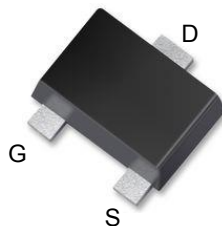
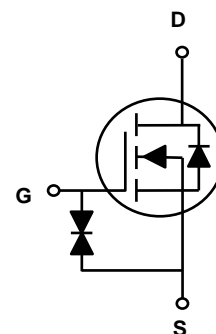


Main Product Characteristics

$V_{(BR)DSS}$	20V
$R_{DS(on)}$	300mΩ
I_D	800mA



SOT-723



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The SSF7320 utilizes the latest processing techniques to achieve high cell density, low on-resistance and high repetitive avalanche rating. These features make this device extremely efficient and reliable device for use in power switching applications and a wide variety of other applications.

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current – Continuous ($T_C=25^{\circ}\text{C}$)	I_D	800	mA
Drain Current – Continuous ($T_C=100^{\circ}\text{C}$)		510	mA
Drain Current – Pulsed ¹	I_{DM}	3.2	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	450	mW
Power Dissipation – Derate above 25°C		3.6	mW/ $^{\circ}\text{C}$
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	$R_{\theta JA}$	---	280	$^{\circ}\text{C/W}$

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 _b =250uA	20	---	---	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _b =1mA	---	-0.01		V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =16V, V _{GS} =0V, T _J =125°C	---	---	10	
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±10V, V _{DS} =0V	---	---	±50	uA
		V _{GS} =±8V, V _{DS} =0V	---	---	±10	uA
On Characteristics						
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _b =0.5A	---	200	300	mΩ
		V _{GS} =2.5V, I _b =0.4A	---	300	450	
		V _{GS} =1.8V, I _b =0.2A	---	500	700	
		V _{GS} =1.5V, I _b =0.1A	---	800	1200	
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	0.3	0.5	1.2	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}		---	3	---	mV/°C
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q _g	V _{DS} =10V, V _{GS} =4.5V, I _b =0.5A	---	1	2	nC
Gate-Source Charge ^{2,3}	Q _{gs}		---	0.26	0.5	
Gate-Drain Charge ^{2,3}	Q _{gd}		---	0.2	0.4	
Turn-On Delay Time ^{2,3}	T _{d(on)}	V _{DD} =10V, V _{GS} =4.5V, R _G =10Ω I _b =0.5A	---	5	10	ns
Rise Time ^{2,3}	T _r		---	3.5	7	
Turn-Off Delay Time ^{2,3}	T _{d(off)}		---	14	28	
Fall Time ^{2,3}	T _f		---	6	12	
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, F=1MHz	---	38.2	75	pF
Output Capacitance	C _{oss}		---	14.4	28	
Reverse Transfer Capacitance	C _{rss}		---	6	12	
Drain-Source Diode Characteristics and Maximum Ratings						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	---	---	0.8	A
Pulsed Source Current	I _{SM}		---	---	1.6	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =0.2A, 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

