



SSC8046GQ4

N-Channel Enhanced MOSFET

➤ Features

VDS	VGS	RDSON Typ.	ID
40V	±20V	8mR@10V	36A
		10mR@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. 100% UIS + DVDS Tested.

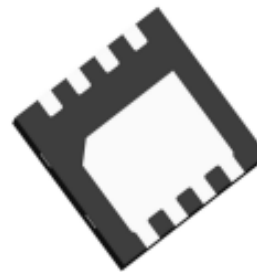
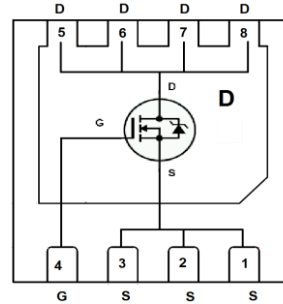
➤ Applications

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

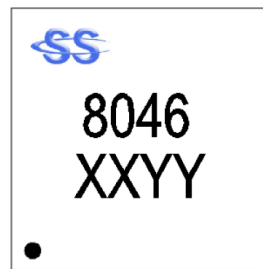
➤ Ordering Information

Device	Package	Shipping
SSC8046GQ4	DFN3X3	5000/Reel

➤ Pin configuration



Bottom View



Marking

(XX: product year / YY: 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	± 20	V	
I_D	Continuous Drain Current ^d	$T_C=25^{\circ}\text{C}$	36	A
		$T_C=100^{\circ}\text{C}$	29	
I_{DSM}	Continuous Drain Current ^a	$T_A=25^{\circ}\text{C}$	20	A
		$T_A=70^{\circ}\text{C}$	13	
I_{DM}	Pulsed Drain Current ^b	80	A	
P_D	Power Dissipation ^c	$T_C=25^{\circ}\text{C}$	27	W
		$T_C=100^{\circ}\text{C}$	11	
P_{DSM}	Power Dissipation ^a	$T_A=25^{\circ}\text{C}$	3.3	W
		$T_A=70^{\circ}\text{C}$	2.1	
I_{AS}	Avalanche Current ^b L=0.5mH Single Pulse	22.5	A	
E_{AS}	Avalanche Energy ^b L=0.5mH Single Pulse	126	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 ^a	38	$^{\circ}\text{C}/\text{W}$
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	4.5	

Note:

- The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² 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.

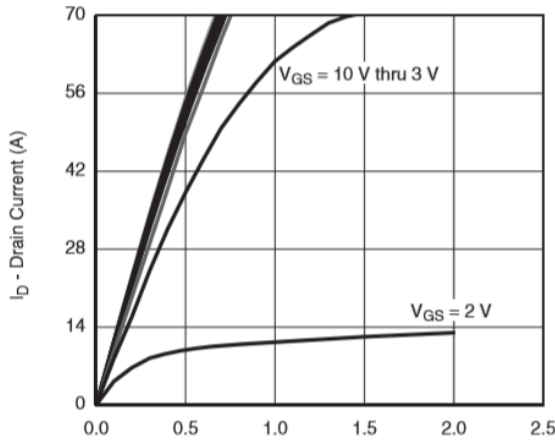


➤ **Electronics Characteristics**($T_A=25^{\circ}\text{C}$ unless otherwise noted)

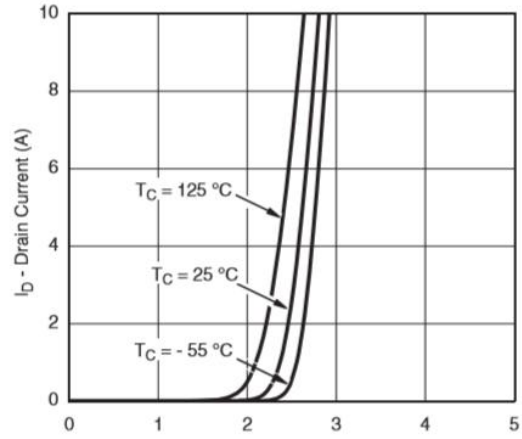
Symbol	Parameter	Test Conditions	Min	Typ.	Max	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.6	2	V
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=20A$		8	13	mR
		$V_{GS}=4.5V, I_D=10A$		10	17	
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=32V, V_{GS}=0V$			1	μA
I_{GSS}	Gate-Source leak current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
G_{FS}	Transconductance	$V_{DS}=5V, I_D=10A$		32		S
V_{SD}	Forward Voltage	$V_{GS}=0V, I_S=10A$		0.8	1.3	V
R_g	Gate Resistance	$V_{DS}=0V, f=1MHz$		2.5		R
C_{iss}	Input Capacitance	$V_{DS}=20V, V_{GS}=0V, f=1MHz$		2200		pF
C_{oss}	Output Capacitance			175		
C_{rss}	Reverse Transfer Capacitance			33		
$T_{D(ON)}$	Turn-on delay time	$V_{GS}=10V, R_L=10R$ $V_{DS}=20V, R_G=6R$		10		ns
T_r	Rise time			11		
$T_{D(OFF)}$	Turn-off delay time			18		
T_f	Fall time			12		
Q_G	Total Gate Charge	$V_{GS}=10V, V_{DS}=20V$ $I_D=20A$		16		nC
Q_{GS}	Gate Source Charge			9		
Q_{GD}	Gate Drain Charge			4		
T_{rr}	Diode Recovery Time	$I_F=20A, di/dt=100A/\mu s$		19		ns
Q_{rr}	Diode Recovery Charge	$I_F=20A, di/dt=100A/\mu s$		5		nC



