



## SSC80312GT8

### N-Channel Enhancement Mode MOSFET

#### ➤ Features

V <sub>DS</sub>	V <sub>GS</sub>	R <sub>DS(ON)</sub> Typ.	I <sub>D</sub>
30V	±20V	3mΩ@10V	140A
		4.5mΩ@4.5V	

#### ➤ Description

This device is N-Channel enhancement MOSFET. Uses advanced trench technology and design to provide excellent RDSON with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit.

**100% UIS + ΔVDS + Rg Tested!**

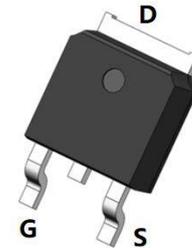
#### ➤ Applications

- Motor Drive Control
- Portable Devices
- DCDC Conversion
- Power Supplies
- Synchronous Rectification

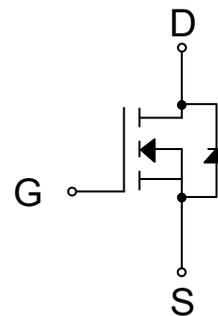
#### ➤ Ordering Information

Device	Package	Shipping
SSC80312GT8	TO-252-2L	2500/Reel

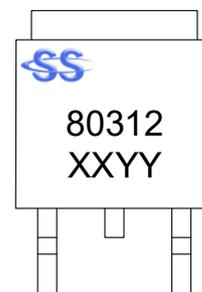
#### ➤ Pin Configuration



**TO-252-2L (Top View)**



**Pin Configuration**



**Marking**

(XXYY: Internal Traceability Code)



## ➤ Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Unit
$V_{DSS}$	Drain-to-Source Voltage	30	V
$V_{GSS}$	Gate-to-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current <sup>d</sup>	$T_C=25^{\circ}\text{C}$	140
		$T_C=100^{\circ}\text{C}$	75
$I_{DSM}$	Continuous Drain Current <sup>a</sup>	$T_A=25^{\circ}\text{C}$	29
		$T_A=70^{\circ}\text{C}$	22
$I_{DM}$	Pulsed Drain Current <sup>b</sup>	560	A
$P_D$	Power Dissipation <sup>c</sup>	$T_C=25^{\circ}\text{C}$	83
		$T_C=100^{\circ}\text{C}$	33
$P_{DSM}$	Power Dissipation <sup>a</sup>	$T_A=25^{\circ}\text{C}$	4.2
		$T_A=70^{\circ}\text{C}$	2.7
$I_{AS}$	Avalanche Energy <sup>b</sup> L=0.5mH Single Pulse	25	A
$E_{AS}$	Avalanche Energy <sup>b</sup> L=0.5mH Single Pulse	156	mJ
$T_J$	Operation junction temperature	-55~150	$^{\circ}\text{C}$
$T_{STG}$	Storage temperature range	-55~150	

## ➤ Thermal Resistance Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance <sup>a</sup>	30	$^{\circ}\text{C}/\text{W}$
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	1.5	

Note:

- The value of  $R_{\theta JA}$  is measured with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz.copper, in a still air environment with  $T_A=25^{\circ}\text{C}$ . The value in any given application depends on the user is specific board design. The power dissipation is based on the  $t \leq 10\text{s}$  thermal resistance rating.
- Repetitive rating, pulse width limited by junction temperature.
- The power dissipation  $P_D$  is based on  $T_{J(MAX)}=150^{\circ}\text{C}$ , using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.
- The maximum current rating is package limited.

