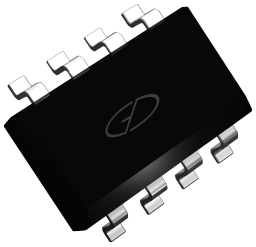
GOOD-ARK SEMICONDUCTOR

SSFQ4435

30V P-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	-30V
$R_{DS(on)}$MAX	24mΩ@-10V
	35mΩ@-4.5V
I_D	-9.1A



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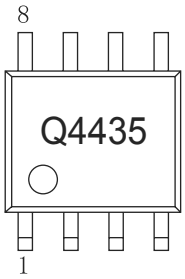
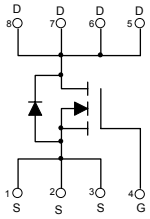


Marking and Pin Assignment



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 reverse body recovery

Description

The SSFQ4435 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°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-9.1	A
Pulsed Drain Current	I_{DM}	-36	A
Single Pulsed Avalanche Energy	E_{AS}(1)	20	mJ
Power Dissipation	P_D	1.4	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	89	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	**°C**
Lead Temperature for Soldering Purposes(1/8" from case for 10s)	T_L	260	°C

(1).E_{AS} condition: V_{DD}=-50V,L=0.5mH, R_G=25Ω, Starting T_J = 25°C

Electrical Characteristics (T_A=25°C unless otherwise specified)

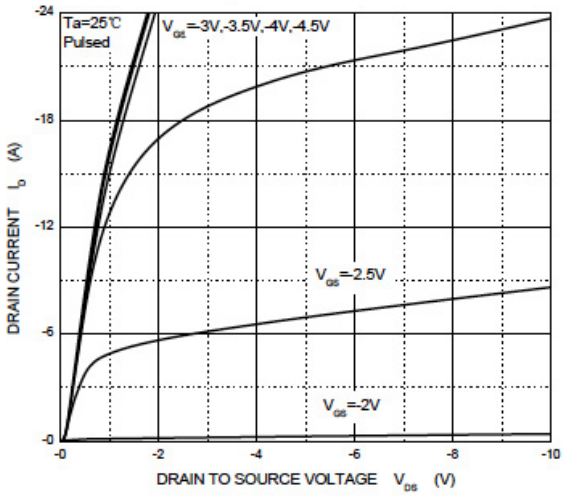
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)\ DSS}$	V_{GS} = 0V, I_D =-250μA	-30	---	---	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =-30V, V_{GS} =0V	---	---	-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V	---	---	±100	nA
On Characteristics (note 1)						
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1.0	-1.5	-3.0	V
Static Drain-Source On-Sate Resistance	$R_{DS(on)}$	V_{GS} =-10V, I_D =-9.1A	---	14	24	mΩ
		V_{GS} =-4.5V, I_D =-6.9A	---	23	35	mΩ
Forward Transconductance	g_{FS}	V_{DS} =-10V, I_D =-9.1A	20	---	---	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} =-15V,V_{GS} =0V, f =1MHz	---	1350	---	pF
Output Capacitance	C_{oss}		---	215	---	
Reverse Transfer Capacitance	C_{rss}		---	185	---	
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}=-15V, V_{GS}=-10V, I_D=-9.1A	---	---	50	nC
		V_{DS}=-15V, V_{GS}=-4.5V, I_D=-9.1A	---	---	25	
Gate-Source Charge	Q_{gs}		---	4	---	
Gate-Drain Charge	Q_{gd}		---	7.5	---	
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=-15V,I_D=-1A, V_{GS}=-10V,R_G=1Ω, R_L=15Ω	---	---	15	ns
Turn-On Rise Time	t_r		---	---	15	
Turn-Off Delay Time	$t_{d(off)}$		---	---	70	
Turn-Off Fall Time	t_f		---	---	25	
Gate Resistance	R_g	f =1MHz, V_{DS}=0V, V_{GS}=0V,	---	5.8	---	Ω
Drain-Source Diode Characteristics						
Drain-Source Diode Forward Voltage (note 1)	V_{SD}	V_{GS} =0V, I_S=-2A	---	---	-1.2	V
Continuous Drain-Source diode Forward Current	I_S		---	---	-9.1	A
Pulsed Drain-Source Diode Forward Current	I_{SM}		---	---	-36	A

Note:

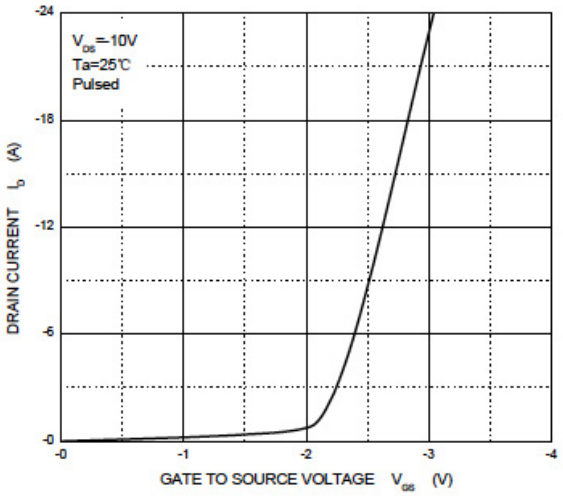
1. Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

