

# SGMNQ40430

## 30V, Power, Single N-Channel, PDFN Package, MOSFET

### GENERAL DESCRIPTION

The power MOSFET features a low on-state resistance.

### FEATURES

- Low On-State Resistance
- Low QG and Capacitance Losses
- Small Footprint ( $5 \times 6 \text{mm}^2$ ) for Compact Design
- Halogen-Free/RoHS Compliant

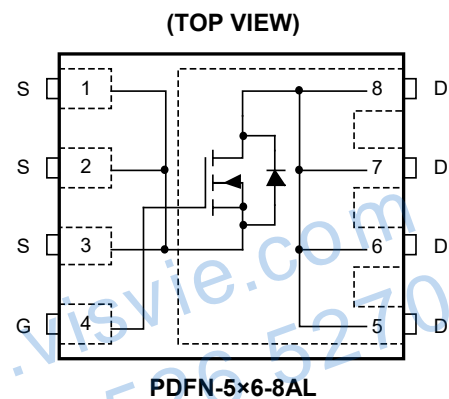
### APPLICATIONS

CPU Power Delivery  
DC-DC Converters  
Power Load Switch  
Notebook Battery Management

### PRODUCT SUMMARY

$R_{DS(ON)}$ (TYP)	$R_{DS(ON)}$ (MAX)	$I_D$ (MAX)
2.9m $\Omega$	3.8m $\Omega$	63A

### PIN CONFIGURATION

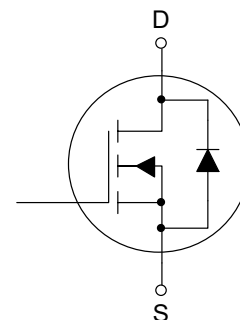


### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNITS
Drain-to-Source Voltage	$V_{DS}$	30	V
Gate-to-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current (DC)	$I_D$	63	A
Continuous Drain Current (Pulse)	$I_{DM}$	150	A
Total Dissipation	$P_D$	27.7	W
Avalanche Current	$I_{AS}$	39	A
Avalanche Energy	$E_{AS}$	76.05	mJ
Junction Temperature	$T_J$	+150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^{\circ}\text{C}$
Lead Temperature (Soldering, 10s)		+260	$^{\circ}\text{C}$

Stresses beyond those listed in Absolute Maximum Ratings may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

### EQUIVALENT CIRCUIT

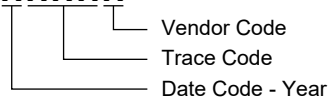


**PACKAGE/ORDERING INFORMATION**

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGMNQ40430	PDFN-5×6-8AL	-55°C to +150°C	SGMNQ40430TPDA8G/TR	SGM40430 TPDA8 XXXXX	Tape and Reel, 4000

**MARKING INFORMATION**

NOTE: XXXXX = Date Code, Trace Code and Vendor Code.

**XXXXX**

Green (RoHS & HSF): SG Micro Corp defines "Green" to mean Pb-Free (RoHS compatible) and free of halogen substances. If you have additional comments or questions, please contact your SGMICRO representative directly.

**DISCLAIMER**

SG Micro Corp reserves the right to make any change in circuit design, or specifications without prior notice.

