SSC8330GQ4

Dual Asymmetric N-Channel Enhancement Mode MOSFET

➢ Features

	VDS	VGS	RDSON Typ.	ID
Q1	30V	±20V	7.4mΩ@10V	33A
			8.1mΩ@4V5	
Q2	30V	±20V	5.5mΩ@10V	35A
			9.5mΩ@4V5	

➢ Description

This device uses advanced trench technology to provide excellent RDSON and low gate charge. This device is suitable for use as a load switch or in PWM applications.

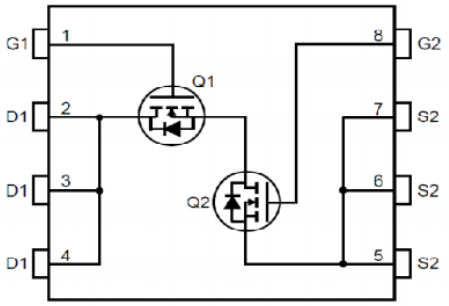
➢ Applications

- Isolated DC/DC Converters
- DC/DC conversion in computing
- Load Switch

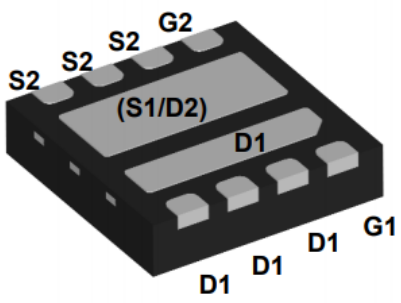
➢ Ordering Information

Device	Package	Shipping
SSC8330GQ4	DFN3X3-8L	5000/Reel

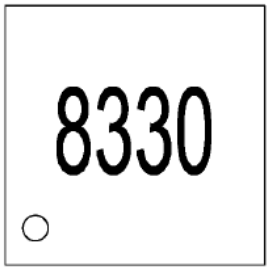
➢ Pin configuration



Top View



Bottom View



Marking

➢ Absolute Maximum Ratings (T_A=25℃ unless otherwise noted)

Symbol	Parameter		Ratings		Unit
			Q1	Q2	
V_{DSS}	Drain-to-Source Voltage		30	30	V
V_{GSS}	Gate-to-Source Voltage		±20	±20	V
I_D	Continuous Drain Current	TC=25℃	33	35	A
		TC=100℃	18	20	A
I_{DM}	Pulsed Drain Current [b]		132	144	A
I_{DSM}	Continuous Drain Current [a]	TA=25℃	11	12.6	A
		TA=70℃	8.3	9.1	A
P_D	Power Dissipation [c]	TC=25℃	21	20.1	W
		TC=100℃	8.3	8.3	W
P_{DSM}	Power Dissipation [a]	TA=25℃	2.3	2.3	W
		TA=70℃	1.5	1.5	W
I_{AS}	Avalanche Current		19	25	A
E_{AS}	Avalanche Energy, L=0.5mH		90	156	mJ
T_J	Operation junction temperature		-55 to 150		℃
T_{STG}	Storage temperature range		-55 to 150		℃

➢ Thermal Resistance Ratings(T_A=25℃ unless otherwise noted)

Symbol	Parameter	Typical	Maximum		Unit
			Q1	Q2	
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance [a]		55	55	℃/W
$R_{\theta JC}$	Junction-to-Case Thermal Resistance		6.5	6	

Note:

a. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR-4 board with 2oz.copper,in a still air environment with T_A=25℃.The value in any given application depends on the user is specific board design. The current rating is based on the t≤10s thermal resistance rating.

b. Repetitive rating, pulse width limited by junction temperature.

c. 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.

