

-60V P-Channel Enhancement Mode MOSFET

MAIN CHARACTERISTICS

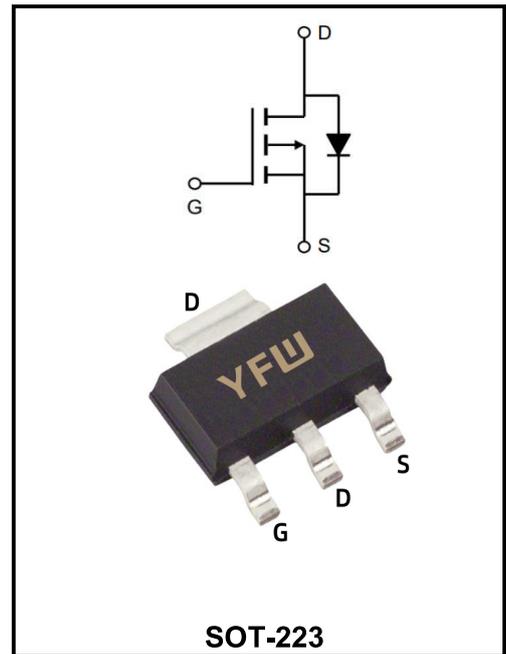
I_D	-8A
V_{DS}	-60V
R_{DS(on)-typ}(@V_{GS}=-10V)	< 100mΩ(Typ:75mΩ)
R_{DS(on)-typ}(@V_{GS}=-4.5V)	< 125mΩ(Typ:100mΩ)

FEATURES

- ◆High density cell design for low RDS(ON)
- ◆Voltage controlled small signal switch
- ◆Rugged and reliable
- ◆High saturation current capability
- ◆Load Switch for Portable Devices
- ◆DC/DC Converter

Mechanical Data

- ◆Case: SOT-223
- ◆Epoxy UL: 94V-0
- ◆Mounting Position: Any



Marking Code	
YFW8P06MSI	8P06

Absolute Maximum Ratings (T_c=25°C unless otherwise noted)

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current, V _{GS} @-10V (Note1)	TA = 25°C	I_D	-8	A
	TA = 100°C		-6.3	A
Pulsed Drain Current note1		I_{DM}	-24	A
Single Pulsed Avalanche Energy note4		E_{AS}	29.8	mJ
Avalanche Current		I_{AS}	-24.4	A
Power Dissipation	TA = 25°C	P_D	31.3	W
Thermal Resistance, Junction to Ambient (Note1)		R_{θJA}	125	°C/W
Thermal Resistance From Junction to Case (Note1)		R_{θJC}	40	°C/W
Storage Temperature Range		T_{STG}	-55 to 150	°C
Operating Junction Temperature Range		T_J	-55 to 150	°C

Electrical Characteristics (Ta =25°C, unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-60			V
BVDSS Temperature Coefficient	Reference to 25°C, $I_D = -1mA$	$\Delta BV_{DSS}/\Delta T_J$		-0.03		V/°C
Gate-Threshold voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-1.2	-1.75	-2.5	V
Zero Gate Voltage Drain current	$V_{DS}=-48V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}			-1	uA
	$V_{DS}=-48V, V_{GS}=0V, T_J=55^\circ C$				-5	
Gate-body Leakage	$V_{DS}=\pm 20V, V_{GS}=0V$	I_{GSS}			± 100	nA
Drain-Source On-Resistance (Note2)	$V_{GS}=-10V, I_D=-3A$	$R_{DS(on)}$		75	100	mΩ
	$V_{GS}=-4.5V, I_D=-2A$			100	125	
Diode forward voltage (Note2)	$I_S=-1A, V_{GS}=0V, T_J=25^\circ C$	V_{SD}			-1.2	V
Forward Transconductance	$V_{DS}=-5V, I_D=-3A$	g_{fs}		8.5		S
Continuous Source Current (Note1)	$V_G=V_D=0V$, Force Current	I_S			-13	A
Input Capacitance	$V_{GS}=0V$ $V_{DS}=-15V$ $f=1MHz$	C_{iss}		1137		pF
Output Capacitance		C_{oss}		76		
Reverse Transfer Capacitance		C_{rss}		50		
Gate charge total	$V_{DS}=-48V$ $I_D=-3A$ $V_{GS}=-4.5V$	Q_G		12.1		nC
Gate to Source Charge		Q_{GS}		2.2		
Gate to Drain Charge		Q_{GD}		6.3		
Turn-On Delay Time	$V_{GS}=-10V$ $V_{DD}=-15V$ $I_D=-1A$ $R_g=3.3\Omega$	$t_{d(ON)}$		9.2		nS
Turn-On Rise Time		t_r		20.1		
Turn-Off Delay Time		$t_{d(OFF)}$		46.7		
Turn-Off Fall Time		t_f		9.4		

