

FEATURES

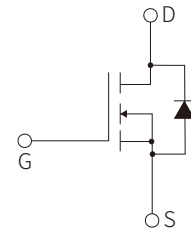
- | Surface-mounted package
- | Low Thermal Resistance



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}^{***}	1300	A
Drain Current (DC)	I_D^{***}	$T_c=25^\circ\text{C}$ $V_{GS}=10\text{V}$	325
		$T_c=100^\circ\text{C}$ $V_{GS}=10\text{V}$	325
Gate-Source Voltage $T_c=25^\circ\text{C}$	V_{GS}	± 20	V
Total Power Dissipation $T_c=25^\circ\text{C}$	P_{tot}^*	375	W
Diode Forward Current $T_c=25^\circ\text{C}$	I_S	325	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}^*	1152	mJ
Thermal Resistance – Junction to Ambient	$R_{\theta JA}^*$	42	$^\circ\text{C}/\text{W}$
Thermal Resistance- Junction to Case	$R_{\theta JC}^*$	0.4	$^\circ\text{C}/\text{W}$

Notes:

- * Surface Mounted on 1 in² pad area, $t \leq 10$ sec
- ** Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 1\%$
- *** 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} =250μA	40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _{DS} =250μA	2		4	V
Drain Leakage Current	I _{DSS}	V _{DS} =32V, V _{GS} =0V			1	μA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
On-State Resistance	R _{DS(on)} ^a	V _{GS} =10V, I _D =50A		0.50	0.55	mΩ
		V _{GS} =6V, I _D =30A		1.42	1.65	mΩ
Diode Characteristics						
Diode Forward Voltage	V _{SD} ^a	I _{SD} =50A, V _{GS} =0V			1.3	V
Reverse Recovery Time	t _{rr}	I _{SD} =45A dI _{SD} /dt=100A/μs		76		nS
Reverse Recovery Charge	Q _{rr}			54		nC
Dynamic Characteristics^b						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =20V, Frequency = 1 MHz		7204		pF
Output capacitance	C _{oss}			2944		pF
Reverse transfer capacitance	C _{rss}			147		pF
Turn-on Delay Time	t _{d(on)}	V _{DS} =20V, V _{GEN} =10V R _G =3.9Ω, R _L =0.4Ω, I _{DS} =50A		26		nS
Turn-on Rise Time	t _r			105		nS
Turn-Off Delay Time	t _{d(off)}			81		nS
Turn-Off Fall Time	t _f			72		nS
Gate Charge Characteristics^b						
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =10V, I _{DS} =50A		121		nC
Gate-Source Charge	Q _{gs}			40		nC
Gate-Drain Charge	Q _{gd}			31		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