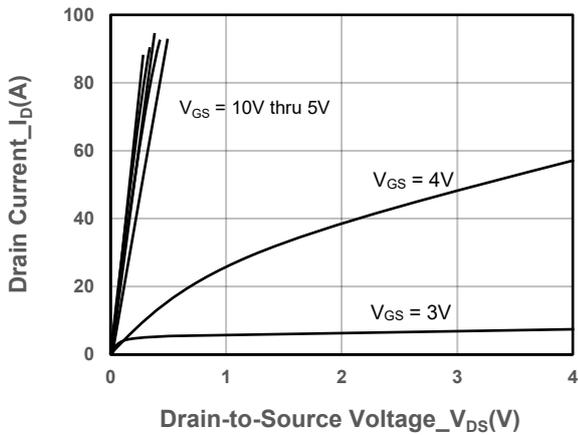


➤ **Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

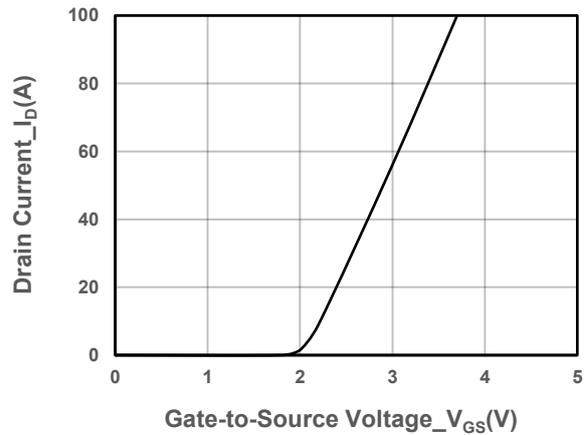
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	30			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250uA	1	1.6	2.5	V
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 30A		3	4.5	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 20A		4.5	6.5	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V			1	μA
Gate-Source Leak Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±100	nA
Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 20A		0.8	1.3	V
Gate Resistance	R <sub>G</sub>	V <sub>DS</sub> = 0V, f = 1MHz		2.5		Ω
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1MHz		2250		pF
Output Capacitance	C <sub>OSS</sub>			290		
Reverse Transfer Capacitance	C <sub>RSS</sub>			230		
Total Gate Charge	Q <sub>G</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 30A		41		nC
Gate to Source Charge	Q <sub>GS</sub>			9		
Gate to Drain Charge	Q <sub>GD</sub>			10		
Turn-on Delay Time	T <sub>D(ON)</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 30A, R <sub>G</sub> = 3Ω		9		ns
Rise Time	T <sub>r</sub>			14		
Turn-off Delay Time	T <sub>D(OFF)</sub>			35		
Fall Time	T <sub>f</sub>			11		
Diode Recovery Time	T <sub>rr</sub>	I <sub>F</sub> =20A, di/dt=100A/us		12		ns
Diode Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> =20A, di/dt=100A/us		2.6		nC



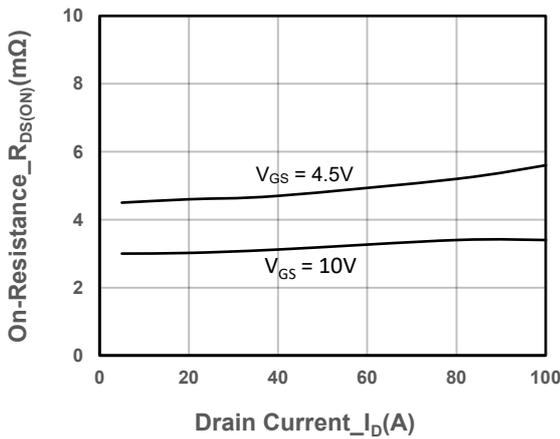
➤ **Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**



