



### N-Channel Enhanced MOSFET

➤ **Features**

VDS	VGS	RDSON Typ.	ID
40V	±20V	5.8mR@10V	52A
		7.2mR@4V5	

➤ **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.

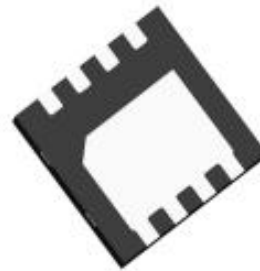
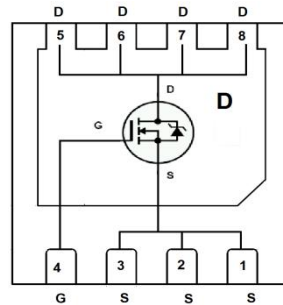
➤ **Applications**

- DC/DC converters
- Power supplies
- Motor Drive Control
- Synchronous rectification

➤ **Ordering Information**

Device	Package	Shipping
SSC8140GQ4	DFN3X3	5000/Reel

➤ **Pin configuration**



Bottom View



Marking

(Y: product year / W: product week)



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

Symbol	Parameter	Ratings	Unit	
$V_{DSS}$	Drain-to-Source Voltage	40	V	
$V_{GSS}$	Gate-to-Source Voltage	$\pm 20$	V	
$I_D$	Continuous Drain Current <sup>d</sup>	$T_C=25^\circ\text{C}$	52	A
		$T_C=100^\circ\text{C}$	24	
$I_{DSM}$	Continuous Drain Current <sup>a</sup>	$T_A=25^\circ\text{C}$	20	A
		$T_A=70^\circ\text{C}$	13	
$I_{DM}$	Pulsed Drain Current <sup>b</sup>	200	A	
$P_D$	Power Dissipation <sup>c</sup>	$T_C=25^\circ\text{C}$	26	W
		$T_C=100^\circ\text{C}$	10	
$P_{DSM}$	Power Dissipation <sup>a</sup>	$T_A=25^\circ\text{C}$	3.9	W
		$T_A=70^\circ\text{C}$	2.5	
$I_{AS}$	Avalanche Current <sup>b</sup> L=0.5mH Single Pulse	32	A	
$E_{AS}$	Avalanche Energy <sup>b</sup> L=0.5mH Single Pulse	256	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>	32	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	4.7	

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  $T_{J(\text{MAX})}=150^\circ\text{C}$ , 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.

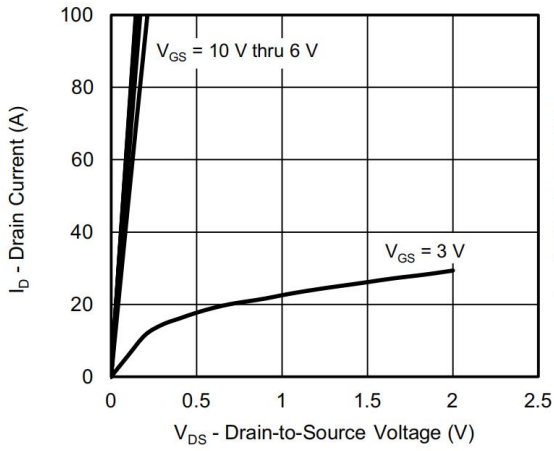


➤ **Electronics Characteristics**( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

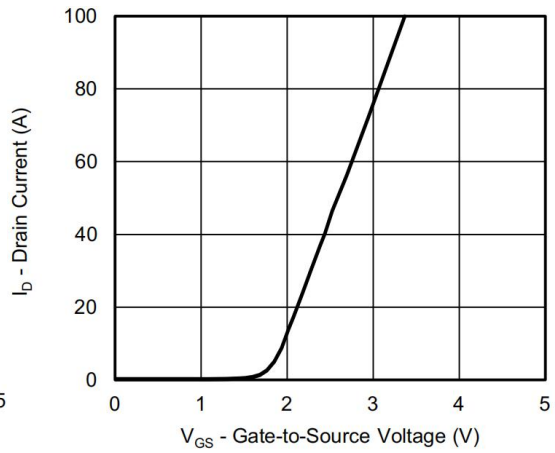
Symbol	Parameter	Test Conditions	Min	Typ.	Max	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.5	2	V
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=20A$		5.8	8	mR
		$V_{GS}=4.5V, I_D=10A$		7.2	10	
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=40V, V_{GS}=0V$			1	$\mu A$
$I_{GSS}$	Gate-Source leak current	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
$G_{FS}$	Transconductance	$V_{DS}=5V, I_D=20A$		27		S
$V_{SD}$	Forward Voltage	$V_{GS}=0V, I_S=5A$		0.74	1.3	V
$C_{iss}$	Input Capacitance	$V_{DS}=20V, V_{GS}=0V,$ $f=1MHz$		3030		pF
$C_{oss}$	Output Capacitance			353		
$C_{rss}$	Reverse Capacitance			272		
$T_{D(ON)}$	Turn-on delay time	$V_{GS}=10V, R_L=1R$ $V_{DS}=20V, R_G=3R$		10		ns
$T_r$	Rise time			5		
$T_{D(OFF)}$	Turn-off delay time			23		
$T_f$	Fall time			7		
$Q_G$	Total Gate Charge	$V_{GS}=10V, V_{DS}=20V$ $I_D=20A$		42		nC
$Q_{GS}$	Gate Source Charge			10		
$Q_{GD}$	Gate Drain Charge			5		
$T_{rr}$	Diode Recovery Time	$I_F=20A, di/dt=500A/\mu s$		16		ns
$Q_{rr}$	Diode Recovery Charge	$I_F=20A, di/dt=500A/\mu s$		38		nC



