



SGMNQ07440

40V, Power, Single N-Channel, PDFN Package, MOSFET

FEATURES

- Low On-State Resistance
- Low Total Gate Charge and Capacitance Losses
- Small Footprint (5×6mm²) 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°C
0.55mΩ	0.8mΩ	380A

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNITS
Drain-to-Source Voltage	V _{DS}	40	V
Gate-to-Source Voltage	V _{GS}	±20	V
Drain Current	I _D	T _C = +25°C	380
		T _C = +100°C	250
Drain Current (Pulse) ⁽¹⁾	I _{DM}	900	A
Total Dissipation	P _D	T _C = +25°C	156
		T _C = +100°C	93
Avalanche Current ⁽²⁾	I _{AS}	111	A
Avalanche Energy ⁽²⁾	E _{AS}	616.05	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:

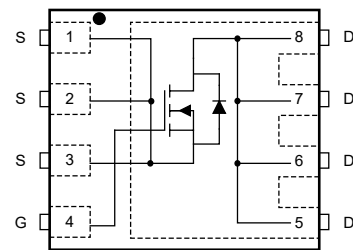
1. t_{PULSE} < 10μs.
2. Parts are 100% tested at V_{GS} = 10V, I_L = 78A, and E_{AS} = 304.2mJ.

APPLICATIONS

- Power Tool
- Brushless DC Motor Control
- Hotswap/In-Rush Current Management
- DC/DC Converters
- Power Load Switch and eFuse

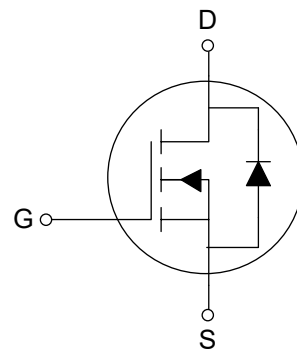
PIN CONFIGURATION

(TOP VIEW)



PDFN-5×6-8CL

EQUIVALENT CIRCUIT



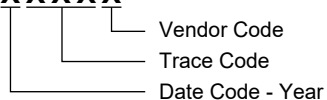
PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGMNQ07440	PDFN-5x6-8CL	-55°C to +150°C	SGMNQ07440TPDA8G/TR	SGM0H2 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.

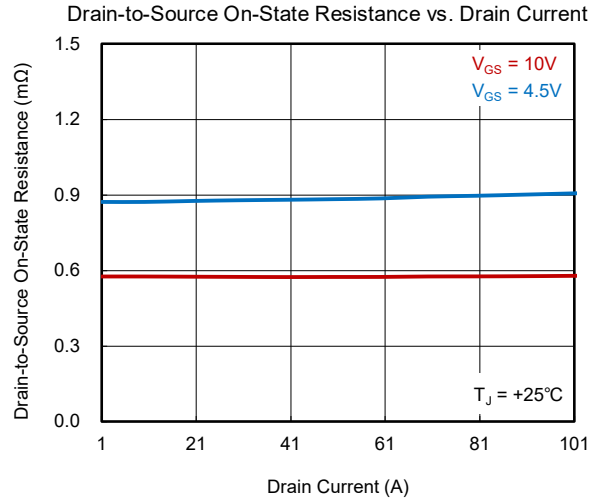
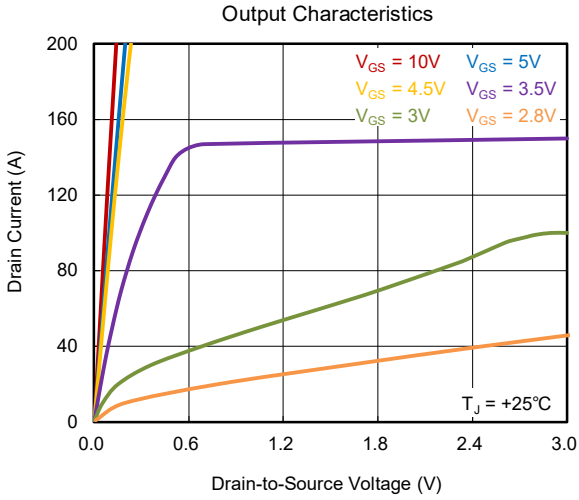
THERMAL RESISTANCE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNITS
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	0.8	°C/W
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$	42	°C/W

