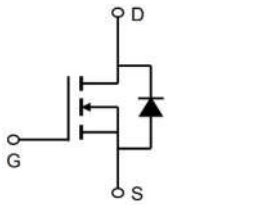
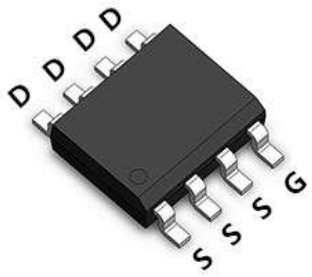
60V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	20A
V_{DSS}	60V
R_{DSON}-typ(@V_{GS}=10V)	< 10mΩ(Type:7.5 mΩ)





SOP-8

Features

- YFW-SGT technology

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFWG20N06S	SOP-8	YFW 20N06S XXXXX	3000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	60	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current @T_A=25℃	I_D	20	A
Continuous Drain Current @T_A=70℃	I_D	11	A
Pulsed Drain Current	I_{DM}	60	A
Power Dissipation[4] @T_A=25℃	P_D	60	W
Single Pulse Avalanche Energy	E_{AS}	30	mJ
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating and Storage Temperature	T_J	-55 to +150	°C
Thermal Resistance Junction-Case	$R_{\theta JC}$	2.1	°C/W
Thermal resistance, junction-ambient5)	$R_{\theta JA}$	85	°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}	60	68	-	V
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	$V_{GS(th)}$	1.2	1.5	2.5	V
Drain-source on-state resistance	V_{GS}=10V, I_D=20A	$R_{DS(ON)}$	-	7.5	10	mΩ
	V_{GS}=4.5V, I_D=10A		-	10	13	
Gate-Source Leakage Current	V_{GS}=±20V	I_{GSS}	-	-	±100	nA
Drain -Source Leakage Current	V_{DS}=60V , V_{GS}=0V	I_{DSS}	-	-	1	μA
Input Capacitance	V_{GS}=0V V_{DS}=50V f=100KHz	C_{iss}	-	1182.1	-	pF
Output Capacitance		C_{oss}	-	199.5	-	
Reverse Transfer Capacitance		C_{rss}	-	4.1	-	
Turn-on delay time	V_{GS}=10V V_{DD}=50V R_G=2Ω I_D=10A	$t_{d(on)}$	-	17.9	-	ns
Rise Time		T_r	-	4.0	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	34.9	-	
Fall Time		t_f	-	5.5	-	
Total Gate Charge	I_D=10A V_{DS}=50V V_{GS}=10V	Q_g	-	18.4	-	nC
Gate-Source Charge		Q_{gs}	-	3.3	-	
Gate-Drain Charge		Q_{gd}	-	3.1	-	
Gate plateau voltage		$V_{plateau}$	-	2.8	-	V
Diode forward current	VGS<Vth	I_S	-	-	60	A
Pulsed Source Current		I_{SP}	-	-	180	
Diode Forward Voltage	V_{GS}=0V , I_S=20A	V_{SD}	-	-	1.3	V
Reverse Recovery Time	I_F=10A , dI/dt=100A/μs ,	t_{rr}	-	41.8	-	ns
Reverse Recovery Charge		Q_{rr}	-	36.1	-	nC
Peak reverse recovery current		I_{rrm}	-	1.4	-	A

Note
1、Calculated continuous current based on maximum allowable junction temperature.
2、Repetitive rating; pulse width limited by max. junction temperature.
3、Pd is based on max. junction temperature, using junction-case thermal resistance.
4、VDD=50 V, RG=50 Ω, L=0.3 mH, starting Tj=25 ℃.
5、The value of RθJA is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with Ta=25 ℃.