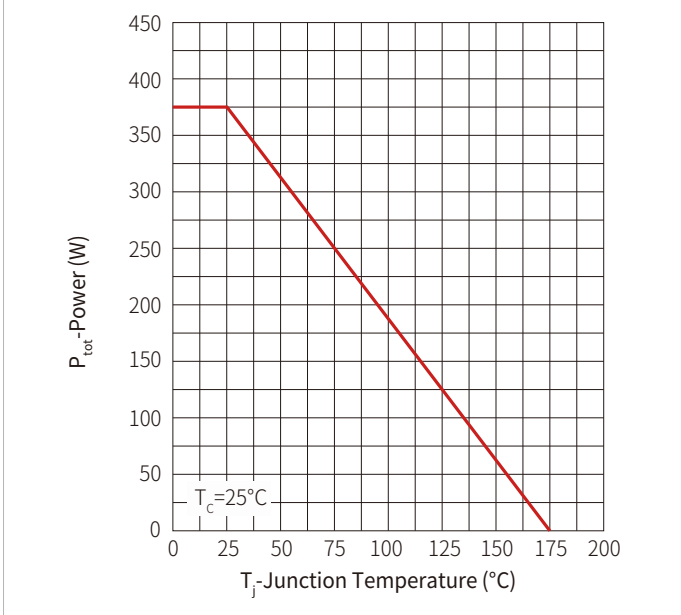


Figure2: Current Capability

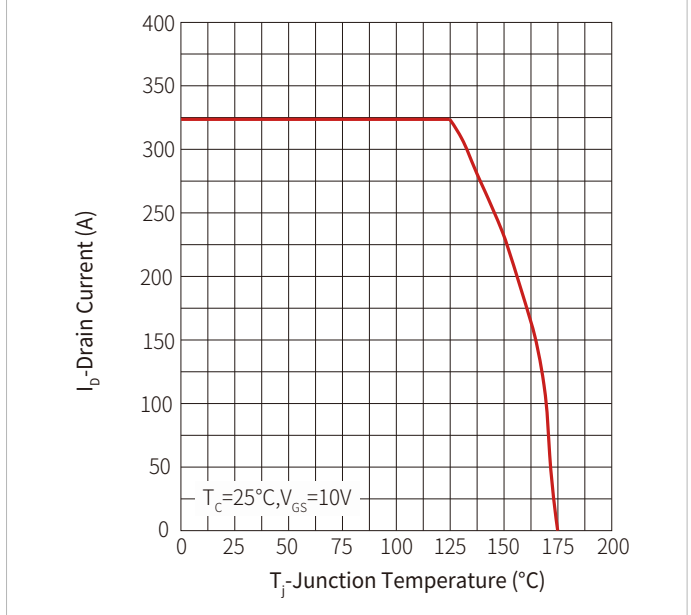


Figure3: Safe operating Area

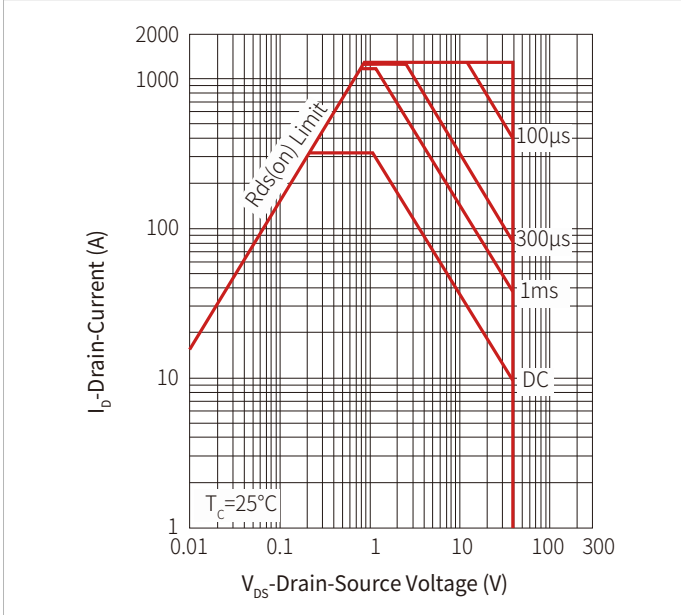


Figure 4: Transient Thermal Impedance

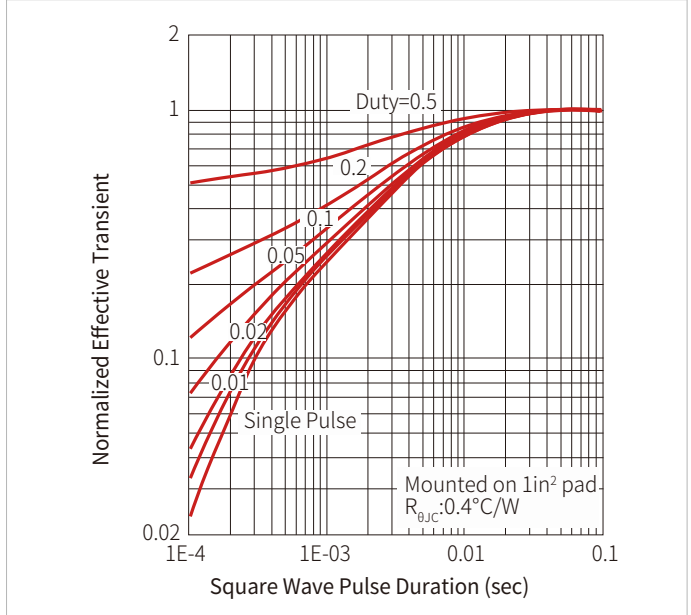


