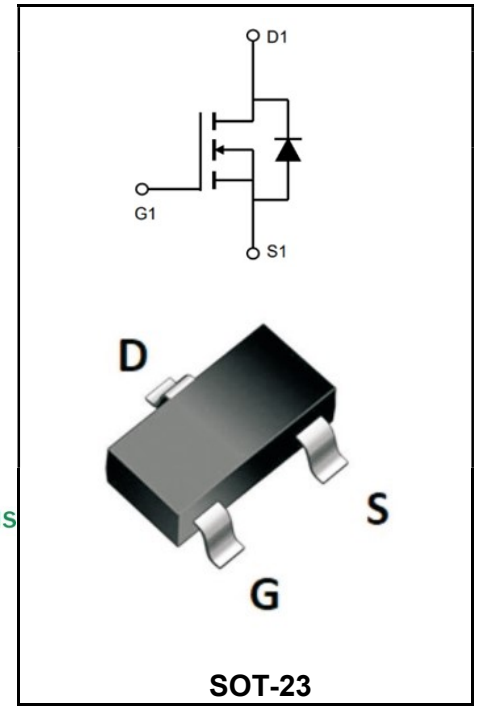
60V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	3A
V_{DSS}	60V
R_{DSON}-typ(@V_{GS}=10V)	<100mΩ **(Type:80mΩ)**



SOT-23

Features

- Adopt advanced trench technology to provide excellent RDS(ON), low gate charge and operation with gatevoltages
- as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.
- Battery protection
- Load switch
- Uninterruptible power supply

lead-free ROHS

Mechanical Data

- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Solder bath temperature275℃maximum,10s per JESD22-106

Product Specification Classification

Part Number	Part Number	Marking	Pack
YFW3N06	SOT-23	6003	3000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	VDS	60	V
Gate-Source Voltage	VGS	±20	V
Continue Drain Current @TA=25℃	ID	3.0	A
@TA=70℃		1.8	
Pulsed Drain Current (Note1)	IDM	9.2	A
Power Dissipation(TA = 25ºC)	PD	1	W
Operating Temperature Range	TJ	-50 to +150	°C
Storage Temperature Range	TSTG	-50 to +150	°C
Thermal Resistance, Junction to Case	RθJC	80	°C/W
Thermal Resistance, Junction to Ambient	RθJA	125	°C/W

Electrical Characteristics at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS} = 0 V,I_D = 250 μA	BV_{DSS}	60	-	-	V
Temperature Coefficient	Reference to 25℃ , ID=1mA	BV_{DSS}	-	0.054	-	V/℃
Drain-Source On-State Resistance	V_{GS} = 10 V, I_D = 2A	$R_{DS(on)}$	-	80	100	mΩ
	V_{GS} = 4.5 V, I_D = 1A		-	85	110	
Gate-Source Threshold Voltage	V_{DS} = V_{GS} , I_D = 250 μA	$V_{GS(th)}$	1.2	-	2.5	V
Temperature Coefficient			-	-4.96	-	mV/℃
Drain-Source Leakage Current T_J = 25ºC	V_{DS} = 48 V, V_{GS} = 0 V	I_{DSS}	-	-	1	uA
T_J = 55ºC	V_{DS} = 48 V, V_{GS} = 0 V		-	-	5	
Gate Leakage Current	V_{GS} = ± 20 V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Forward Transconductance	V_{DS}=5V , I_D=2A	gfs	-	13	-	S
Total Gate Charge(4.5V)	I_D = 2 A, V_{DS} = 48 V, V_{GS} = 4.5 V	Q_G	-	5	7.0	nC
Gate to Source Charge		Q_{GS}	-	1.68	2.4	
Gate to Drain Charge		Q_{GD}	-	1.9	2.7	
Turn-on Delay Time(Note2)	I_D = 2A, V_{DD} = 30 V, R_G= 3.3, V_{GS}=10V	t_d(ON)	-	1.6	3.2	nS
Rise Time(Note2)		tr	-	7.2	13	
Turn-Off Delay Time(Note2)		t_d(OFF)	-	25	50	
Fall Time(Note2)		t_f	-	14.4	28.8	
Input Capacitance	V_{GS} = 0 V, V_{DS} = 15 V, f = 1MHz	C_{iss}	-	511	715	pF
Output Capacitance		C_{oss}	-	38	53	
Reverse Transfer Capacitance		C_{rss}	-	25	35	

Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current	VG=VD=0V , Force Curren	I_S	-	-	2.3	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	9.2	A
Drain-Source Diode Forward Voltage	V_{GS} = 0 V,I_{SD}= 1 A,TJ=25℃	V_{SD}	-	-	1.2	V
Reverse Recovery Time	I_F= 2 A, diF/dt =100A /μs, TJ=25℃	t_{rr}	-	9.7	-	nS
Reverse Recovery Charge		Q_{rr}	-	5.8	-	nC

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 150℃ 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

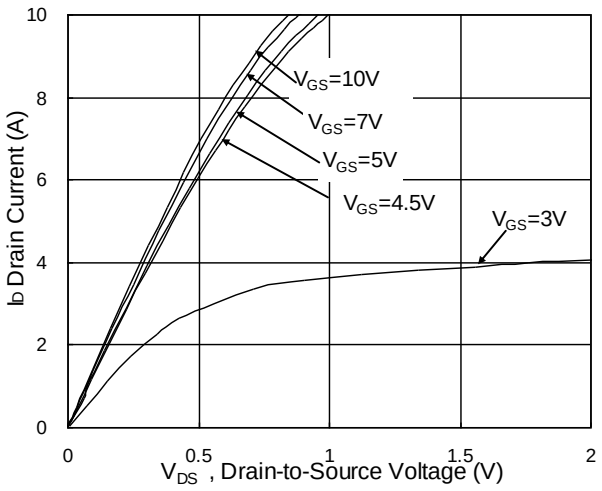


Fig.1 Typical Output Characteristics

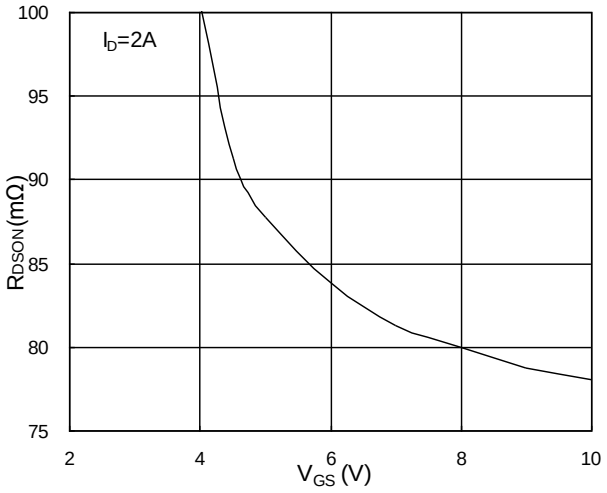


Fig.2 On-Resistance v.s Gate-Source

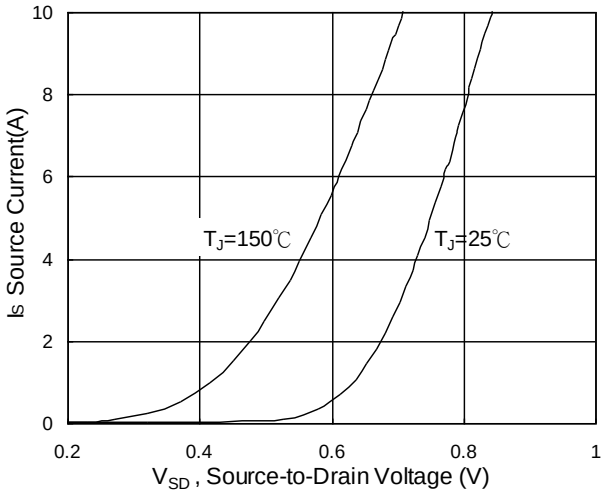


Fig.3 Forward Characteristics of Reverse

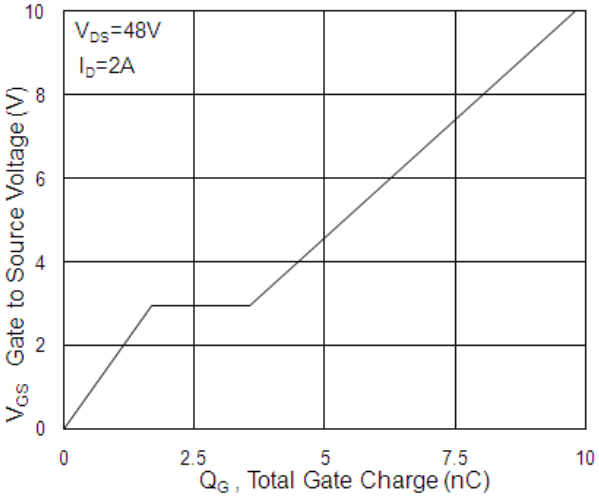


