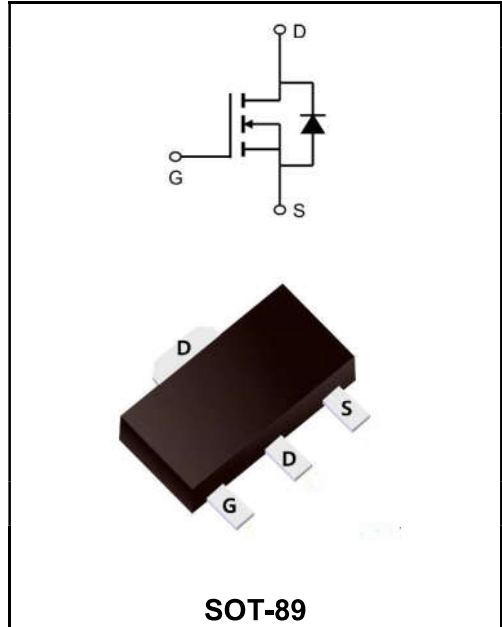


100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	5A
V_{DSS}	100V
R_{DS(on)-typ(@V_{GS}=10V)}	< 110mΩ (Type:88 mΩ)



Application

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

Product Specification Classification

Part Number	Package	Marking	Pack
YFW5N10SI	SOT-89	5N10SI	3000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	100	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V _{GS} @ 10V ¹ @T _A =25 °C	I_D	5	A
Continuous Drain Current, V _{GS} @ 10V ¹ @T _A =70 °C	I_D	3.6	A
Pulsed Drain Current ²	I_{DM}	15	A
Total Power Dissipation ³ @T _A =25 °C	P_D	3.5	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_{θJA}	85	°C/W
Thermal Resistance Junction-Case ¹	R_{θJC}	40	°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}	100	-	-	V
BVDSS Temperature Coefficient	Reference to 25°C, $I_D=1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	0.122	-	V/°C
Static Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=3A$	$R_{DS(on)}$	-	88	110	mΩ
	$V_{GS}=4.5V, I_D=2A$		-	95	125	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	1.6	2.5	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	-4.84	-	mV/°C
Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	10	μA
	$V_{DS}=100V, V_{GS}=0V, T_J=55^\circ C$		-	-	100	
Gate -Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Forward Transconductance	$V_{DS}=5V, I_D=2A$	g_{fs}	-	10.2	-	S
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	R_g	-	2.3	4.6	Ω
Total Gate Charge(10V)	$V_{DS}=60V$ $V_{GS}=10V$ $I_D=2A$	Q_g	-	25.5	-	nC
Gate-Source Charge		Q_{gs}	-	4.2	-	
Gate-Drain Charge		Q_{gd}	-	4.3	-	
Turn-on delay time	$V_{DD}=50V$ $V_{GS}=10V$ $I_D=1A$ $R_G=3.3\Omega$	$t_{d(on)}$	-	17.3	-	ns
Rise Time		T_r	-	2.8	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	50	-	
Fall Time		t_f	-	2.8	-	
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	677	-	pF
Output Capacitance		C_{oss}	-	46	-	
Reverse Transfer Capacitance		C_{rss}	-	32	-	
Continuous Source Current ^{1,4}	$V_G=V_D=0V, \text{Force Current}$	I_S	-	-	2	A
Pulsed Source Current ^{2,4}		I_{SM}	-	-	4	A
Diode Forward Voltage ²	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	V_{SD}	-	-	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 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.