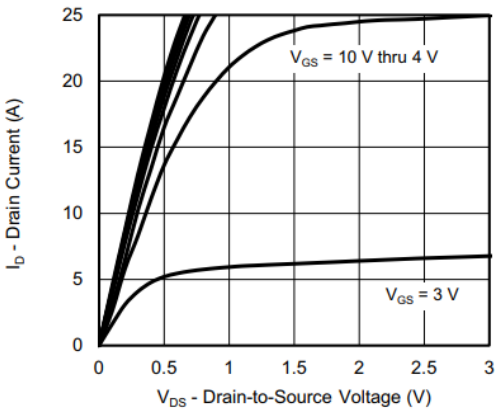
➢ Q1 Electronics Characteristics(T_A=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ.	Max	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	VGS=0V,ID=250uA	30			V
$V_{GS\ (th)}$	Gate Threshold Voltage	VDS=VGS,ID=250uA	1	1.65	2.1	V
$R_{DS(on)}$	Drain-Source On-Resistance	VGS=10V,ID=15A		7.4	13	mΩ
		VGS=4.5V,ID=12A		8.1	16	
I_{DSS}	Zero Gate Voltage Drain Current	VDS=24V,VGS=0V			1	uA
I_{GSS}	Gate-Source leak current	VGS=±20V,VDS=0V			±100	nA
V_{SD}	Forward Voltage	VGS=0V,IS=0.5A		0.8	1.3	V
G_{FS}	Transconductance	VDS=15V,ID=10A		50		S
Ciss	Input Capacitance	VDS=15V, VGS=0V, f=1MHz		800		pF
Coss	Output Capacitance			255		
Crss	Reverse Transfer Capacitance			75		
$T_{D(ON)}$	Turn-on delay time	VGS=10V, VDS=15V, RG=3Ω, RL=2.3Ω		15		ns
Tr	Rise time			9		
$T_{D(OFF)}$	Turn-off delay time			55		
Tf	Fall time			16		
Qg	Total Gate charge	VGS=10V, VDS=15V, ID=13A		8		nC
Qgs	Gate to Source charge			1.1		
Qgd	Gate to Drain charge			2.2		

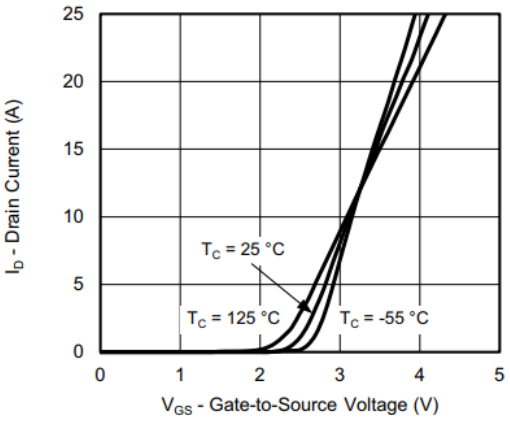
➢ Q2 Electronics Characteristics(T_A=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ.	Max	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	VGS=0V,ID=250uA	30			V
$V_{GS\ (th)}$	Gate Threshold Voltage	VDS=VGS,ID=250uA	1	1.55	3	V
$R_{DS(on)}$	Drain-Source On-Resistance	VGS=10V,ID=15A		5.5	11	mΩ
		VGS=4.5V,ID=12A		9.5	14	
I_{DSS}	Zero Gate Voltage Drain Current	VDS=24V,VGS=0V			1	uA
I_{GSS}	Gate-Source leak current	VGS=±20V,VDS=0V			±100	nA
V_{SD}	Forward Voltage	VGS=0V,IS=1A		0.8	1.5	V
G_{FS}	Transconductance	VDS=15V,ID=10A		60		S
Ciss	Input Capacitance	VDS=15V, VGS=0V, f=1MHz		1000		pF
Coss	Output Capacitance			269		
Crss	Reverse Transfer Capacitance			105		
$T_{D(ON)}$	Turn-on delay time	VGS=10V, VDS=15V, RG=3Ω,RL=2.3Ω		8		ns
Tr	Rise time			4		
$T_{D(OFF)}$	Turn-off delay time			18		
Tf	Fall time			6		
Qg	Total Gate charge	VGS=10V, VDS=15V, ID=13A		15		nC
Qgs	Gate to Source charge			2.2		
Qgd	Gate to Drain charge			3.3		