Ratings and Characteristic Curves

Typical Characteristics

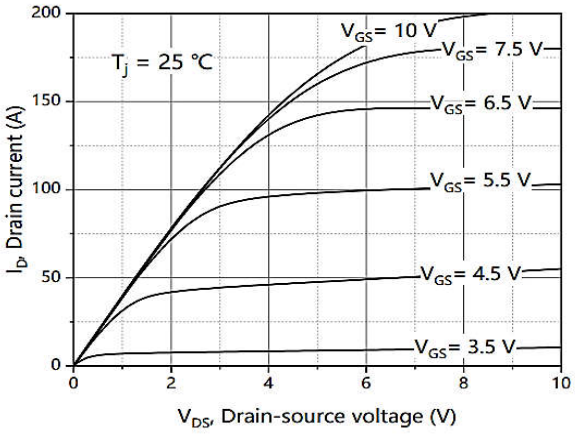


Figure 1. Typ. output characteristics

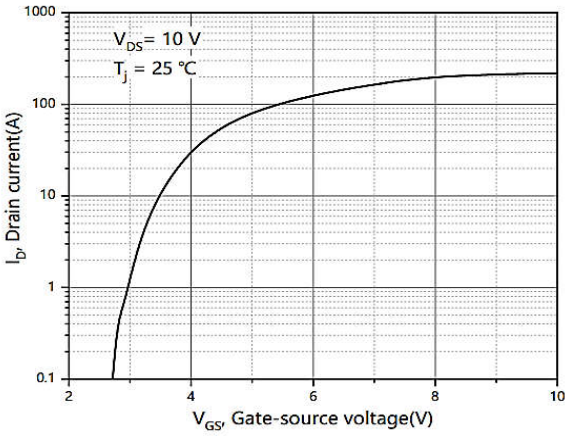


Figure 2. Typ. transfer characteristics

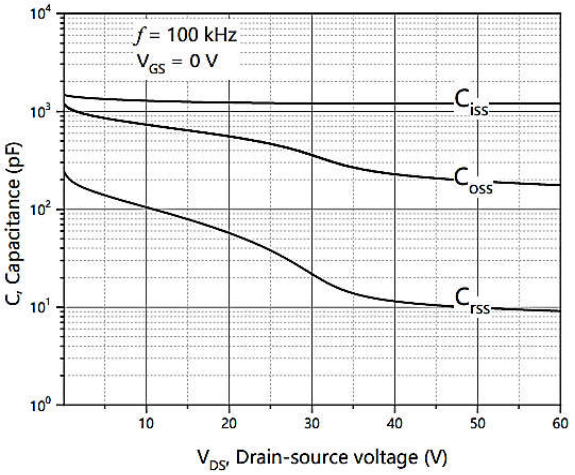


Figure 3. Typ. capacitances

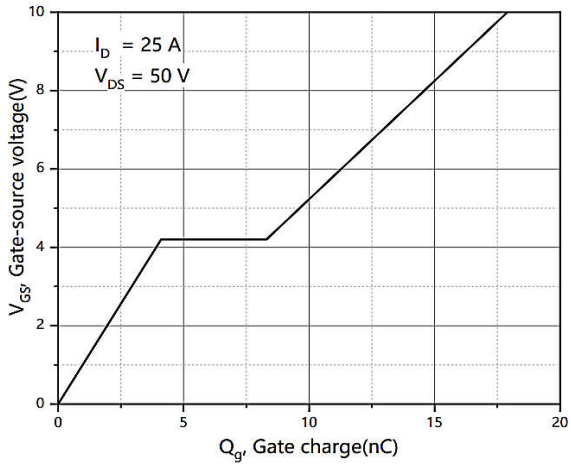


Figure 4. Typ. gate charge

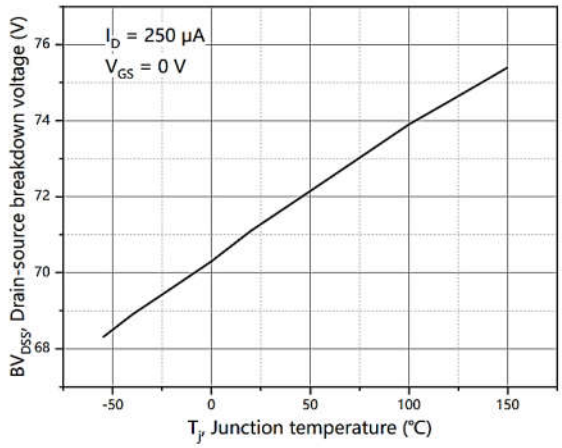


