

60V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

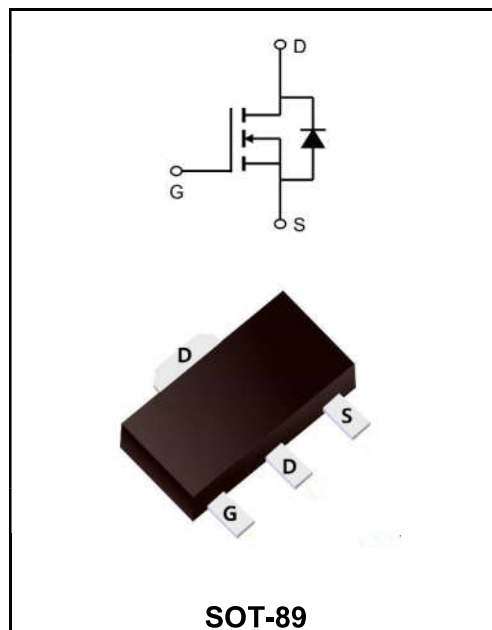
I_D	5A
V_{DSS}	60V
R_{DS(on)-typ}(@V_{GS}=10V)	<31mΩ(Typ:23mΩ)

Features/Application

- ◆Power Switching Application
- ◆Uninterruptible power supply
- ◆DC-DC convertor

Mechanical Data

- ◆SOT-89Small Outline Plastic Package.
- ◆Epoxy UL: 94V-0.
- ◆Mounting Position: Any.



SOT-89

Marking Code

YFW5N06SI	YFW5N06SI
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Maximum Ratings & Thermal Characteristics

Ratings at 25°C ambient temperature unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	60	V
Gate - Source Voltage	V_{GS}	±20	V
Pulsed Drain Current	I_D	5	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	40	A
Power Dissipation ⁽²⁾	P_D	1.78	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction-Ambient ⁽³⁾	R_{θJA}	56	K/W

Electrical Characteristics

Ratings at 25°C ambient temperature 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}	60	-	-	V
Static Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=5A$	$R_{DS(ON)}$	-	23	31	mΩ
	$V_{GS}=4.5V, I_D=3A$		-	27	38	
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1	1.5	2.5	V
Gate resistance	$f=1MHz$	R_G	-	-	1700	mΩ
Drain -Source Leakage Current	$V_{DS}=60V, V_{GS}=0V, T_J=25^{\circ}C$	I_{DSS}	-	-	1	μA
	$V_{DS}=60V, V_{GS}=0V, T_J=155^{\circ}C$		-	-	100	
Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Total Gate Charge	$V_{DS}=30V$ $V_{GS}=10V$ $I_D=5A$	Q_g	-	2.2	-	nC
Gate-Source Charge		Q_{gs}	-	3.2	-	
Gate-Drain Charge		Q_{gd}	-	4.3	-	
Turn-on delay time	$V_{DD}=30V$ $V_{GS}=10V$ $R_G=2.2\Omega$ $I_D=5A$	$t_{d(on)}$	-	8	-	ns
Rise Time		T_r	-	20	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	21	-	
Fall Time		t_f	-	2	-	
Input Capacitance	$V_{DS}=30V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	1150	-	pF
Output Capacitance		C_{oss}	-	65	-	
Reverse Transfer Capacitance		C_{rss}	-	55	-	
Maximum Body-Diode Continuous Current		I_S	-	-	5	A
Diode Forward Voltage	$V_{GS}=0V, I_S=5A$	V_{SD}	-	-	1.2	V
Reverse Recovery Time	$I_F=5A, di/dt=100A/\mu s$	t_{rr}	-	26	-	ns
Reverse Recovery Charge		Q_{rr}	-	18	-	nC

Notes:

(1) Repetitive rating; pulse width limited by max. junction temperature.

(2) Pd is based on max. junction temperature, using junction-case thermal resistance.

(3) The value of $R_{\theta JA}$ is measured with the device mounted on 1 in2 FR-4 board with 2oz. Copper, in the still air environment with $T_A=25^{\circ}C$. The maximum allowed junction temperature of $150^{\circ}C$. The value in any given application depends on the user's

