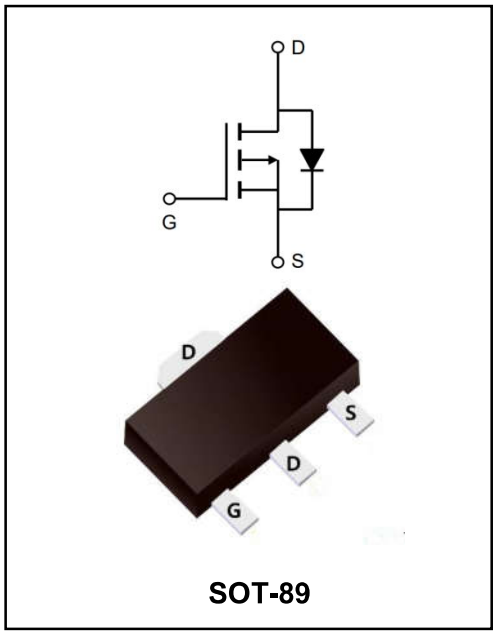
-60V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-10A
V_{DSS}	-60V
R_{DSON}-typ(@V_{GS}=-10V)	＜86mΩ(Typ:66mΩ)
R_{DSON}-typ(@V_{GS}=-4.5V)	＜106mΩ(Typ:82mΩ)



SOT-89

Marking Code	
YFW10P06SI	YFW 10P06

FEATURES

- 100%EAS Guaranteed
- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

DESCRIPTION

The YFW10P06SI is the high cell density trenched P-ch MOSFETs,which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The YFW10P06SI meet the RoHS and Green Product requirement, 100%EASguaranteed with full function reliability approved.

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V_{GS} @ -10V[1]@ T_A=25 ℃	I_D	-10	A
Continuous Drain Current, V_{GS} @ -10V[1]@T_A=70 ℃	I_D	-6.2	A
Pulsed Drain Current[2]	I_{DM}	-16.2	A
Single Pulse Avalanche Energy[3]	E_{AS}	69.7	mJ
Avalanche Current	I_{AS}	44.4	A
Total Power Dissipation[4] @ T_A=25 ℃	P_D	6.1	W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C
Max Thermal Resistance Junction-Ambient [1]	$R_{\theta JA}$	85	°C/W
Max Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	36	°C/W

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Characteristics	Test Condition	Symbols	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	BV_{DSS}	-60	-	-	V
BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=-1mA	$\triangle BV_{DSS}/\triangle TJ$	-	-0.03	-	V/℃
Static Drain-Source On-Resistance[2]	V_{GS}=-10V , I_D=-3A	$R_{DS(ON)}$	-	66	86	mΩ
	V_{GS}=-4.5V , I_D=-2A		-	82	106	
Gate Threshold Voltage	V_{GS}=V_{DS} I_D =-250uA	$V_{GS(th)}$	-1.2	-	-2.5	V
$V_{GS(th)}$ Temperature Coefficient		$\triangle V_{GS(th)}$	-	4.56	-	mV/℃
Drain-Source Leakage Current	V_{DS}=-48V , V_{GS}=0V , T_J=25℃	I_{DSS}	-	-	1	uA
	V_{DS}=-48V , 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=-3A	gfs	-	8.7	-	S
Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	Rg	-	15	-	Ω
Total Gate Charge (-4.5V)	V_{DS}=-48V V_{GS}=-4.5V I_D=-3A	Q_g	-	11.8	-	nC
Gate-Source Charge		Q_{gs}	-	1.9	-	
Gate-Drain Charge		Q_{gd}	-	6.5	-	
Turn-On Delay Time	V_{DD}=-15V V_{GS}=-10V R_G=3.3Ω I_D=-1A	$t_{d(on)}$	-	8.8	-	ns
Rise Time		T_r	-	19.6	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	47.2	-	
Fall Time		t_f	-	9.6	-	
Input Capacitance	V_{DS}=-15V , V_{GS}=0V , f=1MHz	C_{iss}	-	1080	-	pF
Output Capacitance		C_{oss}	-	73	-	
Reverse Transfer Capacitance		C_{rss}	-	50	-	
Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	I_S	-	-	-10	A
Pulsed Source Current[2,5]		I_{SM}	-	-	-16 .2	A
Diode Forward Voltage[2]	V_{GS}=0V , I_S=-1A , T_J=25℃	V_{SD}	-	-	-1.2	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 EAS data shows Max. rating . The test condition is V_{DD}=-25V,VGS=-10V,L=0. 1mH,I_{AS}=-24.4A