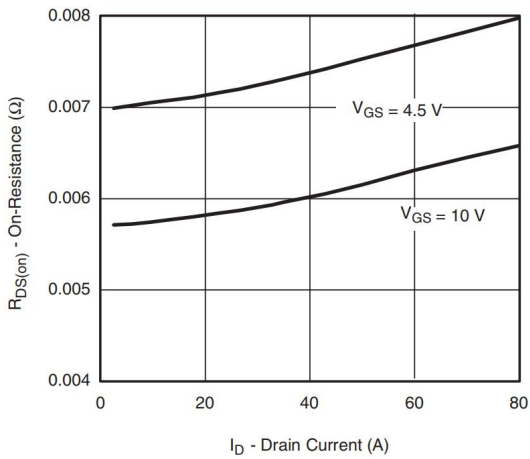
Typical Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise noted)



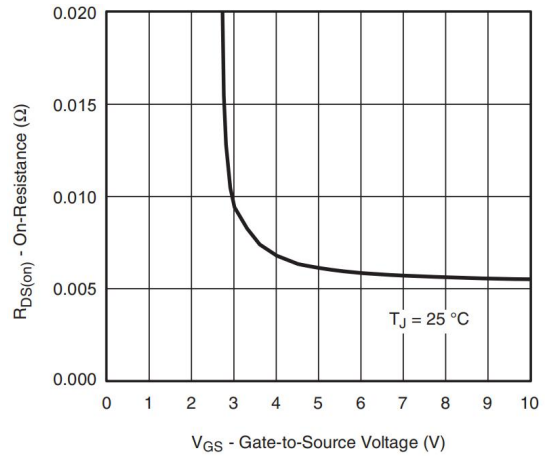
Output Characteristics



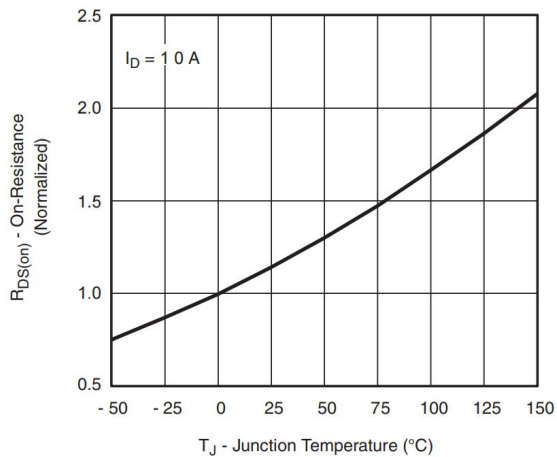
Transfer Characteristics



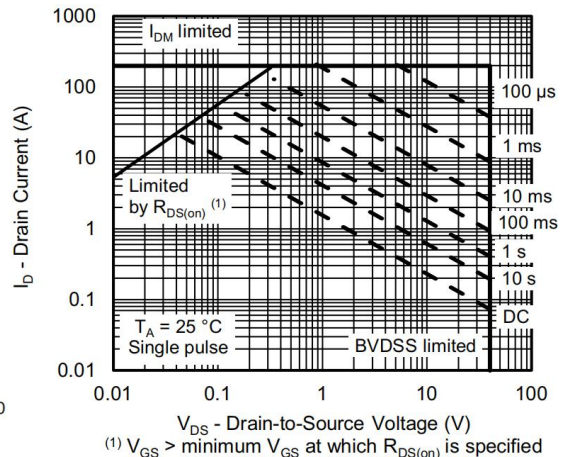
On-Resistance vs. Drain Current and Gate Voltage



On-Resistance vs. Gate-to-Source Voltage



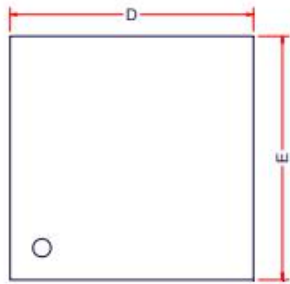
On-Resistance vs. Junction Temperature



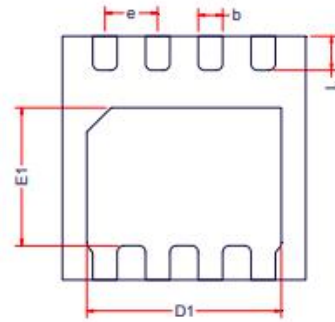
Safe Operating Area, Junction-to-Ambient



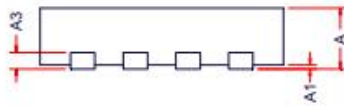
➤ Package Information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

Package: DNF3X3-8L

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2	0.20Ref		
D	2.90	3.00	3.10
E	2.90	3.00	3.10
D1	2.35	2.40	2.45
E1	1.65	1.70	1.75
b	0.25	0.30	0.35
e	0.65BSC		
L	0.37	0.42	0.47



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