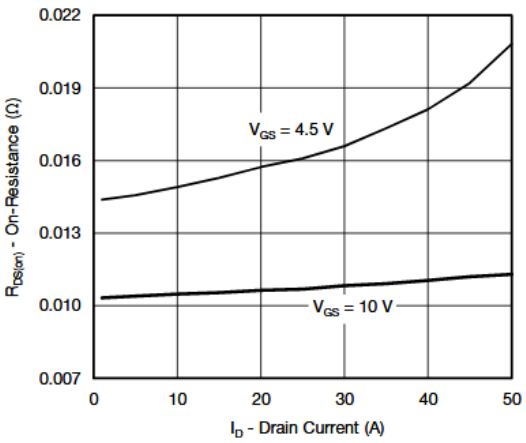
➢ Q1 Typical Characteristics(T_A=25℃ unless otherwise noted)



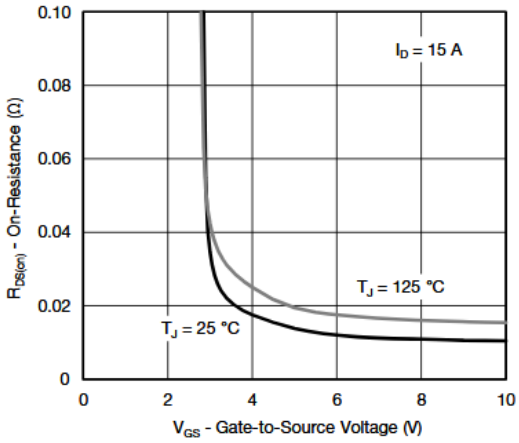
Output Characteristics



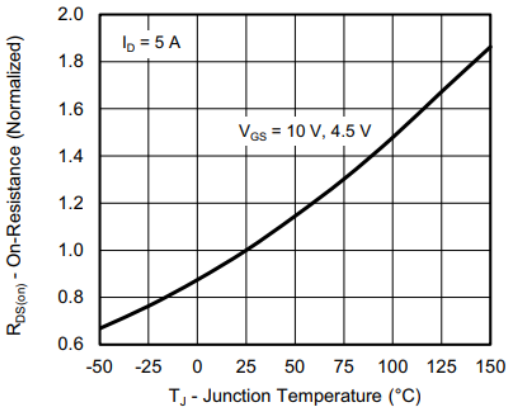
Transfer Characteristics



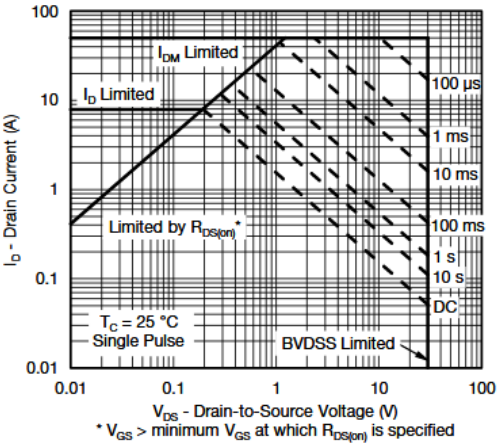
On-Resistance vs. Drain Current and Gate Voltage



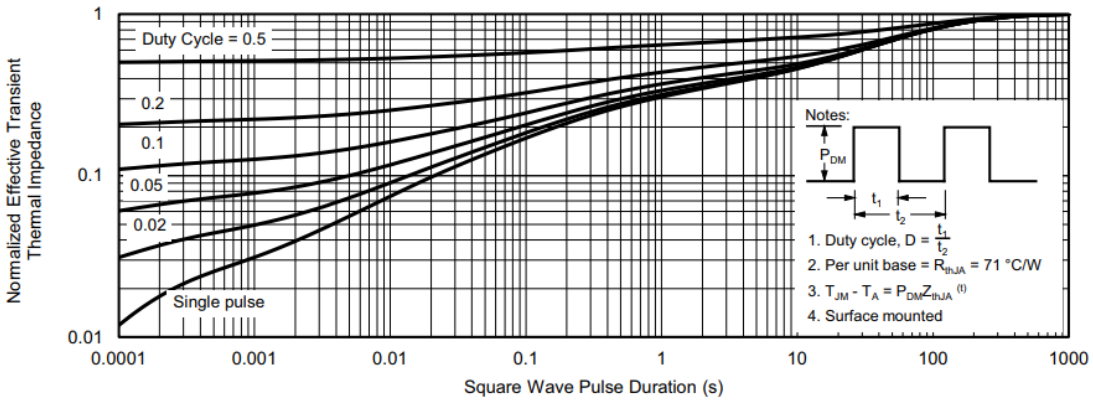
On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature

