

20V N+N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

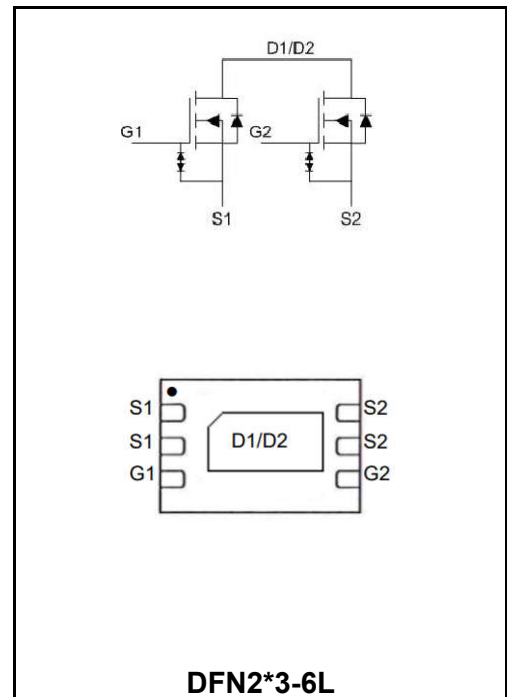
I_D	9.5A
V_{DSS}	20V
$R_{DS(on)-typ}(@V_{GS}=4.5V)$	<9m Ω (Type: 7.8 m Ω)
$R_{DS(on)-typ}(@V_{GS}=2.5V)$	<13.5m Ω (Type: 10.5 m Ω)

Features

ESD=2KV HBM

Application

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply



Product Specification Classification

Part Number	Package	Marking	Pack
YFW8809CF	DFN2*3-6L	YFW 8809E XXXXX	3000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	20	V
Gate -Source Voltage	V_{GS}	± 12	V
Continuous Drain Current, $V_{GS} @ 4.5V^1 @ T_A=25^\circ C$	I_D	9.5	A
Continuous Drain Current, $V_{GS} @ 4.5V^1 @ T_A=70^\circ C$	I_D	7.6	A
Pulsed Drain Current ²	I_{DM}	60	A
Total Power Dissipation ¹ @ $T_A=25^\circ C$	P_D	1.56	W
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ C$
Operating Junction Temperature Range	T_J	-55 to +150	$^\circ C$
Thermal Resistance Junction-Ambient ¹ (t ≤ 10s)	$R_{\theta JA}$	80	$^\circ C/W$

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	BV_{DSS}	20	-	-	V
Static Drain-Source On-Resistance ²	$V_{GS}=4.5V$, $I_D=5A$	$R_{DS(ON)}$	6.3	7.8	9	mΩ
	$V_{GS}=4.0V$, $I_D=5A$		6.5	8.0	9.5	
	$V_{GS}=3.7V$, $I_D=5A$		6.7	8.2	10	
	$V_{GS}=3.1V$, $I_D=5A$		7.1	8.7	11.2	
	$V_{GS}=2.5V$, $I_D=5A$		8.0	10.5	13.5	
Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	$V_{GS(th)}$	0.45	-	1.5	V
Drain-Source Leakage Current	$V_{DS}=16V$, $V_{GS}=0V$ $T_J=25^\circ C$	I_{DSS}	-	-	1	uA
	$V_{DS}=16V$, $V_{GS}=0V$ $T_J=55^\circ C$		-	-	5	
Gate - Source Leakage Current	$V_{GS}=\pm 12V$, $V_{DS}=0V$	I_{GSS}	-	-	± 10	uA
Forward Transconductance	$V_{DS}=5V$, $I_D=5.5A$	G_{fs}	-	38	-	S
Total Gate Charge (4.5V)	$V_{DS}=15V$ $V_{GS}=4.5V$ $I_D=5.5A$	Q_g	-	22	-	nC
Gate-Source Charge		Q_{gs}	-	3.1	-	
Gate-Drain Charge		Q_{gd}	-	8.2	-	
Turn-on delay time	$V_{DD}=15V$, $V_{GS}=4.5V$, $R_G=6\Omega$, $I_D=5.5A$	$T_d(on)$	-	10	-	nS
Rise Time		T_r	-	39.5	-	
Turn-Off Delay Time		$t_d(OFF)$	-	65	-	
Fall Time		t_f	-	30	-	
Input Capacitance	$V_{DS}=10V$, $V_{GS}=0V$, $f=1MHz$	C_{iss}	-	1647	-	pF
Output Capacitance		C_{oss}	-	170	-	
Reverse Transfer Capacitance		C_{rss}	-	148	-	
Continuous Source Current ¹	$V_G=V_D=0V$, Force Current	I_S	-	-	9.5	A
Pulsed Source Current ²		I_{SM}	-	-	60	A
Diode Forward Voltage ²	$V_{GS}=0V$, $I_S=9.5A$ $T_J=25^\circ C$	V_{SD}	-	-	1.2	V

Note:

1 .The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, $t \leq 10s$.