Fig.4 Gate-Charge Characteristics

Ratings and Characteristic Curves

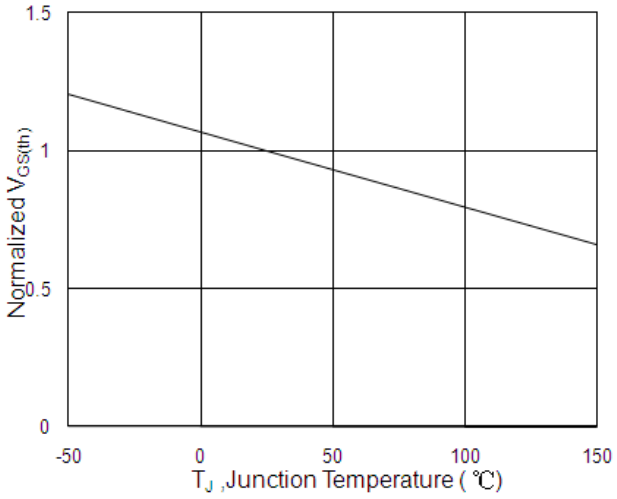


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

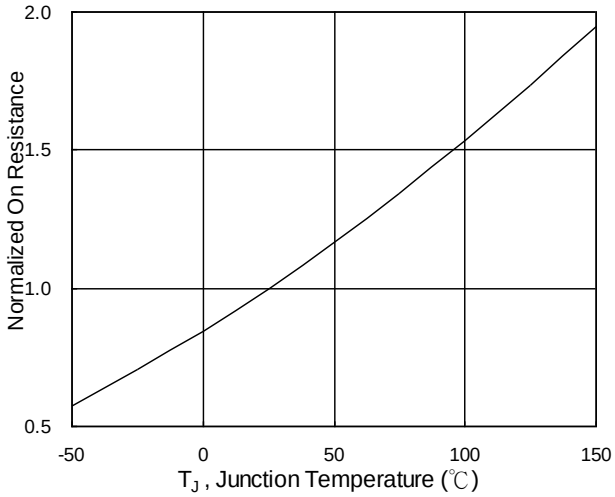


Fig.6 Normalized R_{DSON} v.s T_J

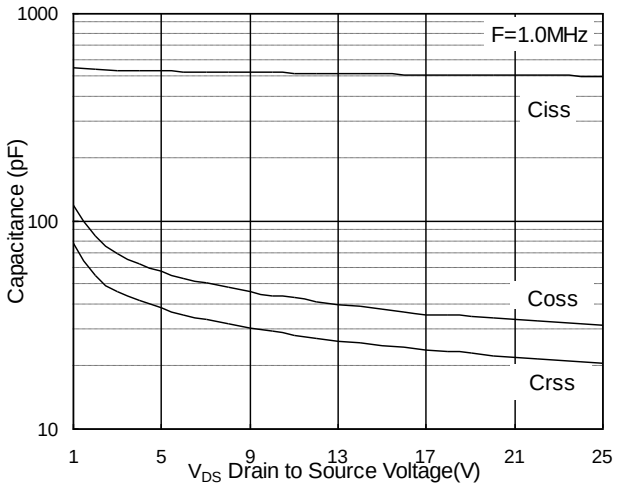


Fig.7 Capacitance

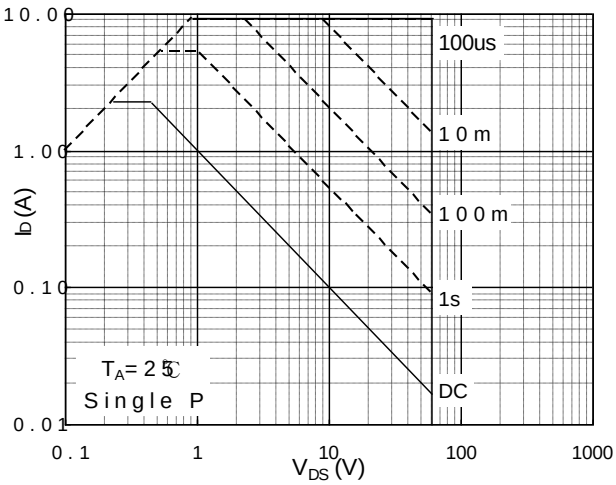


Fig.8 Safe Operating Area

