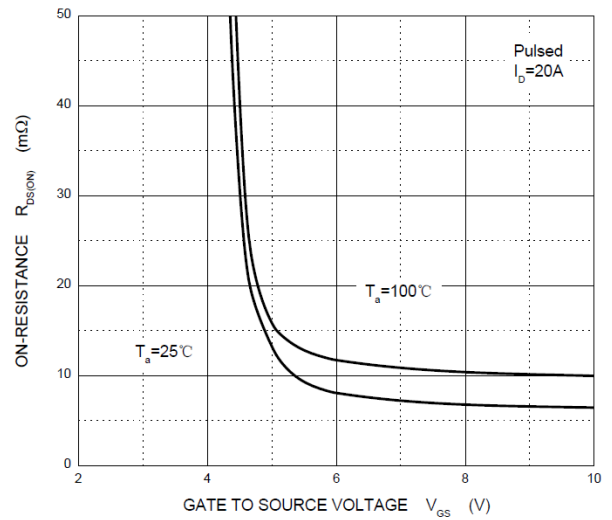
Transfer Characteristics



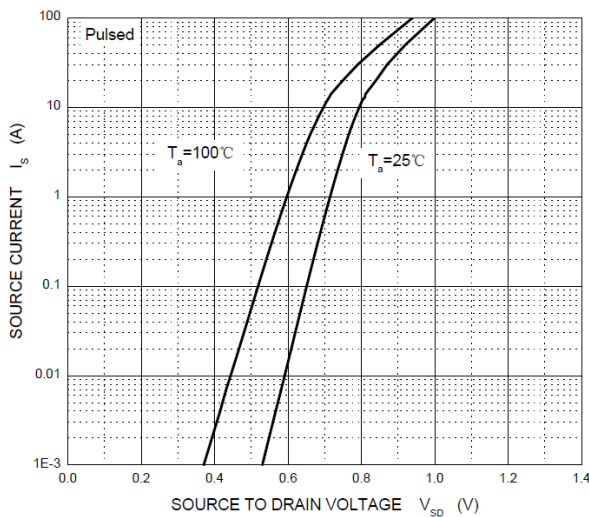
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage

