SGMNQ07430
30V, Power, Single N-Channel, PDFN Package, MOSFET

FEATURES

- **Low On-State Resistance**
- **Low Total Gate Charge and Capacitance Losses**
- **Small Footprint (5×6mm^2) for Compact Design**
- **RoHS Compliant and Halogen Free**

PRODUCT SUMMARY

R_{DSON} (TYP) V_{GS} = 10V	R_{DSON} (MAX) V_{GS} = 10V	I_D (MAX) T_C = +25℃
0.6mΩ	0.72mΩ	327A

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 (DC)	I_D	327	A
Drain Current (Pulse) (1)	I_{DM}	900	A
Total Dissipation	P_D	120	W
Avalanche Current (2)	I_{AS}	106	A
Avalanche Energy (2)	E_{AS}	561.8	mJ
Junction Temperature	T_J	+150	℃
Storage Temperature Range	T_{STG}	-55 to +150	℃
Lead Temperature (Soldering, 10s)		+260	℃

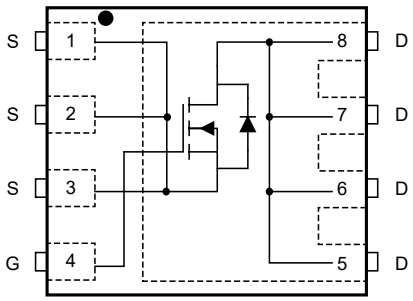
Stresses beyond those listed in Absolute Maximum Ratings may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

NOTES:

1. t_{PLUSE} < 10μs.
2. Parts are 100% tested at V_{GS} = 10V, I_L = 75A, and E_{AS} = 281.25mJ.

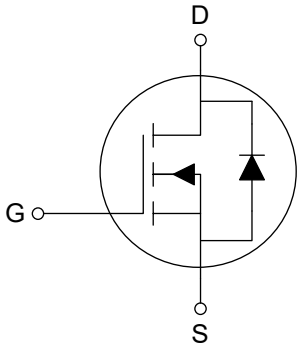
PIN CONFIGURATION

(TOP VIEW)



PDFN-5×6-8CL

EQUIVALENT CIRCUIT



APPLICATIONS

CPU Power Delivery

DC/DC Converters

Power Load Switch

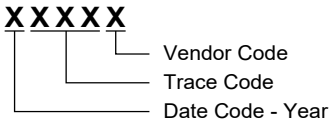
Notebook Battery Management

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGMNQ07430	PDFN-5×6-8CL	-55℃ to +150℃	SGMNQ07430TPDA8G/TR	SGM042 TPDA8 XXXXX	Tape and Reel, 4000

MARKING INFORMATION

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



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	$R_{\theta JC}$	1.04	℃/W
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$	49	℃/W

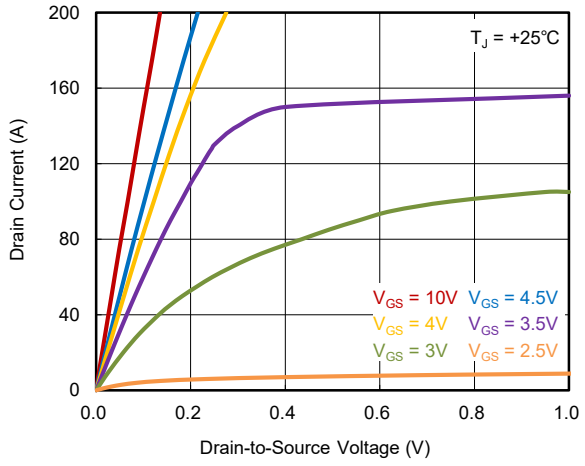
ELECTRICAL CHARACTERISTICS

(T_A = +25℃, unless otherwise noted.)

