

FEATURES

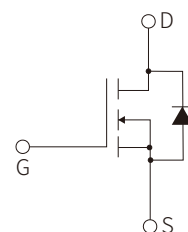
- Surface-mounted package
- Low Thermal Resistance



LFPAK5×6

APPLICATION

- Motor drivers
- DC - DC Converter



Schematic Symbol

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage $T_c=25^{\circ}\text{C}$		V_{DS}	40	V
Drain Current (Pulsed) $T_c=25^{\circ}\text{C}$ $V_{GS}=10\text{V}$		I_{DM}^{***}	1200	A
Drain Current (DC)	$T_c=25^{\circ}\text{C}$ $V_{GS}=10\text{V}$	I_D^{***}	300	A
	$T_c=100^{\circ}\text{C}$ $V_{GS}=10\text{V}$		280	A
Gate-Source Voltage $T_c=25^{\circ}\text{C}$		V_{GS}	± 20	V
Total Power Dissipation $T_c=25^{\circ}\text{C}$		P_{tot}^{*}	230	W
Diode Forward Current $T_c=25^{\circ}\text{C}$		I_S	300	A
Junction Temperature		T_J	175	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55 to 175	$^{\circ}\text{C}$
Single Pulsed Avalanche Energy $V_{DD}=40\text{ V}$, $L=1\text{mH}$		E_{AS}^{*}	800	mJ
Thermal Resistance –Junction to Ambient		$R_{\theta JA}^{*}$	60	$^{\circ}\text{C/W}$
Thermal Resistance- Junction to Case		$R_{\theta JC}^{*}$	0.65	$^{\circ}\text{C/W}$

Notes:

- * Surface Mounted on 1 in² pad area, $t \leq 10$ sec
- ** Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
- *** Limited by bonding wire

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_{DS}=250\mu A$	40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	2		4	V
Drain Leakage Current	I_{DSS}	$V_{DS}=32V, V_{GS}=0V$			1	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
On-State Resistance	$R_{DS(on)}^a$	$V_{GS}=10V, I_D=30A$		0.71	0.85	m Ω
		$V_{GS}=6V, I_D=20A$		1.65	2.05	m Ω
Diode Characteristics						
Diode Forward Voltage	V_{SD}^a	$I_{SD}=30A, V_{GS}=0V$			1.3	V
Reverse Recovery Time	t_{rr}	$I_{DS}=30A, V_{GS}=0V$ $di_{SD}/dt=100A/\mu s$		48		nS
Reverse Recovery Charge	Q_{rr}			41		nC
Dynamic Characteristics ^b						
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=20V,$ Frequency = 1 MHz		4651		pF
Output capacitance	C_{oss}			2224		pF
Reverse transfer capacitance	C_{rss}			165		pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=20V, V_{GEN}=10V$ $R_G=3.9\Omega, R_L=0.66\Omega,$ $I_{DS}=30A$		15		nS
Turn-on Rise Time	t_r			60		nS
Turn-Off Delay Time	$t_{d(off)}$			49		nS
Turn-Off Fall Time	t_f			42		nS
Gate Charge Characteristics ^b						
Total Gate Charge	Q_g	$V_{DS}=20V, V_{GS}=10V, I_{DS}=30A$		79		nC
Gate-Source Charge	Q_{gs}			25		nC
Gate-Drain Charge	Q_{gd}			18		nC

Notes:

a : Pulse test ; pulse width ≤ 300μs, duty cycle ≤ 2 %

b : Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Figure1: Power Capability

