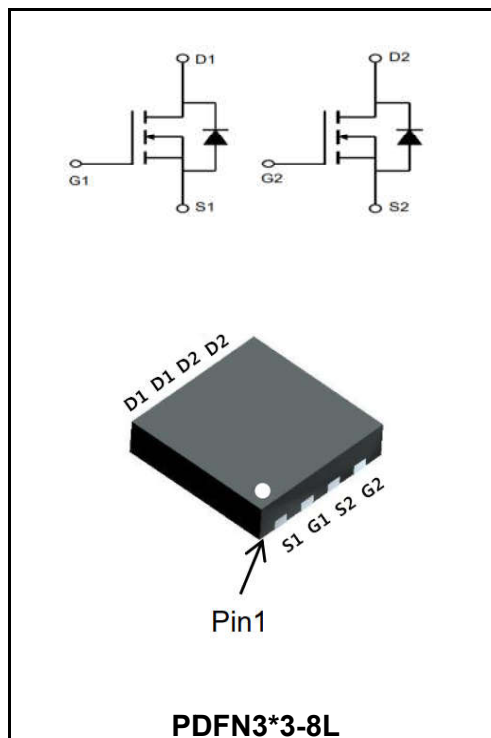


40V N+N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	10.8A
V_{DSS}	40V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 23mΩ (Type: 16 mΩ)



Application

- ◆ Wireless charging
- ◆ Boost driver
- ◆ Brushless motor



Product Specification Classification

Part Number	Package	Marking	Pack
YFW8H04DF	PDFN3*3-8L	YFW 8H04DF XXXXX	5000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	40	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current ¹ @T _A =25°C	I_D	10.8	A
Continuous Drain Current ¹ @T _A =70°C	I_D	7.6	A
Pulsed Drain Current ²	I_{DM}	36	A
Single Pulse Avalanche Energy ³	E_{AS}	31	mJ
Avalanche Current	I_{AS}	25	A
Total Power Dissipation ⁴ @T _A =25°C	P_D	1.9	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction-ambient ¹ (t≤10s)	$R_{\theta JA}$	62	°C/W
Thermal Resistance Junction- ambient ¹	$R_{\theta JC}$	8	°C/W

