



SSC8046GQ4

N-Channel Enhancement Mode MOSFET

➤ Features

V_{DS}	V_{GS}	$R_{DS(ON)}$ Typ.	I_D
40V	$\pm 20V$	8m Ω @10V	36A
		10m Ω @4V5	

➤ Description

The 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.

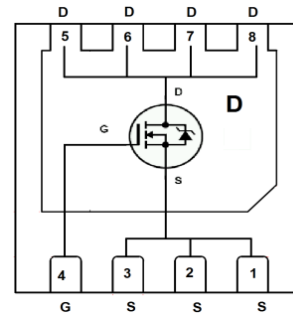
➤ Applications

- DC-DC Converter
- Power supplies
- Motor Drive Control
- Synchronous rectification

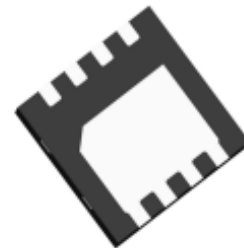
➤ Ordering Information

Device	Package	Shipping
SSC8046GQ4	DFN3X3	5000/Reel

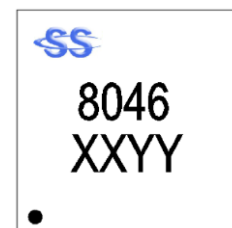
➤ Pin configuration



DFN3x3 (Top View)



Bottom View



Marking

(XX: product year/YY: product week)

**➤ Absolute Maximum Ratings (T_A=25°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°C	36	A
		T _C = 100°C	29	
I _{DSM}	Continuous Drain Current ^a	T _A = 25°C	20	A
		T _A = 70°C	13	
I _{DM}	Pulsed Drain Current ^b		80	A
P _D	Power Dissipation ^c	T _C = 25°C	27	W
		T _C = 100°C	11	
P _{DSM}	Power Dissipation ^a	T _A = 25°C	3.3	W
		T _A = 70°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 range		-55 to 150	°C
T _{STG}	Storage temperature range		-55 to 150	°C

➤ Thermal Resistance Ratings (T_A=25°C unless otherwise noted)

Symbol	Parameter	Ratings	Unit
R _{θJA}	Junction-to-Ambient Thermal Resistance ^a	38	°C/W
R _{θJC}	Junction-to-Case Thermal Resistance	4.5	

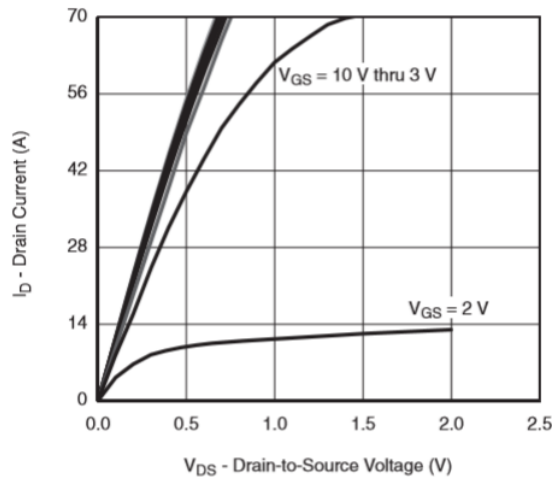
Note:

- The value of R_{θJA} is measured with the device mounted on 1 in² FR-4 board with 2oz.copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t_{≤10s} thermal resistance rating.
- Repetitive rating, pulse width limited by junction temperature.
- The power dissipation P_D is based on T_{J(MAX)}=150°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.