Figure 5: Output Characteristics

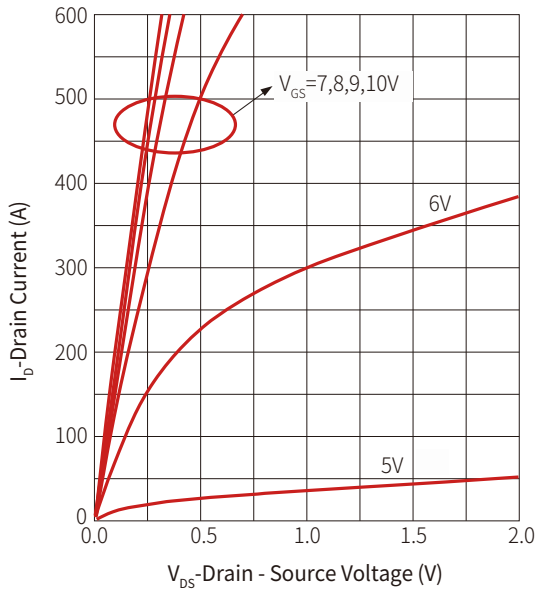


Figure 6: On Resistance

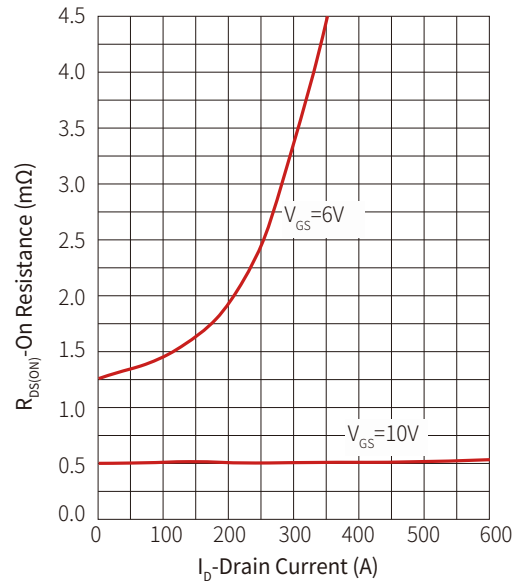


Figure 7: Transfer Characteristics

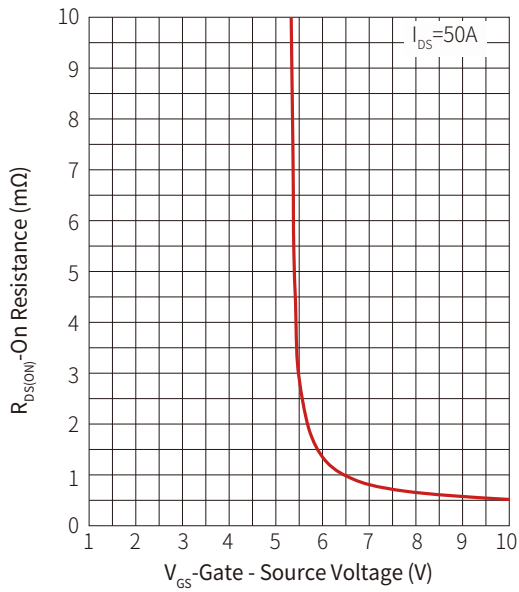


Figure 8: Normalized Threshold Voltage

