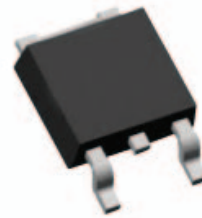
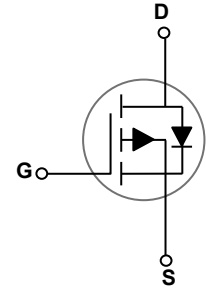


Main Product Characteristics

$V_{(BR)DSS}$	-60V
$R_{DS(ON)}$	28m Ω
I_D	-35A



TO-252 (DPAK)



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for POL applications, load switch and LED lighting
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The SSF6903 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current – Continuous ($T_C=25^\circ\text{C}$)	I_D	-35	A
Drain Current – Continuous ($T_C=100^\circ\text{C}$)		-22.1	A
Drain Current – Pulsed ¹	I_{DM}	-140	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	72.6	W
Power Dissipation – Derate above 25°C	P_D	0.58	W/ $^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 to +150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	---	62	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Case	$R_{\theta JC}$	---	1.72	$^\circ\text{C}/\text{W}$

Electrical Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250uA	-60	---	---	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V, T _J =25°C	---	---	-1	uA
		V _{DS} =-48V, V _{GS} =0V, T _J =125°C	---	---	-10	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	---	---	±100	uA
On Characteristics						
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-8A	---	22	28	Ω
		V _{GS} =-4.5V, I _D =-6A	---	26	35	
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =-250uA	-1	-1.6	-2.5	V
Forward Transconductance	g _{fs}	V _{DS} =-10V, I _S =-3A	---	18	---	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2, 3}	Q _g	V _{DS} =-30V, V _{GS} =-10V, I _D =-5A	---	43.8	88	nC
Gate-Source Charge ^{2, 3}	Q _{gs}		---	4.6	9	
Gate-Drain Charge ^{2, 3}	Q _{gd}		---	8.3	17	
Turn-On Delay Time ^{2, 3}	T _{d(on)}	V _{DD} =-30V, V _{GS} =-10V, R _G =6Ω, I _D =-1A	---	25	50	nS
Rise Time ^{2, 3}	T _r		---	13.8	28	
Turn-Off Delay Time ^{2, 3}	T _{d(off)}		---	148	290	
Fall Time ^{2, 3}	T _f		---	51	100	
Input Capacitance	C _{iss}	V _{DS} =-25V, V _{GS} =0V, F=1MHz	---	2595	3900	pF
Output Capacitance	C _{oss}		---	162	240	
Reverse Transfer Capacitance	C _{rss}		---	115	170	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	---	---	-35	A
Pulsed Source Current	I _{SM}		---	---	-70	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-1A, T _J =25°C	---	---	-1	V

Notes:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width ≤ 300uS, duty cycle ≤ 2%.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

