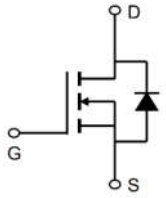
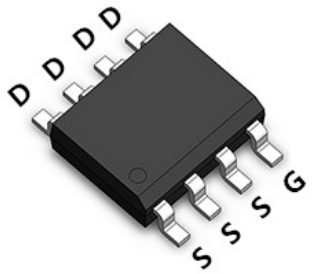
40V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	25A
V_{DSS}	40V
R_{DSON}-typ(@V_{GS}=10V)	< 7mΩ(Type:5.5 mΩ)





SOP-8

Application

- Battery protection
- Load switch
- Uninterruptible power supply

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, V_{GS} @ 10V[1] @T_A=25℃	I_D	25.5	A
Continuous Drain Current, V_{GS} @ 10V[1] @T_A=70℃	I_D	18.4	A
Pulsed Drain Current[2]	I_{DM}	75	A
Single Pulse Avalanche Energy[3]	E_{AS}	176	mJ
Avalanche Current	I_{AS}	39	A
Total Power Dissipation[4] @TA=25℃	P_D	1.5	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	85	°C/W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	28	°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=250uA	BV_{DSS}	40	44	-	V
BVDSS Temperature Coefficient	Reference to 25℃ , I_D=1mA	$\Delta BV_{DSS/\Delta TJ}$	-	0.034	-	V/°C
Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=10A	$R_{DS(ON)}$	-	5.5	7.5	mΩ
	V_{GS}=4.5V, I_D=8A		-	6.5	10	
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	$V_{GS(th)}$	1.0	1.6	2.5	V
V_{GS}(th) Temperature Coefficient		$\Delta V_{GS(th)}$	-	-4.96	-	mV/°C
Drain -Source Leakage Current	V_{DS}=32V , V_{GS}=0V , T_J=25℃	I_{DSS}	-	-	1	μA
	V_{DS}=32V , V_{GS}=0V , T_J=55℃		-	-	5	
Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Forward Transconductance	V_{DS}=5V, I_D=10A	g_{FS}	-	40	-	S
Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	R_g	-	1.6	-	
Total Gate Charge(4.5V)	V_{DS}=20V V_{GS}=4.5V I_D=10A	Q_g	-	18.8	-	nC
Gate-Source Charge		Q_{gs}	-	4.7	-	
Gate-Drain Charge		Q_{gd}	-	8.2	-	
Turn-on delay time	V_{DD}=15V V_{GS}=10V R_G=3.3Ω I_D=1A	$t_{d(on)}$	-	14.3	-	ns
Rise Time		T_r	-	2.6	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	77	-	
Fall Time		t_f	-	4.8	-	
Input Capacitance	V_{DS}=15V V_{GS}=0V f=1.0MHz	C_{iss}	-	2332	-	pF
Output Capacitance		C_{oss}	-	193	-	
Reverse Transfer Capacitance		C_{rss}	-	138	-	
Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	I_S	-	-	10.5	A
Pulsed Source Current[2,5]		I_{SM}	-	-	42	A
Diode Forward Voltage [2]	V_{GS}=0V , I_S=1A , T_J=25℃	V_{SD}	-	-	1	V

Note :
1、The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
2、The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3、The power dissipation is limited by 175℃ junction temperature
4、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

