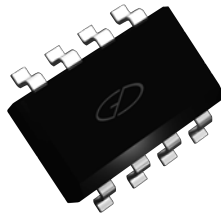
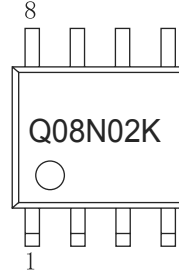


Main Product Characteristics

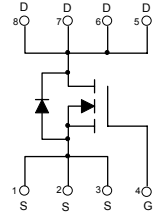
$V_{(BR)DSS}$	20V
$R_{DS(on)MAX}$	15mΩ@4.5V
	19mΩ@2.5V
I_D	8 A



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Marking and Pin Assignment



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for battery operated systems, load switching, power converters and other general purpose applications
- Low on-resistance with low gate charge
- Fast switching and ESD protected



Description

The SSFQ08N02K utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

Absolute Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	8	A
Pulsed Drain Current	I_{DM}	32	A
Single Pulsed Avalanche Energy	$E_{AS}^{(1)}$	50	mJ
Power Dissipation	P_D	1.4	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	89	$^{\circ}C/W$
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}C$
Lead Temperature for Soldering Purposes(1/8" from case for 10s)	T_L	260	$^{\circ}C$

(1). E_{AS} condition: $V_{DD}=20V, L=0.1mH, R_G=25\Omega$, Starting $T_J = 25^{\circ}C$

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

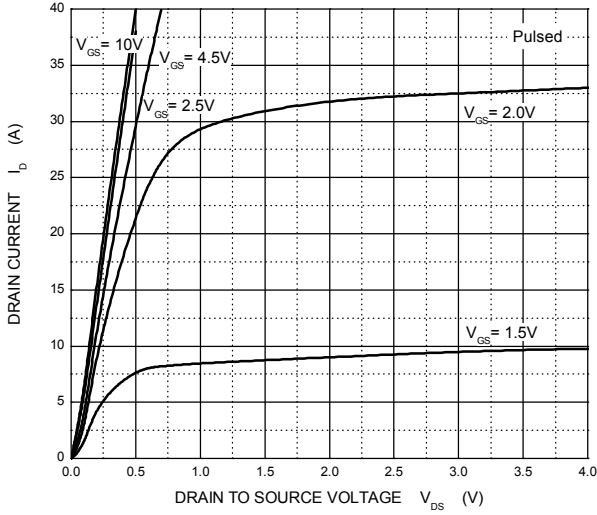
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20	---	---	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$	---	---	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 10V$	---	---	± 10	μA
On Characteristics (note 1)						
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.45	---	1.0	V
Static Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 5A$	---	---	15	m Ω
		$V_{GS} = 2.5V, I_D = 4A$	---	---	19	m Ω
Forward Transconductance	g_{fs}	$V_{DS} = 5V, I_D = 5A$	---	16	---	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1MHz$	---	1800	---	pF
Output Capacitance	C_{oss}		---	230	---	
Reverse Transfer Capacitance	C_{rss}		---	200	---	
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 10V, V_{GS} = 4.5V,$ $I_D = 8A$	---	17.9	---	nC
Gate-Source Charge	Q_{gs}		---	1.5	---	
Gate-Drain Charge	Q_{gd}		---	4.7	---	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 10V, I_D = 8A,$ $V_{GS} = 10V, R_G = 3\Omega,$ $R_L = 1.2\Omega$	---	2.5	---	ns
Turn-On Rise Time	t_r		---	7.2	---	
Turn-off Delay Time	$t_{d(off)}$		---	49	---	
Turn-off Fall Time	t_f		---	10.8	---	
Drain-Source Diode Characteristics						
Drain-Source Diode Forward Voltage (note 1)	V_{SD}	$V_{GS} = 0V, I_S = 8A$	---	---	1.2	V
Continuous Drain-Source Diode Forward Current	I_S		---	---	8	A
Pulsed Drain-Source Diode Forward Current	I_{SM}		---	---	32	A