4.The power dissipation is limited by 150℃ junction temperature

5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

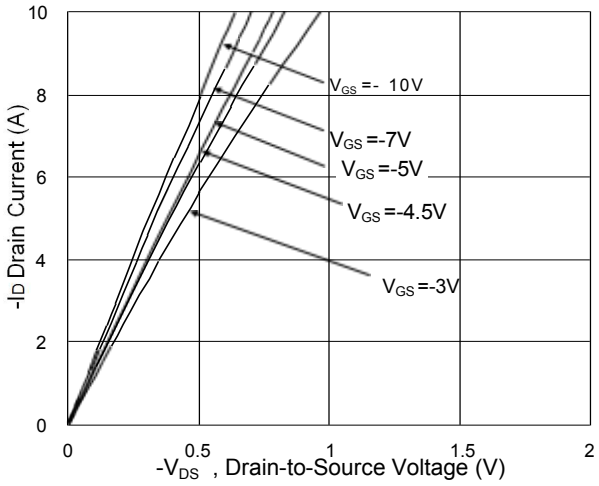


Fig. 1 Typical Output Characteristics

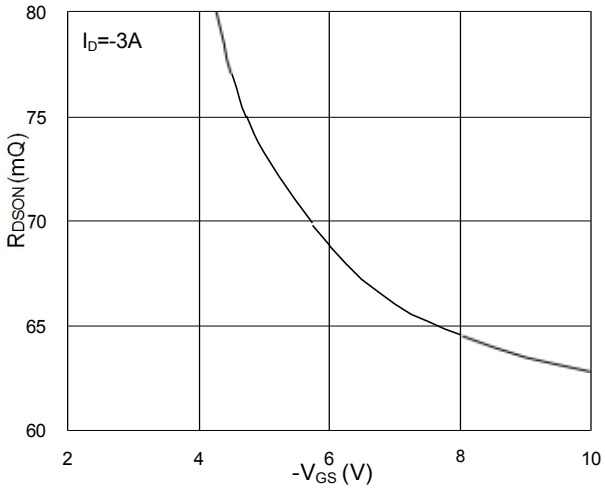


Fig. 2 On-Resistance v.s Gate-Source

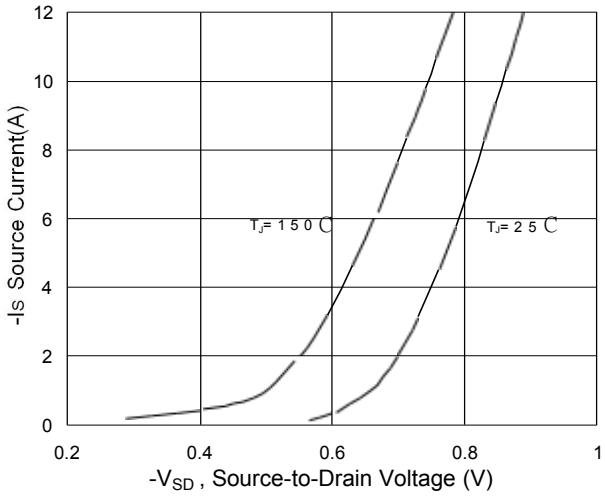


Fig. 3 Forward Characteristics of Reverse

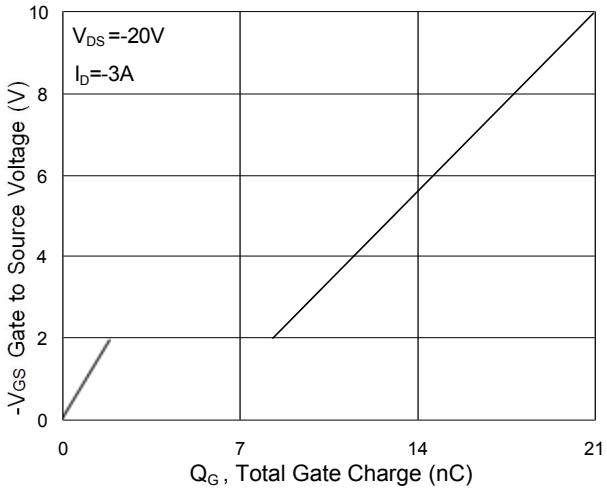


Fig. 4 Gate-Charge Characteristics