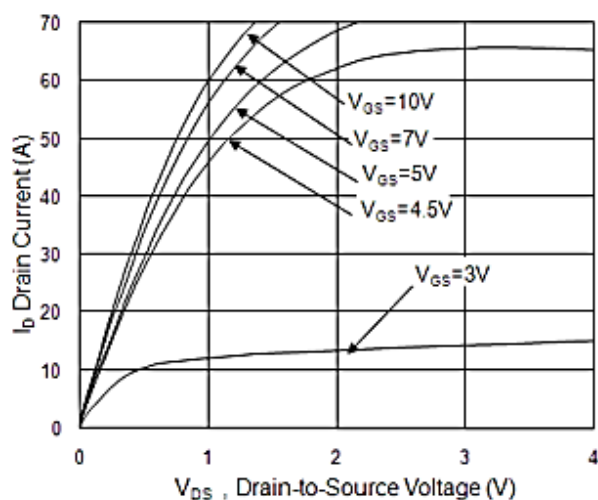
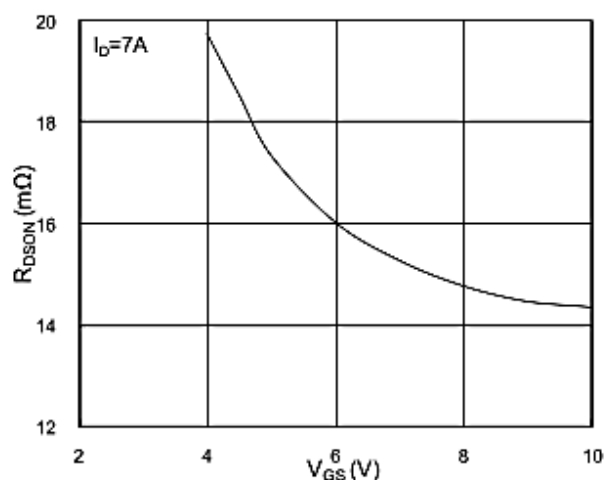
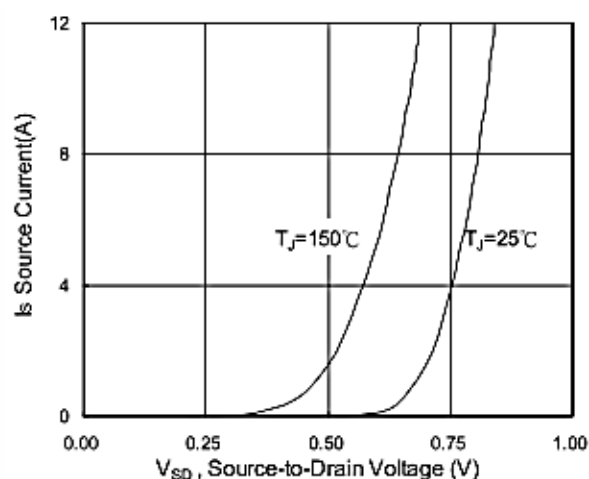
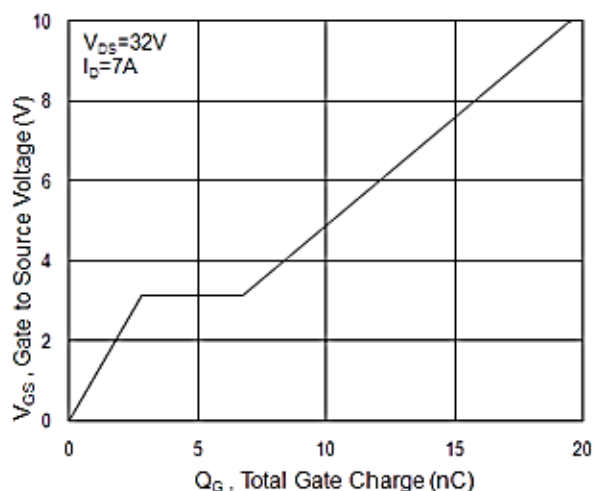
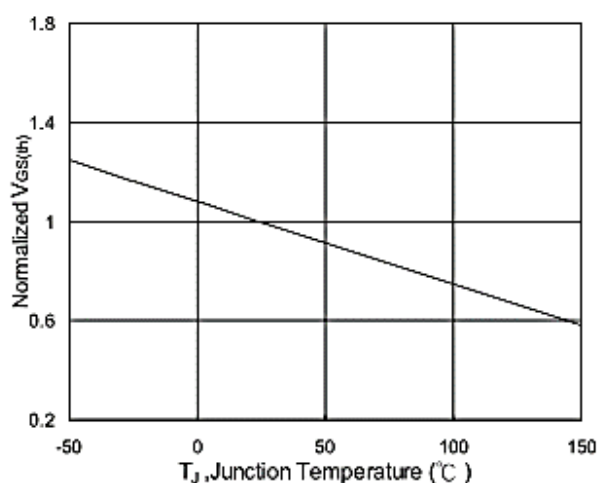
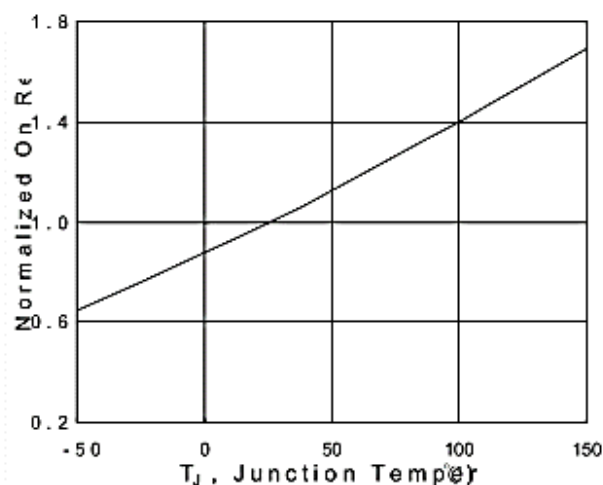
Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	$B_{V_{DSS}}$	40	44	-	V
BVDSS Temperature Coefficient	Reference to 25°C, $I_D=1mA$	$\Delta B_{V_{DSS}}/\Delta T_J$	-	0.034	-	V/°C
Static Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=5A$	$R_{DS(ON)}$	-	16	23	mΩ
	$V_{GS}=4.5V, I_D=4A$		-	20	36	mΩ
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	1.6	2.5	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	-4.56	-	mV/°C
Drain-Source Leakage Current	$V_{DS}=32V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	1	uA
	$V_{DS}=32V, V_{GS}=0V, T_J=55^\circ C$		-	-	5	
Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Forward Transconductance	$V_{DS}=5V, I_D=5A$	g_{fs}	-	14	-	S
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	R_g		2.6	-	Ω
Total Gate Charge (4.5V)	$V_{DS}=20V$ $V_{GS}=4.5V$ $I_D=5A$	Q_g	-	5.5	-	nC
Gate-Source Charge		Q_{gs}	-	1.25	-	nC
Gate-Drain Charge		Q_{gd}	-	2.5	-	nC
Turn-on delay time	$V_{DD}=20V$ $V_{GS}=10V$ $R_G=3.3\Omega$ $I_D=1A$	$t_{d(on)}$	-	8.9	-	ns
Rise Time		T_r	-	2.2	-	ns
Turn-Off Delay Time		$t_{d(OFF)}$	-	41	-	ns
Fall Time		t_f	-	2.7	-	ns
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	593	-	pF
Output Capacitance		C_{oss}	-	76	-	pF
Reverse Transfer Capacitance		C_{rss}	-	56	-	pF
Continuous Source Current ^{1,5}	$V_G=V_D=0V$, Force Current	I_S	-	-	6.1	A
Pulsed Source Current ^{2,5}		I_{SM}	-	-	23	A
Diode Forward Voltage ²	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	V_{SD}	-	-	1.2	V