Typical Electrical and Thermal Characteristic Curves

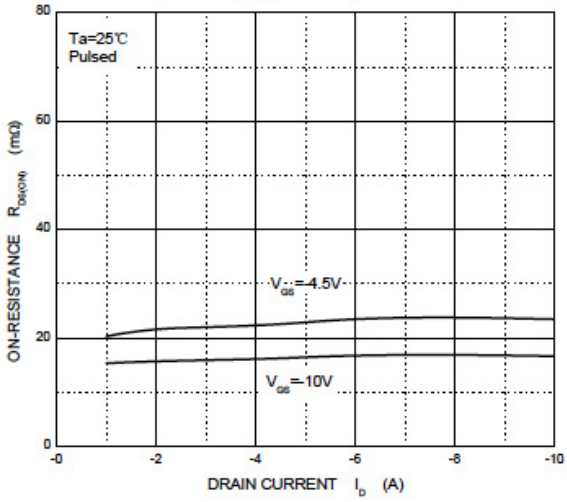
Output Characteristics



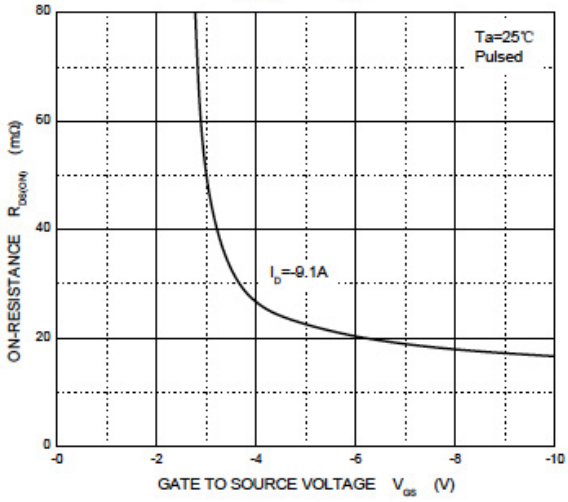
Transfer Characteristics



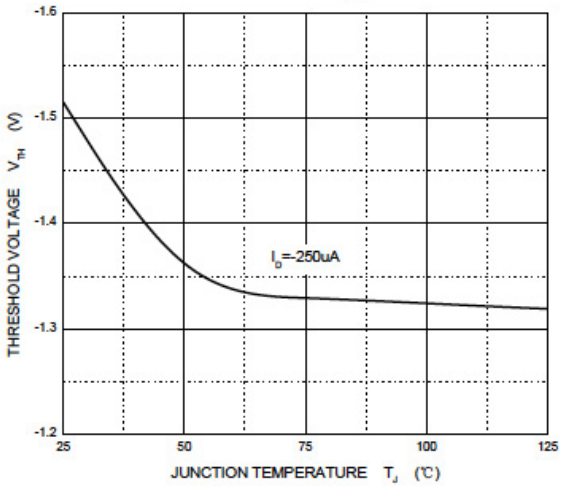
$R_{DS(ON)}$ —— I_D



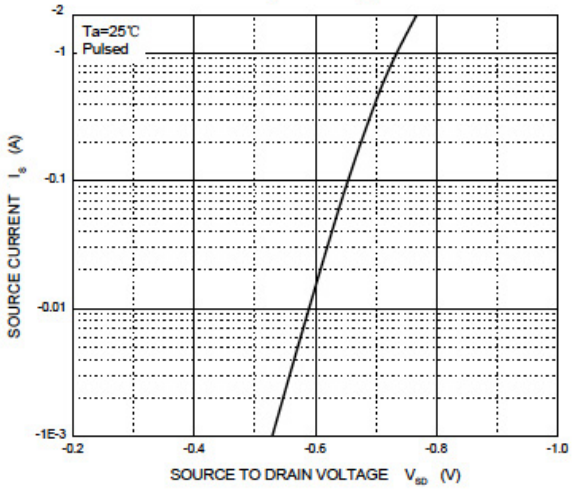
$R_{DS(ON)}$ —— V_{GS}



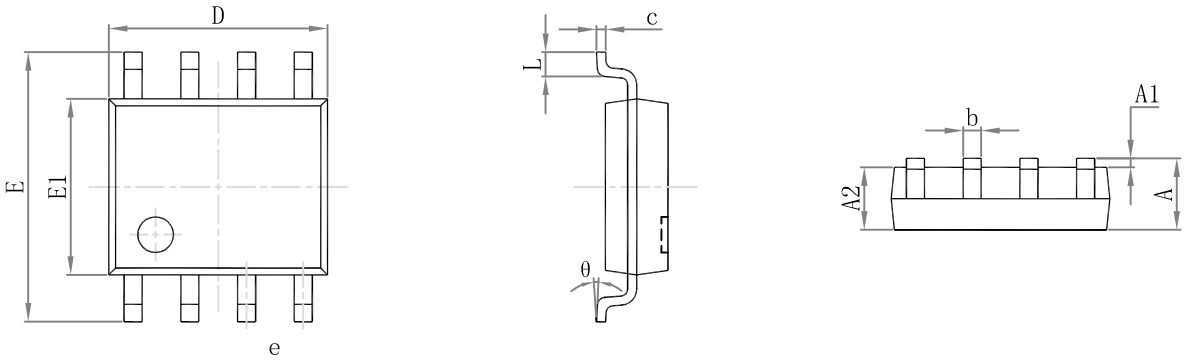
Threshold Voltage



I_S —— V_{SD}

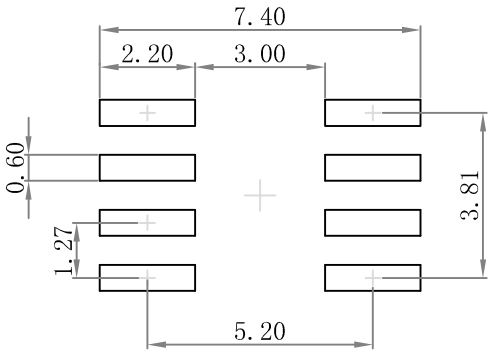


Package Outline Dimensions SOP-8



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:±0.05mm.
3.The pad layout is for reference purposes only.