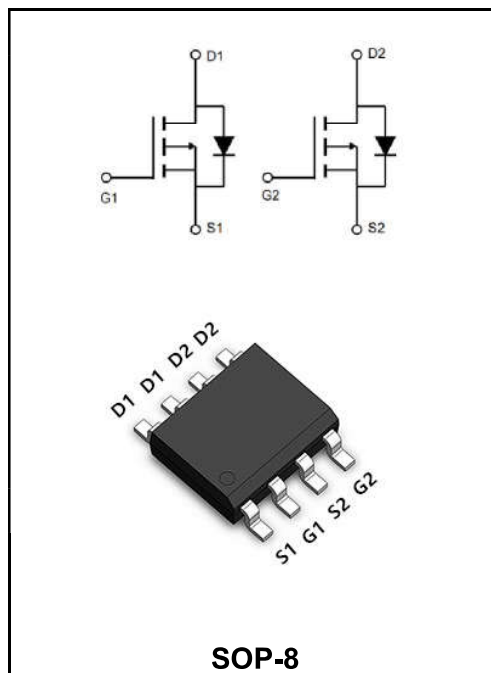


-30V P+P-Channel Enhancement Mode MOSFET

MAIN CHARACTERISTICS

I_D	-10A
V_{DSS}	-30V
$R_{DS(on)}-typ(@V_{GS}=-10V)$	$< 20m\Omega$ (Typ:16 mΩ)
$R_{DS(on)}-typ(@V_{GS}=-4.5V)$	$< 30m\Omega$ (Typ:23 mΩ)



DESCRIPTION

The YFW10V03S uses advanced trench technology to provide excellent RDS(ON), low gate charge and operation with gate voltages as low as -4.5V. This device is suitable for use as a Battery protection or in other Switching application.

APPLICATION

- ♦Lithium battery protection
- ♦Wireless impact
- ♦Mobile phone fast charging

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, V_{GS} @ -10V ¹ @T _C =25°C	I_D	-10	A
Continuous Drain Current, V_{GS} @ -10V ¹ @T _C =100°C	I_D	-6	A
Pulsed Drain Current ⁽²⁾	I_{DM}	-25	A
Single Pulse Avalanche Energy ⁽³⁾	E_{AS}	44	mJ
Avalanche Current	I_{AS}	-16	A
Total Power Dissipation ⁴ @T _A =25°C	P_D	2.1	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	62.5	°C/W
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	60	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-30	-33	-	V
Drain-Source Leakage Current	$V_{DS}=-30V, V_{GS}=0V$	I_{DSS}	-	-	-1.0	μA
Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate-Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-1.0	-1.5	-2.5	V
Static Drain-Source ON-Resistance ⁽³⁾	$V_{GS}=-10V, I_D=-10A$	$R_{DS(on)}$	-	16	20	m Ω
	$V_{GS}=-4.5V, I_D=-5A$		-	23	30	
Input Capacitance	$V_{DS} = -15V$ $V_{GS} = 0V$ $f = 1.0MHz$	C_{iss}	-	1550	-	pF
Output Capacitance		C_{oss}	-	327	-	
Reverse Transfer Capacitance		C_{rss}	-	278	-	
Total Gate Charge	$V_{DS} = -15V$ $I_D = -9.1A$ $V_{GS} = -10V$	Q_g	-	30	-	nC
Gate-Source Charge		Q_{gs}	-	5.3	-	
Gate-Drain Charge		Q_{gd}	-	7.6	-	
Turn-on delay time	$V_{DD} = -15V$ $I_D = -6A$ $V_{GS} = -10V$ $R_{GEN} = 2.5\Omega$	$t_{d(on)}$	-	14	-	ns
Rise Time		T_r	-	20	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	95	-	
Fall Time		t_f	-	65	-	
Maximum Continuous Drain to Source Diode Forward Current		I_S	-	-	-10	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}			-25	A
Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_S = -11A$	V_{SD}	-	-0.8	-1.2	V

Note :

- 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 $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、The EAS data shows Max. rating . The test condition is $V_{DD}=-15V, V_{GS}=-10V, L=0.5mH, I_{AS}=-16A$
- 4、The power dissipation is limited by 150°C junction temperature
- 5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