Ratings and Characteristic Curves

Typical Characteristics

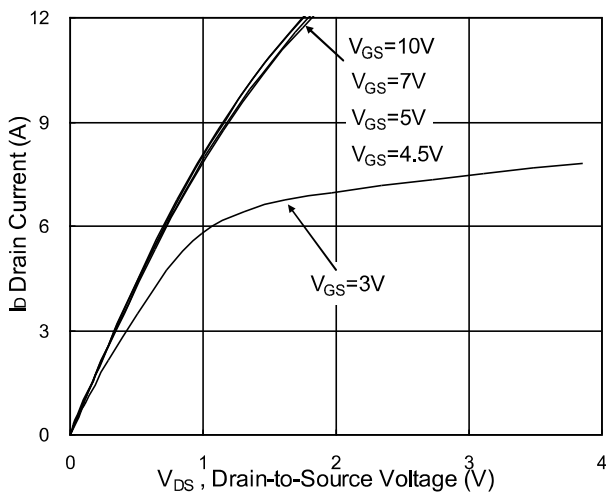


Fig.1 Typical Output Characteristics

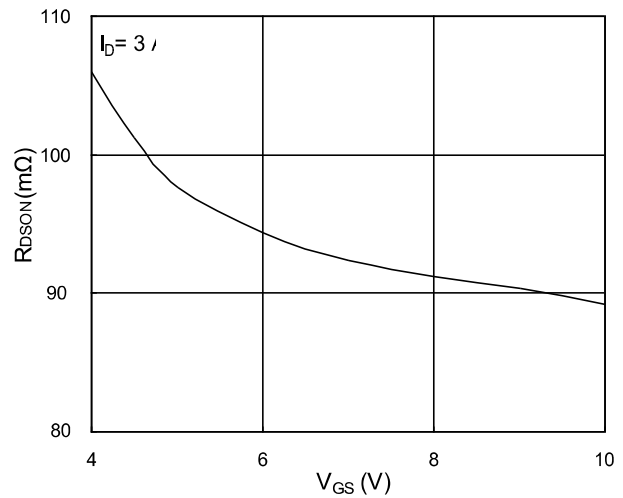


Fig.2 On-Resistance vs. Gate-Source

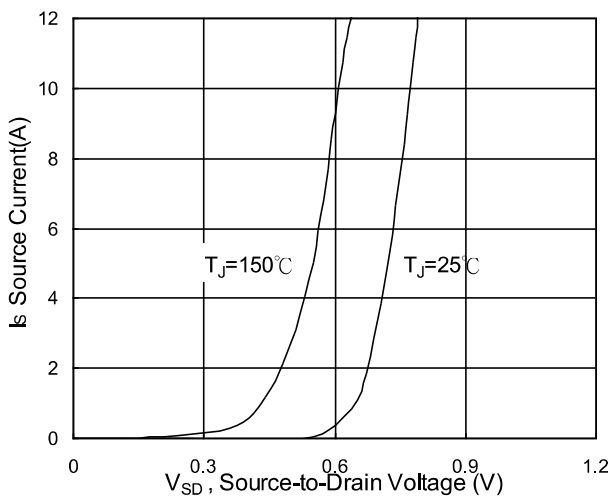