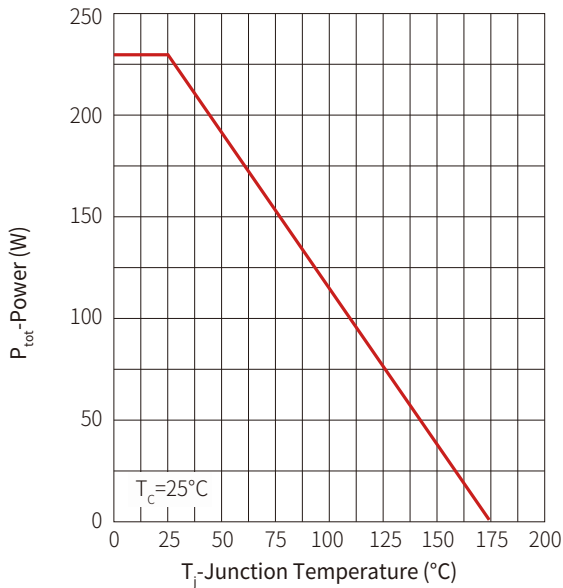


Figure2: Current Capability

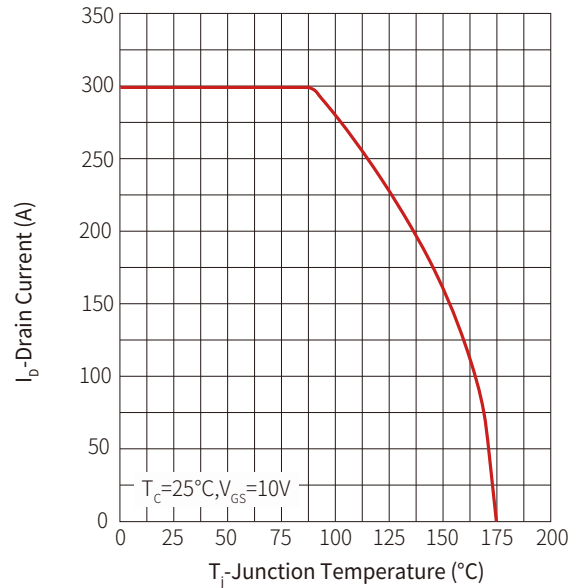


Figure3: Safe operating Area

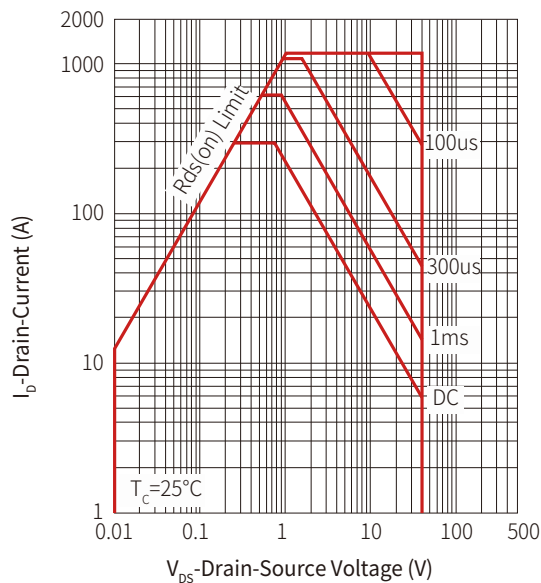


Figure 4: Transient Thermal Impedance