Typical Characteristics

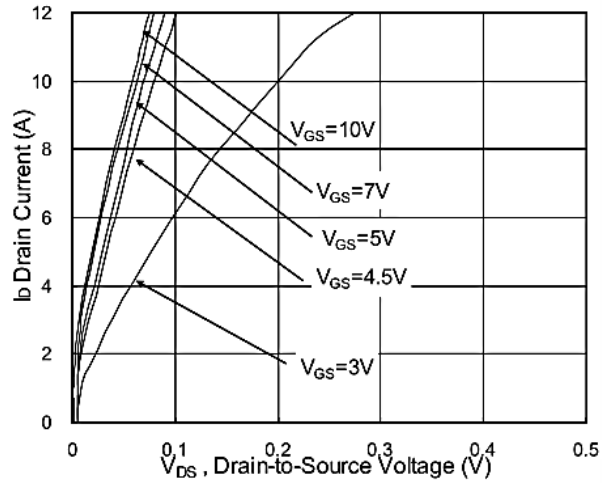


Fig.1 Typical Output Characteristics

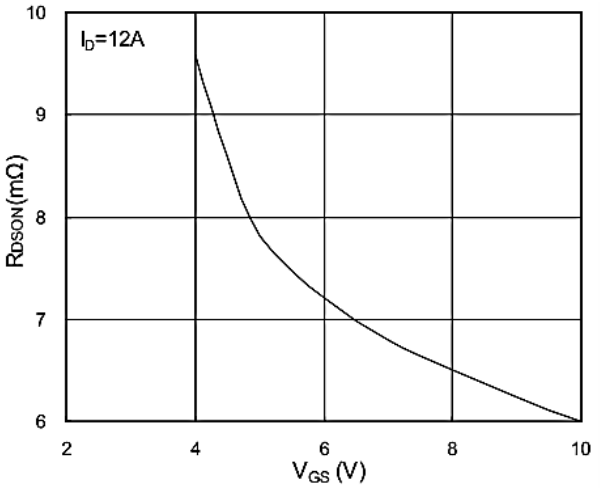


Fig.2 On-Resistance vs. G-S Voltage

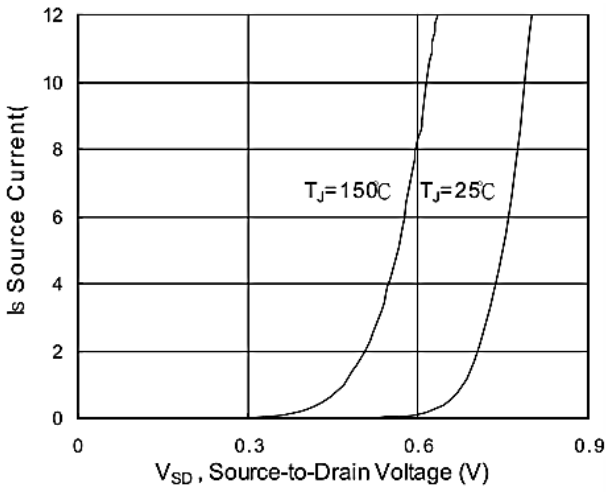


Fig.3 Forward Characteristics of Reverse

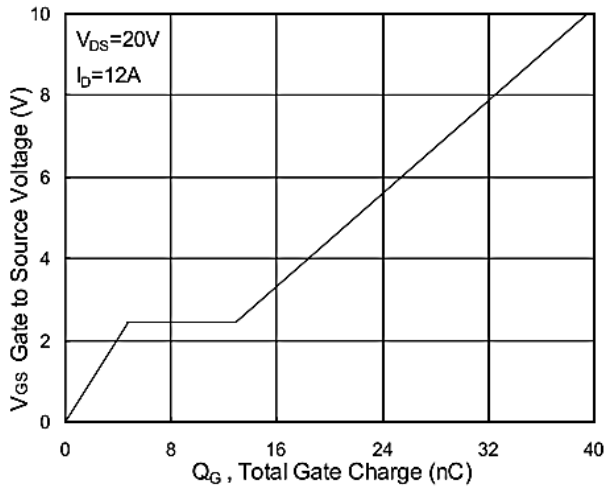


