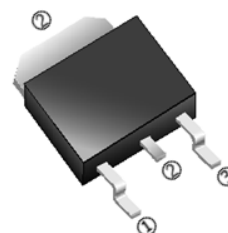


RoHS Compliant Product  
A suffix of "-C" specifies halogen free

## DESCRIPTION

SSD12P10-C provide the designer with the best Combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness. TO-252 package is universally preferred for all commercial-industrial surface mount applications.

### TO-252(D-Pack)



## FEATURES

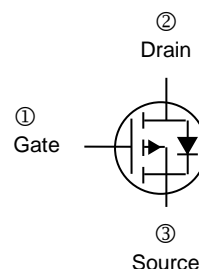
- Simple Drive Requirement
- Lower On-Resistance
- Fast Switching Characteristic

## MARKING



## PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch



## ORDER INFORMATION

Part Number	Type
SSD12P10-C	Lead (Pb)-free and Halogen-free

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current @ $V_{GS}=10\text{V}$	$I_D$	$T_C=25^\circ\text{C}$	-12
		$T_C=100^\circ\text{C}$	-10
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	-48	A
Total Power Dissipation	$P_D$	35.7	W
Operating Junction & Storage Temperature Range	$T_J, T_{STG}$	-55~150	$^\circ\text{C}$
<b>Thermal Resistance Rating</b>			
Maximum Thermal Resistance from Junction-Case	$R_{\theta JC}$	3.5	$^\circ\text{C/W}$
Maximum Thermal Resistance from Junction-Ambient	$R_{\theta JA}$	110	

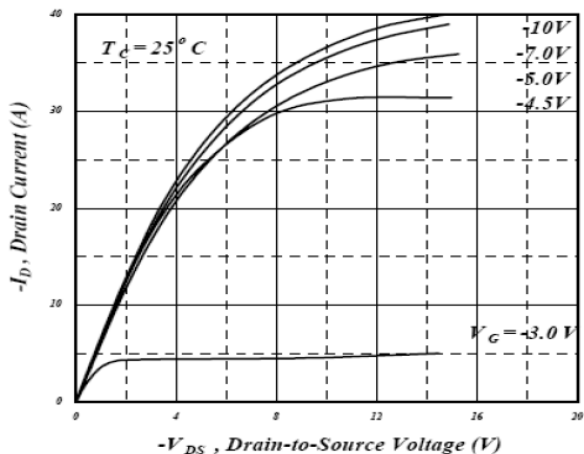
**ELECTRICAL CHARACTERISTICS** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage	$BV_{DSS}$	-100	-	-	V	$V_{GS}=0, I_D = -250\mu\text{A}$
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_J$	-	-0.096	-	V/ $^\circ\text{C}$	Reference to $25^\circ\text{C}$ , $I_D = -1\text{mA}$
Gate-Threshold Voltage	$V_{GS(th)}$	-1	-	-2.5	V	$V_{DS}=V_{GS}, I_D = -250\mu\text{A}$
Forward Transconductance	$g_{fs}$	-	8	-	S	$V_{DS} = -10\text{V}, I_D = -8\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{GS} = \pm 32\text{V}$
Drain-Source Leakage Current	$I_{DSS}$	-	-	-1	$\mu\text{A}$	$V_{DS} = -100\text{V}, V_{GS}=0, T_J = 25^\circ\text{C}$
		-	-	-25		$V_{DS} = -80\text{V}, V_{GS}=0, T_J = 150^\circ\text{C}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	210	m $\Omega$	$V_{GS} = -10\text{V}, I_D = -8\text{A}$
		-	-	250		$V_{GS} = -4.5\text{V}, I_D = -6\text{A}$
Total Gate Charge <sup>2</sup>	$Q_g$	-	10	-	nC	$V_{DS} = -80\text{V}$ $V_{GS} = -4.5\text{V}$ $I_D = -8\text{A}$
Gate-Source Charge	$Q_{gs}$	-	5.4	-		
Gate-Drain ("Miller") Charge	$Q_{gd}$	-	3.5	-		
Turn-on Delay Time <sup>2</sup>	$T_{d(on)}$	-	6.2	-	nS	$V_{DS} = -50\text{V}$ $V_{GS} = -10\text{V}$ $R_G = 3.3\Omega$ $R_D = 6.25\Omega$ $I_D = -8\text{A}$
Rise Time	$T_r$	-	26.9	-		
Turn-off Delay Time	$T_{d(off)}$	-	52.9	-		
Fall Time	$T_f$	-	45.5	-		
Input Capacitance	$C_{iss}$	-	1281	-	pF	$V_{GS}=0$ $V_{DS} = -25\text{V}$ $f=1\text{MHz}$
Output Capacitance	$C_{oss}$	-	56	-		
Reverse Transfer Capacitance	$C_{rss}$	-	39	-		
Gate Resistance	$R_g$	-	15	-	$\Omega$	$f=1\text{MHz}$
<b>Source-Drain Diode Characteristics</b>						
Forward On Voltage <sup>2</sup>	$V_{SD}$	-	-	-1.3	V	$I_S = -12\text{A}, V_{GS}=0$
Continuous Source Current	$I_S$	-	-	-12	A	$V_D=V_G=0\text{V}, \text{Force Current}$
Pulsed Source Current <sup>1</sup>	$I_{SM}$	-	-	-48	A	