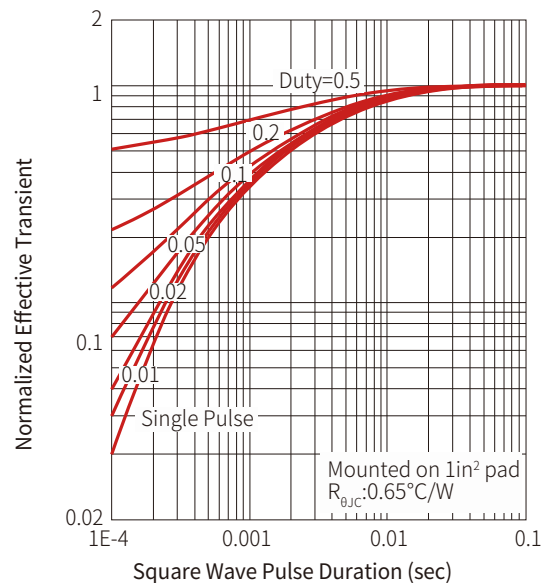


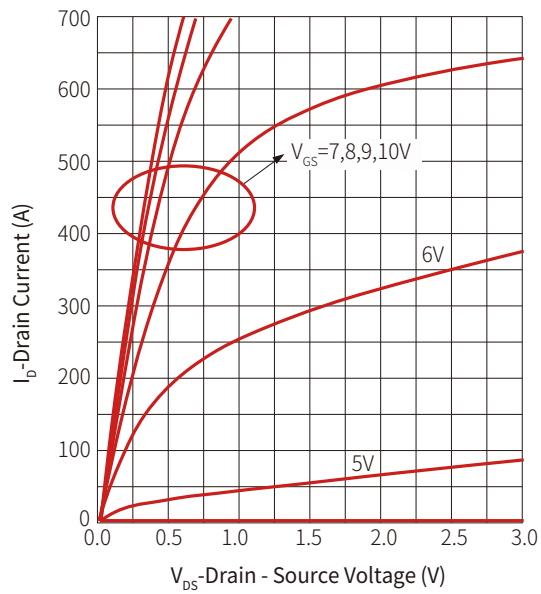
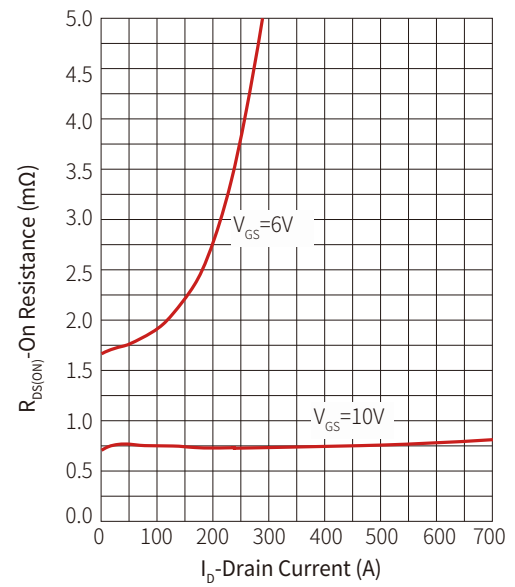
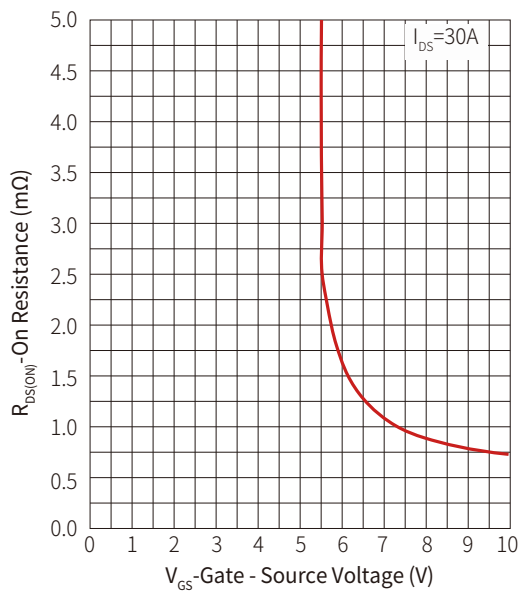
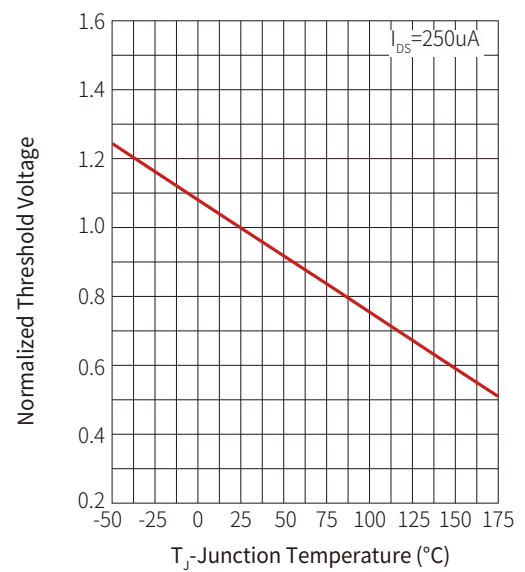