2.The data tested by pulsed , pulse width $\leq 10\mu s$, duty cycle $\leq 1\%$

Ratings and Characteristic Curves

Typical Characteristics

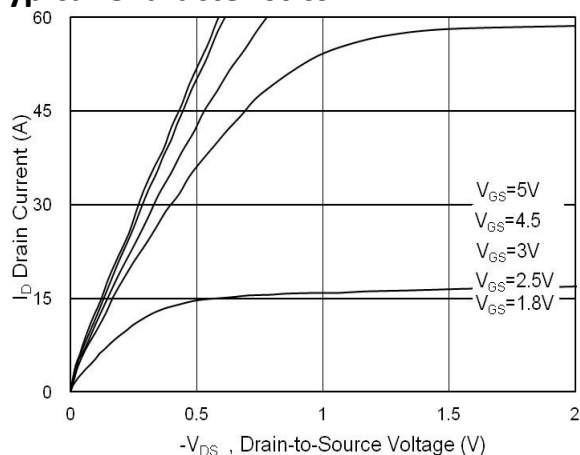


Fig.1 Typical Output Characteristics

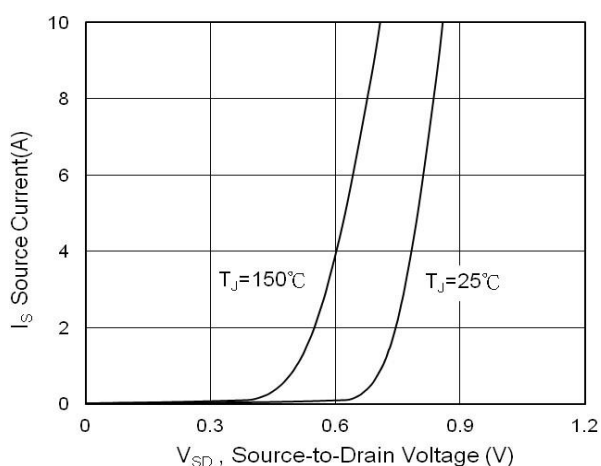


Fig.3 Forward Characteristics Of Reverse

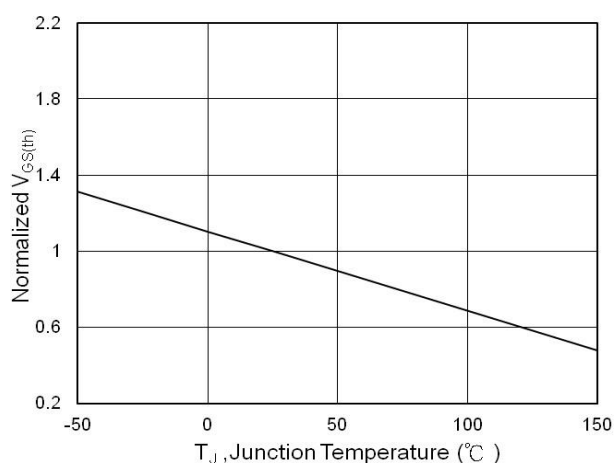


Fig.5 $V_{GS(th)}$ vs. T_J

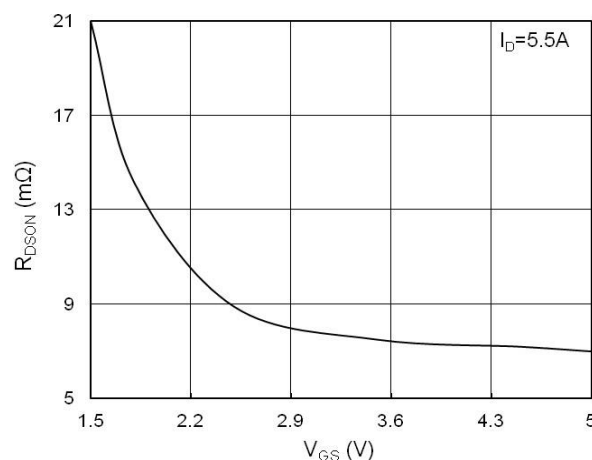


Fig.2 On-Resistance vs. Gate-Source