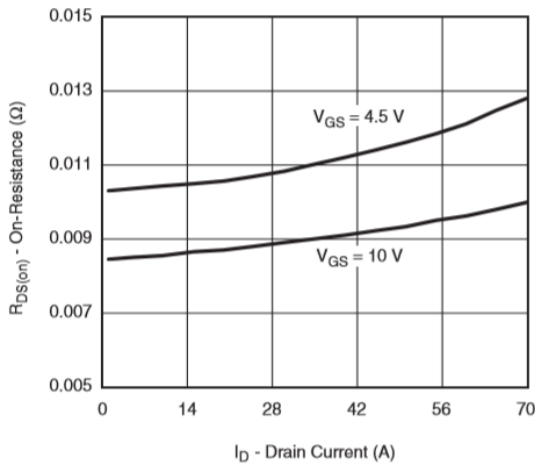
➤ **Typical Characteristics** ($T_A=25^\circ\text{C}$ unless otherwise noted)



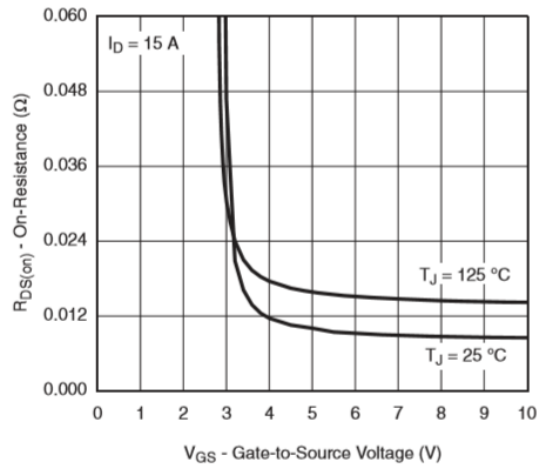
Output Characteristics



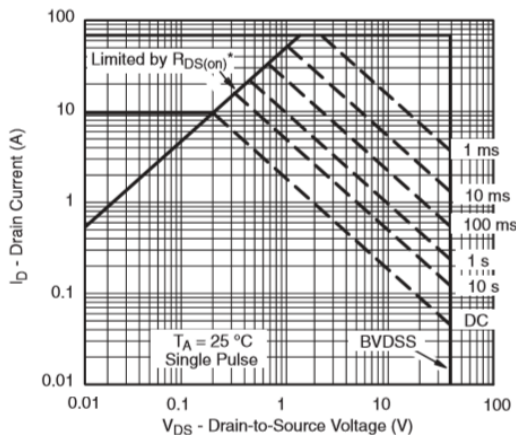
Transfer Characteristics



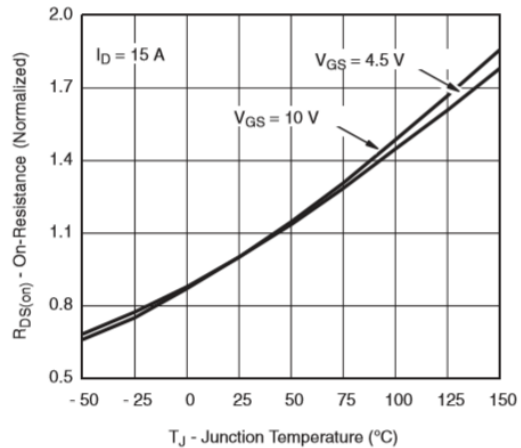
On-Resistance vs. Drain Current and Gate Voltage