Note :

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2、The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、The power dissipation is limited by 150°C junction temperature
- 4、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics



Ratings and Characteristic Curves

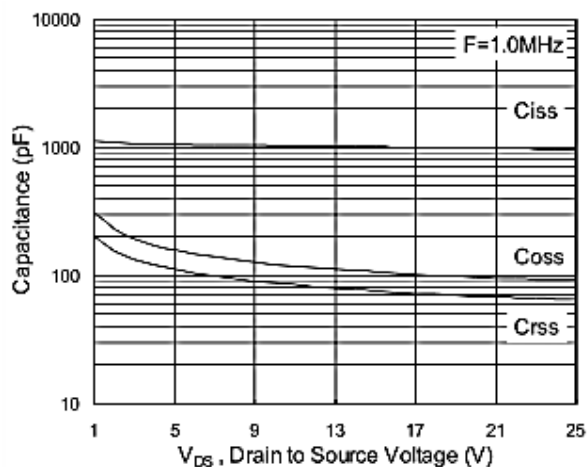


Fig.7 Capacitance

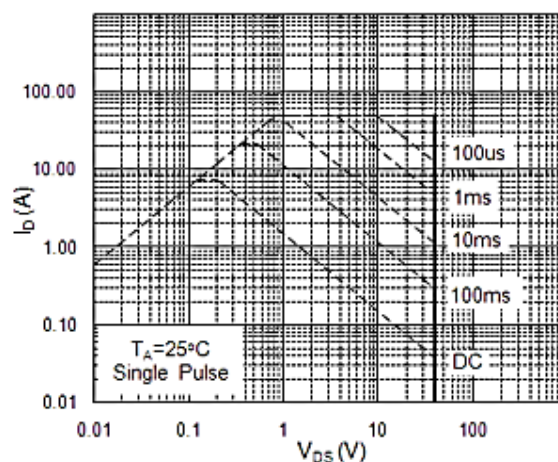


Fig.8 Safe Operating Area

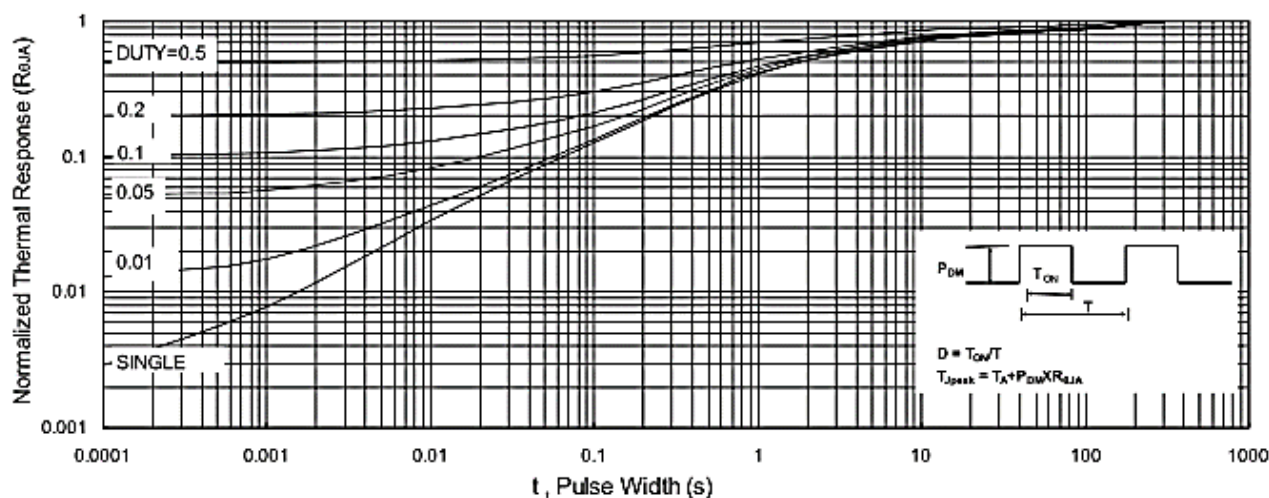


Fig.9 Normalized Maximum Transient Thermal Impedance

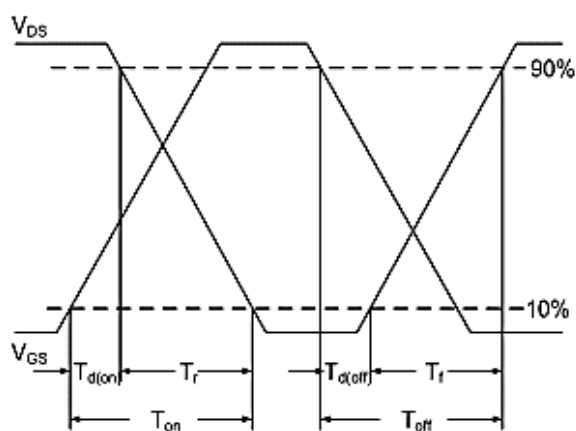


Fig.10 Switching Time Waveform