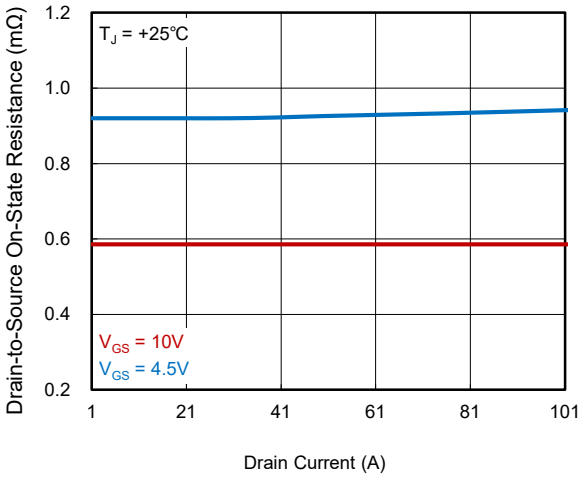
PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNITS
Static OFF Characteristics							
Drain-to-Source Breakdown Voltage	V_{BR_DSS}	V_{GS} = 0V, I_D = 250μA		30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS} = 0V, V_{DS} = 24V				1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V				±100	nA
Static ON Characteristics							
Gate-to-Source Threshold Voltage	V_{GS_TH}	V_{GS} = V_{DS}, I_D = 250μA		1.2	1.5	2.2	V
Drain-to-Source On-State Resistance	R_{DSON}	I_D = 30A	V_{GS} = 10V		0.6	0.72	mΩ
			V_{GS} = 4.5V		0.9	1.1	
Forward Transconductance	g_{FS}	V_{DS} = 12V, I_D = 15A			44		S
Gate Resistance	R_G	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz			2.2		Ω
Diode Characteristics							
Diode Forward Voltage	V_{F_SD}	V_{GS} = 0V, I_S = 10A			0.7	1.1	V
Reverse Recovery Time	t_{RR}	V_{GS} = 0V, I_S = 30A, di/dt = 100A/μs			69		ns
Reverse Recovery Charge	Q_{RR}				80		nC
Dynamic Characteristics							
Input Capacitance	C_{ISS}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz			5844		pF
Output Capacitance	C_{OSS}				5051		
Reverse Transfer Capacitance	C_{RSS}				175		
Total Gate Charge	Q_G	V_{DS} = 15V, I_D = 30A	V_{GS} = 10V		130.7		nC
			V_{GS} = 4.5V		60.6		
Gate-to-Source Charge	Q_{GS}	V_{GS} = 4.5V, V_{DS} = 15V, I_D = 30A			29		
Gate-to-Drain Charge	Q_{GD}				19.9		
Switch Characteristics							
Turn-On Delay Time	t_{D_ON}	V_{GS} = 10V, V_{DS} = 15V, I_D = 15A, R_G = 3Ω			17		ns
Rise Time	t_R				49.6		
Turn-Off Delay Time	t_{D_OFF}				86.5		
Fall Time	t_F				39.6		

TYPICAL PERFORMANCE CHARACTERISTICS

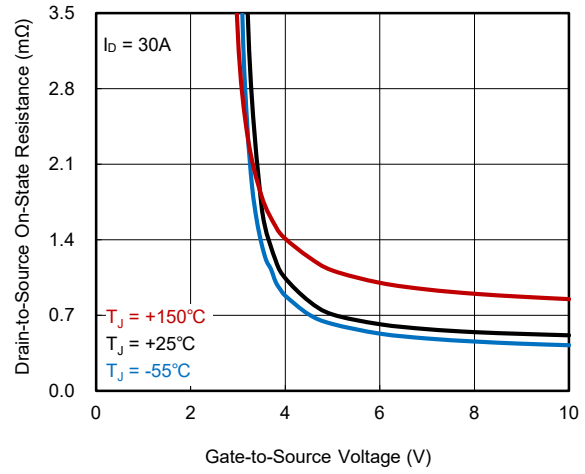
Output Characteristics



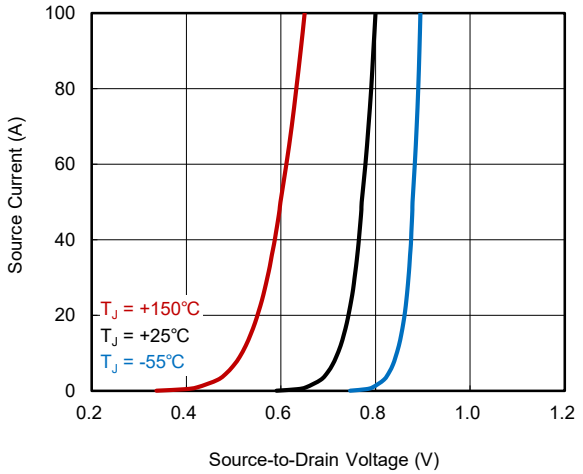
Drain-to-Source On-State Resistance vs. Drain Current