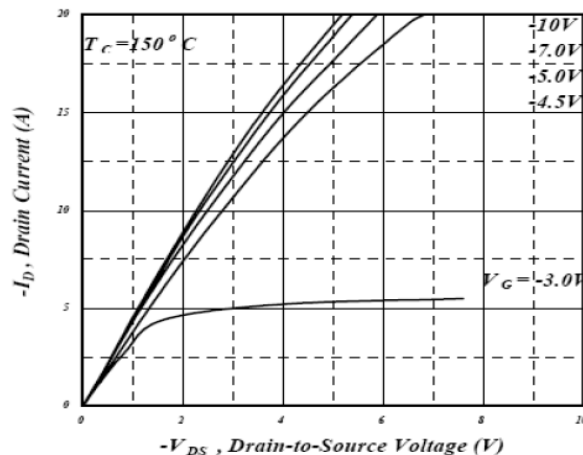
Notes:

- The pulse width is limited by the safe operating area.
- Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .

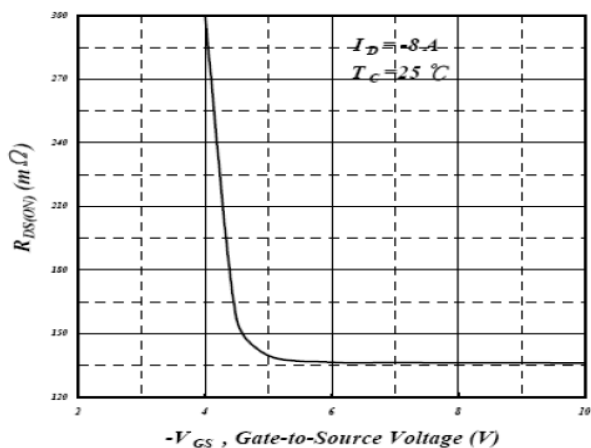
**CHARACTERISTIC CURVES**



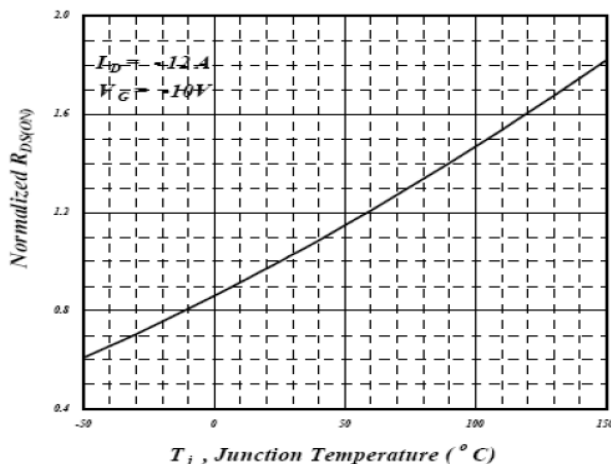
**Fig 1. Typical Output Characteristics**



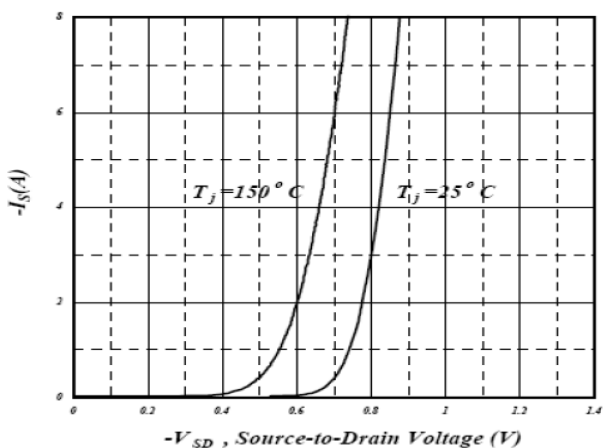
**Fig 2. Typical Output Characteristics**