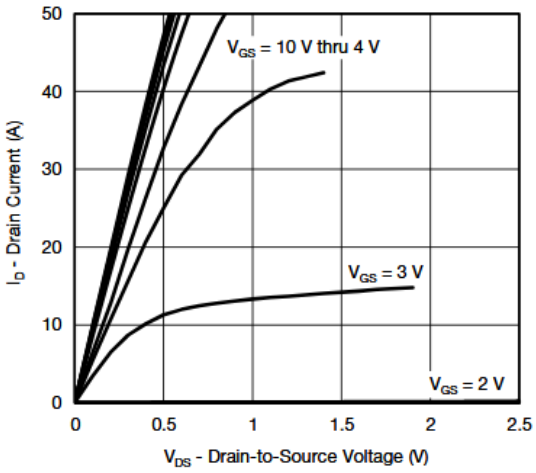


Safe Operating Area, Junction-to-Ambient

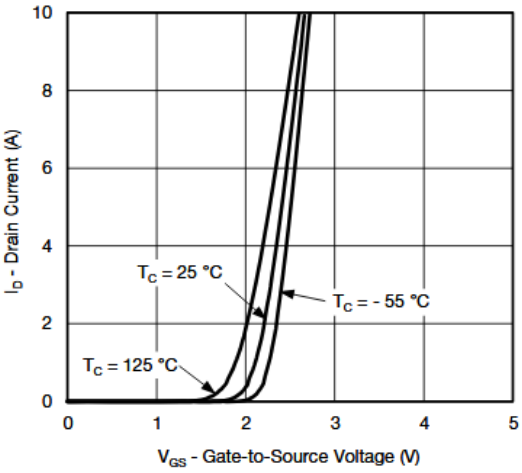


Normalized Thermal Transient Impedance, Junction-to-Ambient

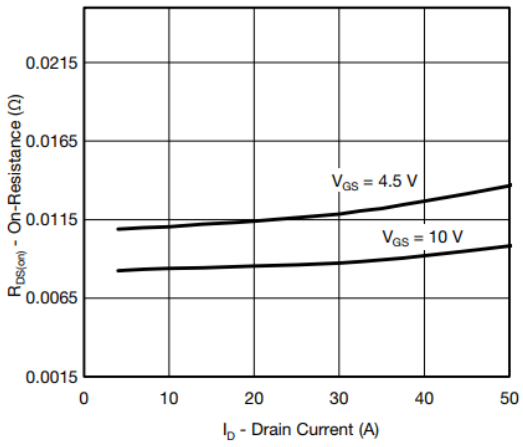
➢ Q2 Typical Characteristics(T_A=25℃ unless otherwise noted)