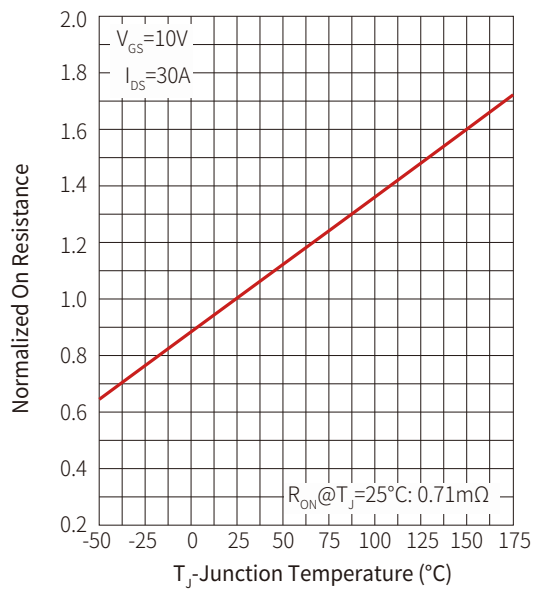
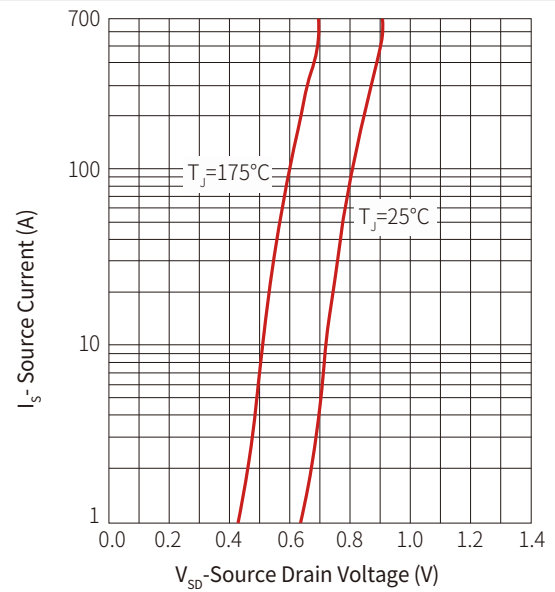
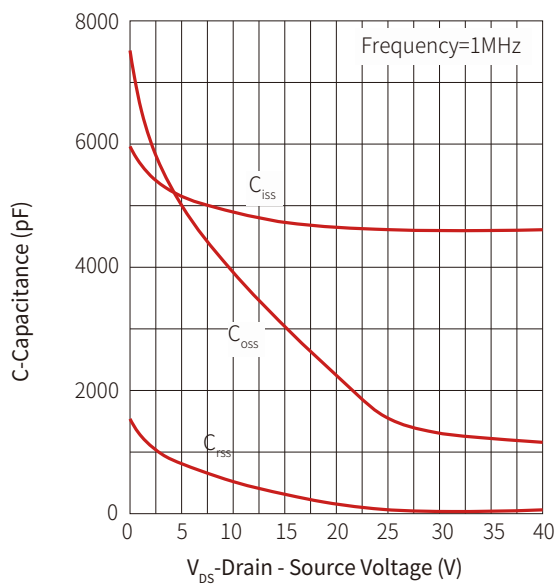
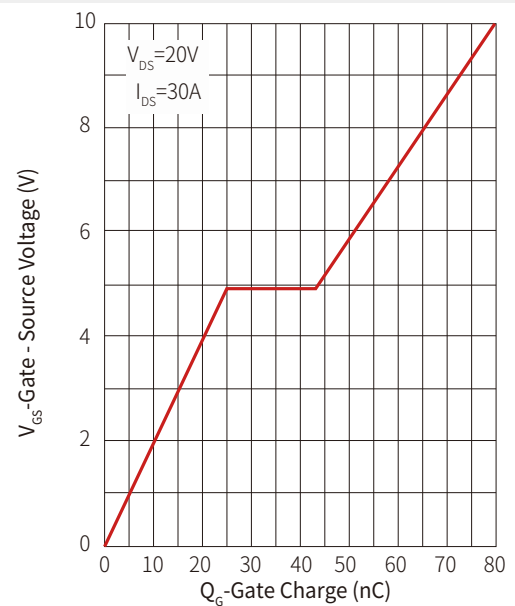
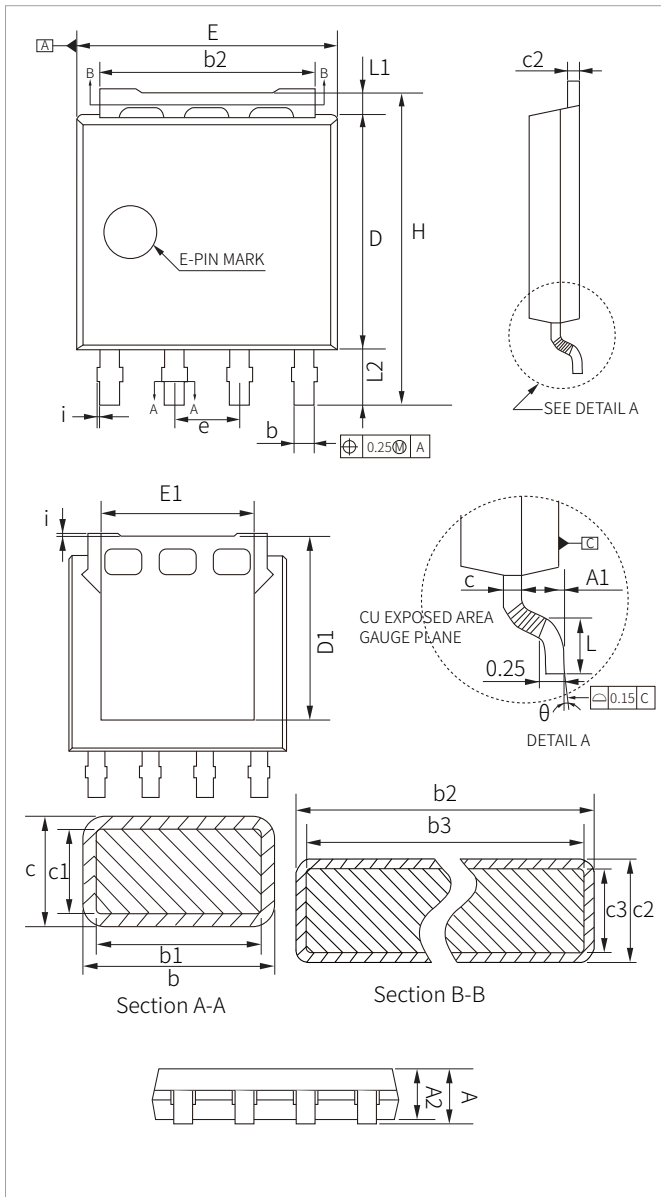
Figure 5: Output Characteristics

