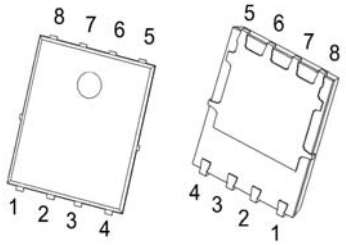
N-Channel MOSFET

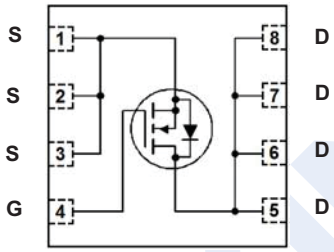
KI50N06DFN

■ Features

- $V_{DS\ (V)}$ = 60 V
- I_{DMAX} = 50 A
- $R_{DS(ON)}$=10.8mΩ(max.) @ V_{GS}=10V
- $R_{DS(ON)}$=13.5mΩ(max.) @ V_{GS}=4.5V

DFN5x6-8(PDFNWB5x6-8L)





■ Absolute Maximum Ratings (T_A = 25℃ unless otherwise noted)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C=25℃	I_D	50	A
	T_C=100℃		32	
Continuous Drain Current	T_A=25℃	I_D	10	
	T_A=100℃		8	
Pulsed Drain Current (Note 1)	T_C=100℃	I_{DM}	200	
Diode Continuous Forward Current	T_C=25℃	I_S	25	
Avalanche Current, Single pulse (L=0.5mH) (Note 2)		I_{AS}	20	
Avalanche Energy, Single pulse (L=0.5mH) (Note 2)		E_{AS}	100	mJ
Power Dissipation	T_C=25℃	P_D	52	W
	T_C=100℃		20.8	
Power Dissipation	T_A=25℃	P_D	2	
	T_A=100℃		1.3	
Thermal Resistance.Junction- to-Case	Steady State	$R_{\theta JC}$	2.4	℃/W
Thermal Resistance.Junction- to-Ambient (Note 3)	t ⩽ 10s	$R_{\theta JA}$	25	
	Steady State		60	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Notes 1：Pulse width limited by max. junction temperature.

2：UIS tested and pulse width limited by maximum junction temperature 150℃(initial temperature T_j=25℃).

3：Surface Mounted on 1in^2 pad area.

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■ Electrical Characteristics (T_A = 25℃ unless othewise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = 250 μA, V_{GS} = 0V	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 48 V, V_{GS} = 0 V			1	μA
		V_{DS} = 48 V, V_{GS} = 0 V, T_J = 85 ℃			30	
Gate to Source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Gate to Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = 250μA	1		3	V
Static Drain-Source On-Resistance (Note 4)	$R_{DS(ON)}$	V_{GS} = 10 V, I_D = 25 A			10.8	mΩ
		V_{GS} = 4.5 V, I_D = 25 A			13.5	
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 30 V, f = 1 MHz		2500	3500	pF
Output Capacitance	C_{oss}			215		
Reverse Transfer Capacitance	C_{rss}			105		
Gate Resistance	R_g	V_{GS} = 0 V, V_{DS} = 0 V, f = 1 MHz		1		Ω
Total Gate Charge	Q_g	V_{GS} = 10V, V_{DS} = 30 V, I_{DS} = 25 A		45	65	nC
Gate Source Charge	Q_{gs}			9		
Gate Drain Charge	Q_{gd}			8.5		
Turn-On DelayTime	$t_{d(on)}$	V_{DD}=30V, R_L=30Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω		20	36	ns
Turn-On Rise Time	t_r			9	16	
Turn-Off DelayTime	$t_{d(off)}$			55	99	
Turn-Off Fall Time	t_f			20	36	
Body Diode Reverse Recovery Time	t_{rr}	I_F = 25 A, dI/dt = 100 A/μs		28		
Body Diode Reverse Recovery Charge	Q_{rr}			30		nC
Diode Forward Voltage (Note 4)	V_{SD}	I_{SD}=25A, V_{GS}=0V			1.3	V

Notes 4：Pulse test ; pulse width≤300μs, duty cycle≤2%.