Ratings and Characteristic Curves

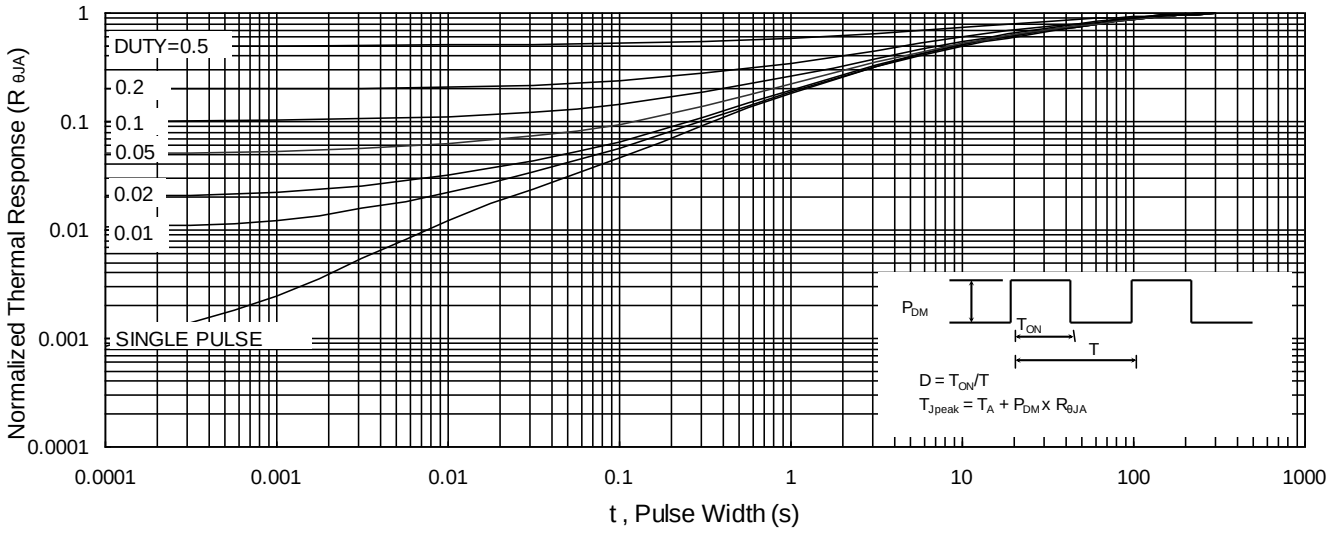


Fig.9 Normalized Maximum Transient Thermal Impedance

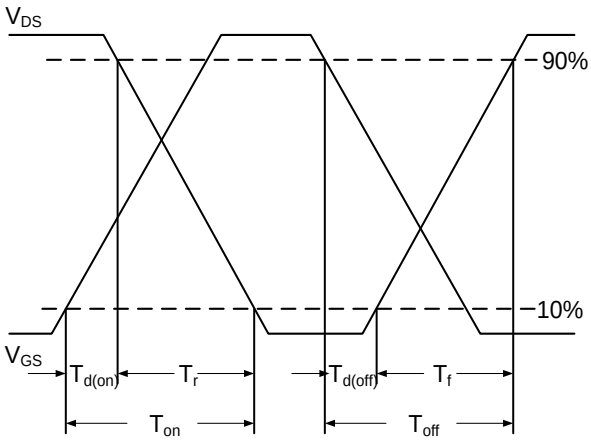


Fig.10 Switching Time Waveform

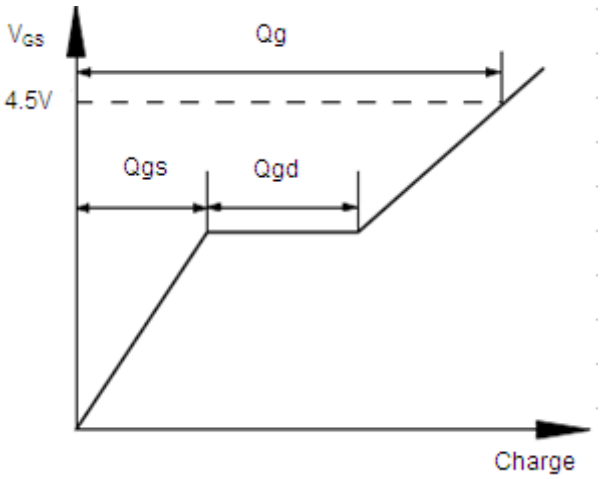
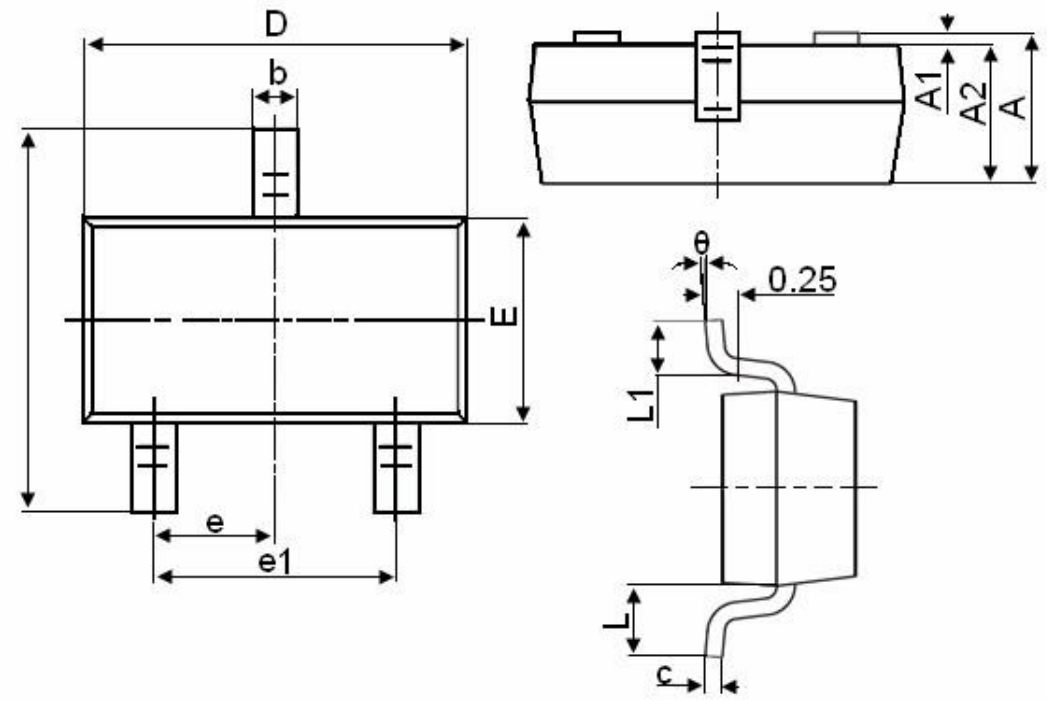


Fig.11 Gate Charge Waveform

Package Outline SOT-23



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°