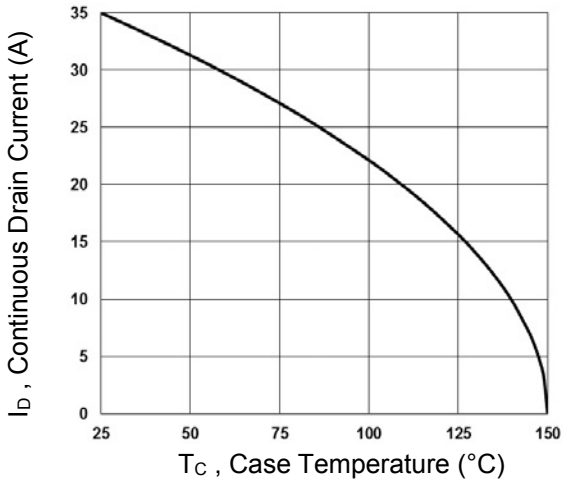


Fig.1 Continuous Drain Current vs. T_c

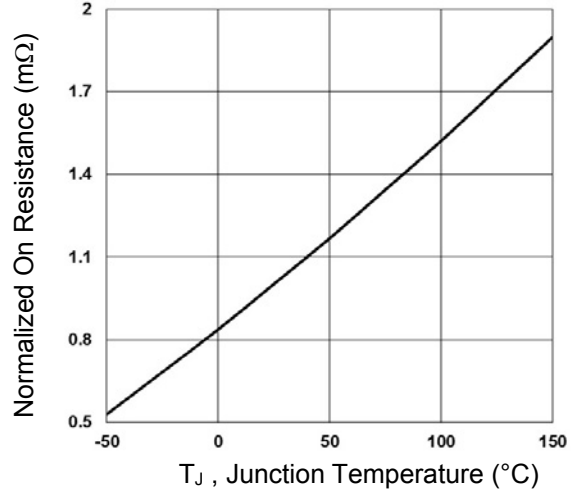


Fig.2 Normalized $R_{DS(ON)}$ vs. T_j

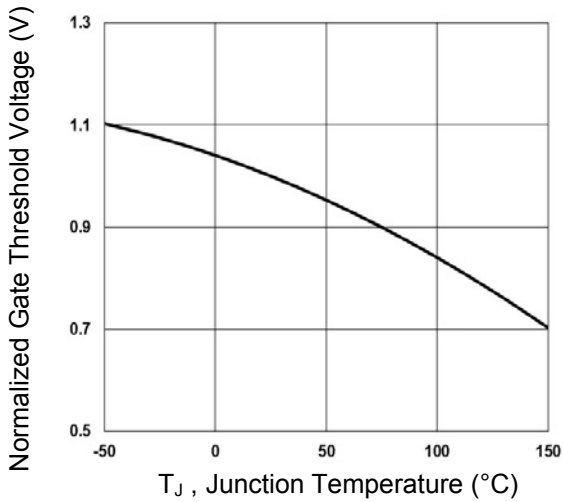


Fig.3 Normalized V_{th} vs. T_j

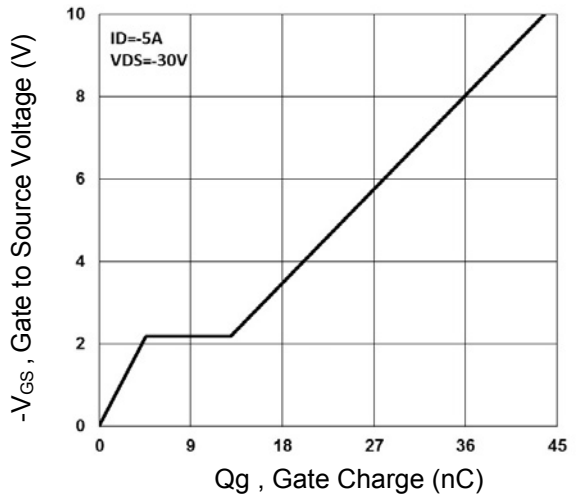


Fig.4 Gate Charge Waveform

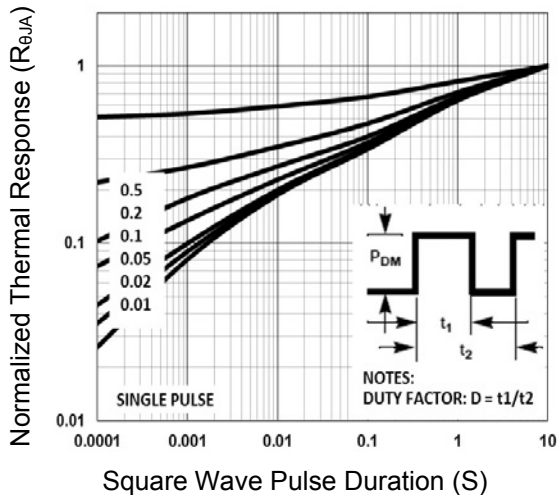


Fig.5 Normalized Transient Impedance

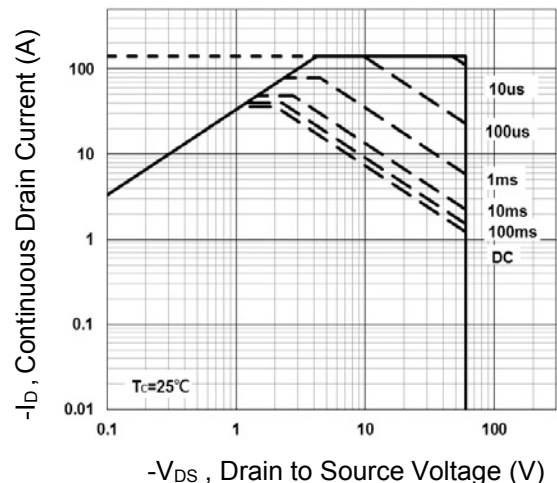


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

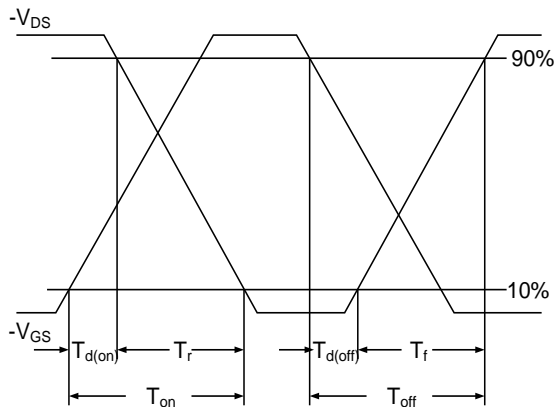


Fig.7 Switching Time Waveform