■ Marking

Marking	50N06 K****

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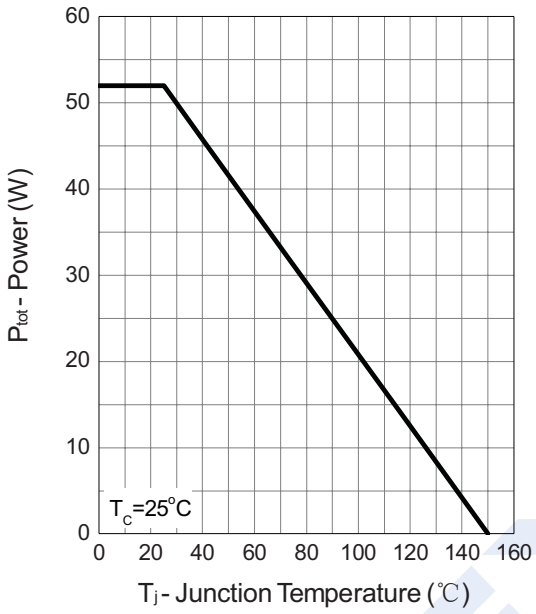
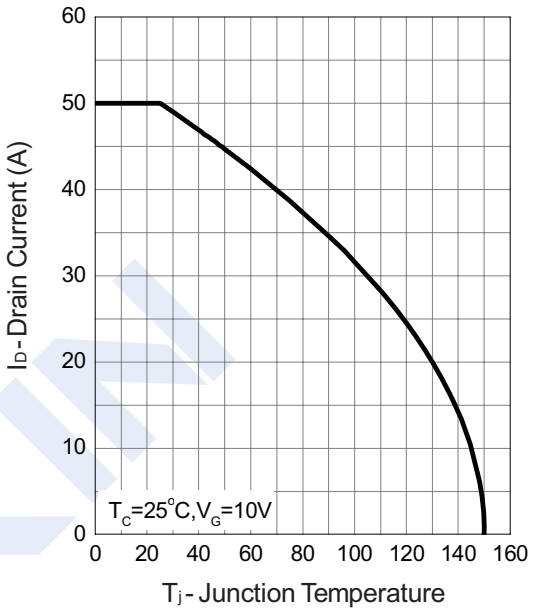
■ Typical Characterisitics