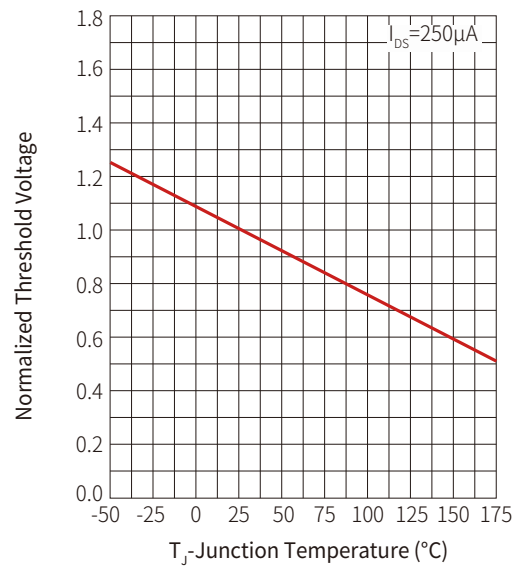


Figure 9: Normalized On Resistance

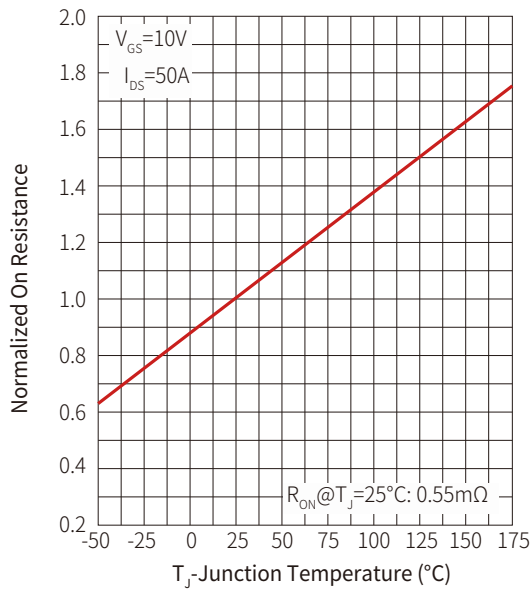


Figure 10: Diode Forward Current

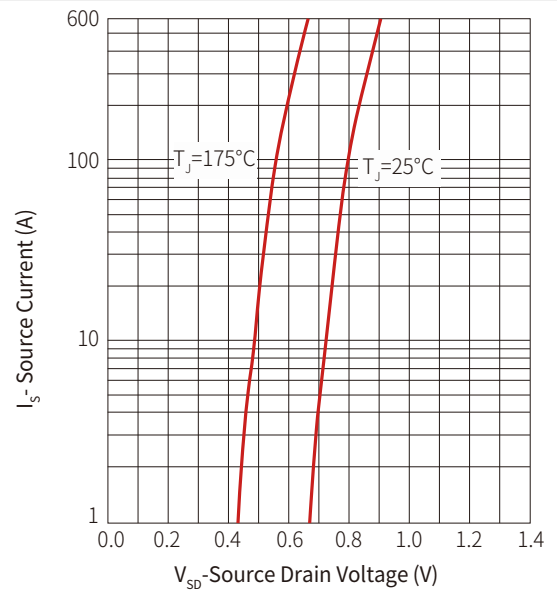


Figure 11: Capacitance

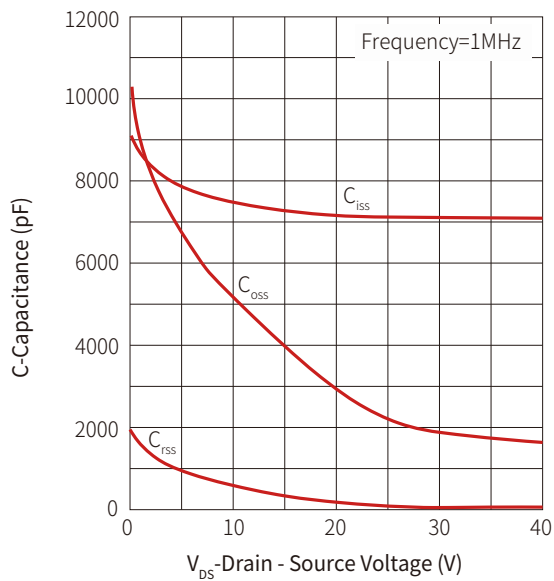