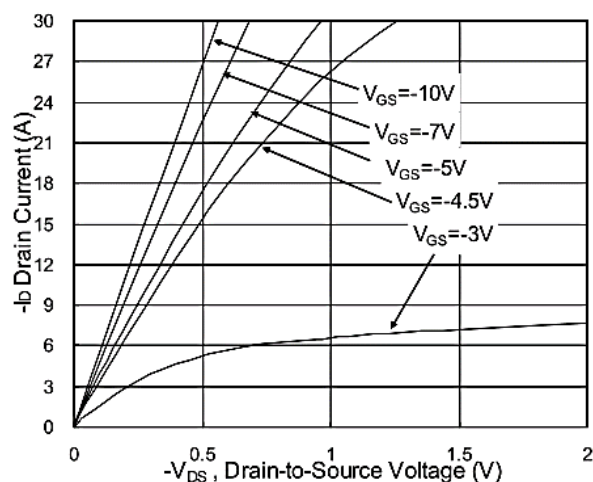


Fig.1 Typical Output Characteristics

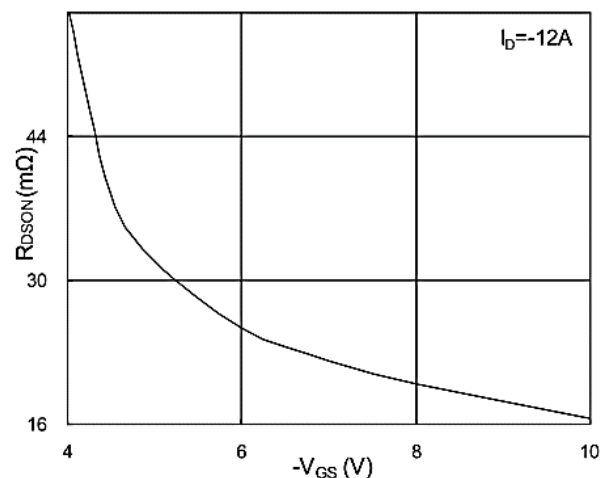


Fig.2 On-Resistance v.s Gate-Source

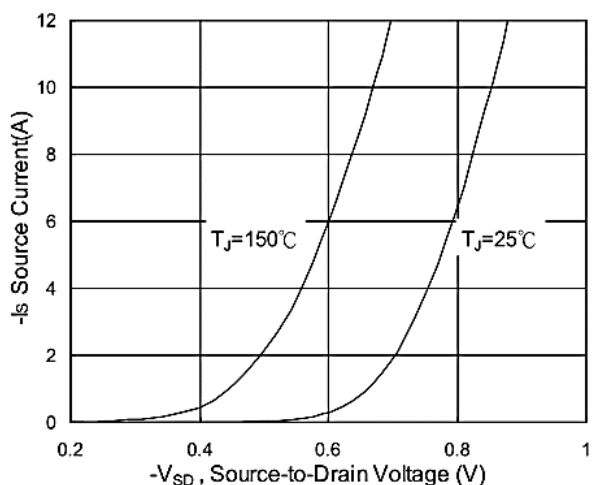


Fig.3 Forward Characteristics of Reverse

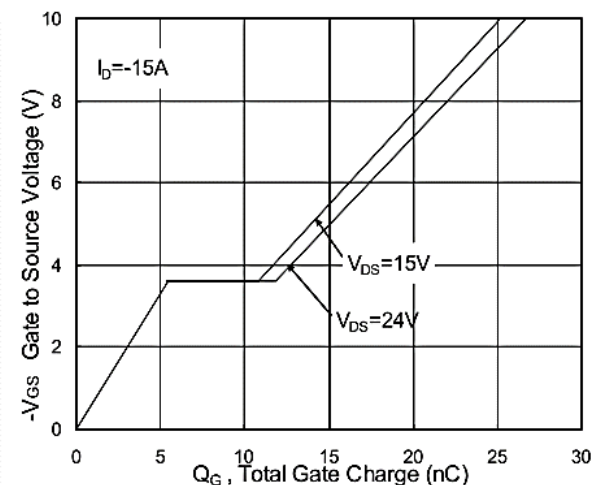


Fig.4 Gate-Charge Characteristics

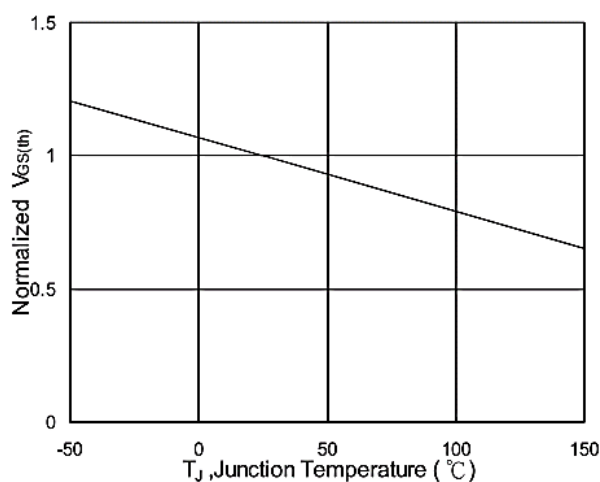


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