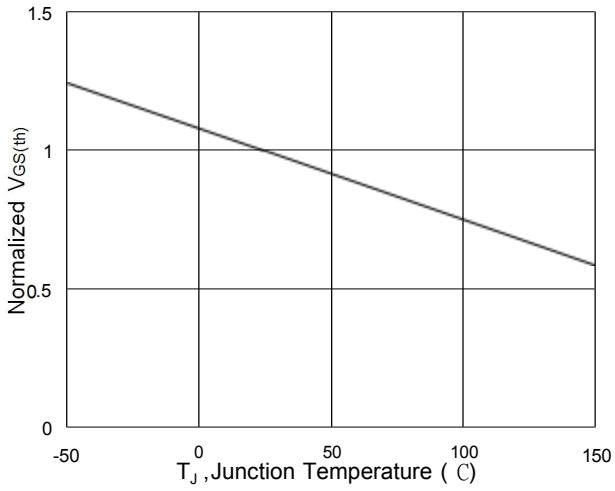


Fig. 5 Normalized $V_{GS(th)}$ vs. T_J

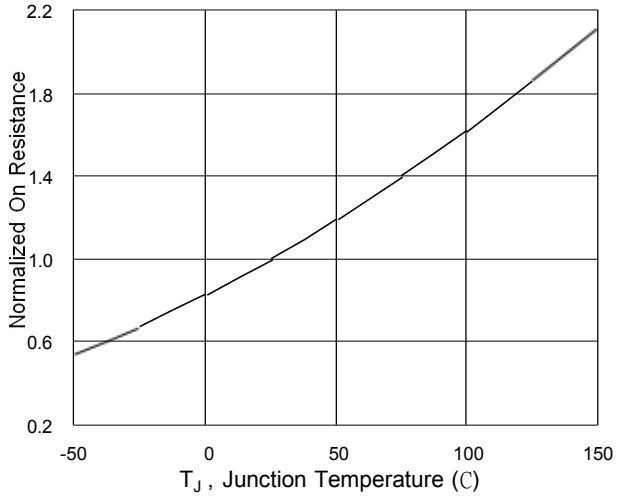


Fig. 6 Normalized R_{DSON} vs. T_J

Typical Characteristics

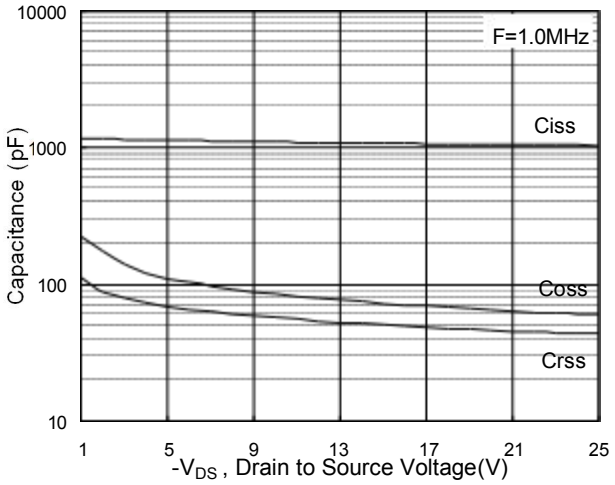


Fig.7 Capacitance

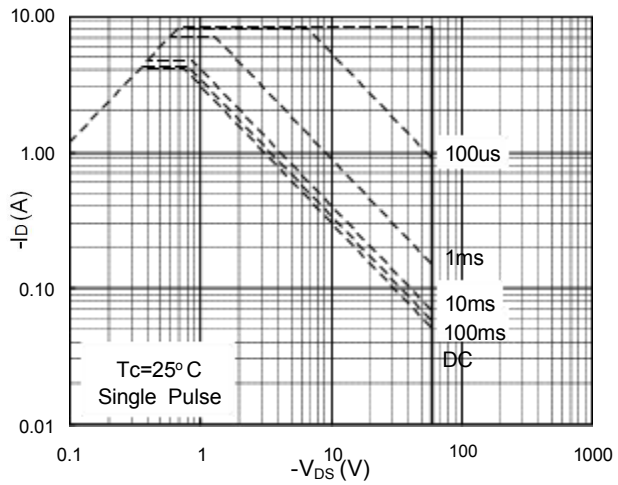


Fig.8 Safe Operating Area

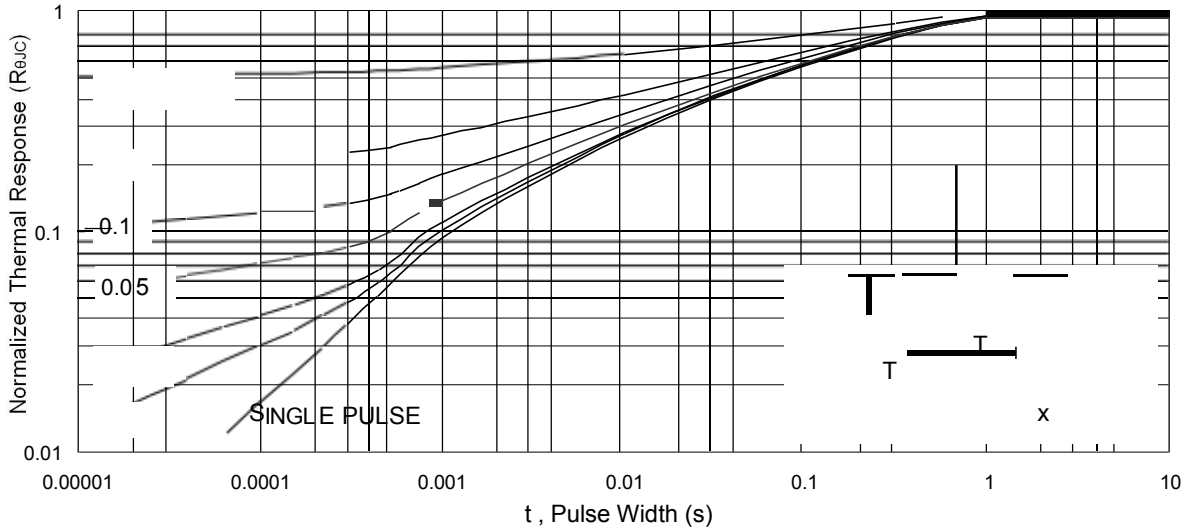


Fig. 9 Normalized Maximum Transient Thermal Impedance