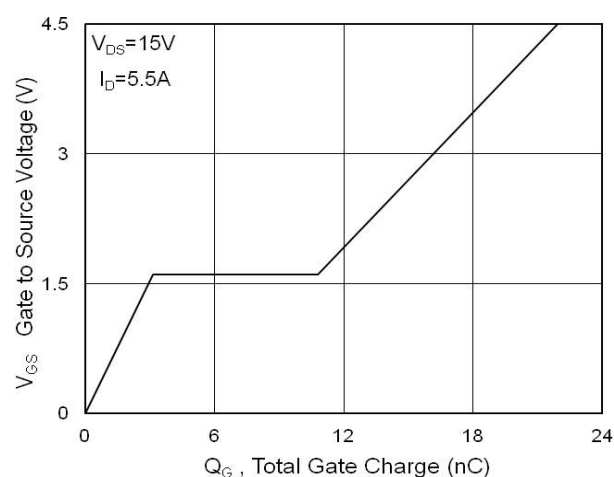


Fig.4 Gate-Charge Characteristics

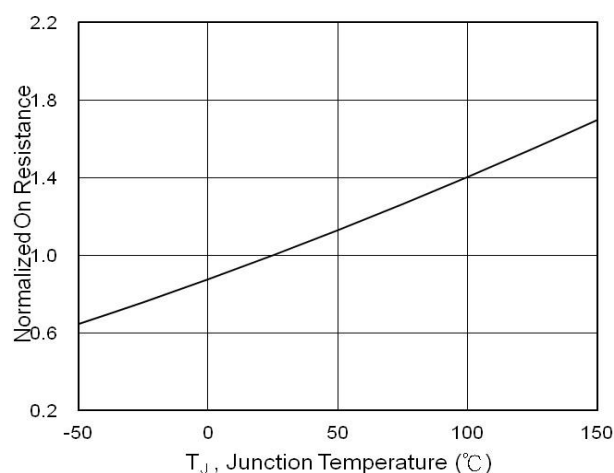


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

Ratings and Characteristic Curves

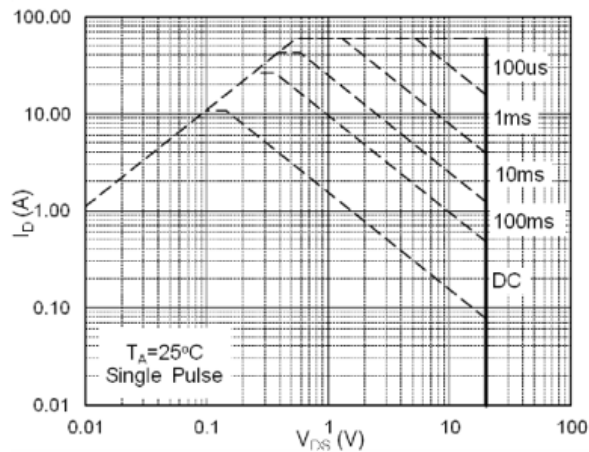


Fig.8 Safe Operating Area

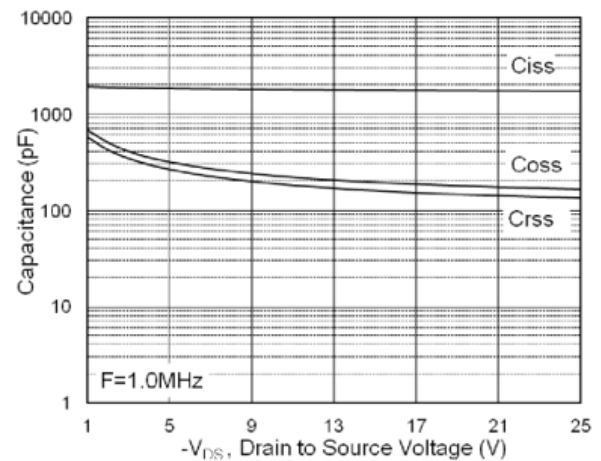


Fig.7 Capacitance

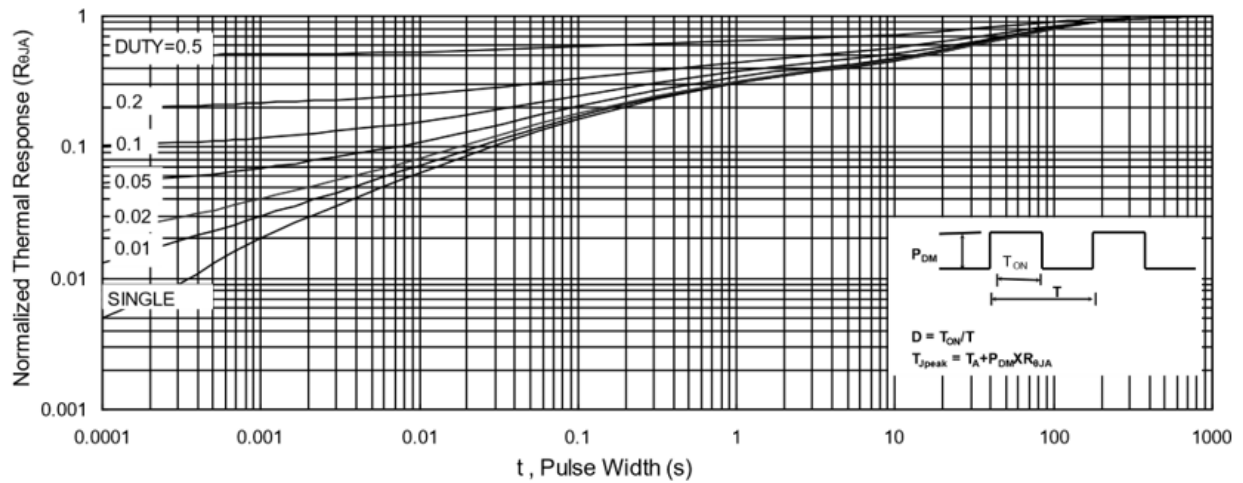


Fig.9 Normalized Maximum Transient Thermal Impedance

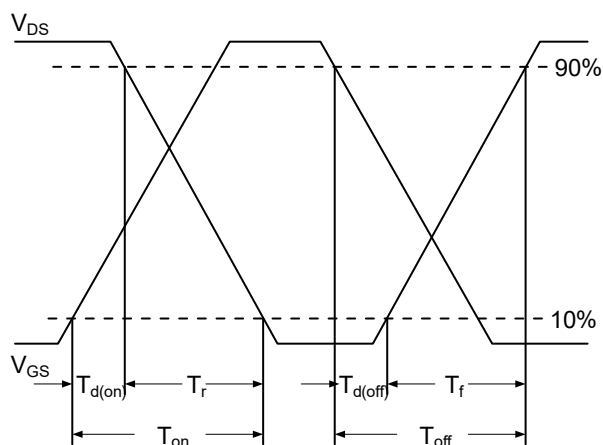