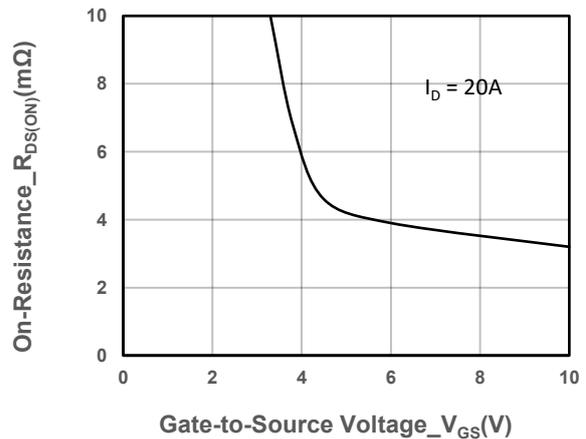
**Output Characteristics**



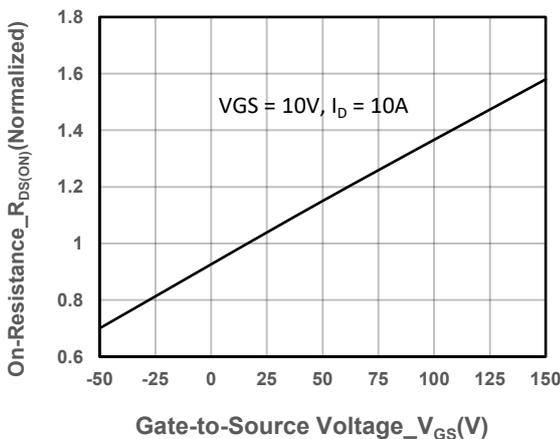
**Transfer Characteristics**



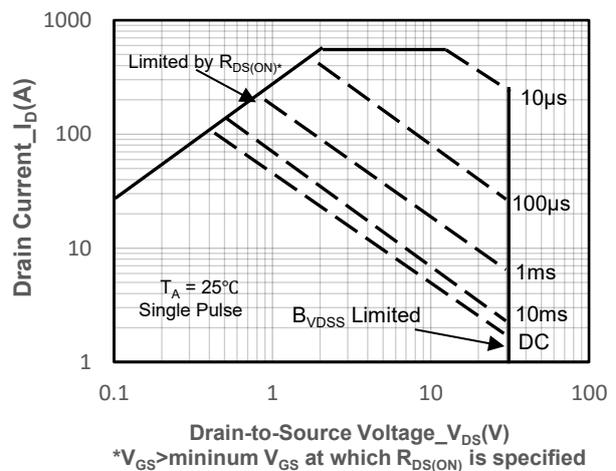
**On-Resistance vs. Drain Current and Gate Voltage**



**On-Resistance vs. Gate-to-Source Voltage**

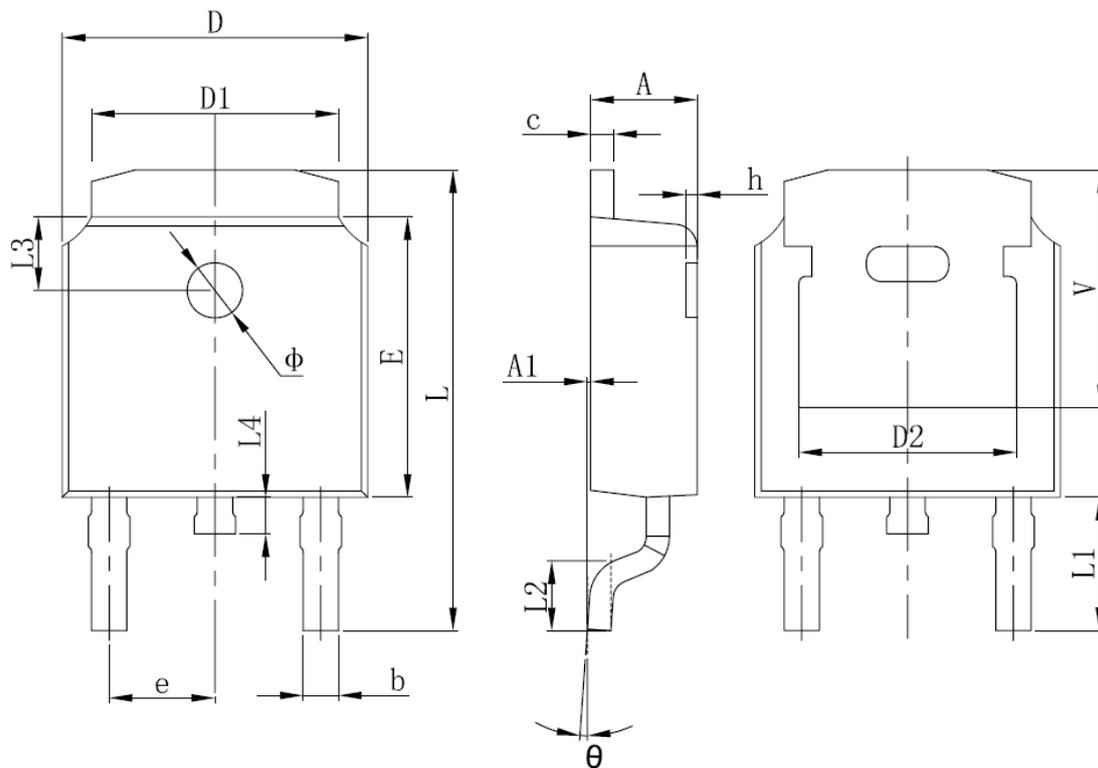


**On-Resistance vs. Junction Temperature**



**Safe Operating Area vs. Junction-to-Ambient**

## ➤ Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	



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