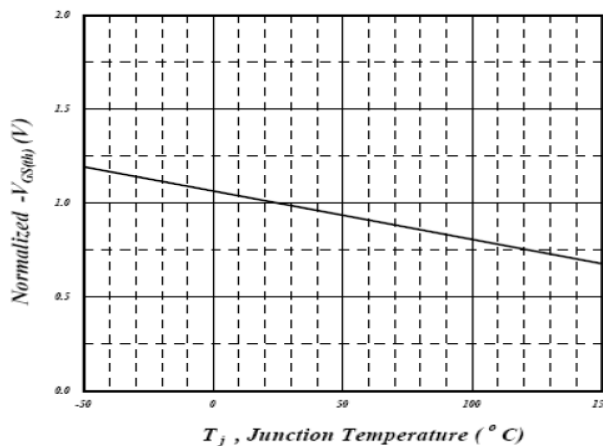
**Fig 3. On-Resistance v.s. Gate Voltage**



**Fig 4. Normalized On-Resistance v.s. Junction Temperature**

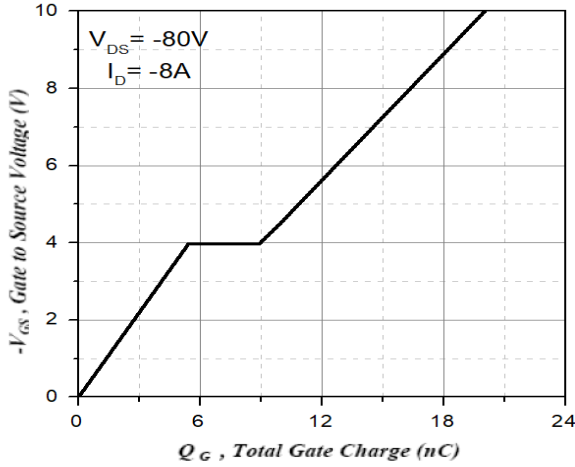


**Fig 5. Forward Characteristic of Reverse Diode**

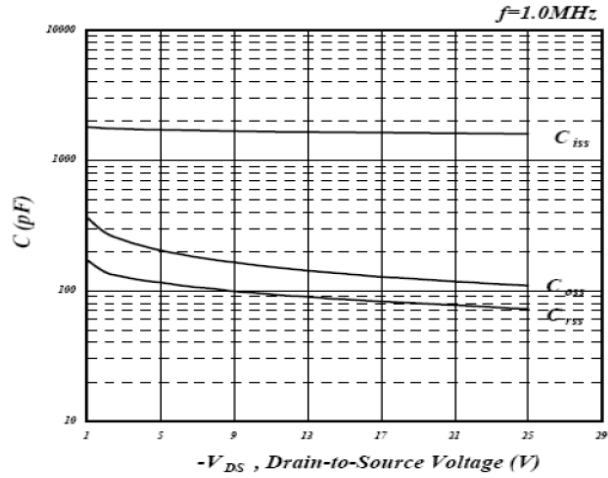


**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**

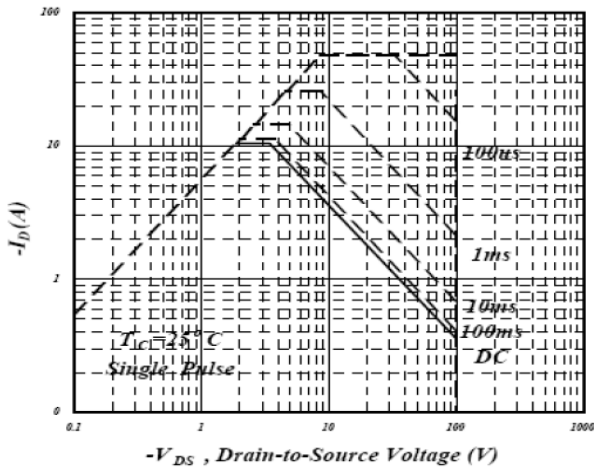
**CHARACTERISTIC CURVES**



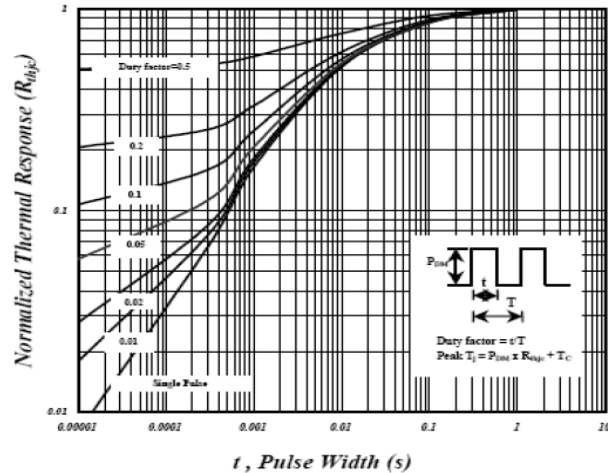
**Fig 7. Gate Charge Characteristics**



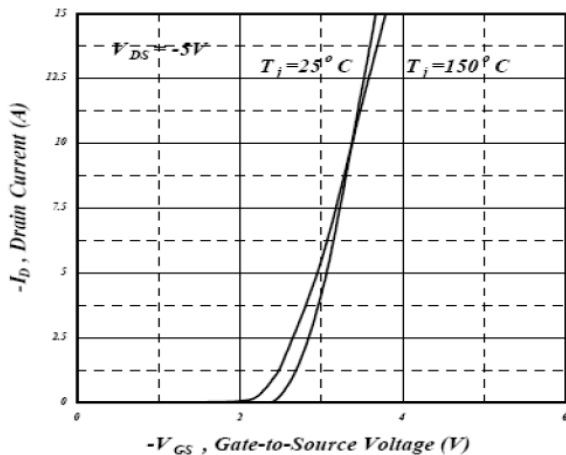
**Fig 8. Typical Capacitance Characteristics**



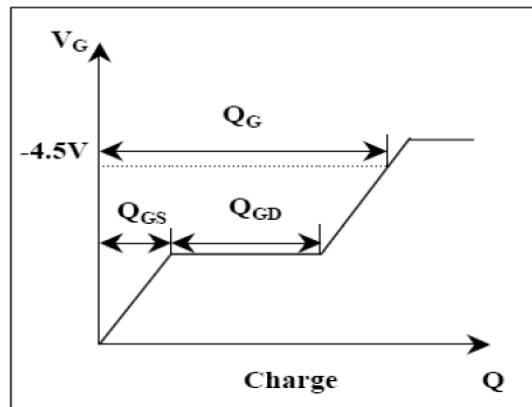