Fig.4 Gate-Charge Characteristics

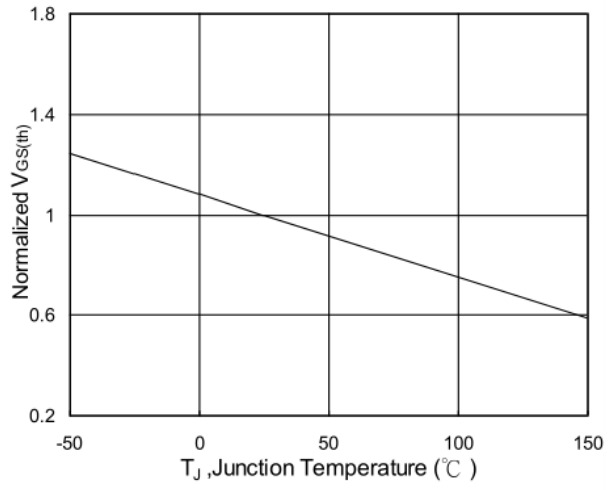


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

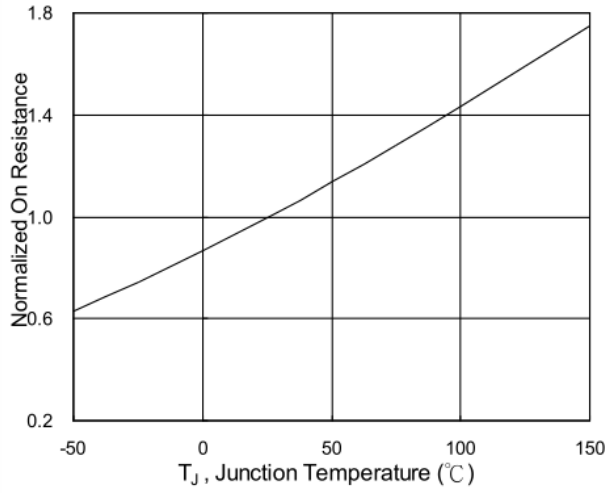


Fig.6 Normalized R_{DSON} vs. T_J

Ratings and Characteristic Curves

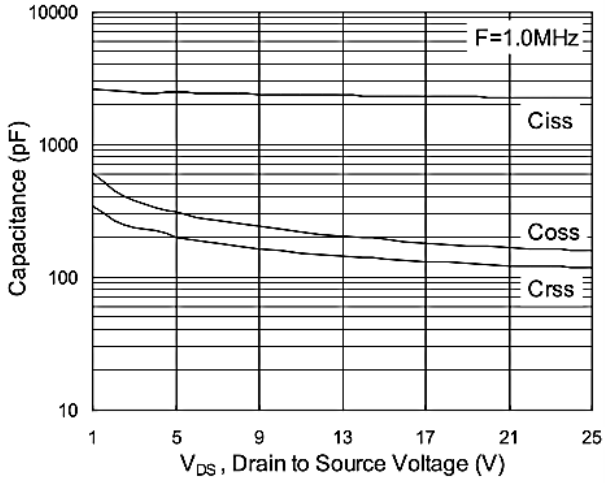


Fig.7 Capacitance

