



# SGMNQ48430

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

### FEATURES

- Low On-State Resistance
- Low Total Gate Charge and Capacitance Losses
- Small Footprint (3.3×3.3mm<sup>2</sup>) for Compact Design
- RoHS Compliant and Halogen Free

### PRODUCT SUMMARY

$R_{DS(on)}$ (TYP) $V_{GS} = 10V$	$R_{DS(on)}$ (MAX) $V_{GS} = 10V$	$I_D$ (MAX) $T_C = +25^\circ C$
3.4mΩ	4.5mΩ	35A

### ABSOLUTE MAXIMUM RATINGS

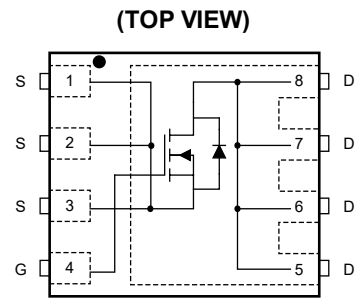
PARAMETER	SYMBOL	VALUE	UNITS
Drain-to-Source Voltage	$V_{DS}$	30	V
Gate-to-Source Voltage	$V_{GS}$	±20	V
Drain Current <sup>(1)</sup>	$I_D$	$T_C = +25^\circ C$	35
		$T_C = +100^\circ C$	32
		$T_A = +25^\circ C$	22
		$T_A = +70^\circ C$	17
Drain Current (Pulse) <sup>(2)</sup>	$I_{DM}$	128	A
Total Dissipation	$P_D$	$T_C = +25^\circ C$	24
		$T_C = +100^\circ C$	9.6
		$T_A = +25^\circ C$	2.4
		$T_A = +70^\circ C$	1.5
Avalanche Current <sup>(3)</sup>	$I_{AS}$	34	A
Avalanche Energy <sup>(3)</sup>	$E_{AS}$	57.8	mJ
Junction Temperature	$T_J$	150	°C
Storage Temperature Range	$T_{STG}$	-55 to +150	°C
Lead Temperature (Soldering, 10s)		+260	°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.

**NOTES:**

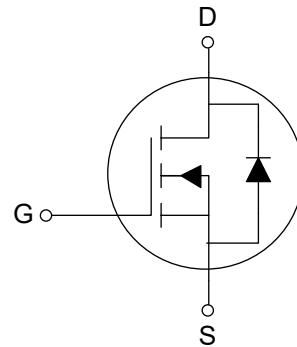
1. The maximum current rating is package limited.
2.  $t_{PULSE} < 10\mu s$ .
3. Parts are 100% tested at  $V_{GS} = 10V$ ,  $I_L = 24.8A$ , and  $E_{AS} = 31mJ$ .

### PIN CONFIGURATION



PDFN-3.3×3.3-8AL

### EQUIVALENT CIRCUIT



### APPLICATIONS

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

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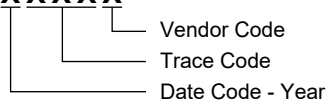
## PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGMNQ48430	PDFN-3.3x3.3-8AL	-55°C to +150°C	SGMNQ48430TPDB8G/TR	SGMC0L TPDB8 XXXXXX	Tape and Reel, 5000

## 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

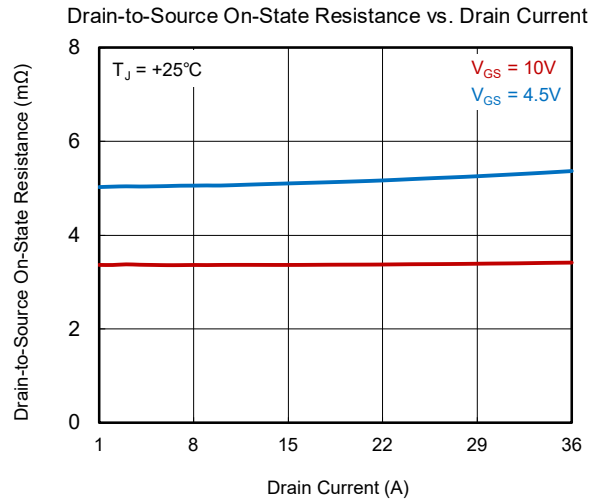
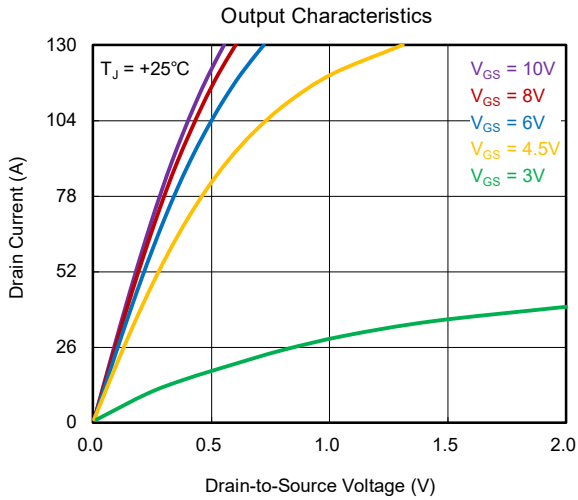
PARAMETER	SYMBOL	VALUE	UNITS
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	3.5	°C/W
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$	52	°C/W