Notes:

- 1.The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper
- 2.The data tested by pulsed , pulse width $\cong 300\mu s$, duty cycle $\cong 2\%$
- 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

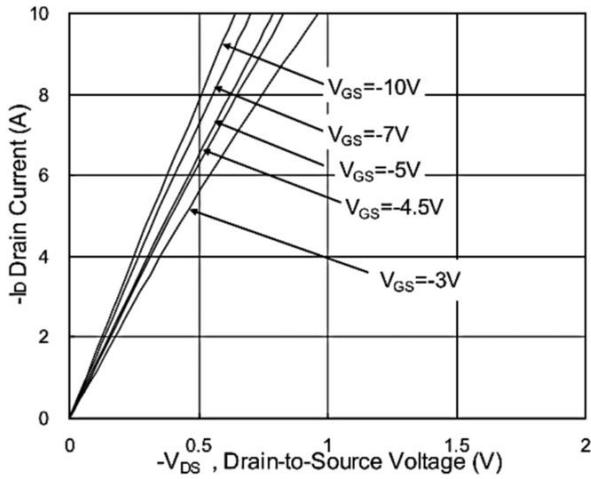


Fig.1 Typical Output Characteristics

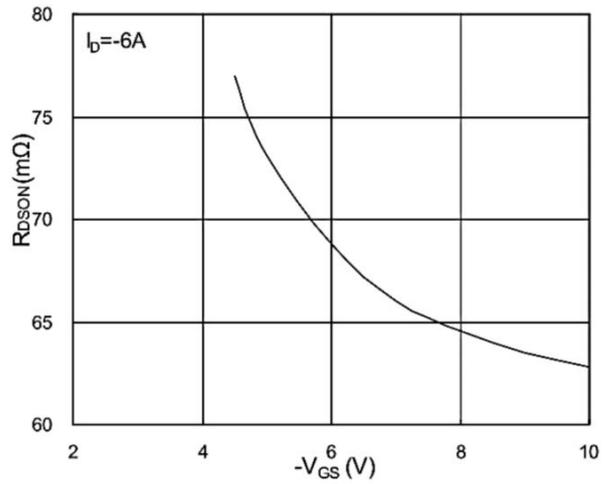


Fig.2 On-Resistance v.s Gate-Source

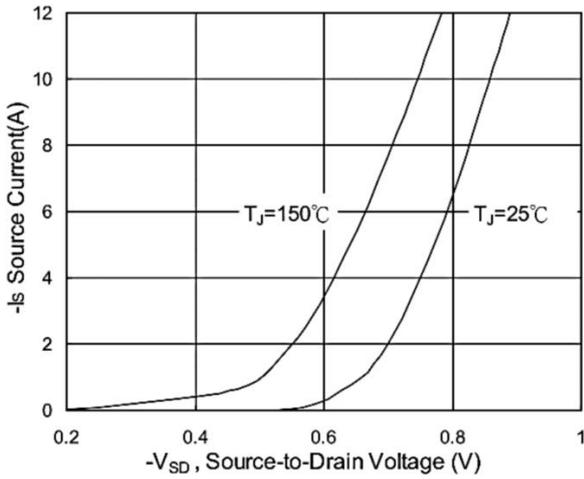


Fig.3 Forward Characteristics of Reverse

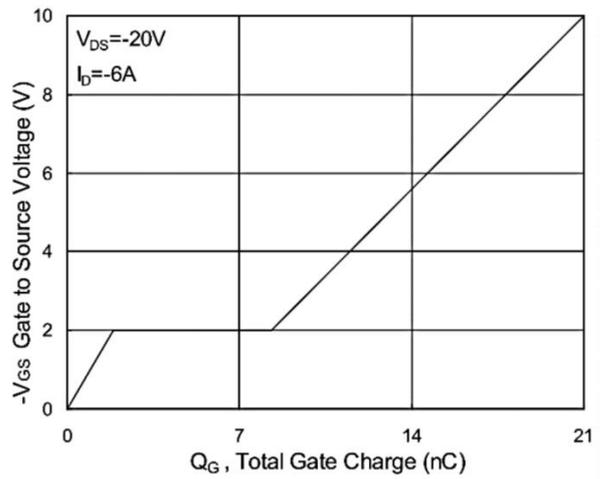


Fig.4 Gate-Charge Characteristics

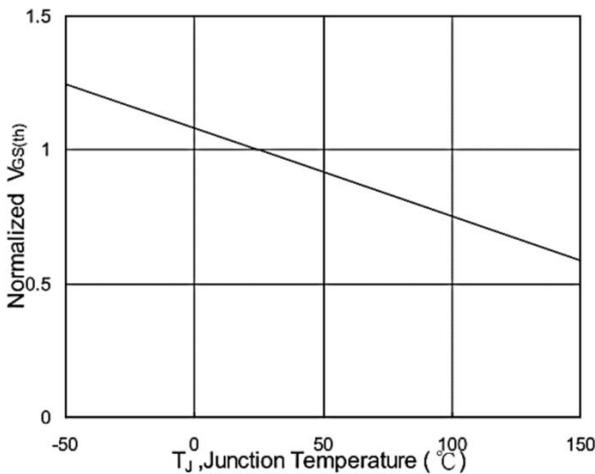


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