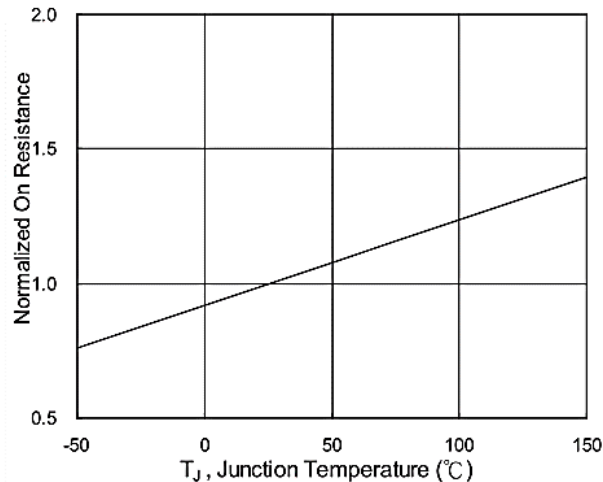


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

Typical Characteristics

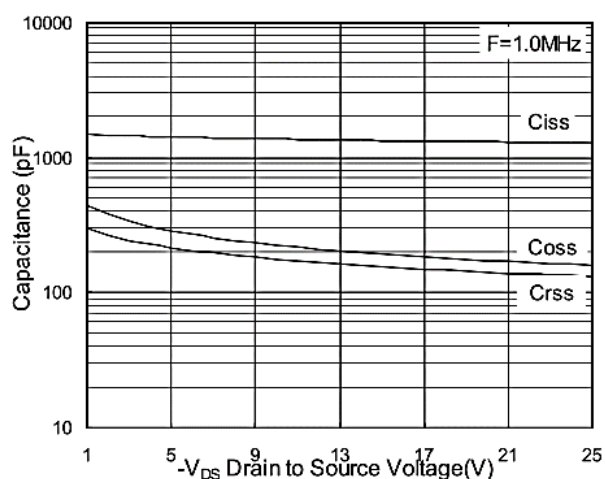


Fig.7 Capacitance

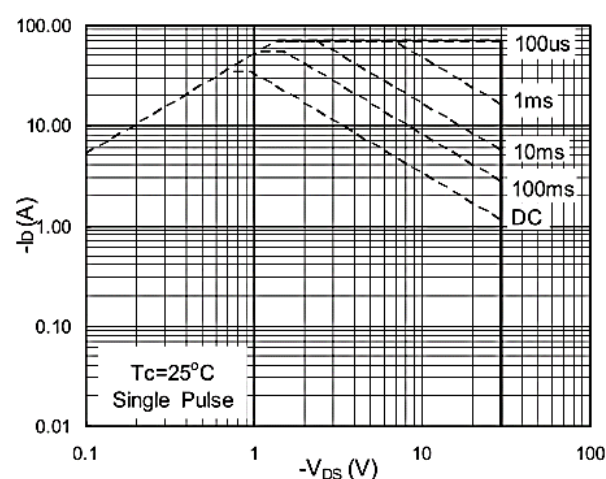


Fig.8 Safe Operating Area

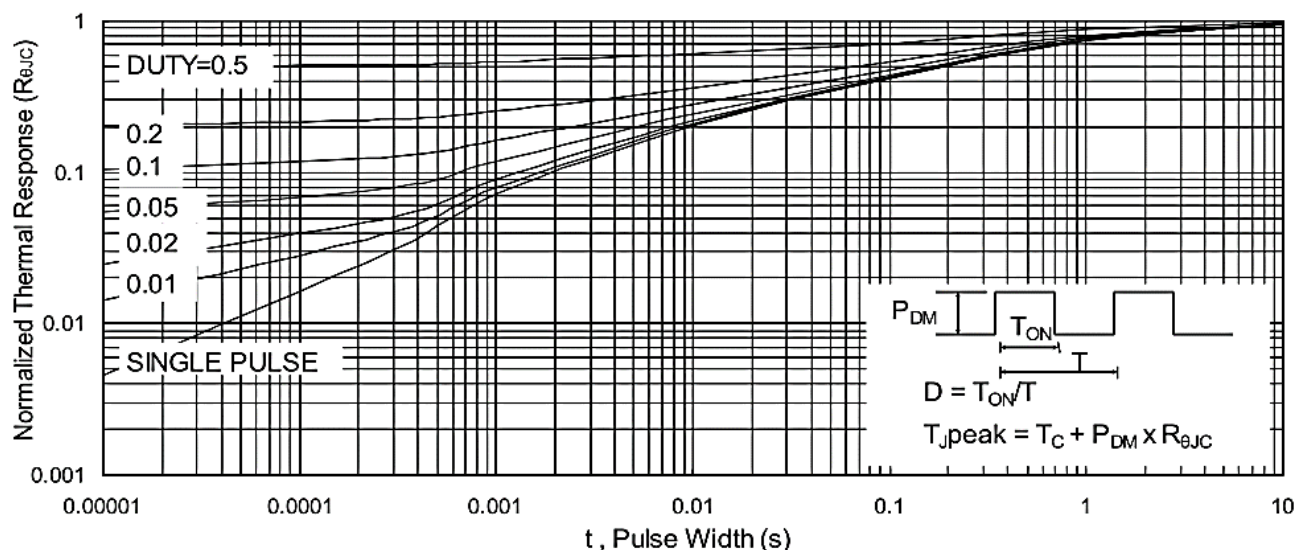


Fig.9 Normalized Maximum Transient Thermal Impedance

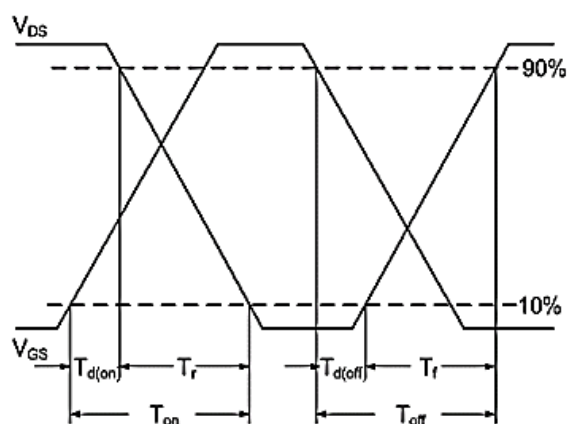


Fig.10 Switching Time Waveform