**ELECTRICAL CHARACTERISTICS**

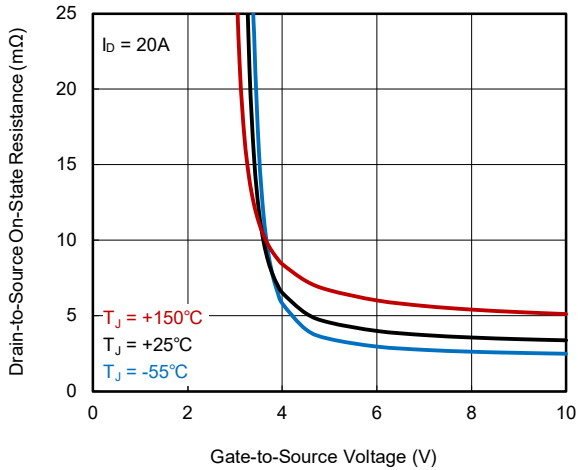
(T<sub>A</sub> = +25°C, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
<b>Static OFF Characteristics</b>						
Drain-to-Source Breakdown Voltage	V <sub>BR_DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 24V			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> = 20A	V <sub>GS</sub> = 10V	3.4	4.5	mΩ
			V <sub>GS</sub> = 4.5V	5.2	6.9	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 20A		15		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		V
Reverse Recovery Time	t <sub>RR</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 20A, di/dt = 100A/μs		34.3		ns
Reverse Recovery Charge	Q <sub>RR</sub>			24.4		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 15V, f = 1MHz		870		pF
Output Capacitance	C <sub>OSS</sub>			790		
Reverse Transfer Capacitance	C <sub>RSS</sub>			55		
Total Gate Charge	Q <sub>G</sub>	V <sub>DS</sub> = 15V, I <sub>D</sub> = 20A	V <sub>GS</sub> = 10V	20.1		nC
			V <sub>GS</sub> = 4.5V	10.1		
Gate-to-Source Charge	Q <sub>GS</sub>	V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 20A		3.5		nC
Gate-to-Drain Charge	Q <sub>GD</sub>			5.0		
<b>Switch Characteristics</b>						
Turn-On Delay Time	t <sub>D_ON</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 20A, R <sub>G</sub> = 3Ω		4.7		ns
Rise Time	t <sub>R</sub>			36.9		
Turn-Off Delay Time	t <sub>D_OFF</sub>			14.2		
Fall Time	t <sub>F</sub>			6.5		

