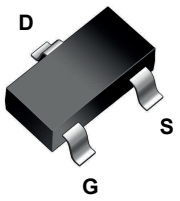
GOOD-ARK
SEMICONDUCTOR

GSFC123W

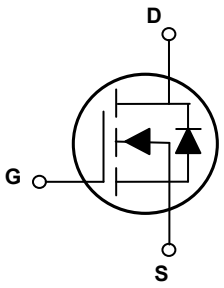
100V N-Channel MOSFET

Main Product Characteristics

BV_{DSS}	100V
$R_{DS(ON)}$	4.0Ω (Max.)
I_D	200mA



SOT-323



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 GSFC123W 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 supplies and a wide variety of other applications.

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous (T_A=25°C)	I_D	200	mA
Drain Current-Continuous (T_A=70°C)		160	
Drain Current-Pulsed (T_A=25°C)[1]	I_{DM}	800	mA
Power Dissipation (T_A=25°C)	P_D	0.32	W
Power Dissipation (T_A=70°C)		0.2	W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	400	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250uA	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V, T_A=25°C	-	-	1	uA
		V_{DS}=80V, V_{GS}=0V, T_A=125°C	-	-	100	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±10	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250uA	1.0	1.7	2.5	V
Drain-Source On-State Resistance[2]	$R_{DS(ON)}$	V_{GS}=10V, I_D=0.2A	-	2.7	4.0	Ω
		V_{GS}=4.5V, I_D=0.18A	-	3.5	5.0	Ω
Dynamic and Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}=50V, V_{GS}=10V, I_D=0.2A	-	0.60	-	nC
Gate-Source Charge	Q_{gs}		-	0.14	-	
Gate-Drain Charge	Q_{gd}		-	0.15	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=50V, V_{GS}=10V, R_G=6Ω, I_D=0.2A	-	3.5	-	nS
Rise Time	t_r		-	5.0	-	
Turn-Off Delay Time	$t_{d(off)}$		-	11	-	
Fall Time	t_f		-	15	-	
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, F=1MHz	-	26	-	pF
Output Capacitance	C_{oss}		-	4	-	
Reverse Transfer Capacitance	C_{rss}		-	2.3	-	
Source-Drain Ratings and Characteristics						
Source Drain Current (Body Diode)	I_{SD}	T_A=25°C	-	-	0.2	A
Diode Forward Voltage[2]	V_{SD}	V_{GS}=0V, I_{SD}=0.1A, T_J=25°C	-	0.85	1.2	V

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%.