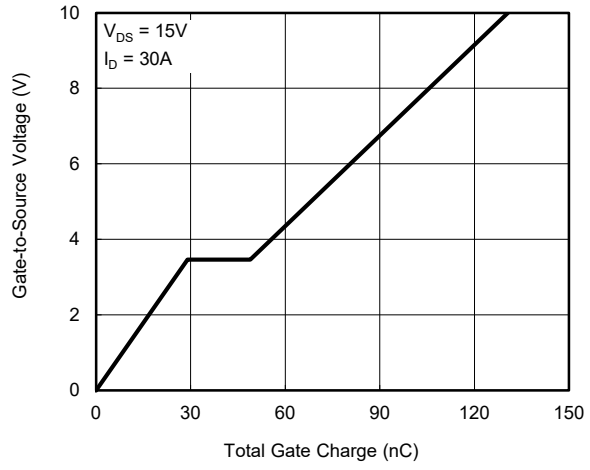
Drain-to-Source On-State Resistance vs. Gate-to-Source Voltage



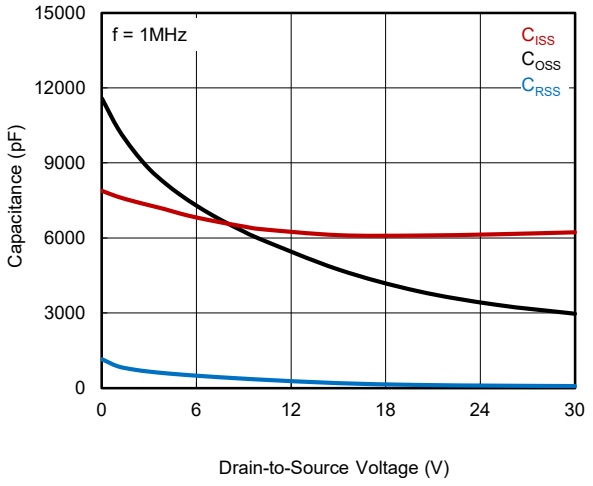
Diode Forward



Gate Charge Characteristics

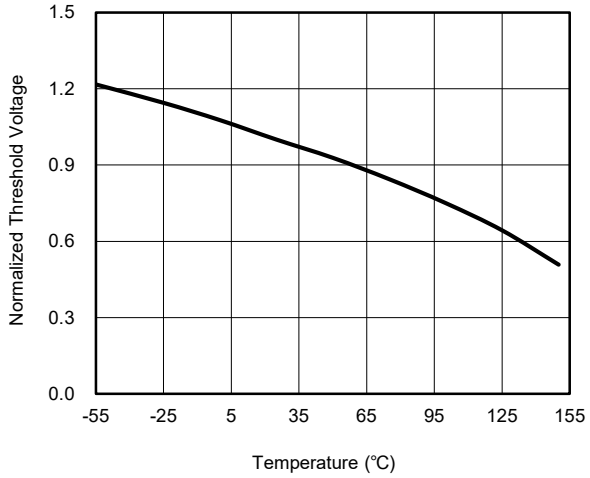


Capacitance Characteristics

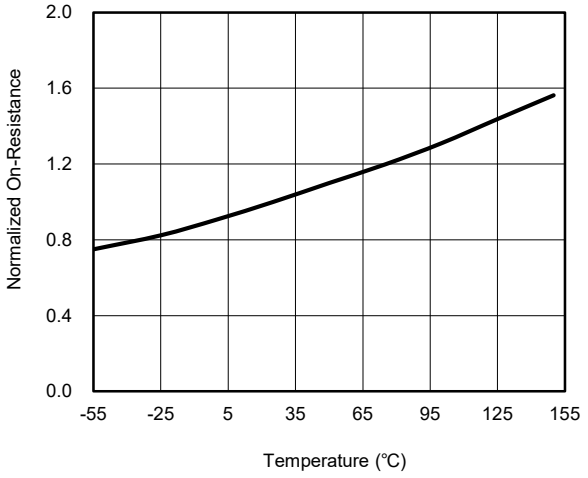


TYPICAL PERFORMANCE CHARACTERISTICS (continued)