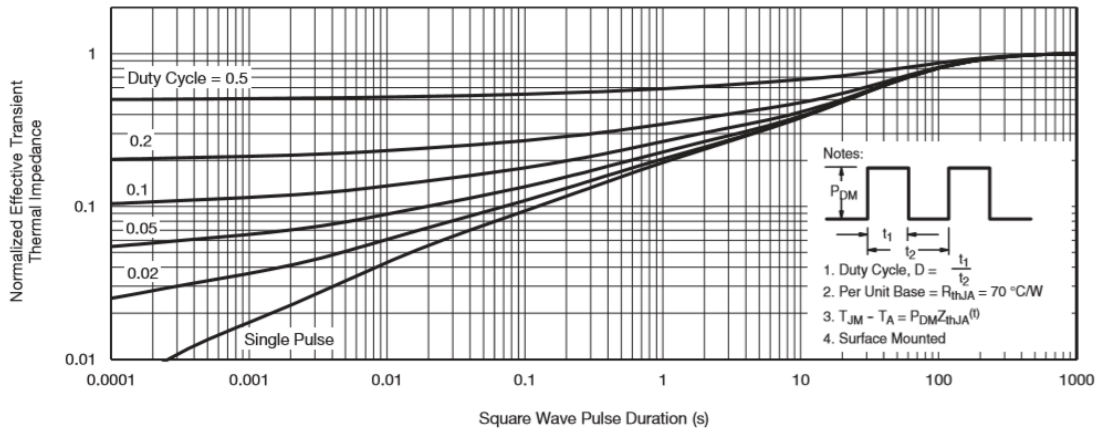
On-Resistance vs. Gate-to-Source Voltage



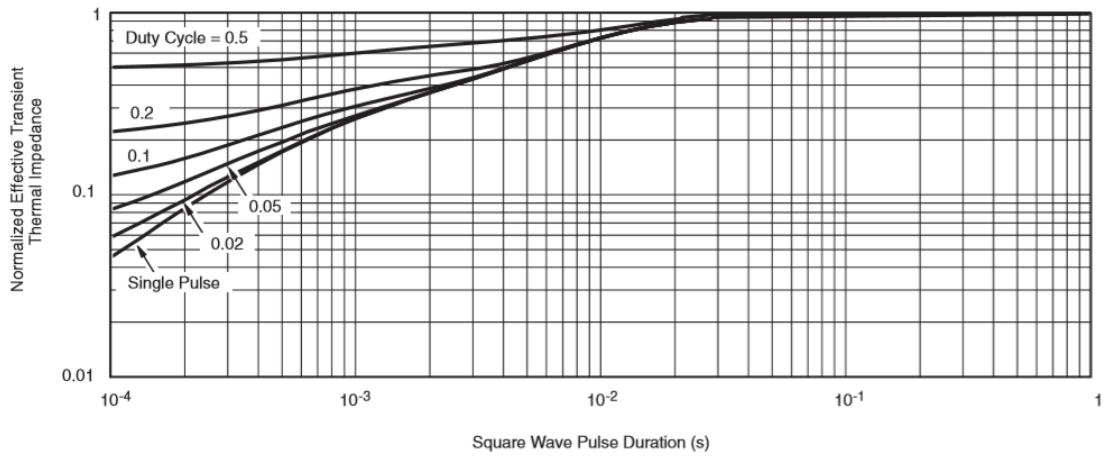
Safe Operating Area, Junction-to-Ambient



On-Resistance vs. Junction Temperature



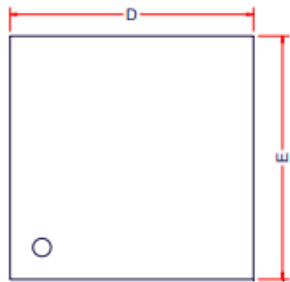
Normalized Thermal Transient Impedance, Junction-to-Ambient



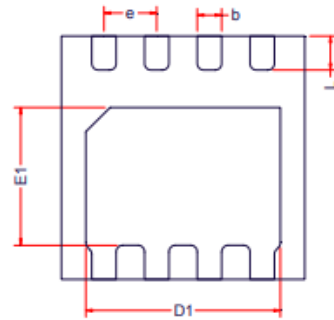
Normalized Thermal Transient Impedance, Junction-to-Case