Figure 6: On Resistance

Figure 7: Transfer Characteristics

Figure 8: Normalized Threshold Voltage


Figure 9: Normalized On Resistance

Figure 10: Diode Forward Current

Figure 11: Capacitance

Figure 12: Gate Charge


LFPK5×6 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.00	1.30	0.039	0.051
A1	0.00	0.15	0.00	0.006
A2	0.98	1.12	0.039	0.044
b	0.35	0.50	0.014	0.020
b1	0.32	0.46	0.013	0.018
b2	4.02	4.41	0.158	0.174
b3	4.00	4.37	0.157	0.172
c	0.19	0.25	0.007	0.010
c1	0.17	0.23	0.007	0.010
c2	0.24	0.30	0.010	0.012
c3	0.22	0.28	0.009	0.011
D	4.45	4.70	0.175	0.185
D1	-	4.45	-	0.175
E	4.95	5.30	0.195	0.209
E1	3.50	3.70	0.138	0.146
e	1.27BSC		0.050BSC	
H	5.95	6.25	0.234	0.246
i	-	0.25	-	0.010
L	0.40	0.85	0.016	0.033
L1	0.27	0.57	0.011	0.022
L2	0.80	1.30	0.031	0.051
θ	0°	8°	0°	0.315°

ORDERING INFORMATION

Part Number	Component Package	Marking	QTY/Reel	Reel Size
SNM009N04L	LFPK5×6	009N04 YWW01 AAAAAA	3000PCS	7"

Headquarters

No.3387 Shendu Road
Pujiang I&E Park
Minhang Shanghai China
201000

Hotline

400-021-5756

Web

<https://www.semiware.com>

Sales Center

Tel: 86-21-3463-7458
Email: sales18@semiware.com

Customer Service

Tel: 86-21-5484-1001
Email: sales17@semiware.com

Technical Support

Tel: 86-21-3463-7654
Email: fae01@semiware.com

Complaint & Suggestions

Tel: 86-21-3463-7172
Ext: 8868
Email: cs03@semiware.com

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