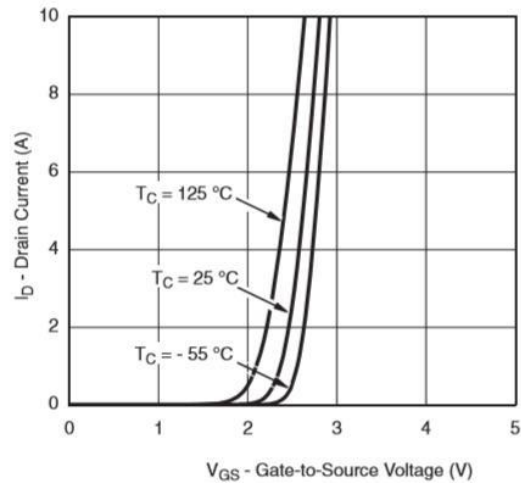
**➤ Electrical Characteristics (T_A=25°C unless otherwise noted)**

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250uA	40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1	1.6	2.4	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 20A		8	13	mΩ
		V _{GS} = 4.5V, I _D = 10A		10	17	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 32V, V _{GS} = 0V			1	μA
Gate-Source Leak Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
Transconductance	G _{FS}	V _{DS} =5V, I _D =10A		32		S
Forward Voltage	V _{SD}	V _{GS} = 0V, I _S =10A		0.8	1.3	V
Gate Resistance	R _G	V _{DS} = 0V, f = 1MHz		2.5		Ω
Input Capacitance	C _{ISS}	V _{DS} = 20V, V _{GS} = 0V, f = 1MHz		2200		pF
Output Capacitance	C _{OSS}			175		
Reverse Transfer Capacitance	C _{RSS}			33		
Total Gate Charge	Q _G	V _{GS} =10V, V _{DS} = 20V, I _D = 20A		16		nC
Gate to Source Charge	Q _{GS}			9		
Gate to Drain Charge	Q _{GD}			4		
Turn-on Delay Time	T _{D(ON)}	V _{GS} = 10V, V _{DS} = 20V, R _L =10Ω, R _G = 6Ω		10		ns
Rise Time	T _r			11		
Turn-off Delay Time	T _{D(OFF)}			18		
Fall Time	T _f			12		
Diode Recovery Time	T _{rr}	I _F =20A, di/dt=100A/us		19		ns
Diode Recovery Charge	Q _{rr}	I _F =20A, di/dt=100A/us		5		nC

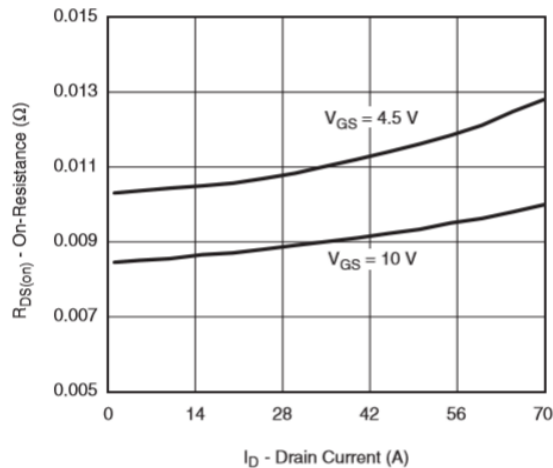
➤ Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)