Figure 5. Drain-source breakdown voltage

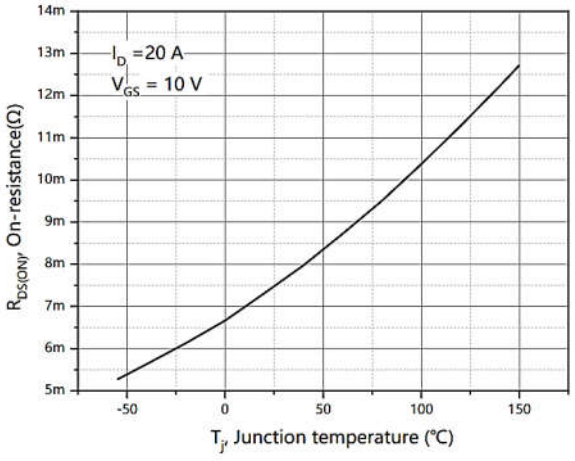


Figure 6. Drain-source on-state resistance

Ratings and Characteristic Curves

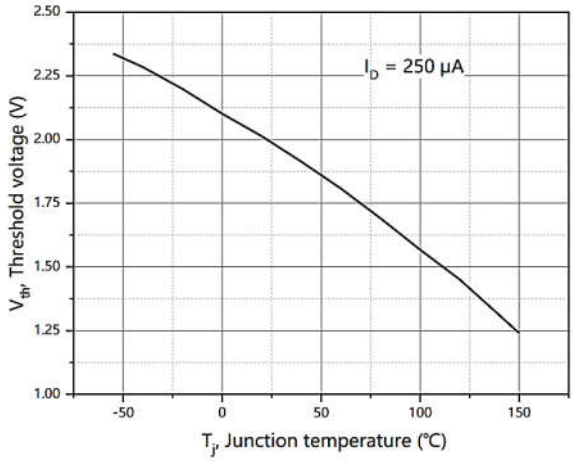


Figure 7. Threshold voltage

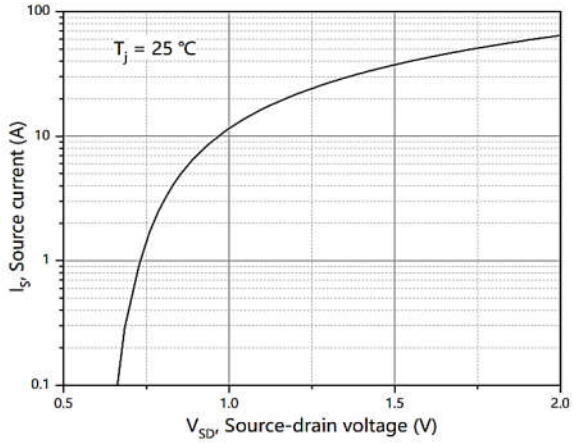


Figure 8. Forward characteristic of body diode

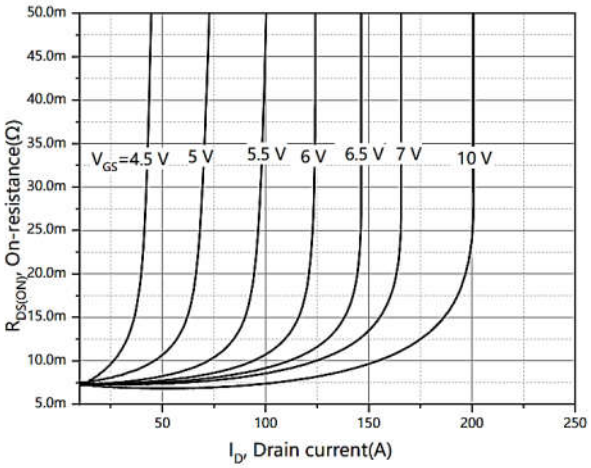


Figure 9. Drain-source on-state resistance