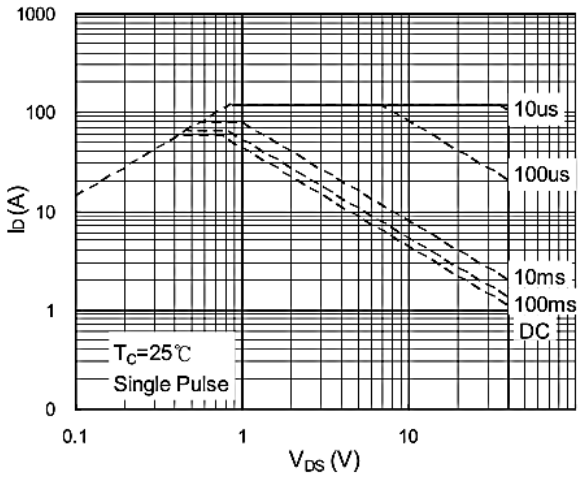


Fig.8 Safe Operating Area

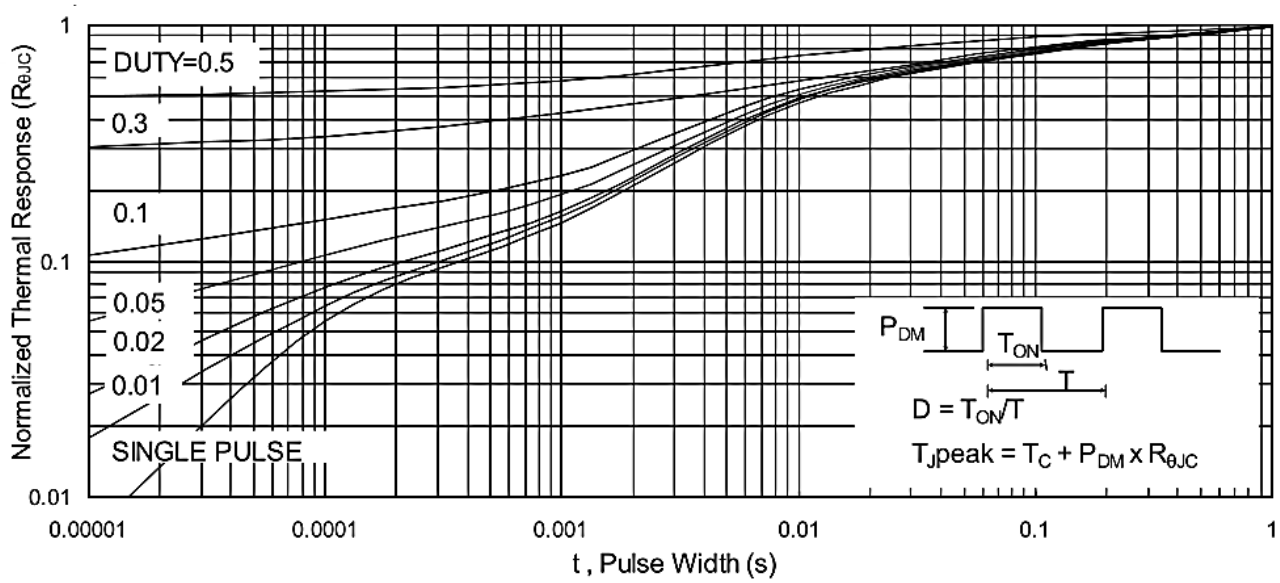


Fig.9 Normalized Maximum Transient Thermal Impedance

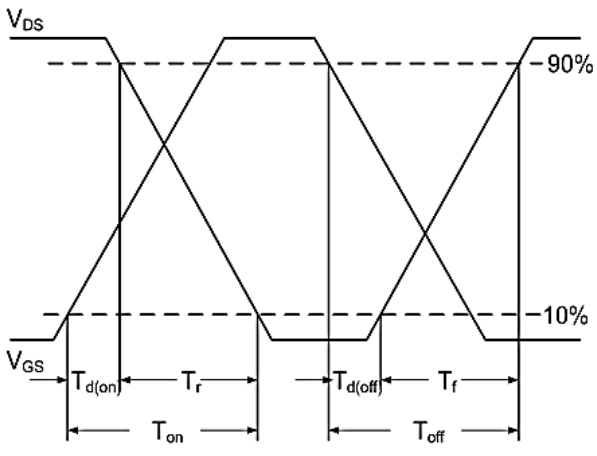


Fig.10 Switching Time Waveform

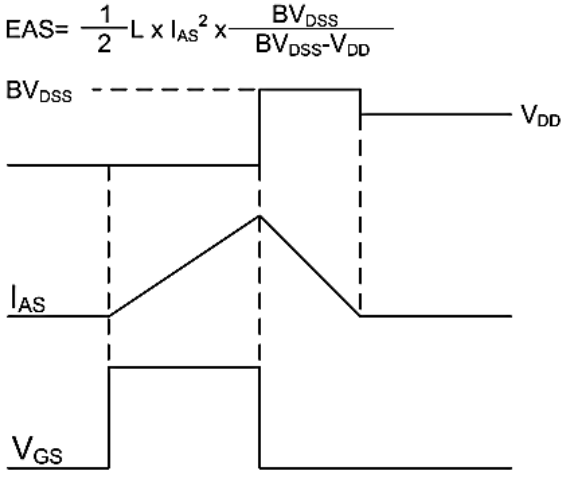
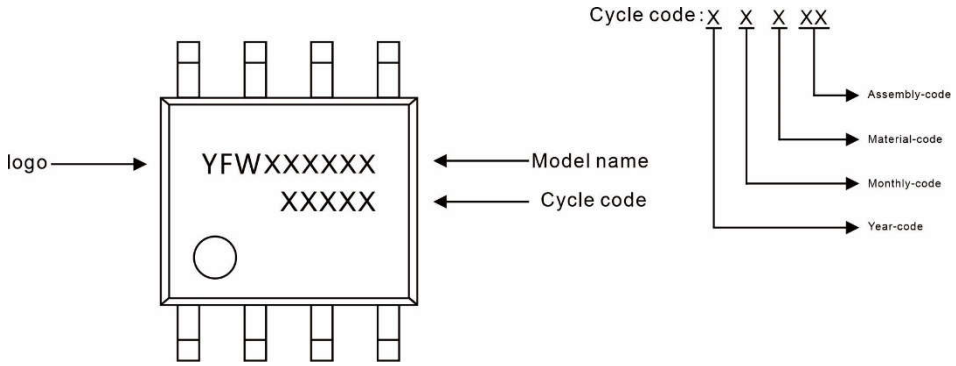