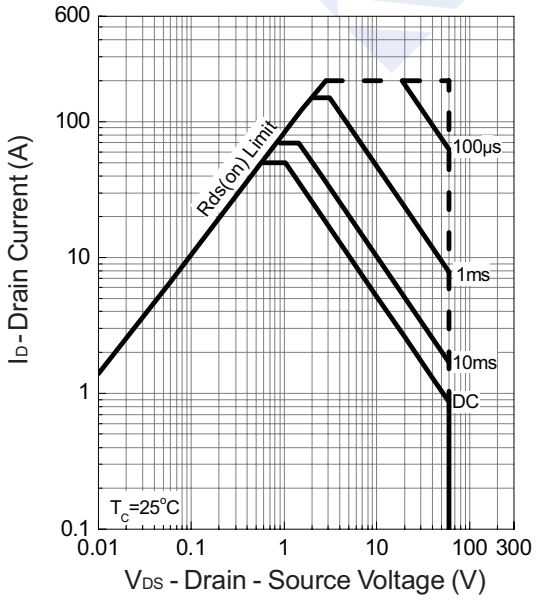
Power Dissipation



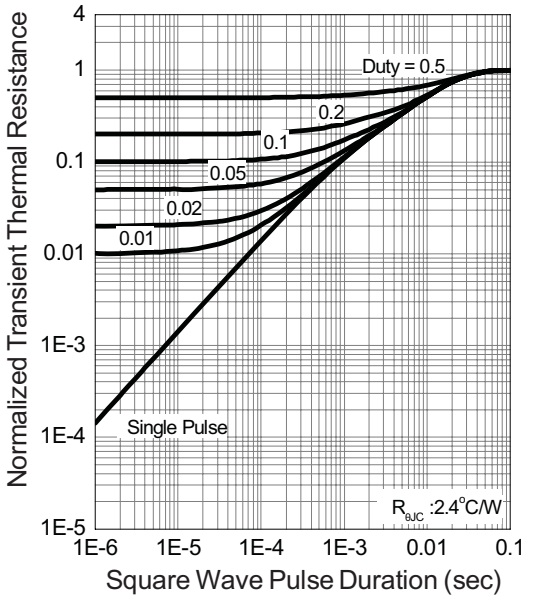
Drain Current



Safe Operation Area



Thermal Transient Impedance



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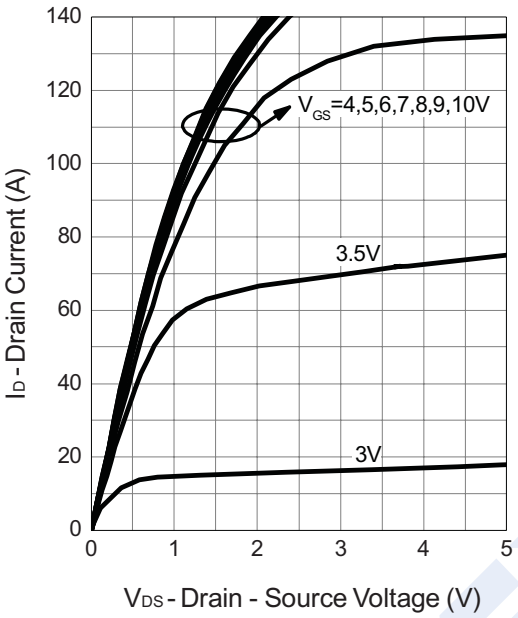
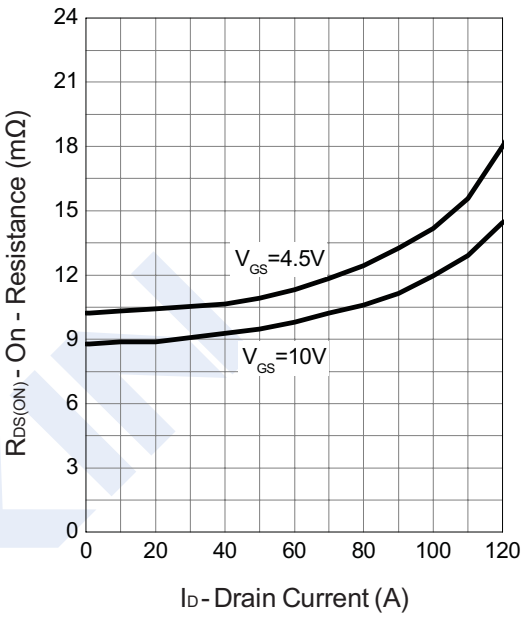
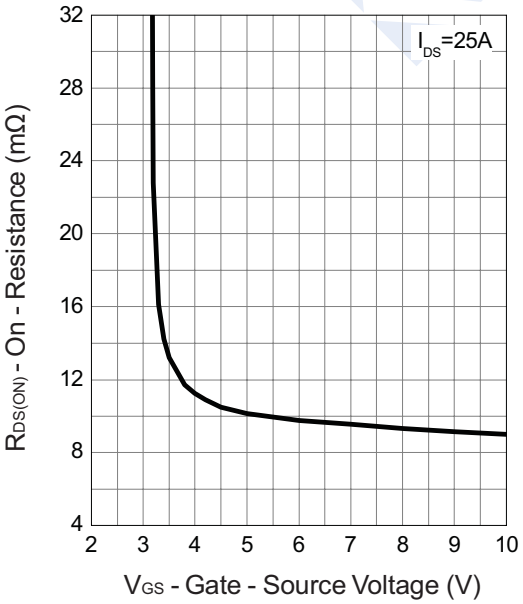
Output Characteristics