Fig.3 Forward Characteristics Of Reverse

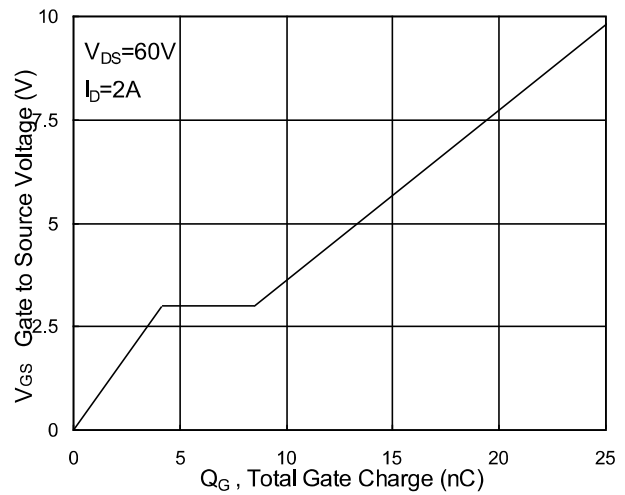


Fig.4 Gate-Charge Characteristics

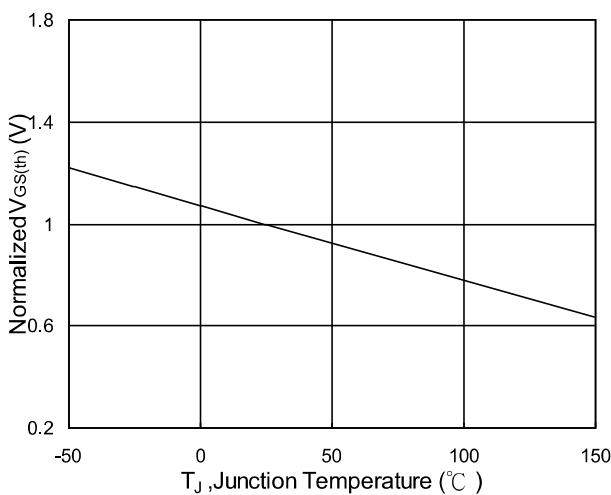


Fig.5 Normalized V_{GS(th)} vs. T_J

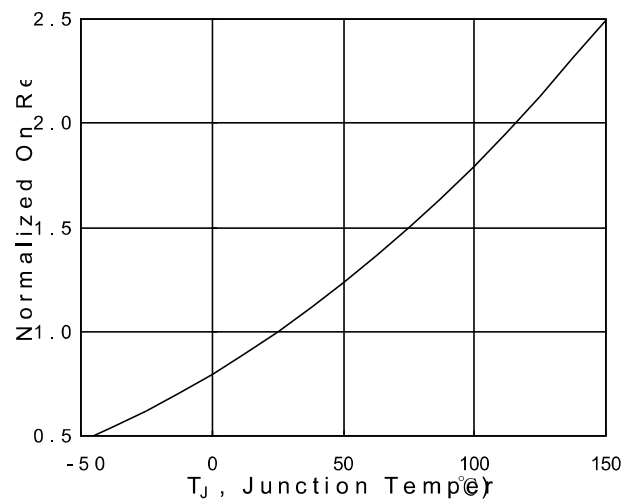


Fig.6 Normalized R_{DS(on)} vs. T_J