**THERMAL RESISTANCE MAXIMUM RATINGS**

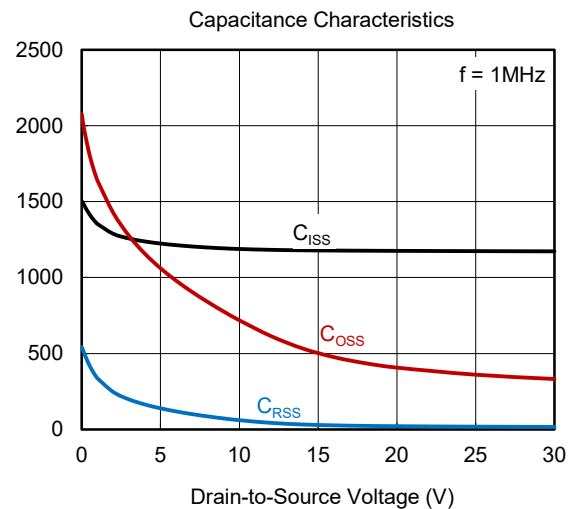
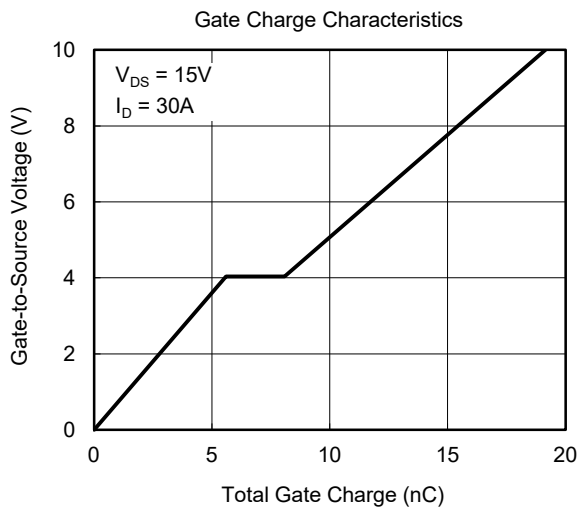
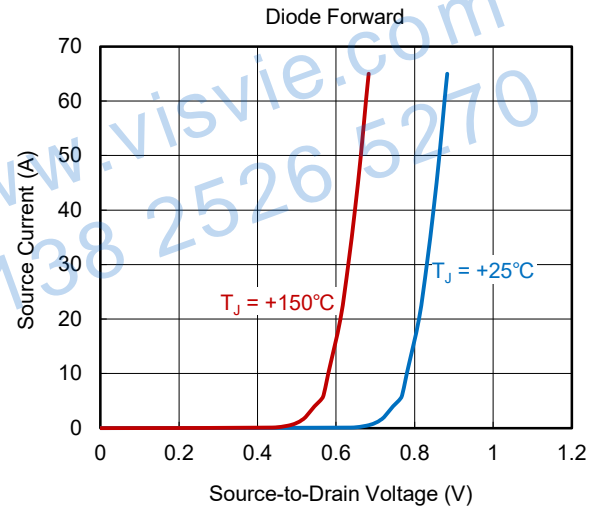
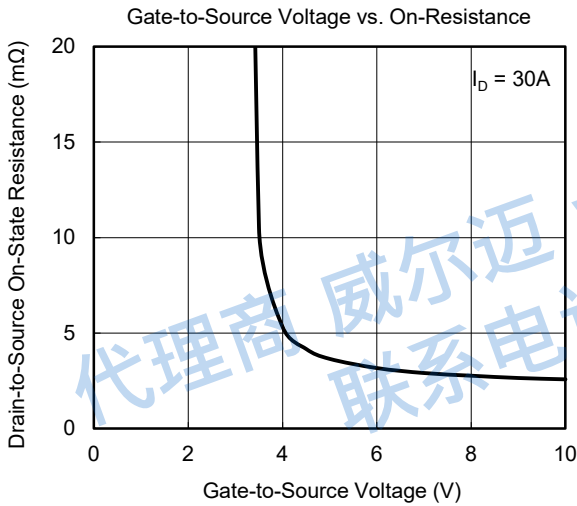
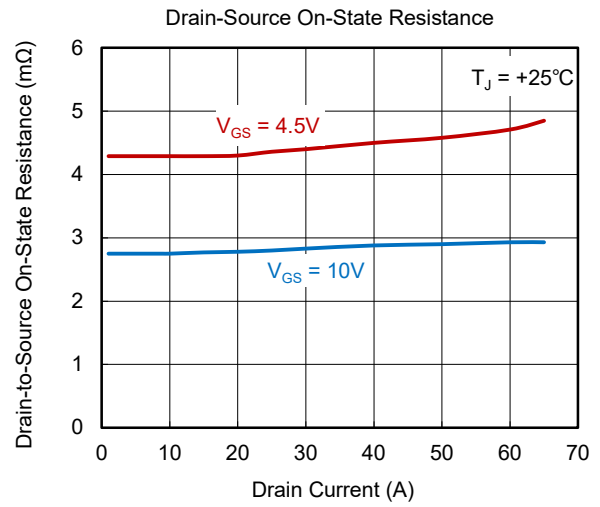
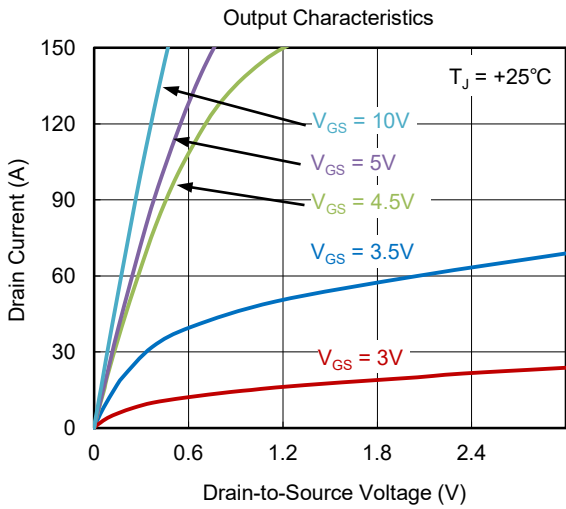
PARAMETER	SYMBOL	VALUE	UNITS
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$	49	°C/W
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	4.5	°C/W

## ELECTRICAL CHARACTERISTICS

(T<sub>A</sub> = +25°C, unless otherwise noted.)