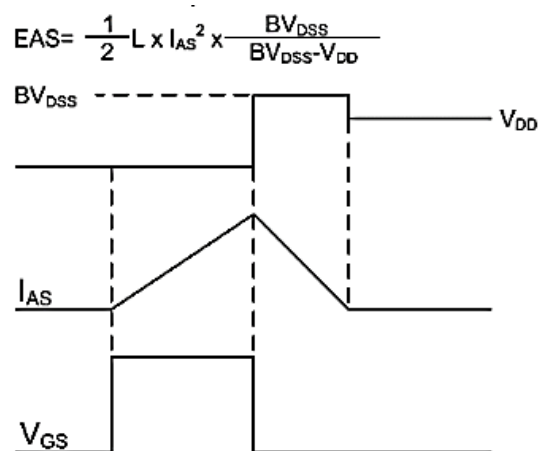
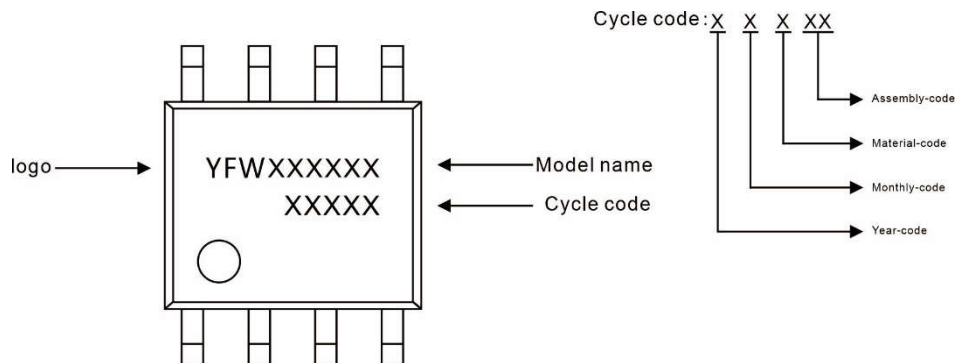


Fig.11 Unclamped Inductive Switching Waveform

Marking Diagram



Ordering information

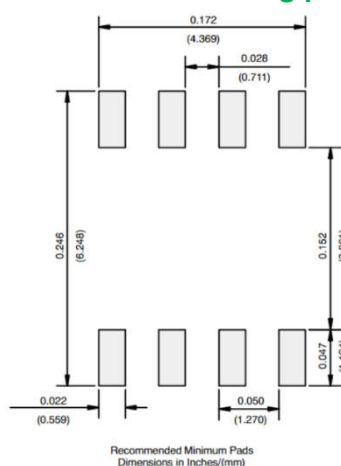
Package	Packing Description	Packing Quantity
SOP-8	Tape/Reel, 13" reel	3000PCS/Reel 30000PCS/Carton

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

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