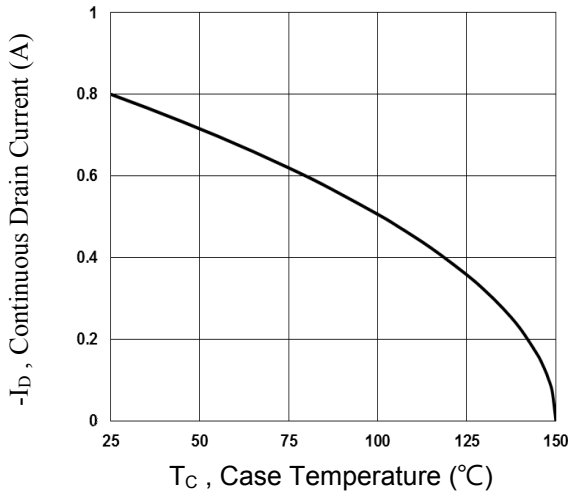


Fig.1 Continuous Drain Current vs. TC

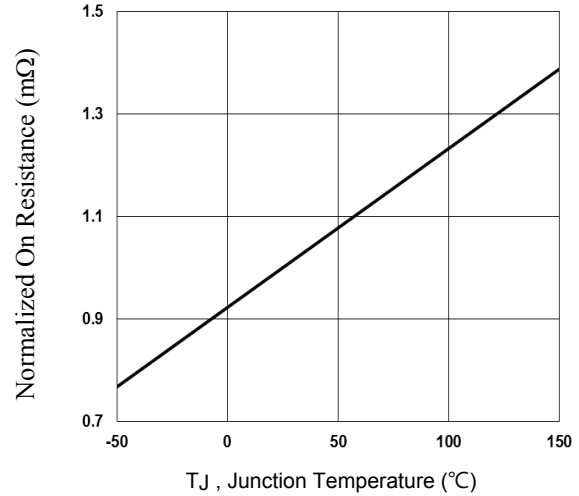


Fig.2 Normalized RDSON vs. TJ

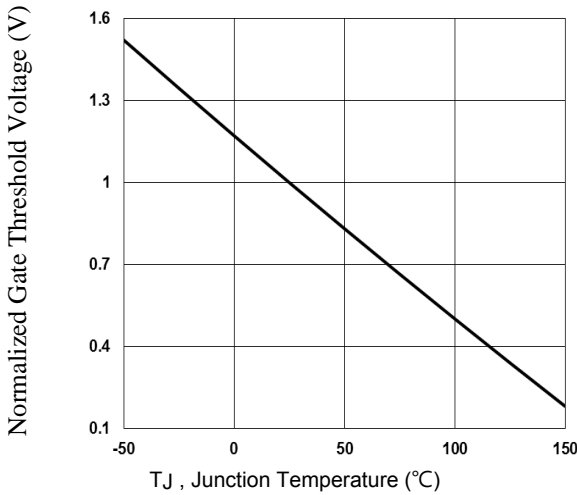


Fig.3 Normalized V_{th} vs. TJ

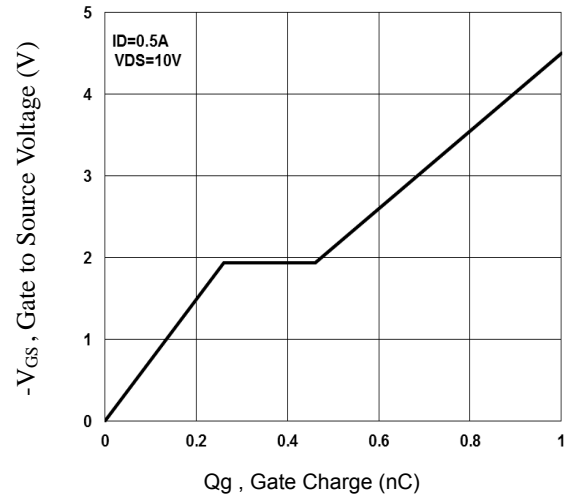


Fig.4 Gate Charge Waveform

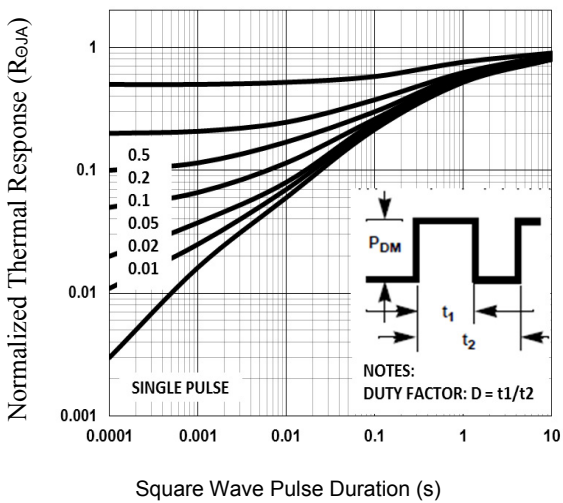


Fig.5 Normalized Transient Impedance

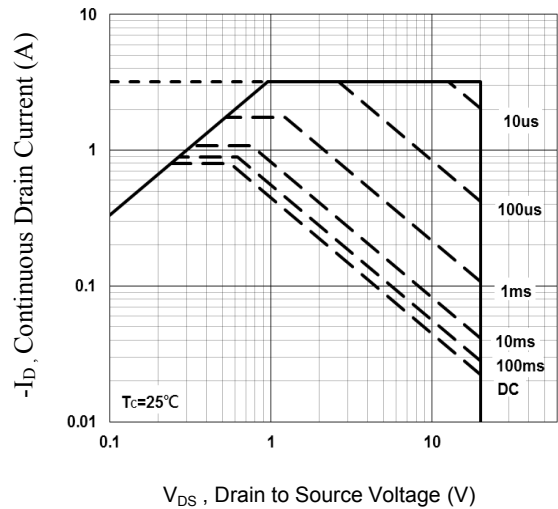


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