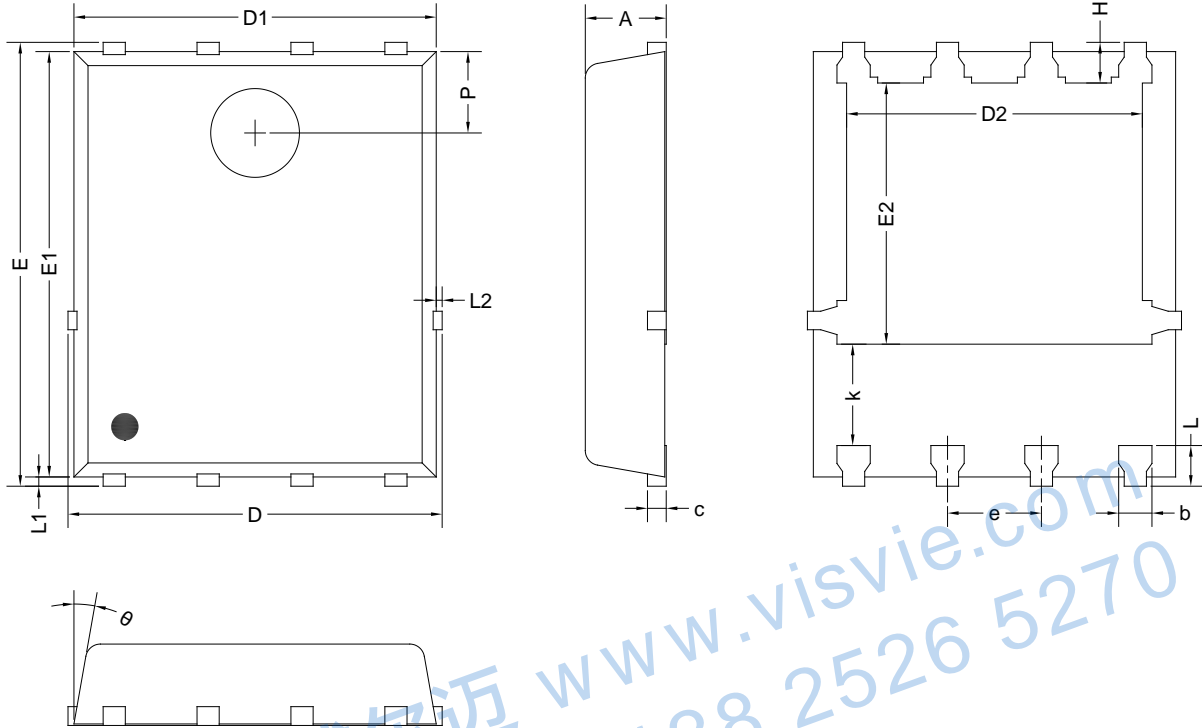
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
<b>Static OFF Characteristics</b>						
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> = 250μA, V <sub>GS</sub> = 0V	30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V			1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±100	nA
<b>Static ON Characteristics</b>						
Gate-to-Source Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = 250μA	1.2	1.6	2.2	V
Drain-to-Source On-State Resistance	R <sub>DS(ON)</sub>	I <sub>D</sub> = 30A, V <sub>GS</sub> = 10V		2.9	3.8	mΩ
		I <sub>D</sub> = 25A, V <sub>GS</sub> = 4.5V		4.5	5.8	
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> = 1.5V, I <sub>D</sub> = 15A		41		S
Gate Resistance	R <sub>G</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 0V, f = 1MHz		1		Ω
<b>Diode Characteristics</b>						
Diode Forward Voltage	V <sub>F(SD)</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 10A		0.8	1.1	V
Reverse Recovery Time	t <sub>RR</sub>	I <sub>S</sub> = 30A, V <sub>GS</sub> = 0V, di/dt = 100A/μs		16.4		ns
Reverse Recovery Charge	Q <sub>RR</sub>				4.6	
<b>Dynamic Characteristics</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1MHz		1156		pF
Output Capacitance	C <sub>OSS</sub>			481		
Reverse Transfer Capacitance	C <sub>RSS</sub>			36		
Total Gate Charge	Q <sub>G</sub>	V <sub>DS</sub> = 15V, I <sub>D</sub> = 30A	V <sub>GS</sub> = 10V	19.1		nC
			V <sub>GS</sub> = 4.5V	8.6		
Gate-to-Source Charge	Q <sub>GS</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 30A		5.6		nC
Gate-to-Drain Charge	Q <sub>GD</sub>			2.5		
<b>Switch Characteristics</b>						
Turn-On Delay Time	t <sub>D(ON)</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 15A, R <sub>G</sub> = 3Ω		9.8		ns
Rise Time	t <sub>r</sub>			57.7		
Turn-Off Delay Time	t <sub>D(OFF)</sub>			15.2		
Fall Time	t <sub>f</sub>			51.7		