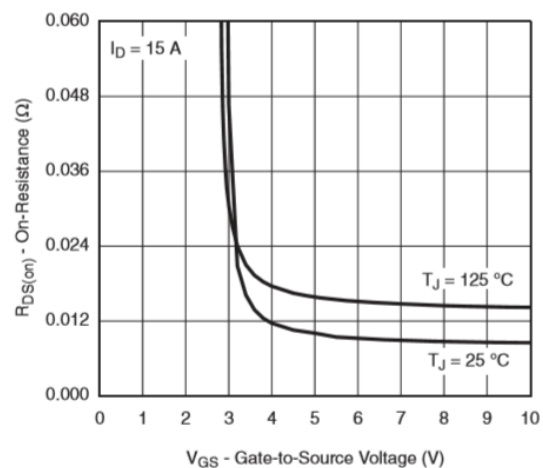
Output Characteristics



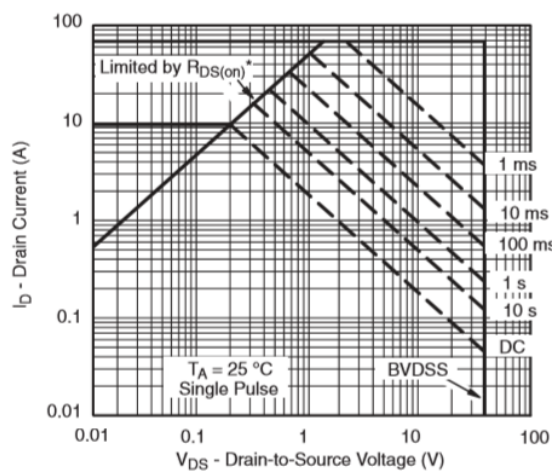
Transfer Characteristics



On-Resistance vs. Drain Current and Gate Voltage

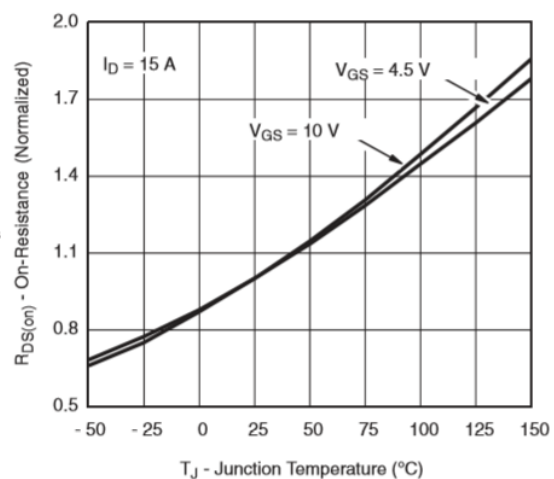


On-Resistance vs. Gate-to-Source Voltage

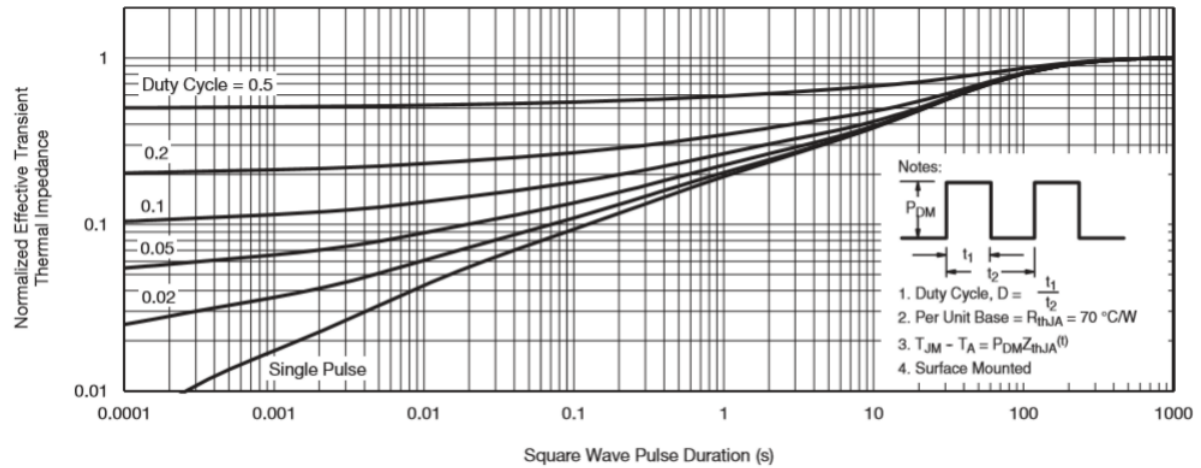


* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