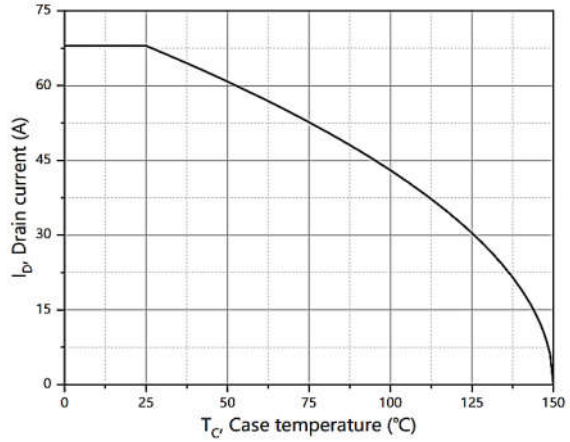


Figure 10. Drain current

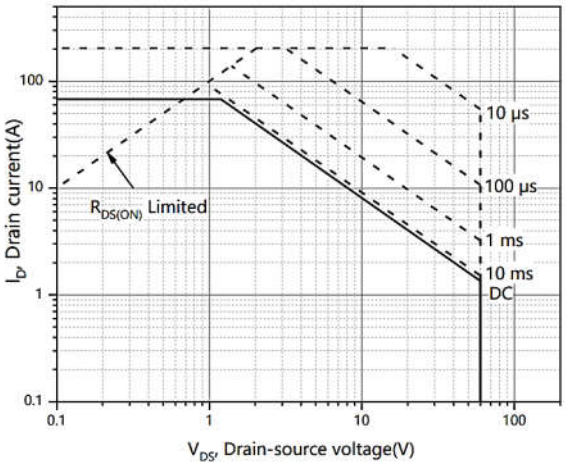


Figure 11. Safe operation area T_C=25 ℃

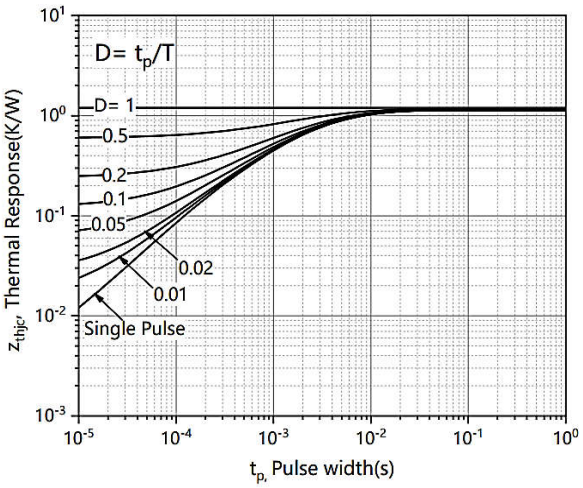
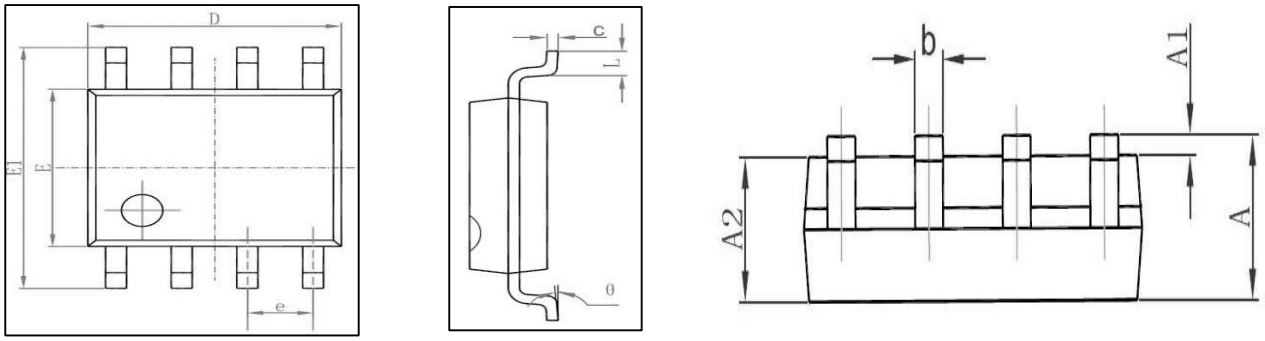


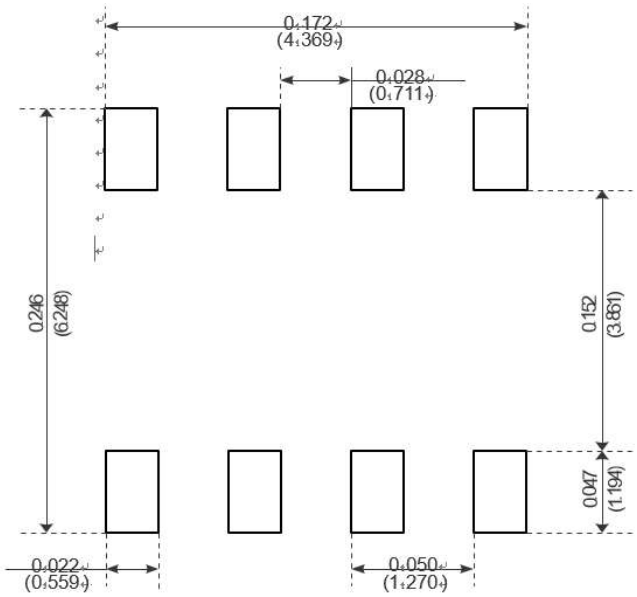
Figure 12. Max. transient thermal impedance

Package Outline Dimensions Millimeters

SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



Recommended Minimum Pads