Typical characteristics

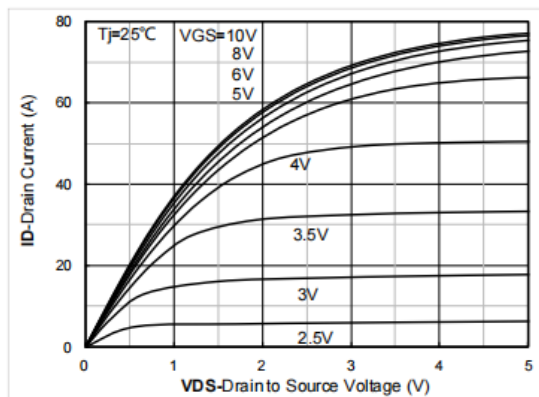


Figure 1. Output Characteristics

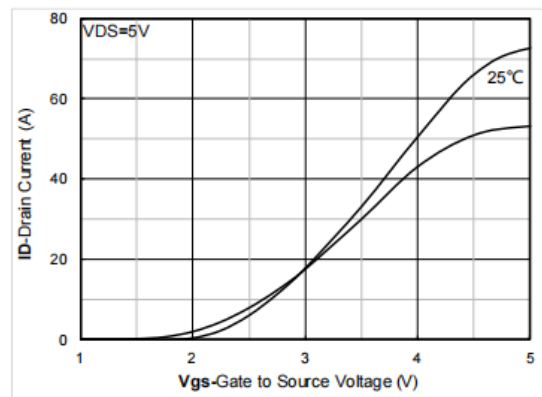


Figure 2. Transfer Characteristics

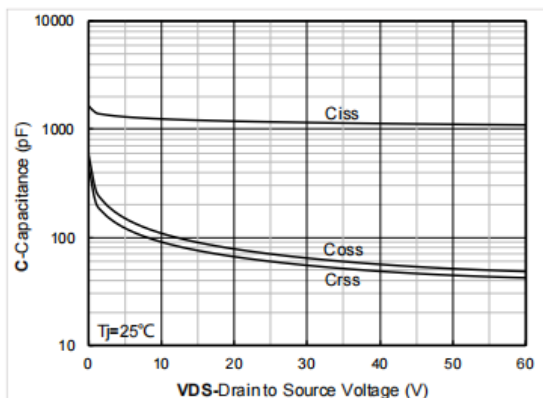


Figure 3. Capacitance Characteristics

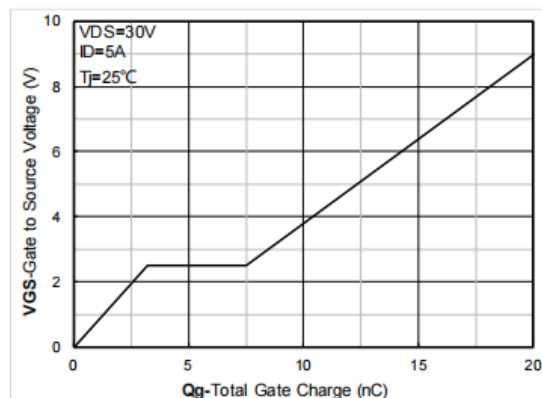


Figure 4. Gate Charge

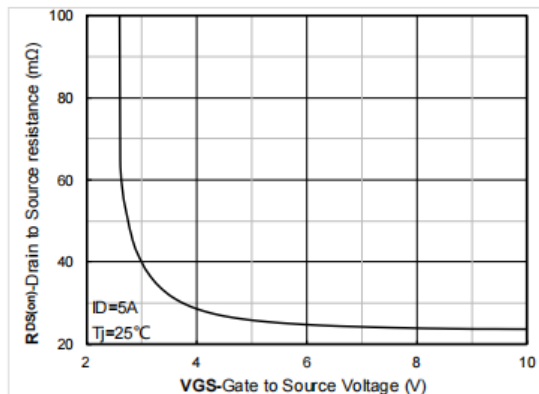


Figure 5. On-Resistance vs Gate to Source Voltage

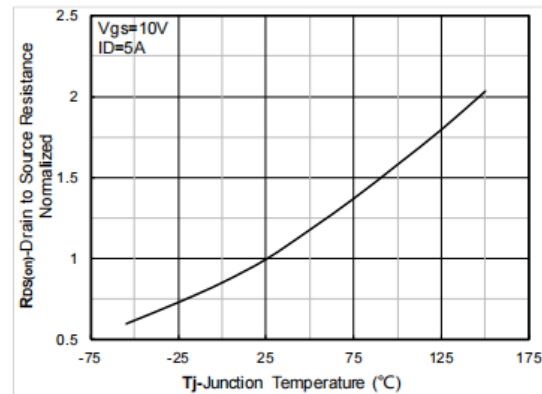


Figure 6. Normalized On-Resistance

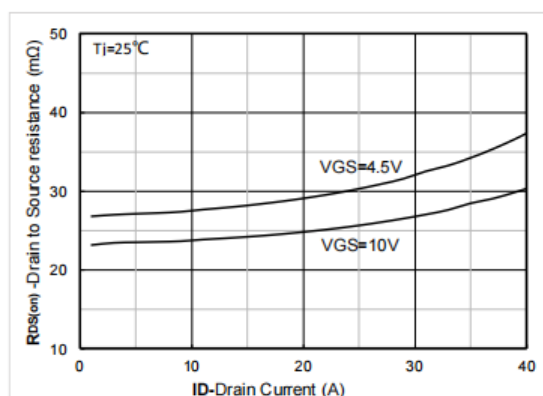


Figure 7. RDS(on) VS Drain Current

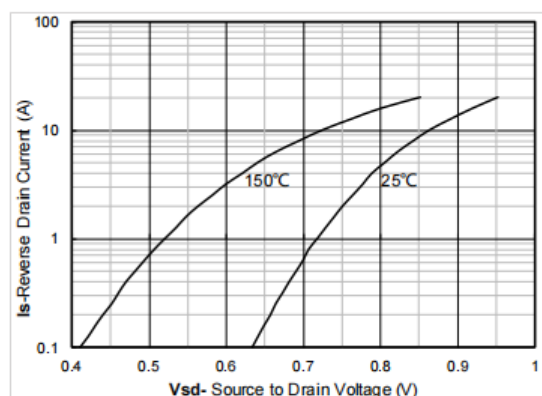


Figure 8. Forward characteristics of reverse diode

Typical characteristics