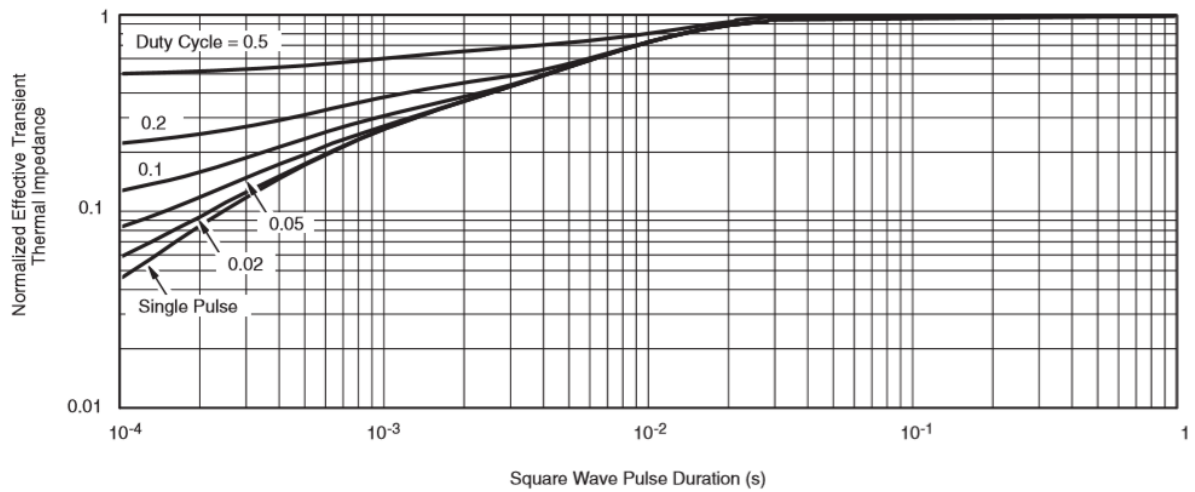
Safe Operating Area, Junction-to-Ambient



On-Resistance vs. Junction Temperature

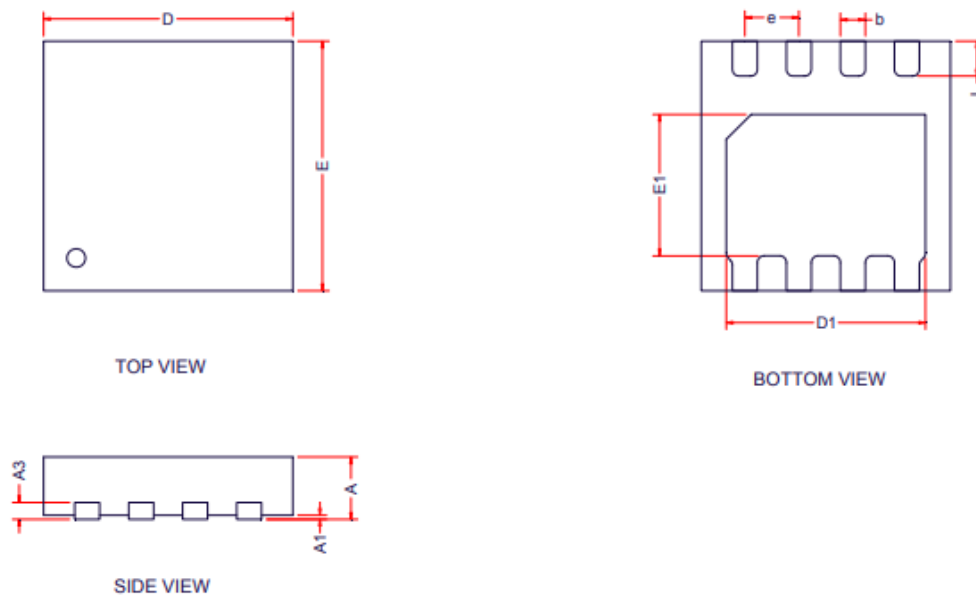


Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

➤ Package Information



DFN3X3-8L

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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