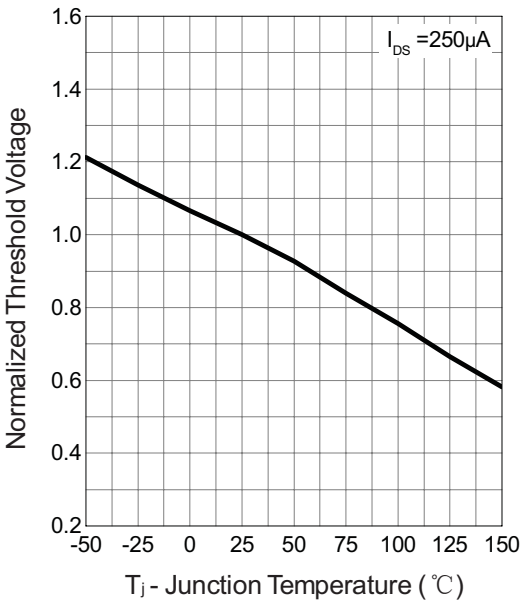
Drain-Source On Resistance



Gate-Source On Resistance



Gate Threshold Voltage



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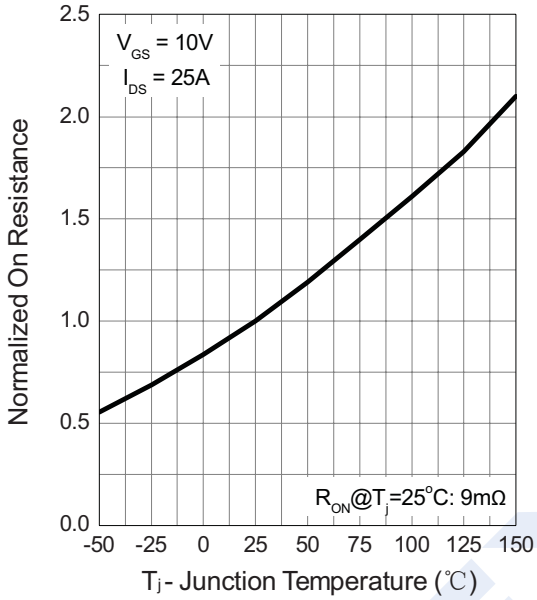
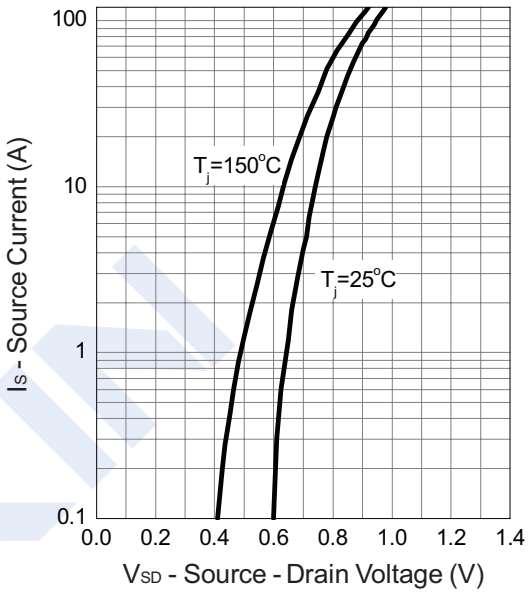
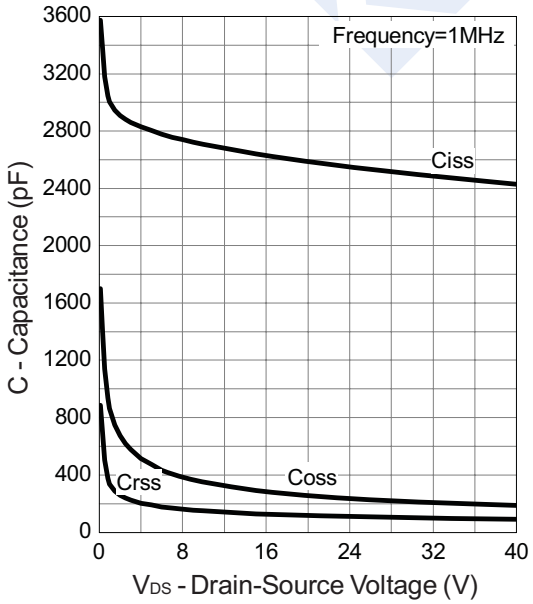
Drain-Source On Resistance