Note:

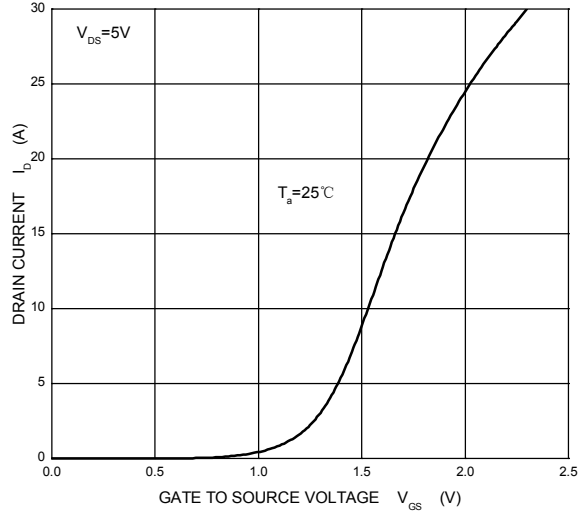
1. Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Typical Electrical and Thermal Characteristic Curves

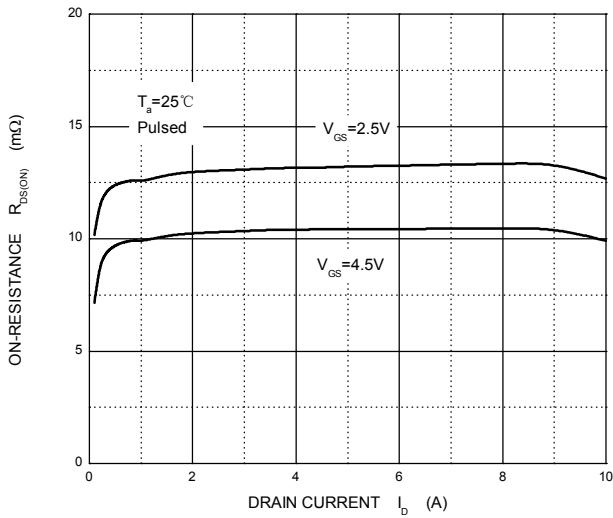
Output Characteristics



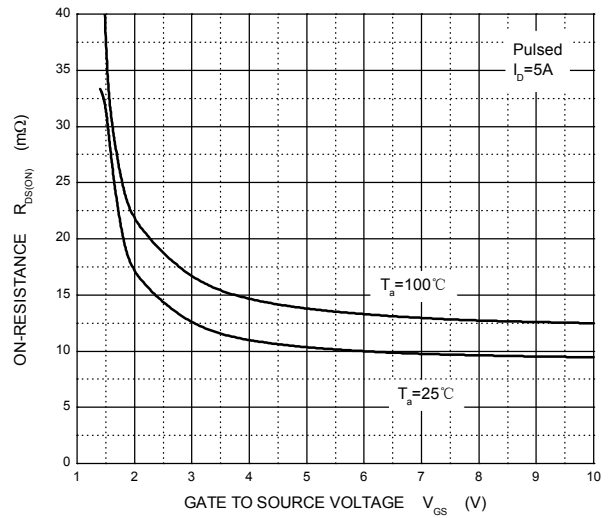
Transfer Characteristics



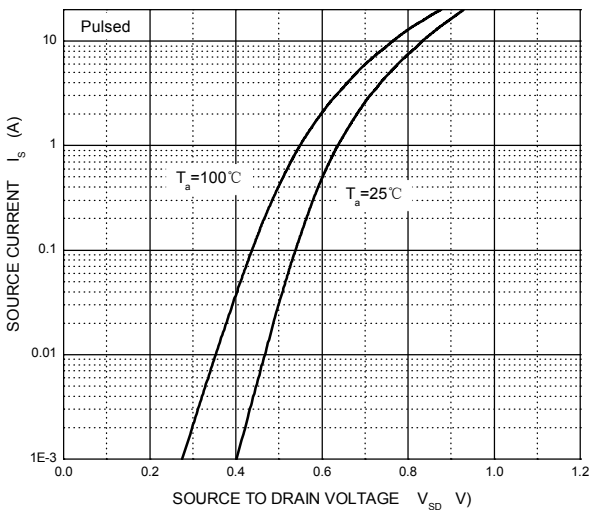
$R_{DS(ON)}$ — I_D