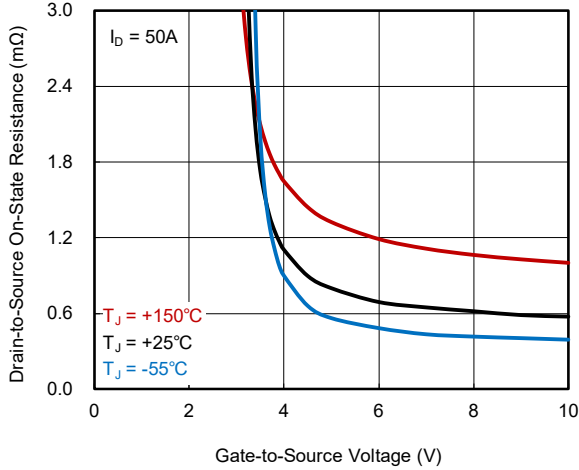
ELECTRICAL CHARACTERISTICS(T_A = +25°C, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Static OFF Characteristics						
Drain-to-Source Breakdown Voltage	V _{BR_DSS}	V _{GS} = 0V, I _D = 250μA	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{GS} = 0V, V _{DS} = 32V			10	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	1.6	2.2	V
Drain-to-Source On-State Resistance	R _{DS(on)}	I _D = 50A	V _{GS} = 10V	0.55	0.8	mΩ
			V _{GS} = 4.5V	0.86	1.15	
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 50A		100		S
Gate Resistance	R _G	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		1.6		Ω
Diode Characteristics						
Diode Forward Voltage	V _{F_SD}	V _{GS} = 0V, I _S = 50A		0.7	1.2	V
Reverse Recovery Time	t _{RR}	V _{GS} = 0V, I _S = 50A, di/dt = 100A/μs		85		ns
Reverse Recovery Charge	Q _{RR}			150		nC
Dynamic Characteristics						
Input Capacitance	C _{ISS}	V _{GS} = 0V, V _{DS} = 20V, f = 1MHz		7320		pF
Output Capacitance	C _{OSS}			2633		
Reverse Transfer Capacitance	C _{RSS}			118		
Total Gate Charge	Q _G	V _{DS} = 20V, I _D = 50A	V _{GS} = 10V	132.6		nC
			V _{GS} = 4.5V	66		
Gate-to-Source Charge	Q _{GS}	V _{GS} = 4.5V, V _{DS} = 20V, I _D = 50A		25.5		nC
Gate-to-Drain Charge	Q _{GD}			30.7		
Switch Characteristics						
Turn-On Delay Time	t _{D_ON}	V _{GS} = 10V, V _{DS} = 20V, I _D = 50A, R _G = 3Ω		14		ns
Rise Time	t _R			57		
Turn-Off Delay Time	t _{D_OFF}			90		
Fall Time	t _F			150		

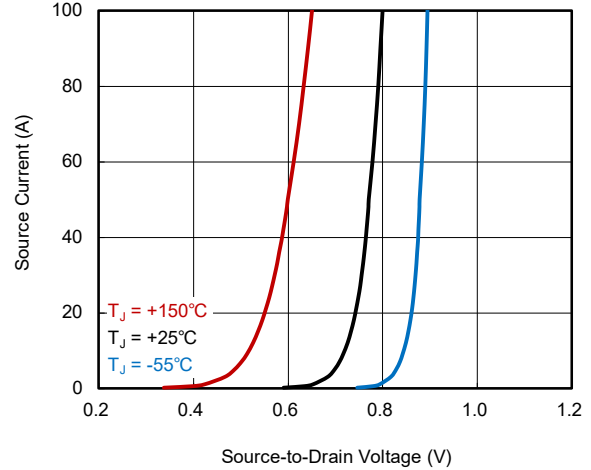
TYPICAL PERFORMANCE CHARACTERISTICS



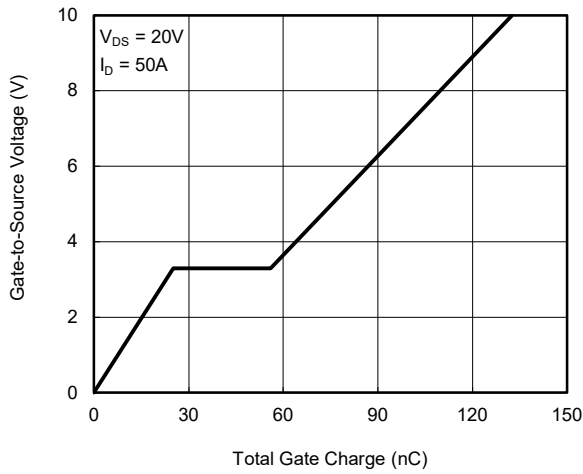
Drain-to-Source On-State Resistance vs. Gate-to-Source Voltage