**Fig 9. Maximum Safe Operating Area**



**Fig 10. Effective Transient Thermal Impedance**



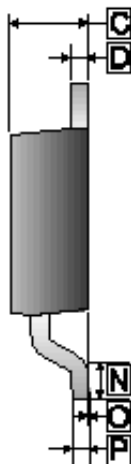
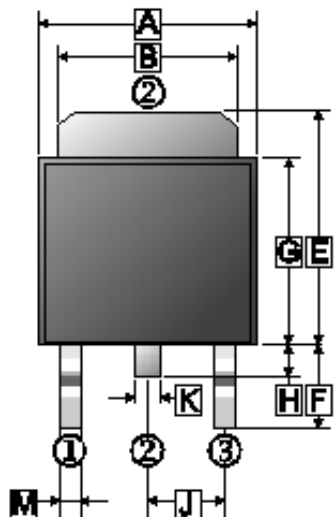
**Fig 11. Transfer Characteristics**



**Fig 12. Gate Charge Waveform**

**PACKAGE OUTLINE DIMENSIONS**

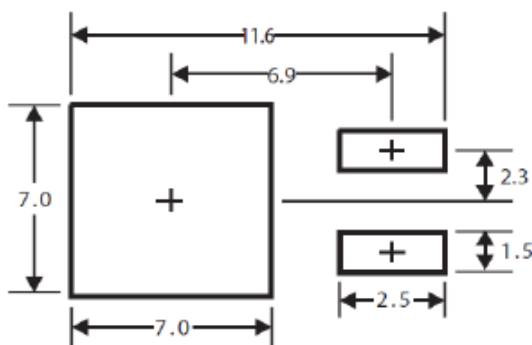
TO-252



REF.	Millimeter	
	Min.	Max.
A	6.30	6.90
B	4.95	5.53
C	2.10	2.50
D	0.40	0.90
E	6.00	7.70
F	2.90 REF.	
G	5.40	6.40
H	0.60	1.20
J	2.30 REF.	
K	0.89 REF.	
M	0.45	1.14
N	1.55 TYP.	
O	0	0.15
P	0.58 REF.	

**MOUNTING PAD LAYOUT**

TO-252



\*Dimensions in millimeters