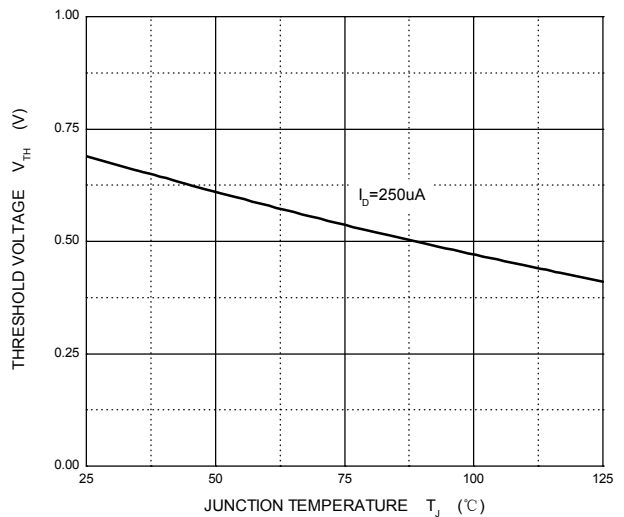
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

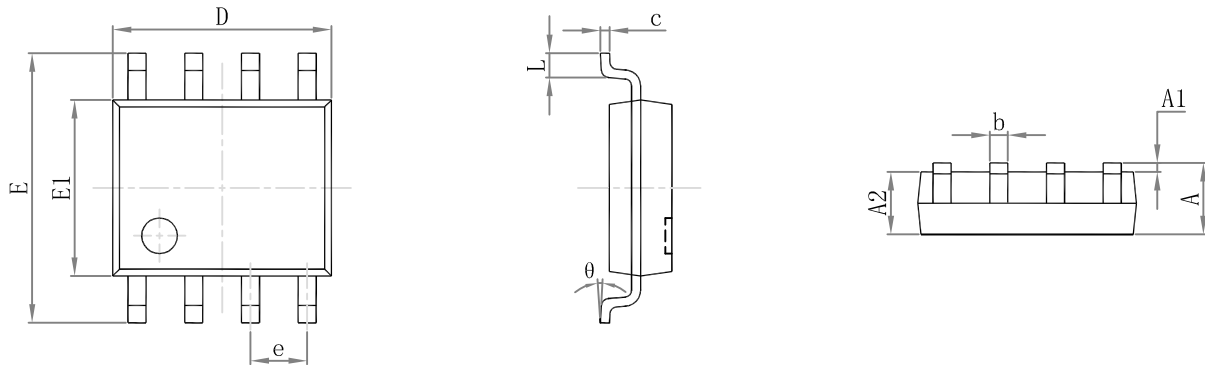


Threshold Voltage



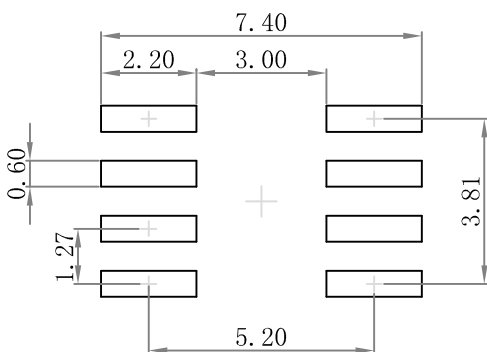
Package Outline Dimensions

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Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.