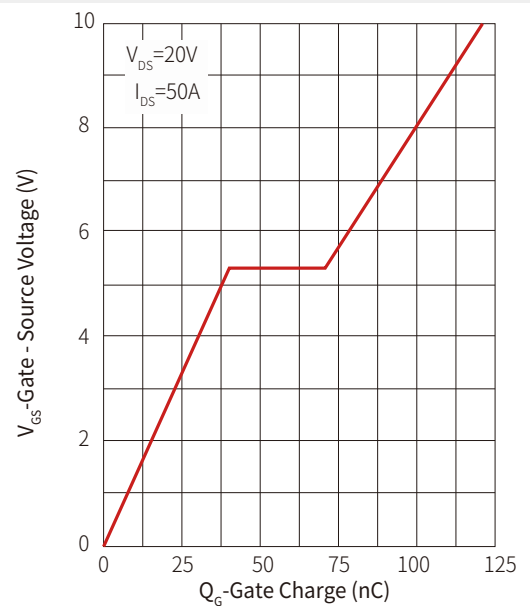
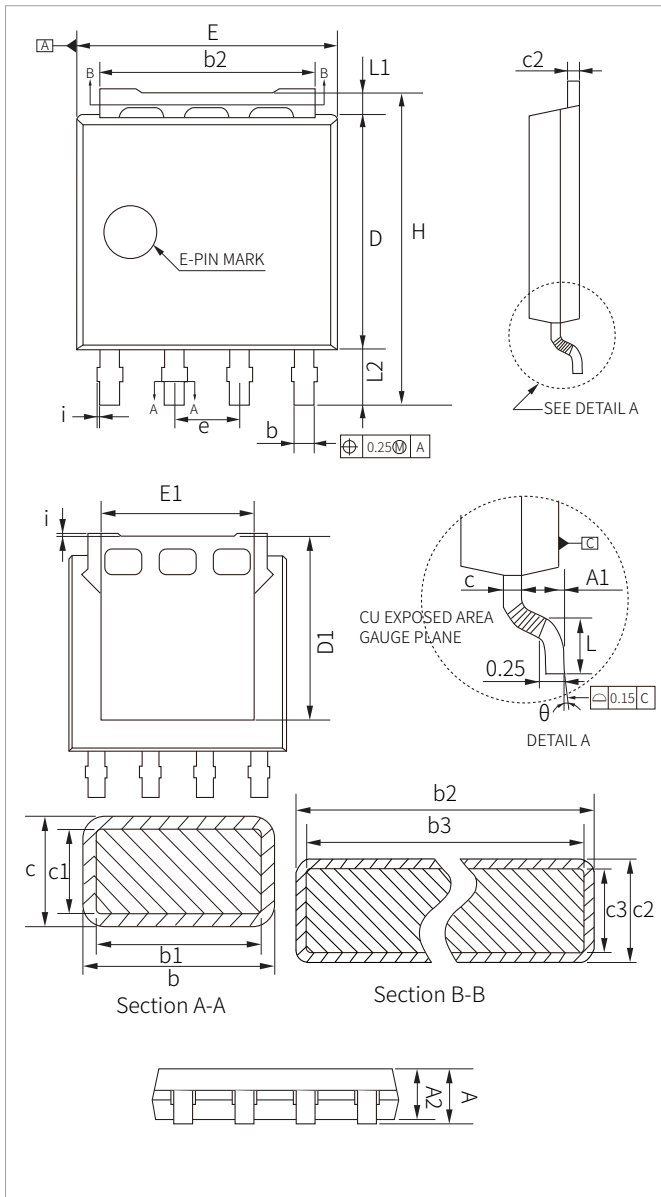


Figure 12: Gate Charge



LFPAK5×6 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
SNM005N04FH	LFPAK5×6	005N04H XXXX XXXXXX	5000PCS	13"

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