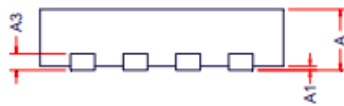
➤ Package Information



TOP VIEW



BOTTOM VIEW



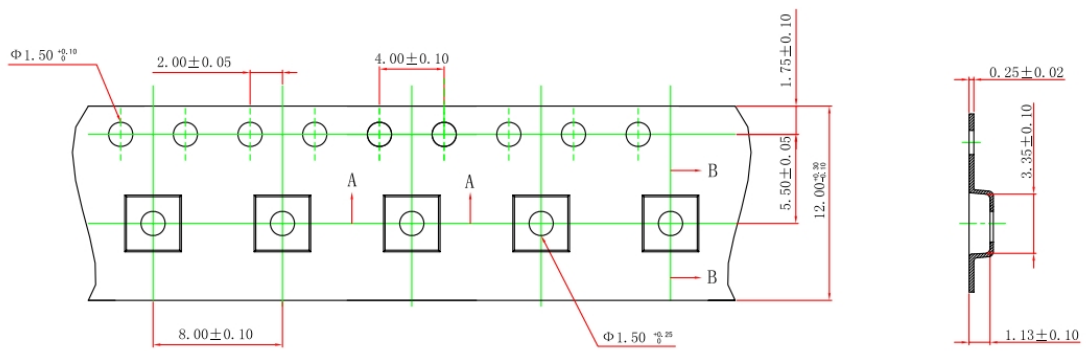
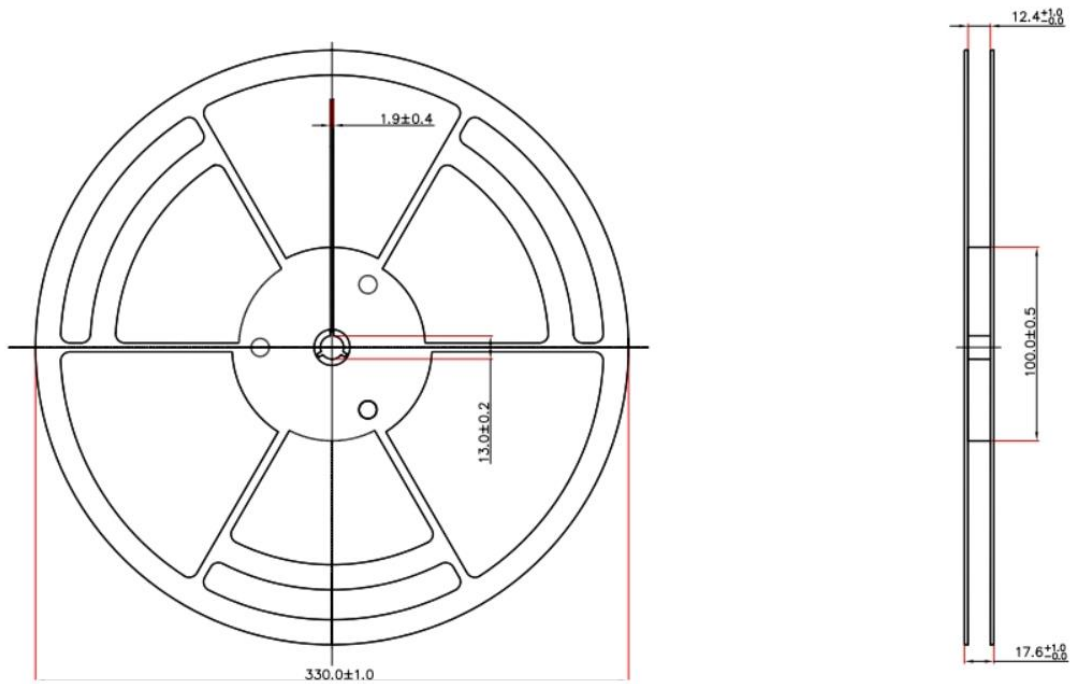
SIDE VIEW

Package: DNF3X3-8L

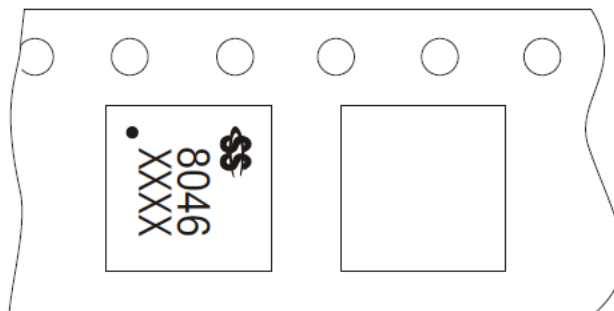
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2	0.20Ref		
D	2.90	3.00	3.10
E	2.90	3.00	3.10
D1	2.35	2.40	2.45
E1	1.65	1.70	1.75
b	0.25	0.30	0.35
e	0.65BSC		
L	0.37	0.42	0.47



➤ Tape and Reel



SECTION B-B





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