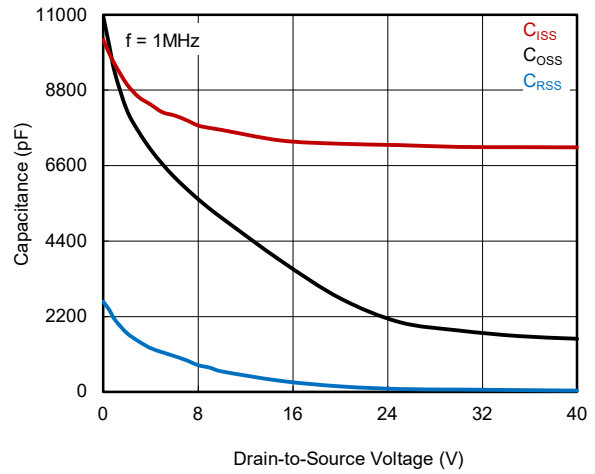
Diode Forward



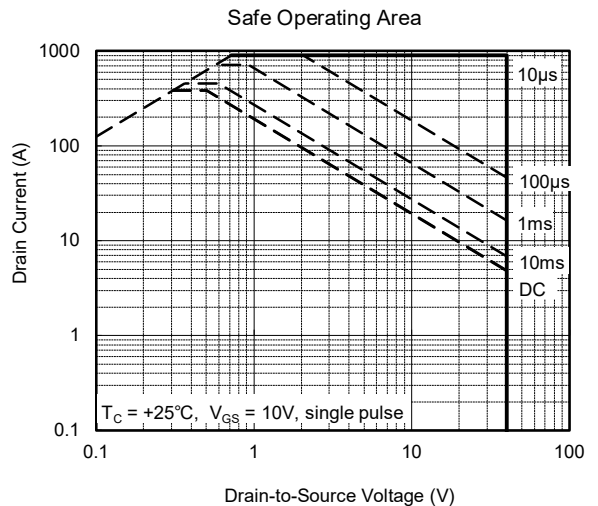
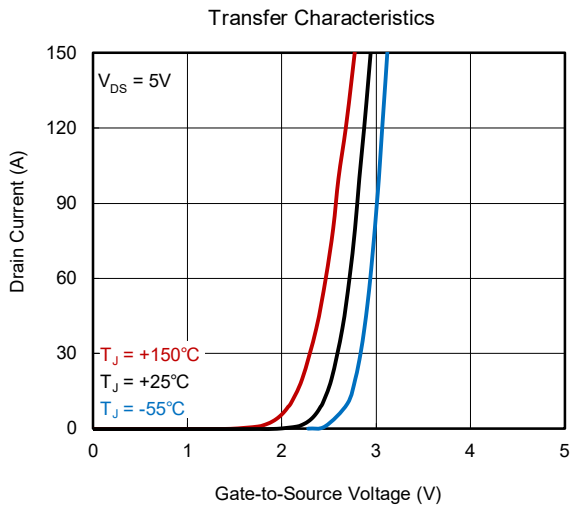
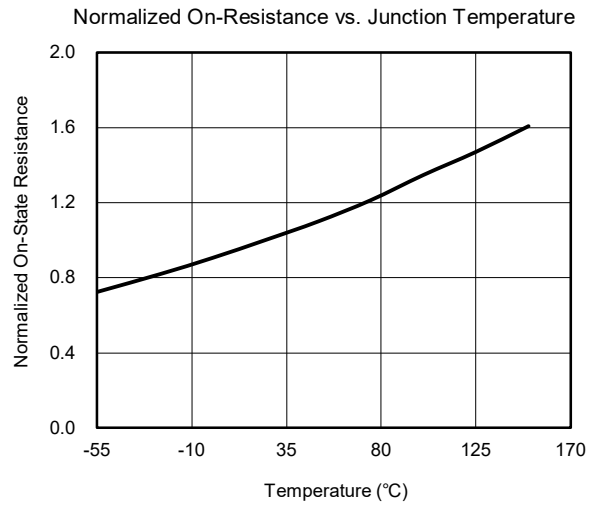
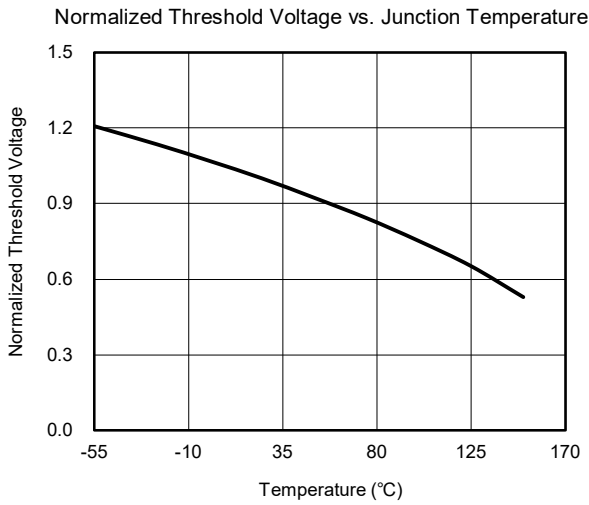
Gate Charge Characteristics