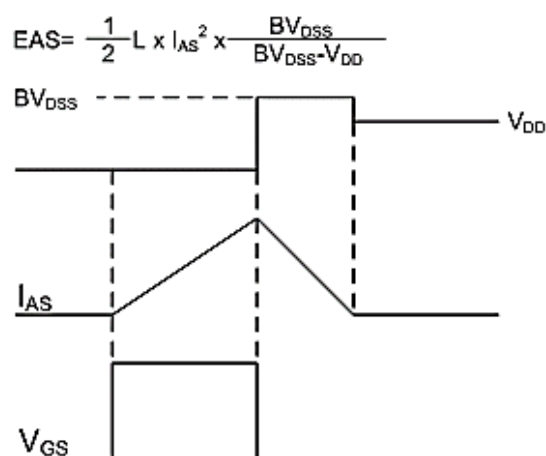
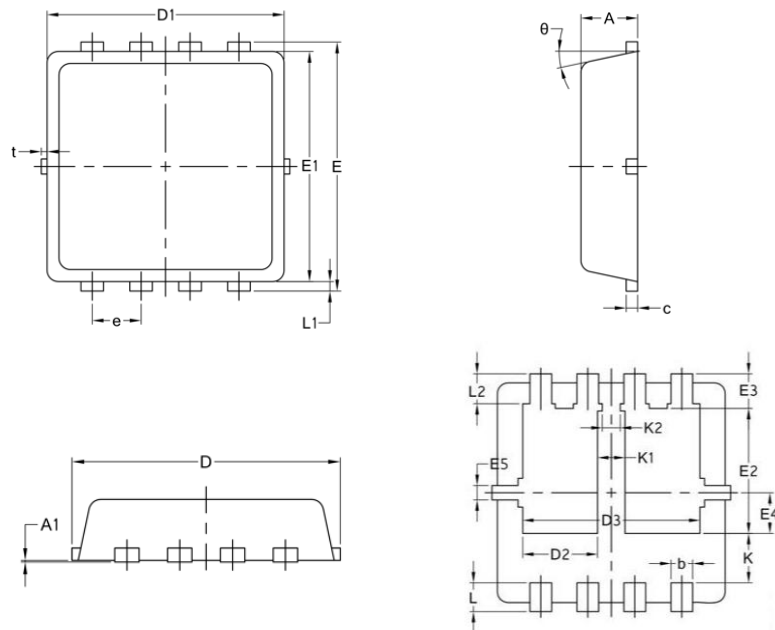


Fig.11 Unclamped Inductive Switching Waveform

PDFN3*3-8L



Symbol	Common		
	Mm		
	Min	Nom	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.25	0.30	0.39
c	0.14	0.152	0.20
D	3.20	3.30	3.45
D1	3.05	3.15	3.25
D2	0.84	1.04	1.24
D3	2.30	2.45	2.60
E	3.20	3.30	3.40
E1	2.95	3.05	3.15
E2	1.60	1.74	1.90
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.50	0.69	0.80
K1	0.30	0.38	0.53
K2	0.15	0.25	0.35
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
L2	0.27	0.42	0.57
t	0	0.075	0.13
Φ	10°	12°	14°