Ratings and Characteristic Curves

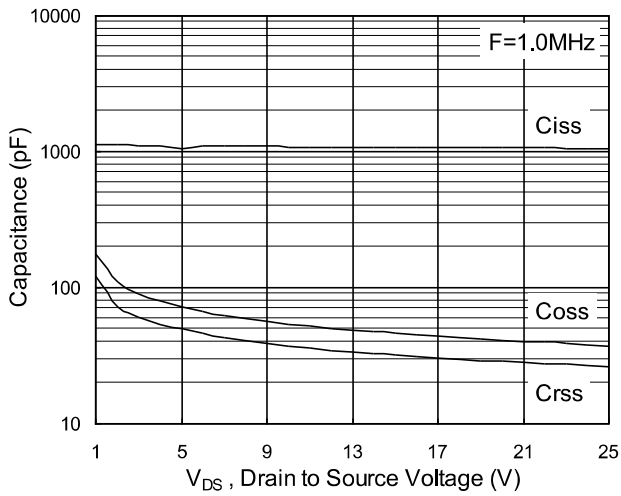


Fig.7 Capacitance

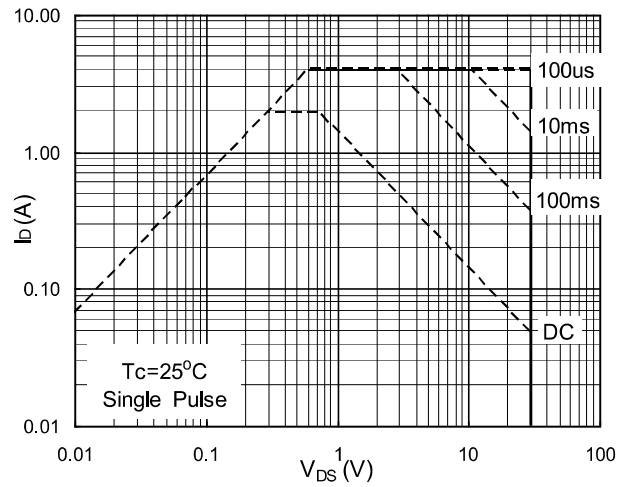


Fig.8 Safe Operating Area

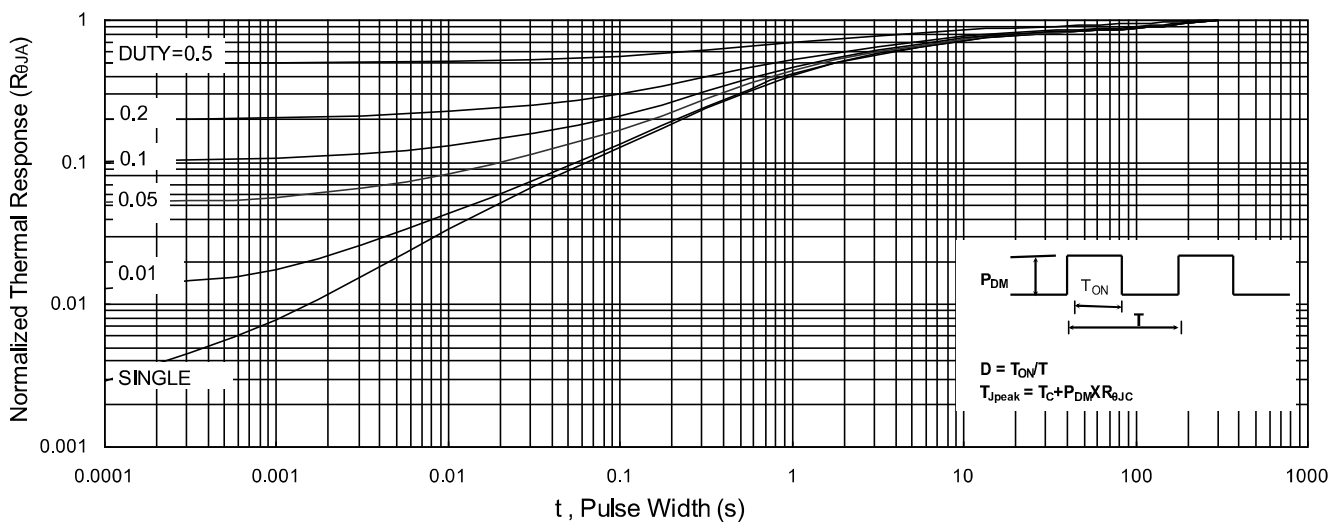


Fig.9 Normalized Maximum Transient Thermal Impedance

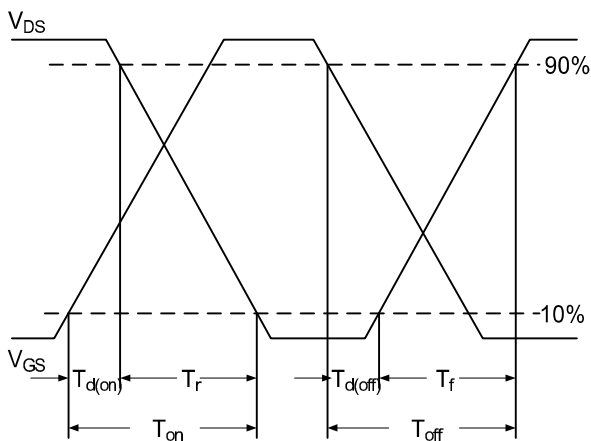