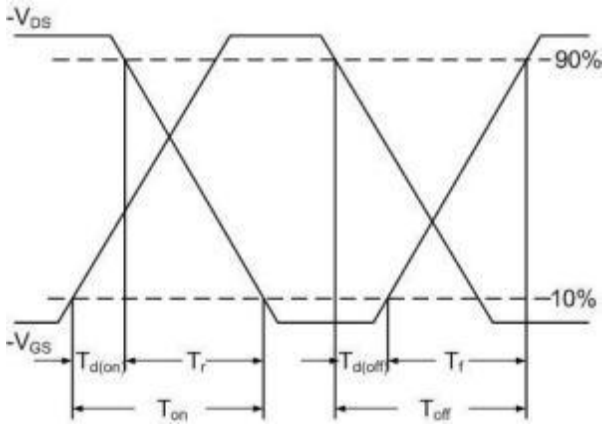


Fig.10 Switching Time Waveform

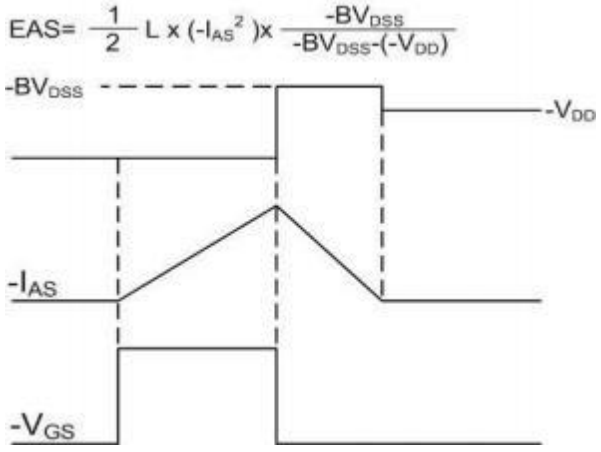


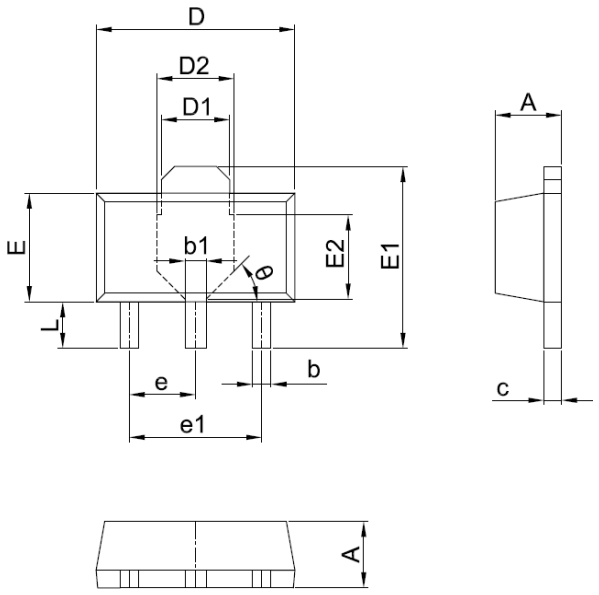
Fig.11 Unclamped Inductive Waveform

Ordering information

Package	Packing Description	Base Quantity	Packing Quantity
SOT-89	Tape/Reel,7"reel	1000pcs/Reel	6000PCS/Box 30000PCS/Carton

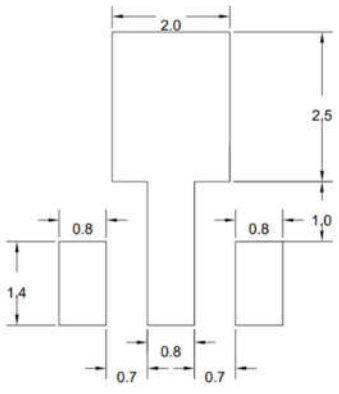
Package Dimensions

SOT-89



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.40	1.60	0.055	0.063
b	0.32	0.52	0.013	0.020
b1	0.38	0.58	0.015	0.023
c	0.35	0.45	0.014	0.018
D	4.40	4.60	0.173	0.181
D1	1.45	1.65	0.057	0.065
D2	1.70	1.80	0.067	0.071
E	2.30	2.60	0.091	0.102
E1	3.95	4.25	0.156	0.167
E2	1.80	2.00	0.071	0.079
e	1.40	1.60	0.055	0.063
e1	2.80	3.20	0.110	0.126
L	0.90	1.20	0.035	0.047

The recommended mounting pad size



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