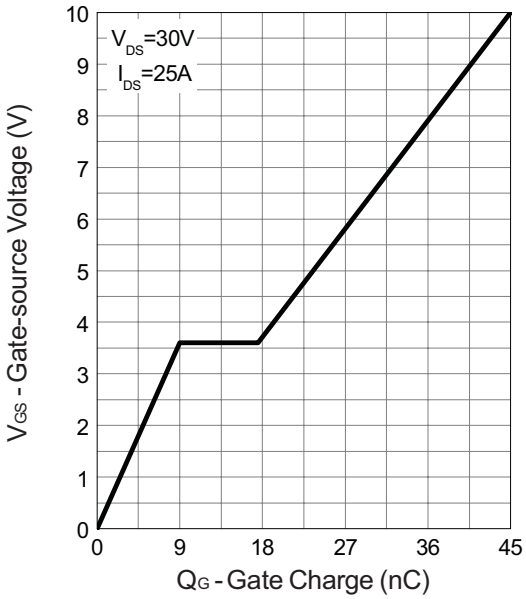
Source-Drain Diode Forward



Capacitance



Gate Charge



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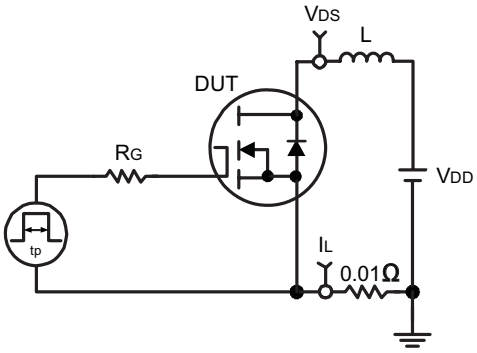
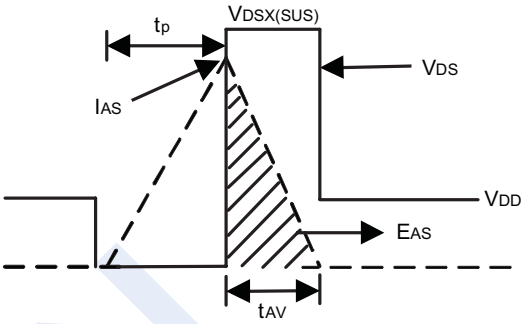
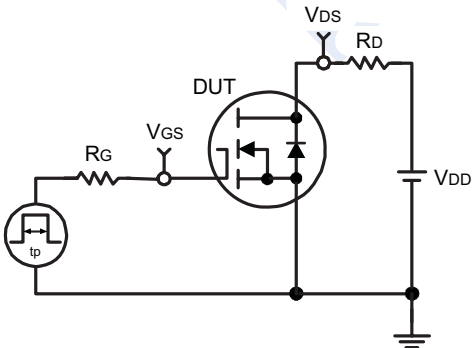
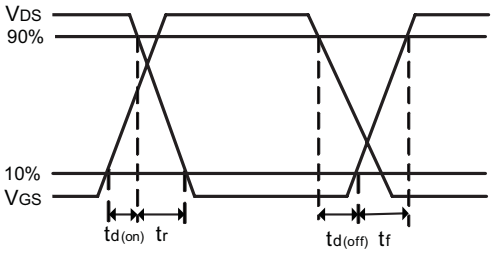
■ Avalanche Test Circuit and Waveforms





■ Switching Time Test Circuit and Waveforms





N-Channel MOSFET

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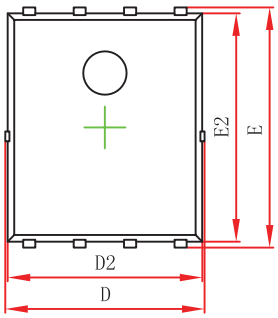
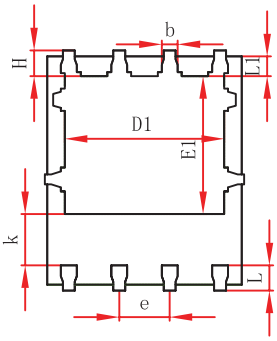
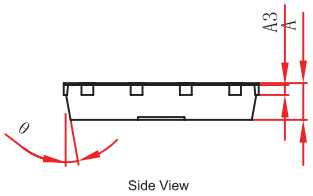
■ DFN5x6-8(PDFNWB5x6-8L) Package Outline Dimensions



Top View



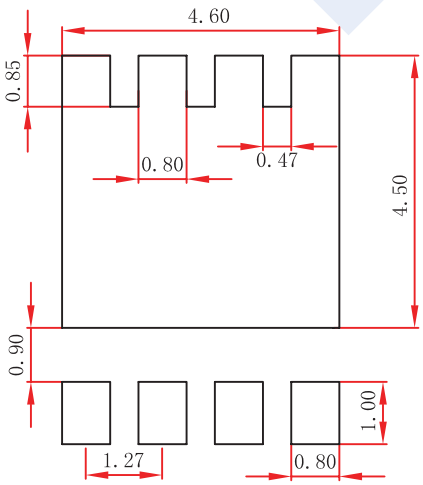
Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°

■ DFN5x6-8(PDFNWB5x6-8L) Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.