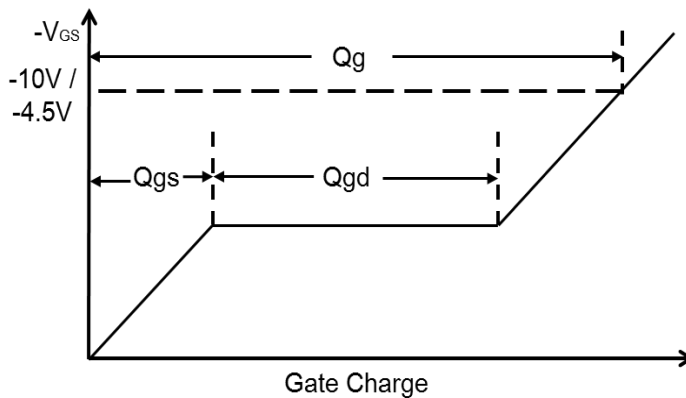
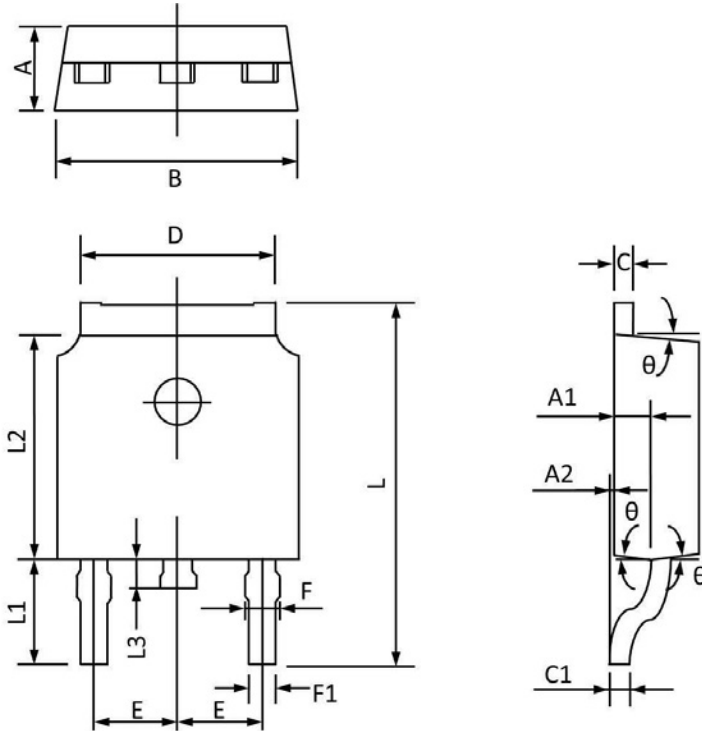


Fig.8 Gate Charge Waveform



Package Outline Dimensions

TO-252(DPAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	2.400	2.200	0.094	0.087
A1	1.110	0.910	0.044	0.036
A2	0.150	0.000	0.006	0.000
B	6.800	6.400	0.268	0.252
C	0.580	0.450	0.023	0.018
C1	0.580	0.460	0.023	0.018
D	5.500	5.100	0.217	0.201
E	2.386	2.186	0.094	0.086
F	1.140	0.600	0.045	0.024
F1	0.880	0.500	0.035	0.020
L	10.400	9.400	0.409	0.370
L1	3.000	2.400	0.118	0.094
L2	6.223	5.400	0.245	0.213
L3	1.200	0.600	0.047	0.024
θ	9°	3°	9°	3°