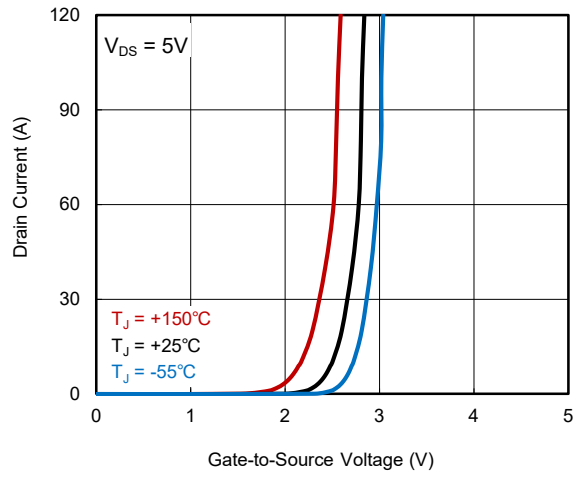
Normalized Threshold Voltage vs. Junction Temperature



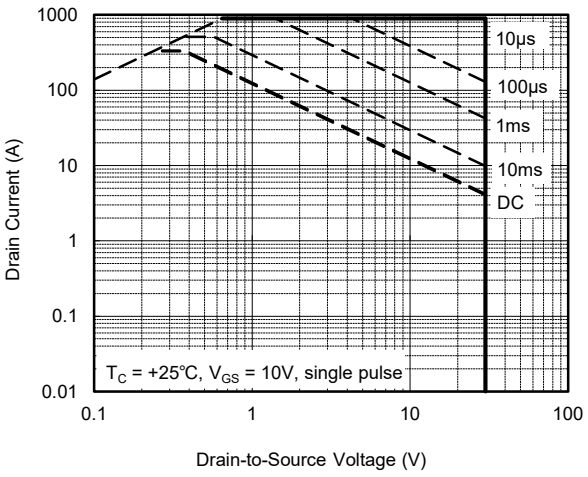
Normalized On-Resistance vs. Junction Temperature



Transfer Characteristics



Safe Operating Area



REVISION HISTORY

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

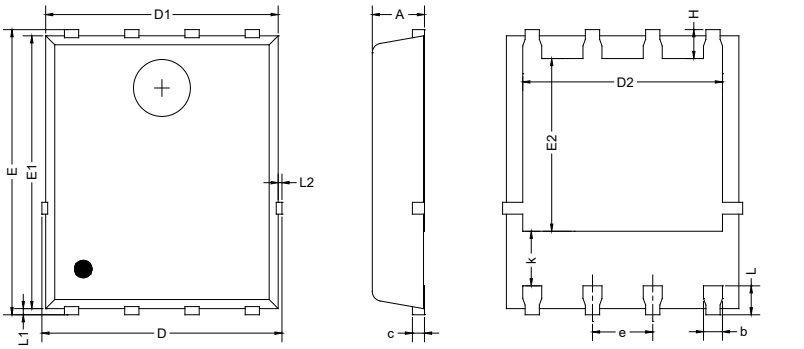
JULY 2025 – REV.A.1 to REV.A.2	Page
Updated package outline dimensions information	6

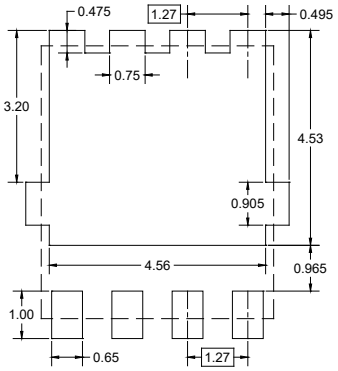
APRIL 2024 – REV.A to REV.A.1	Page
Updated typical performance characteristics figures	4, 5

Changes from Original to REV.A (DECEMBER 2023)	Page
Changed from Product Preview to Production Data	All