Capacitance Characteristics



TYPICAL PERFORMANCE CHARACTERISTICS (continued)



REVISION HISTORY

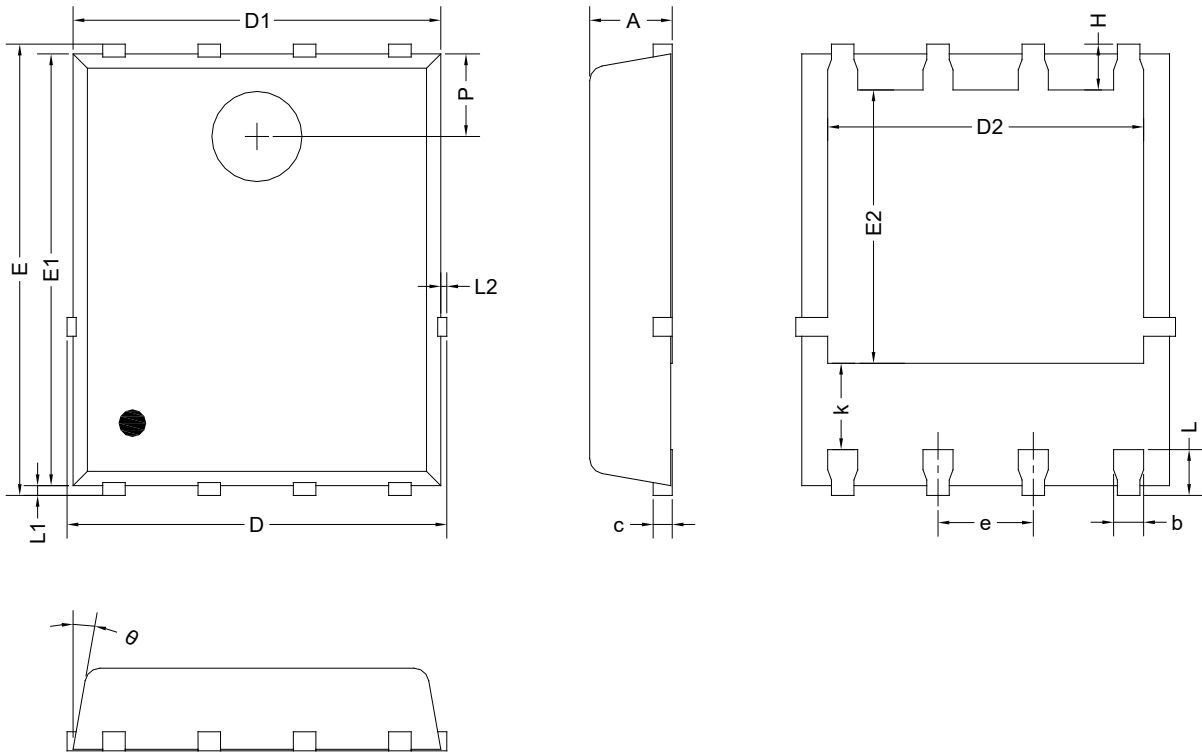
NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Original (JUNE 2024) to REV.A	Page
Changed from product preview to production data.....	All