TYPICAL PERFORMANCE CHARACTERISTICS



PACKAGE OUTLINE DIMENSIONS

PDFN-5x6-8AL

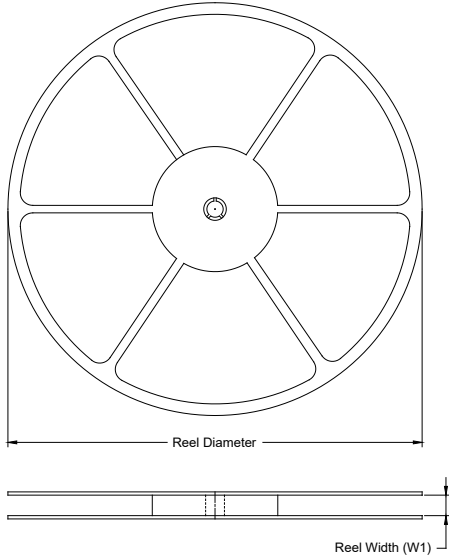


Symbol	Dimensions In Millimeters		
	MIN	MOD	MAX
A	1.000	1.100	1.200
b	0.340	0.450	0.540
c	0.210	0.250	0.340
D	4.800	5.000	5.100
D1	4.800	4.900	5.000
D2	3.900	4.000	4.100
E	5.900	6.000	6.100
E1	5.700	5.750	5.800
E2	3.430	3.530	3.630
e	1.270 BSC		
H	0.450	0.550	0.650
k	1.170	1.370	1.570
L	0.450	0.550	0.650
L1	0.000	0.130	0.200
L2	0.000	0.080	0.150
P	1.000	1.100	1.200
θ	8°	10°	12°

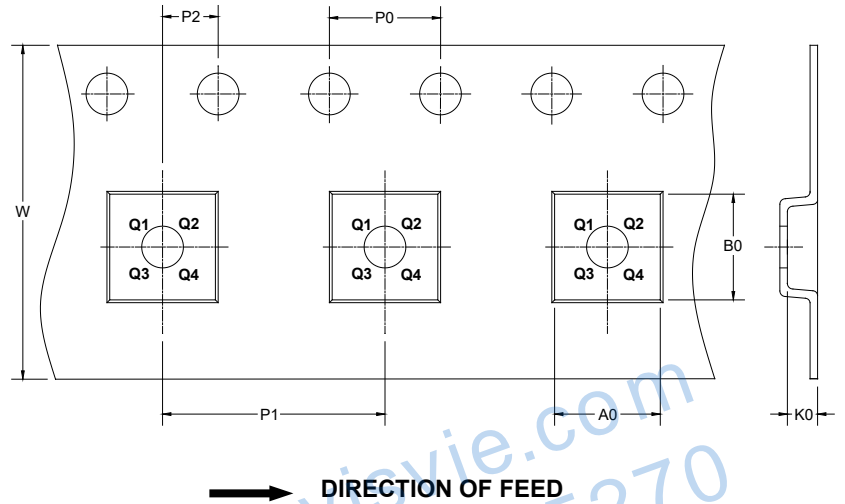
NOTE: This drawing is subject to change without notice.

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
PDFN-5×6-8AL	13"	12.4	6.45	5.30	1.40	4.0	8.0	2.0	12.0	Q1

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# PACKAGE INFORMATION

## CARTON BOX DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

## KEY PARAMETER LIST OF CARTON BOX

Reel Type	Length (mm)	Width (mm)	Height (mm)	Pizza/Carton
13"	386	280	370	5

DD0002

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