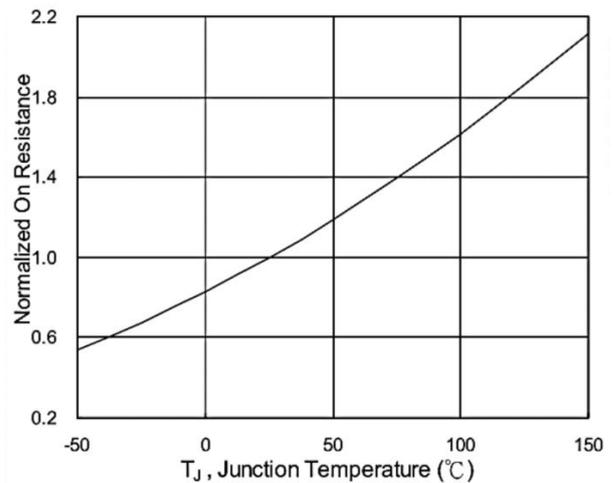


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

Typical Characteristics

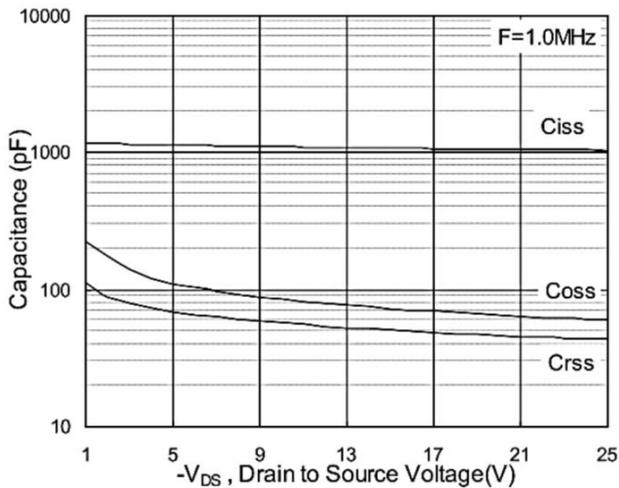


Fig.7 Capacitance

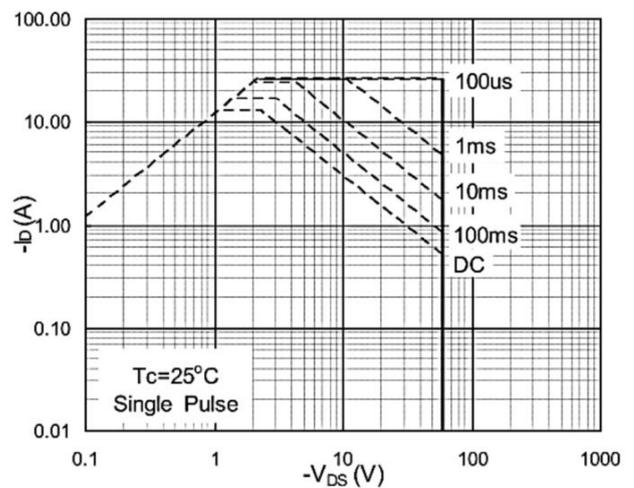


Fig.8 Safe Operating Area

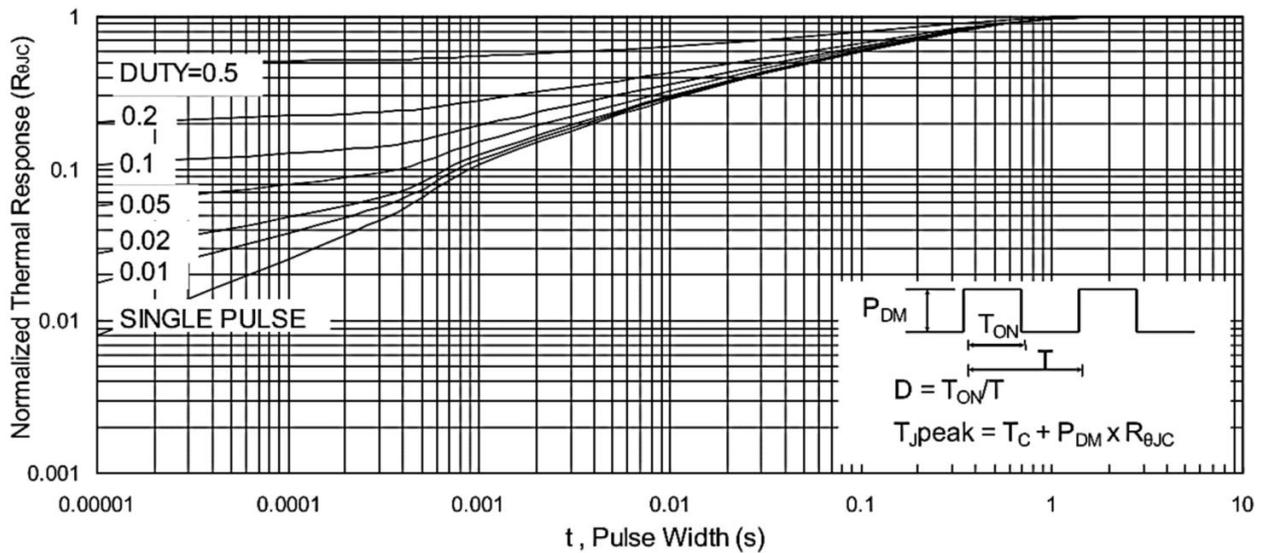


Fig.9 Normalized Maximum Transient Thermal Impedance

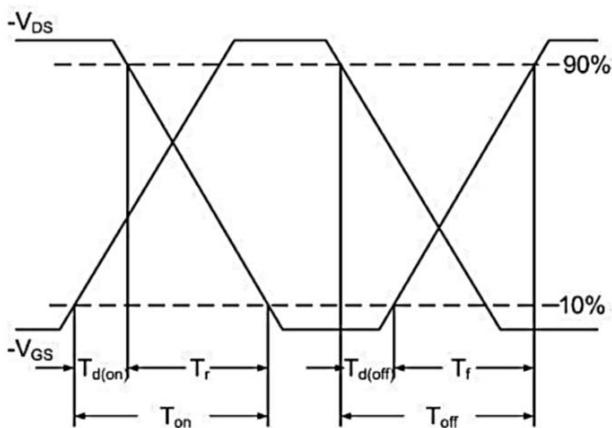


Fig.10 Switching Time Waveform

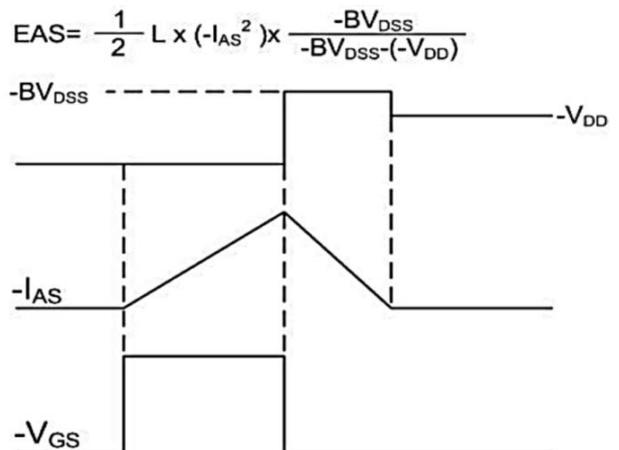


Fig.11 Unclamped Inductive Switching Waveform

Ordering information

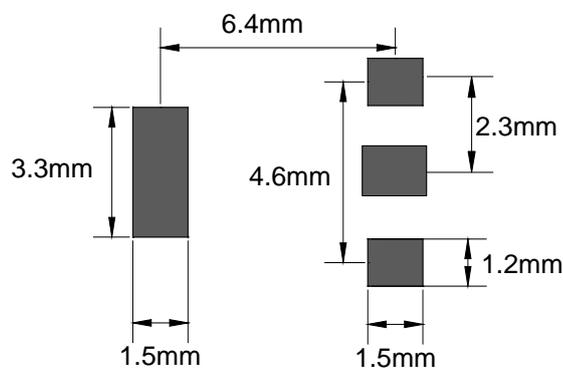
Package	Packing Description	Base Quantity	Packing Quantity
SOT-223	Tape/Reel, 7" reel	1000pcs/Reel	6000PCS/Box 30000PCS/Carton
	Tape/Reel, 13" reel	2500pcs/Reel	5000PCS/Box 30000PCS/Carton

Package Dimensions

SOT-223

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.50	1.80	0.059	0.071
A1	0.00	0.10	0.000	0.004
A2	1.50	1.70	0.059	0.067
b	0.65	0.75	0.026	0.030
c	0.20	0.30	0.008	0.012
D	6.40	6.60	0.252	0.260
D1	2.90	3.10	0.114	0.122
E	3.30	3.70	0.130	0.146
E1	6.85	7.15	0.270	0.281
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	1.65	1.85	0.065	0.073
L1	0.90	1.15	0.035	0.045

The recommended mounting pad size



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