PACKAGE INFORMATION

PACKAGE OUTLINE DIMENSIONS

PDFN-5×6-8CL



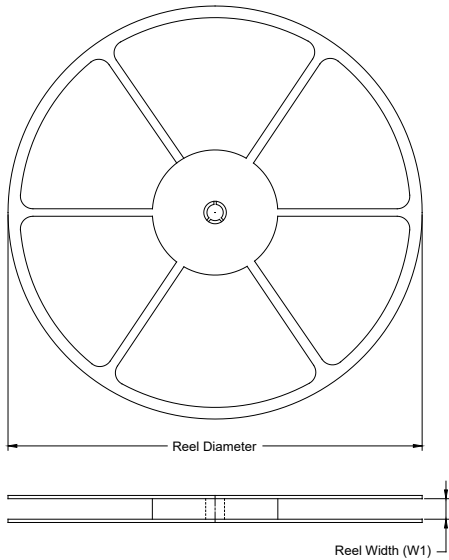
Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	1.000	1.100	1.200
b	0.350	0.400	0.450
c	0.210	0.250	0.340
D	4.800	-	5.100
D1	4.800	4.900	5.000
D2	4.110	4.210	4.310
E	5.900	6.000	6.100
E1	5.700	5.750	5.800
E2	3.540	3.640	3.740
e	1.270 BSC		
H	0.510	0.610	0.710
k	1.100	-	-
L	0.510	0.610	0.710
L1	0.060	0.130	0.200
L2	-	-	0.100
P	1.000	1.100	1.200
θ	8°	10°	12°

NOTE: This drawing is subject to change without notice.

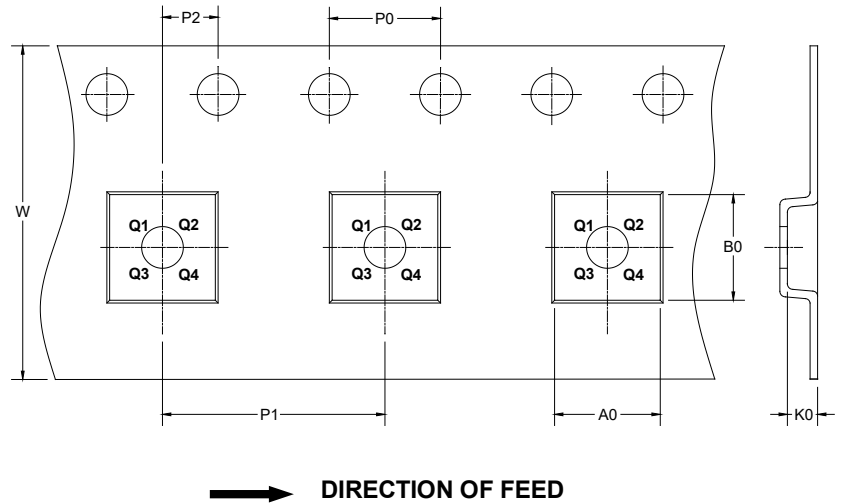
PACKAGE INFORMATION

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



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

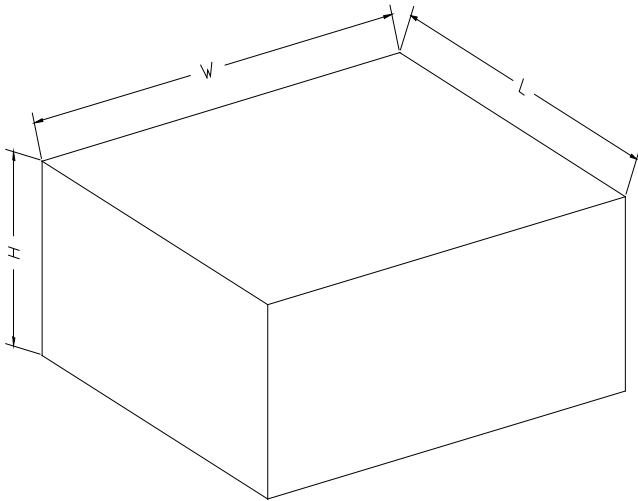
KEY PARAMETER LIST OF TAPE AND REEL

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-5×6-8CL	13"	12.4	6.45	5.30	1.40	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