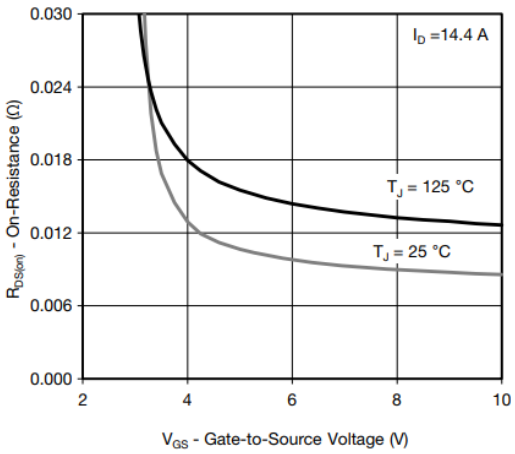
Output Characteristics



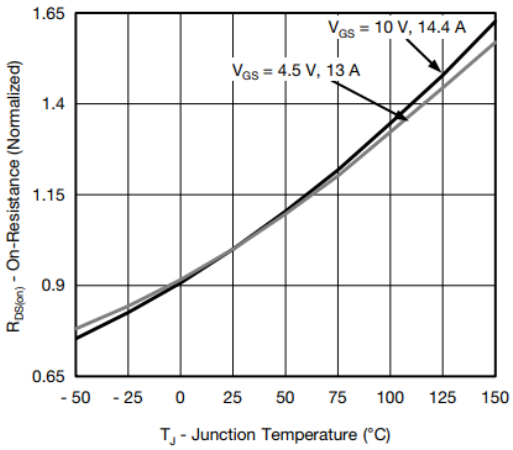
Transfer Characteristics



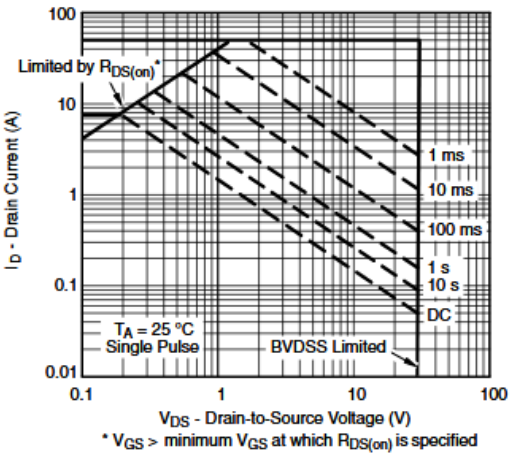
On-Resistance vs. Drain Current



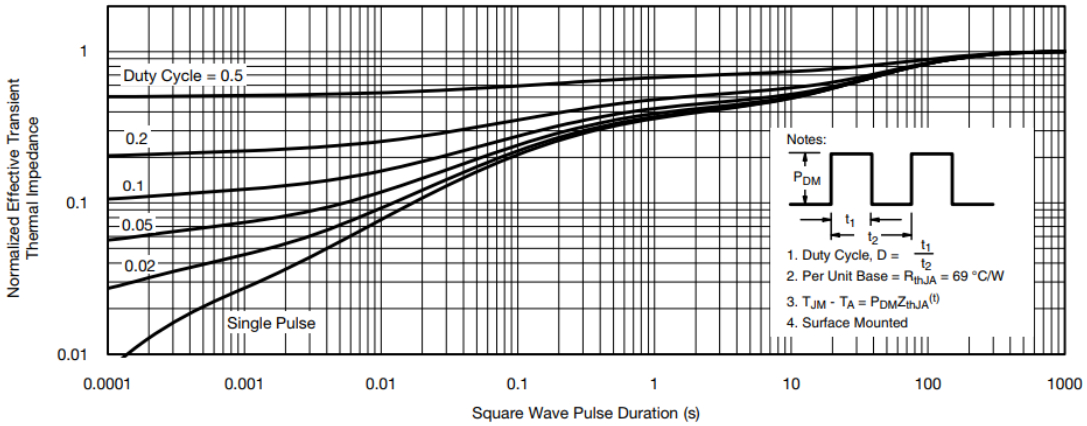
On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature