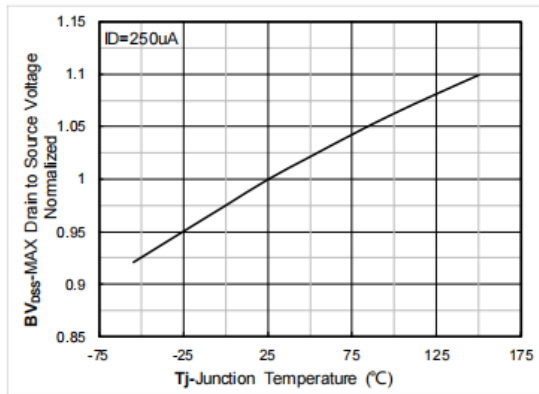


Figure 9. Normalized breakdown voltage

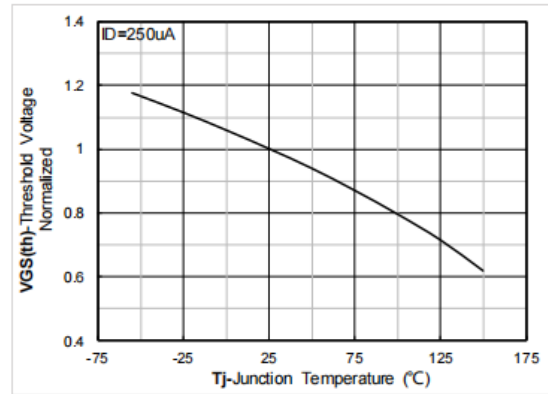


Figure 10. Normalized Threshold voltage

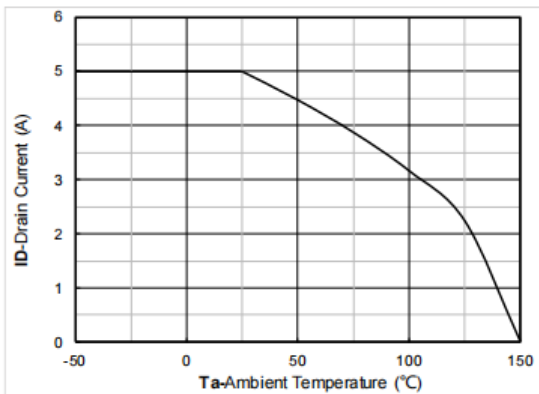


Figure 11. Current dissipation

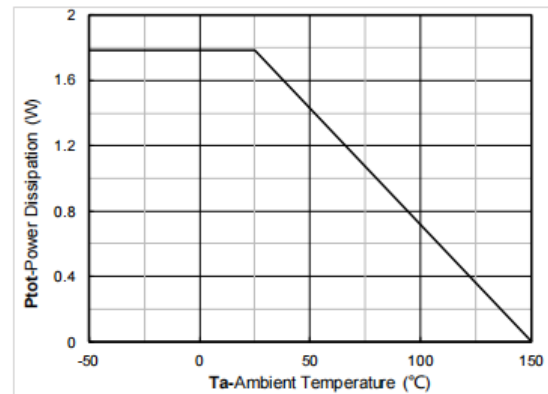


Figure 12. Power dissipation

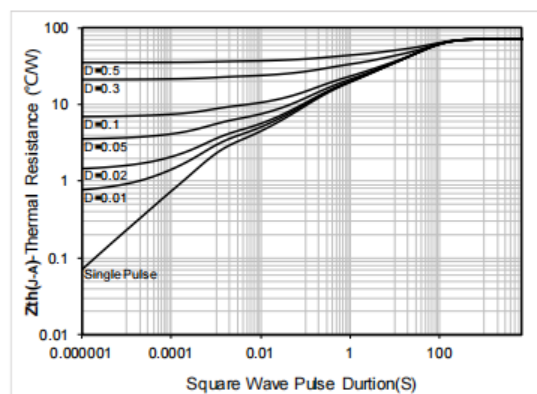


Figure 13. Maximum Transient Thermal Impedance

Ordering information

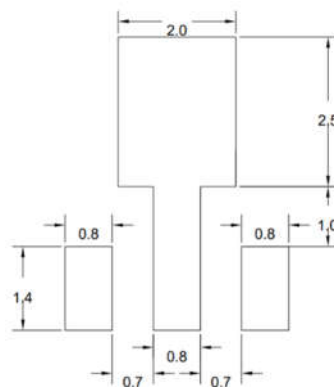
Package	Packing Description	Base Quantity	Packing Quantity
SOT-89	Tape/Reel, 7" reel	1000pcs/Reel	6000PCS/Box 30000PCS/Carton

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



UNIT:MM

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