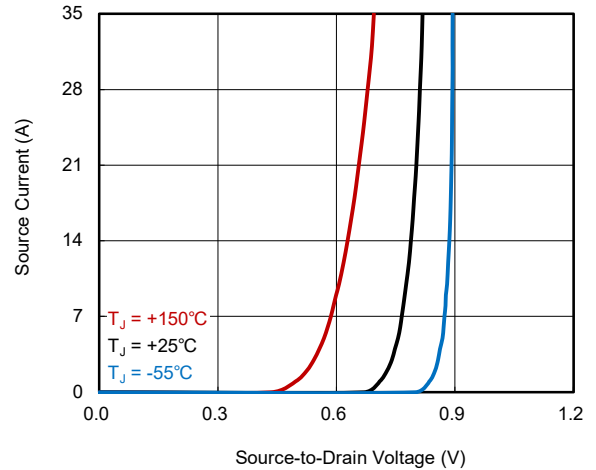
TYPICAL PERFORMANCE CHARACTERISTICS



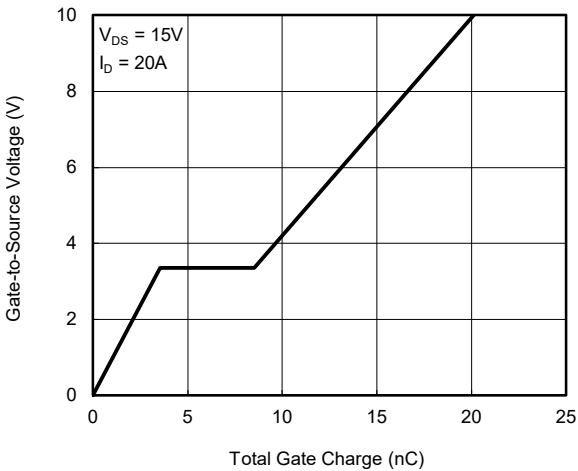
Drain-to-Source On-State Resistance vs. Gate-to-Source Voltage



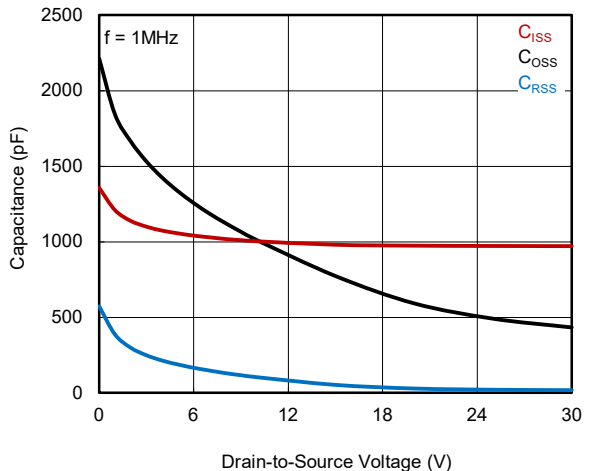
Diode Forward



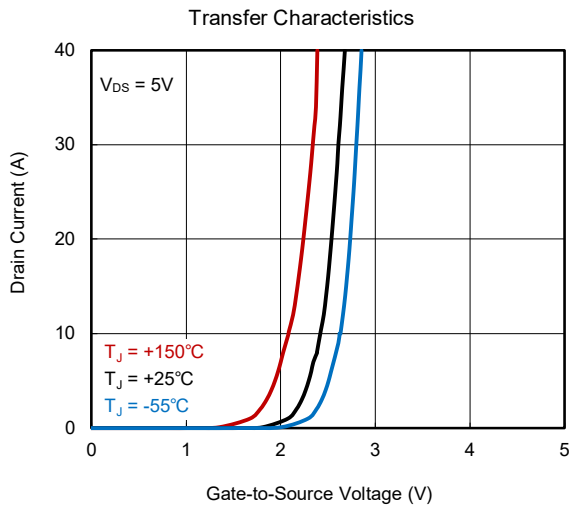
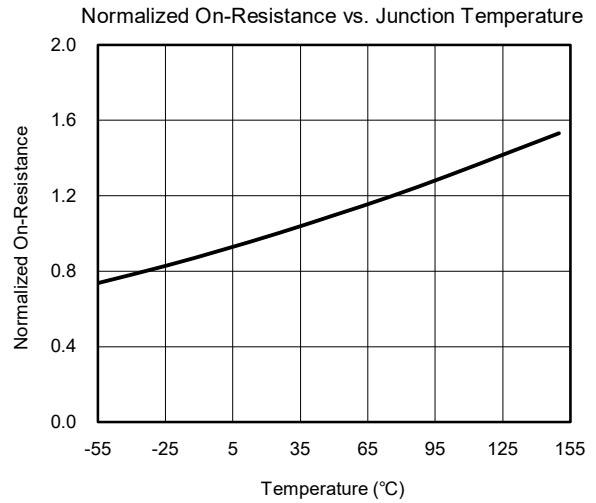
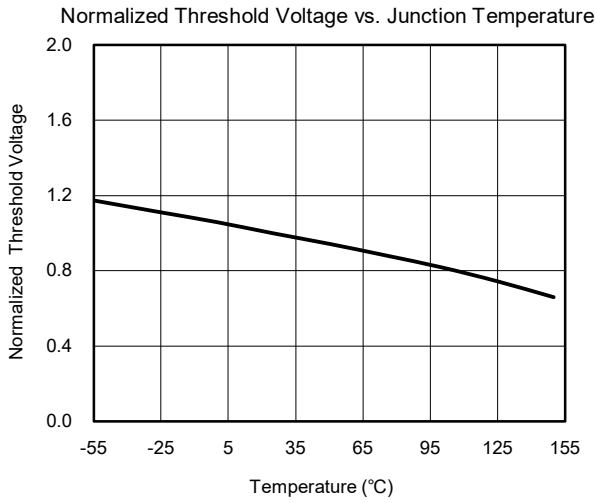
Gate Charge Characteristics