Fig.10 Switching Time Waveform

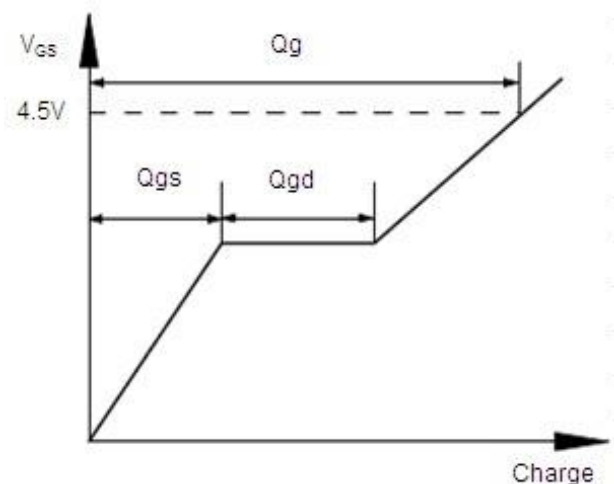
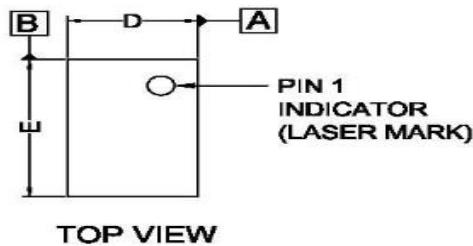
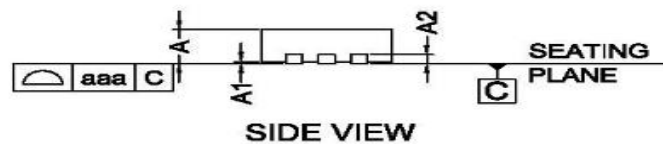
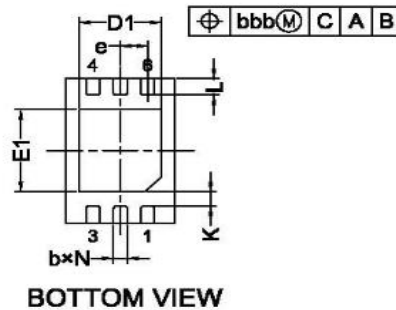


Fig.11 Gate Charge Waveform

DFN2*3-6L



SYMBOL	MIN	TYP	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2	0.203		
b	0.20	0.25	0.30
D	1.95	2.00	2.05
D1	1.45	1.50	1.55
E	2.95	3.00	3.05
E1	1.65	1.70	1.75
e	0.50BSC		
L	0.30	0.35	0.40
K	0.20MIN		
N	6		
aaa	0.08		
bbb	0.10		