Fig.10 Switching Time Waveform

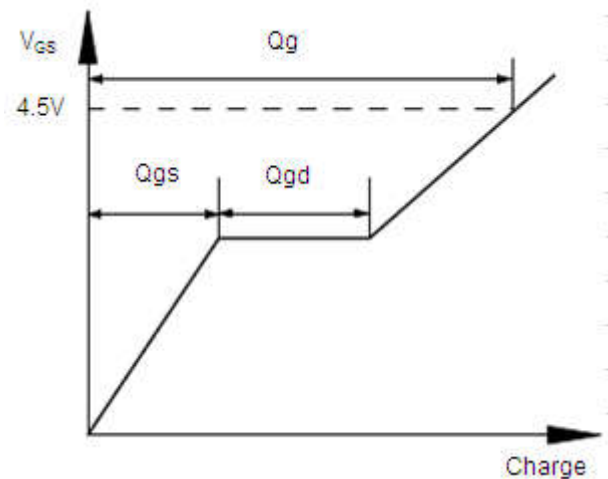
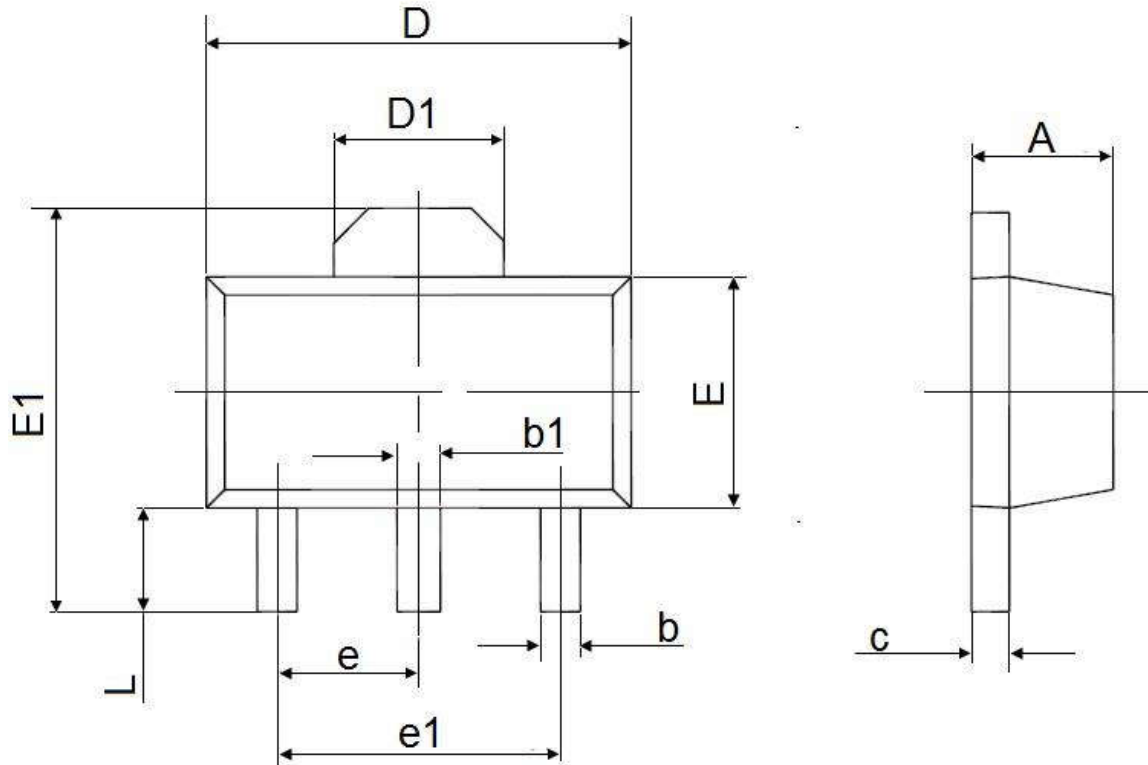


Fig.11 Gate Charge Waveform

SOT-89



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

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