PACKAGE OUTLINE DIMENSIONS

PDFN-5×6-8CL





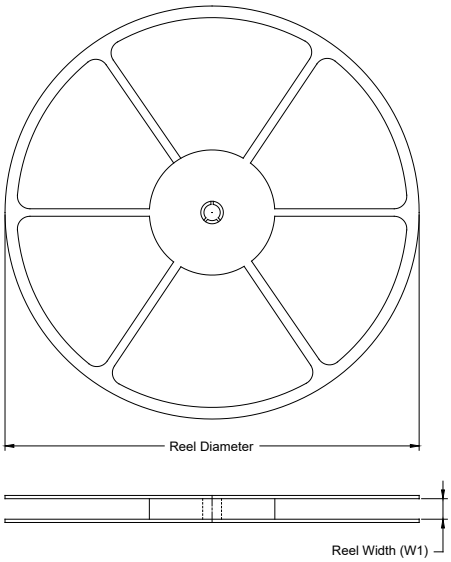
RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	1.000	1.100	1.200
b	0.300	0.400	0.500
c	0.150	0.250	0.350
D	4.800	-	5.400
D1	4.800	4.900	5.000
D2	4.000	4.210	4.400
E	5.900	6.000	6.250
E1	5.650	5.750	5.850
E2	3.500	3.640	3.900
e	1.270 BSC		
H	0.350	0.610	0.710
k	1.100	-	-
L	0.400	0.610	0.710
L1	0.050	0.130	0.250
L2	-	-	0.220
θ	8°	10°	12°

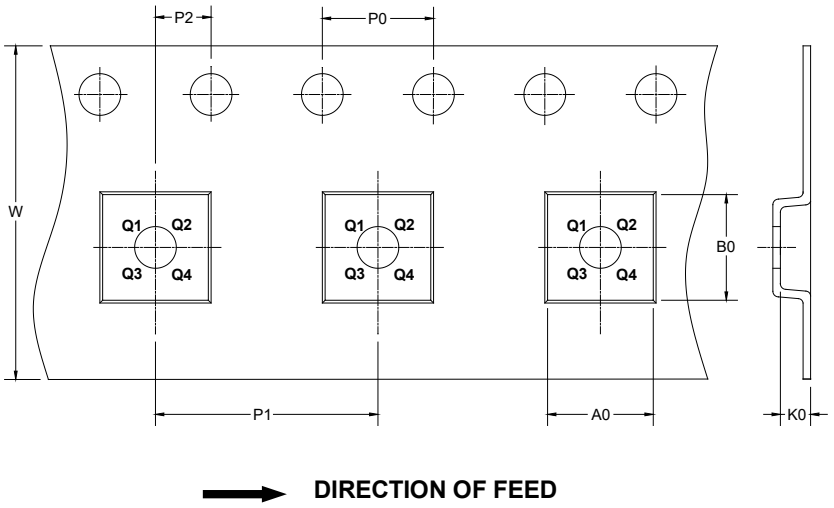
NOTE: This drawing is subject to change without notice.

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



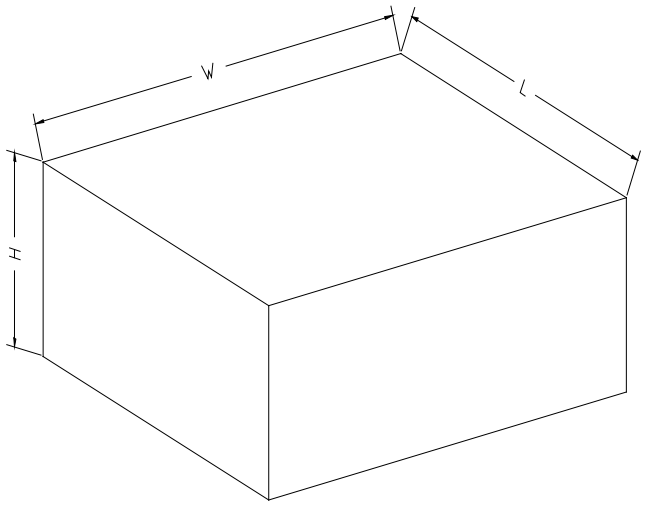
NOTE: The picture is only for reference. Please make the object as the standard.

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-5×6-8CL	13″	12.4	6.45	5.3	1.4	4	8	2	12	Q1

DD0001

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