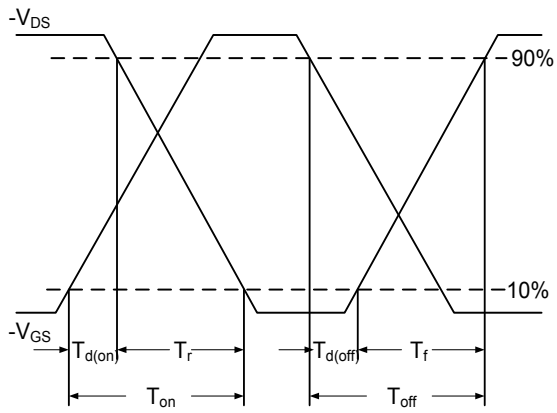


Fig.7 Switching Time Waveform

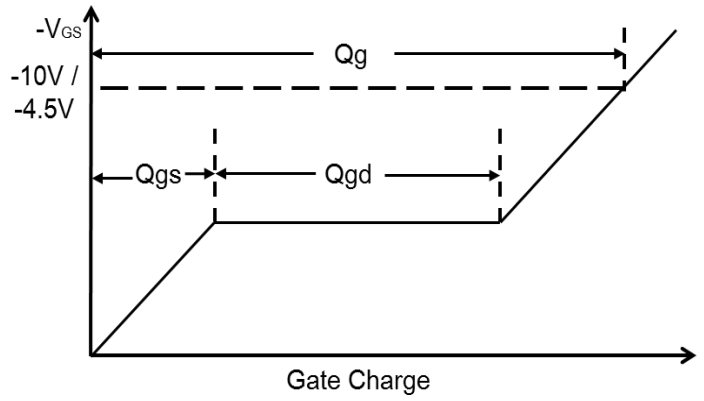
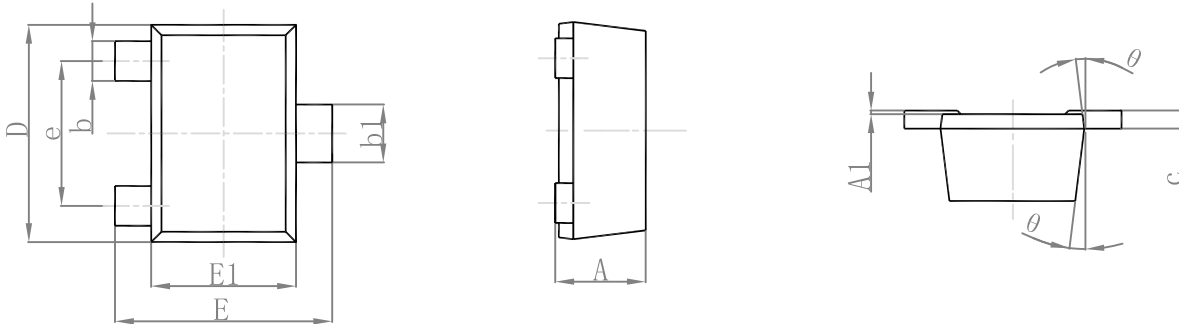


Fig.8 EAS Waveform

Package Outline Dimensions

SOT-723



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.370	0.500	0.015	0.020
A1	0.000	0.050	0.000	0.002
b	0.170	0.270	0.007	0.011
b1	0.270	0.370	0.011	0.015
c	0.080	0.150	0.003	0.006
D	1.150	1.250	0.045	0.049
E	1.150	1.250	0.045	0.049
E1	0.750	0.850	0.030	0.033
e	0.800TYP.		0.031TYP.	
θ	7° REF.		7° REF.	