Capacitance Characteristics



**TYPICAL PERFORMANCE CHARACTERISTICS (continued)**



**REVISION HISTORY**

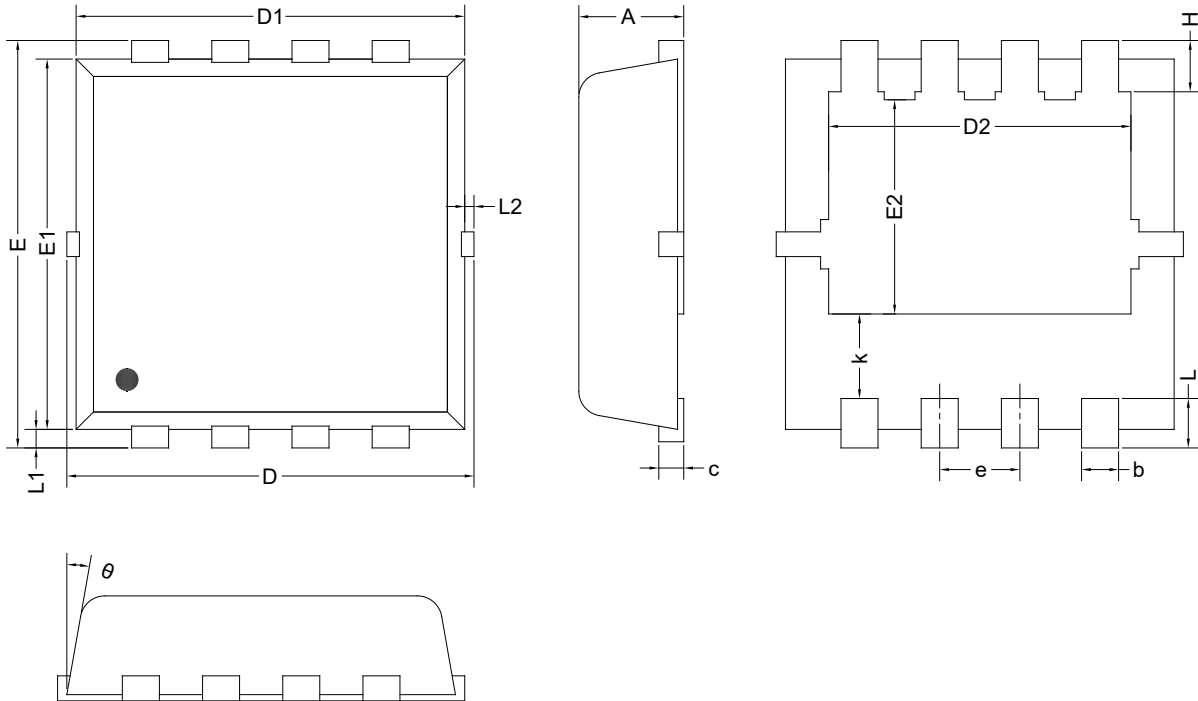
NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

JULY 2024 – REV.A to REV.A.1		Page
Updated $I_D$ value .....	1	1
Changes from Original (JUNE 2024) to REV.A		Page
Changed from product preview to production data.....	All	All