Fig.11 Unclamped Inductive Waveform

Marking Diagram

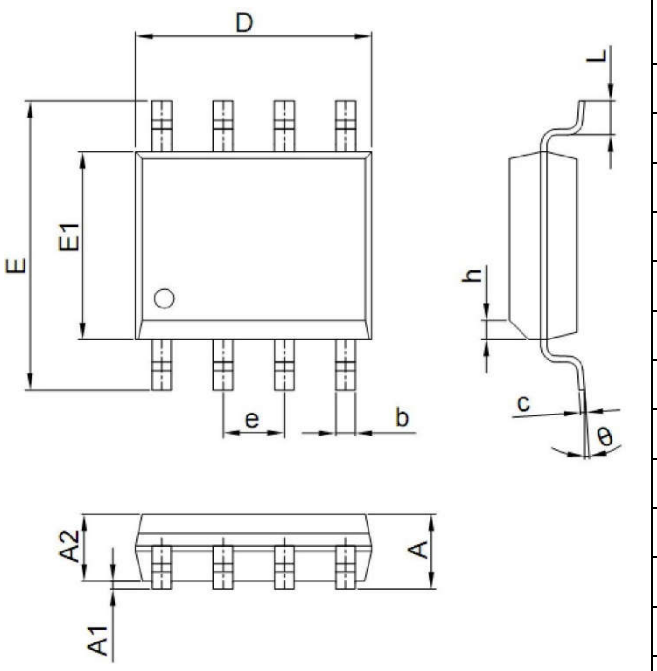


Ordering information

Package	Packing Description	Packing Quantity
SOP-8	Tape/Reel,13"reel	3000PCS/Reel 30000PCS/Carton

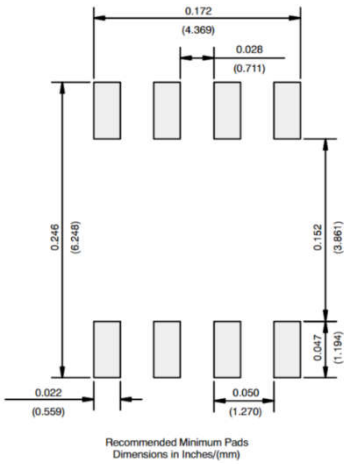
Package Dimensions

SOP-8



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
A2	1.35	1.50	0.053	0.059
b	0.35	0.55	0.014	0.022
c	0.15	0.25	0.006	0.010
D	4.80	5.00	0.189	0.197
D1	3.10	3.50	0.122	0.138
E	5.80	6.20	0.228	0.244
E1	3.80	4.00	0.150	0.157
E2	2.20	2.60	0.087	0.102
e	1.27 (BSC)		0.050 (BSC)	
L	0.40	1.27	0.016	0.050
θ	0°	8°	0°	8°

The recommended mounting pad size



Disclaimer

The information presented in this document is for reference only. GuangDong Youfeng Microelectronics Co.,Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise. The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of with would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices),YFW or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale. This publication supersedes & replaces all information previously supplied. For additional information, please visit our website https://www.yfwdiode.com, or consult YFW sales office for further assistance.