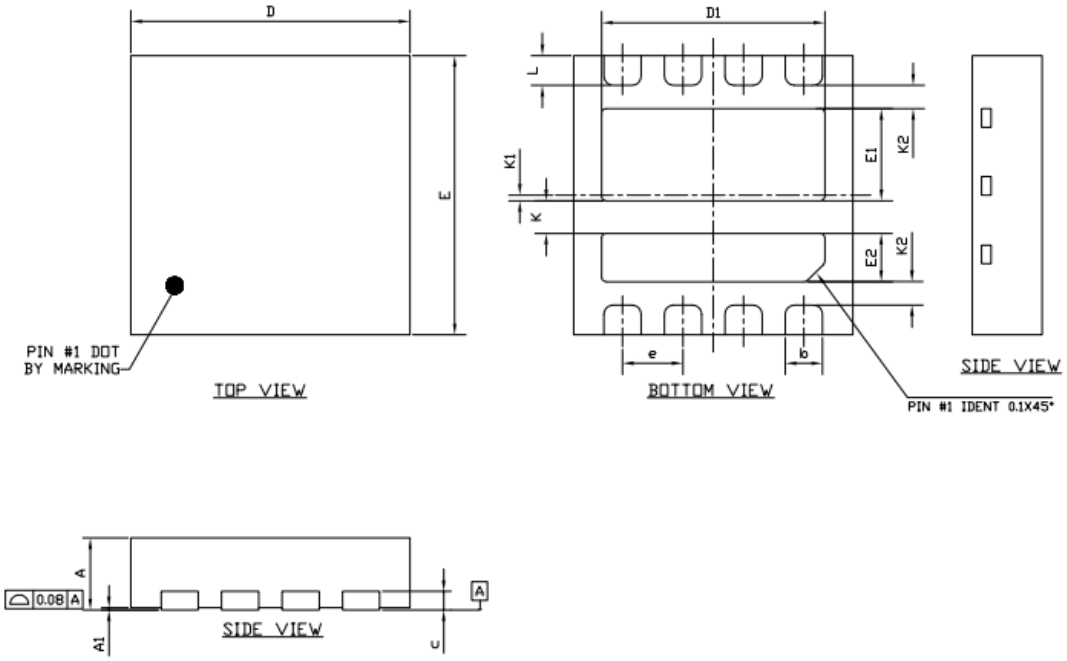


Safe Operating Area, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

➢ Package Information



DFN3X3-8L

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.75	0.80	0.028	0.030	0.032
A1	0.00	---	0.05	0.000	---	0.002
c		0.203 REF.			0.008 REF.	
b	0.35	0.40	0.45	0.014	0.016	0.018
D	2.90	3.00	3.10	0.114	0.118	0.122
D1	2.30	2.40	2.50	0.090	0.094	0.098
E	2.90	3.00	3.10	0.114	0.118	0.122
E1	0.89	0.99	1.09	0.035	0.039	0.043
E2	0.42	0.52	0.62	0.016	0.020	0.024
e		0.65 BSC			0.026 BSC	
L	0.27	0.32	0.37	0.011	0.013	0.015
K		0.35 REF.			0.014 REF.	
K1		0.06 REF.			0.002 REF.	
K2		0.25 REF.			0.010 REF.	

➢ History Version

V3.0		
V3.1	Change ID Change Q1/Q2 Rdson Typ.	2023-11-07

DISCLAIMER

AFSEMI RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. AFSEMI DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICIENCE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

THE GRAPHS PROVIDED IN THIS DOCUMENT ARE STATISTICAL SUMMARIES BASED ON A LIMITED NUMBER OF SAMPLES AND ARE PROVIDED FOR INFORMATIONAL PURPOSE ONLY. THE PERFORMANCE CHARACTERISTICS LISTED IN THEM ARE NOT TESTED OR GUARANTEED. IN SOME GRAPHS, THE DATA PRESENTED MAY BE OUTSIDE THE SPECIFIED OPERATING RANGE (E.G. OUTSIDE SPECIFIED POWER SUPPLY RANGE) AND THEREFORE OUTSIDE THE WARRANTED RANGE.

OUR PRODUCT SPECIFICATIONS ARE ONLY VALID IF OBTAINED THROUGH THE COMPANY'S OFFICIAL WEBSITE, CRM SYSTEM, OR OUR SALES PERSONNEL CHANNELS. IF CHANGES OR SPECIAL VERSIONS ARE INVOLVED, THEY MUST BE STAMPED WITH A QUALITY SEAL AND MARKED WITH A SPECIAL VERSION NUMBER TO BE VALID.