# PACKAGE INFORMATION

## PACKAGE OUTLINE DIMENSIONS

### PDFN-3.3×3.3-8AL



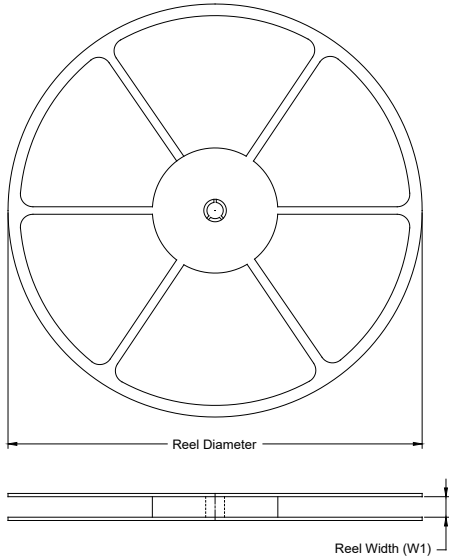
Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	0.700	0.800	0.900
b	0.250	0.300	0.350
c	0.140	0.150	0.200
D	3.100	3.300	3.500
D1	3.050	3.150	3.250
D2	2.350	2.450	2.550
E	3.100	3.300	3.500
E1	2.900	3.000	3.100
E2	1.640	1.740	1.840
e	0.650 BSC		
H	0.320	0.420	0.520
k	0.590	0.690	0.790
L	0.250	0.400	0.550
L1	0.100	0.150	0.200
L2	-	-	0.150
θ	8°	10°	12°

NOTE: This drawing is subject to change without notice.

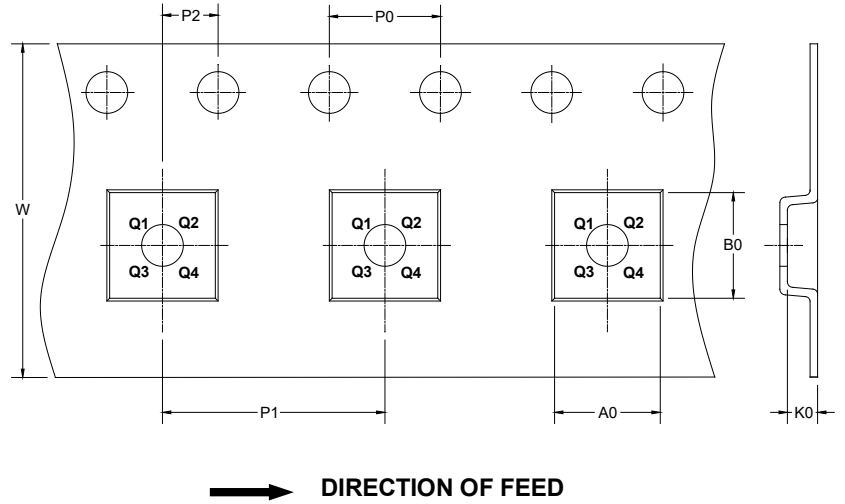
# PACKAGE INFORMATION

## TAPE AND REEL INFORMATION

### REEL DIMENSIONS



### TAPE DIMENSIONS



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

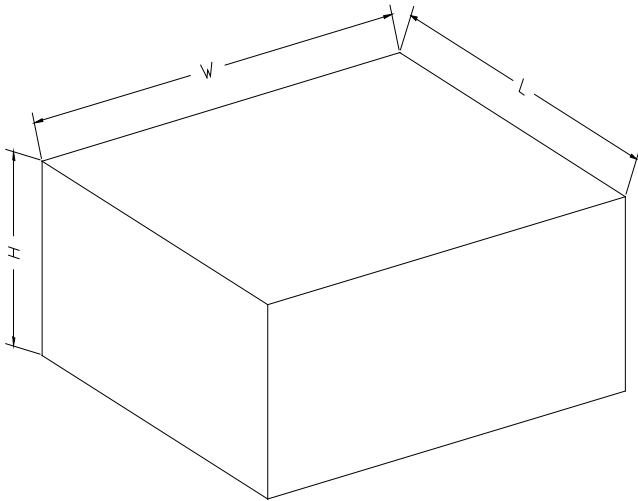
### KEY PARAMETER LIST OF TAPE AND REEL

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-3.3×3.3-8AL	13"	12.4	3.60	3.60	1.10	4.0	8.0	2.0	12.0	Q1

DD0001

# 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