Typical Electrical and Thermal Characteristic Curves

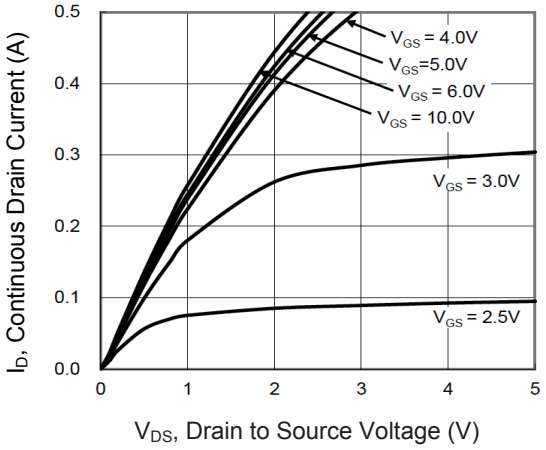


Figure 1. Typical Output Characteristics

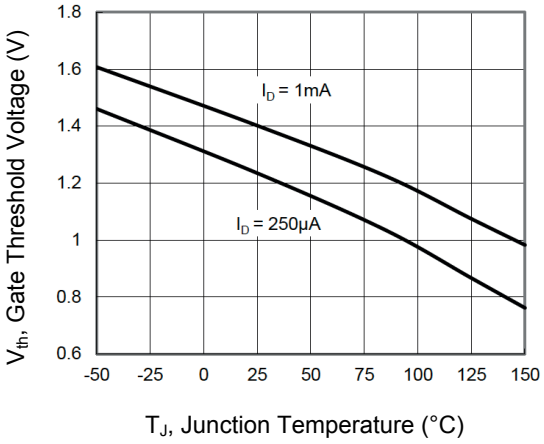


Figure 2. V_{th} vs. T_J

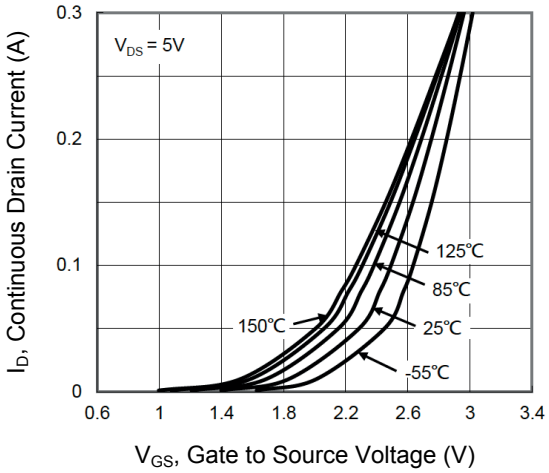


Figure 3. Typical Transfer Characteristics

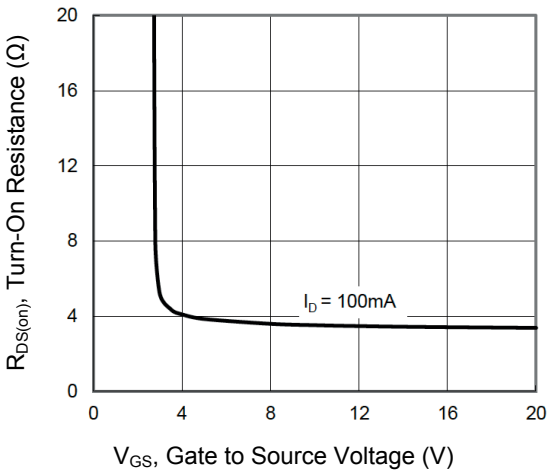


Figure 4. Turn-On Resistance vs. V_{GS}

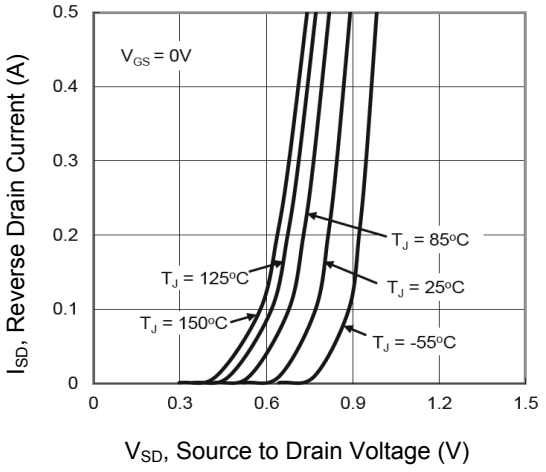


Figure 5. Body Diode Characteristics

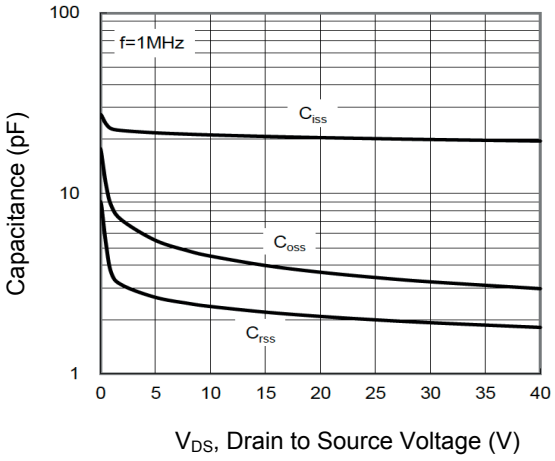
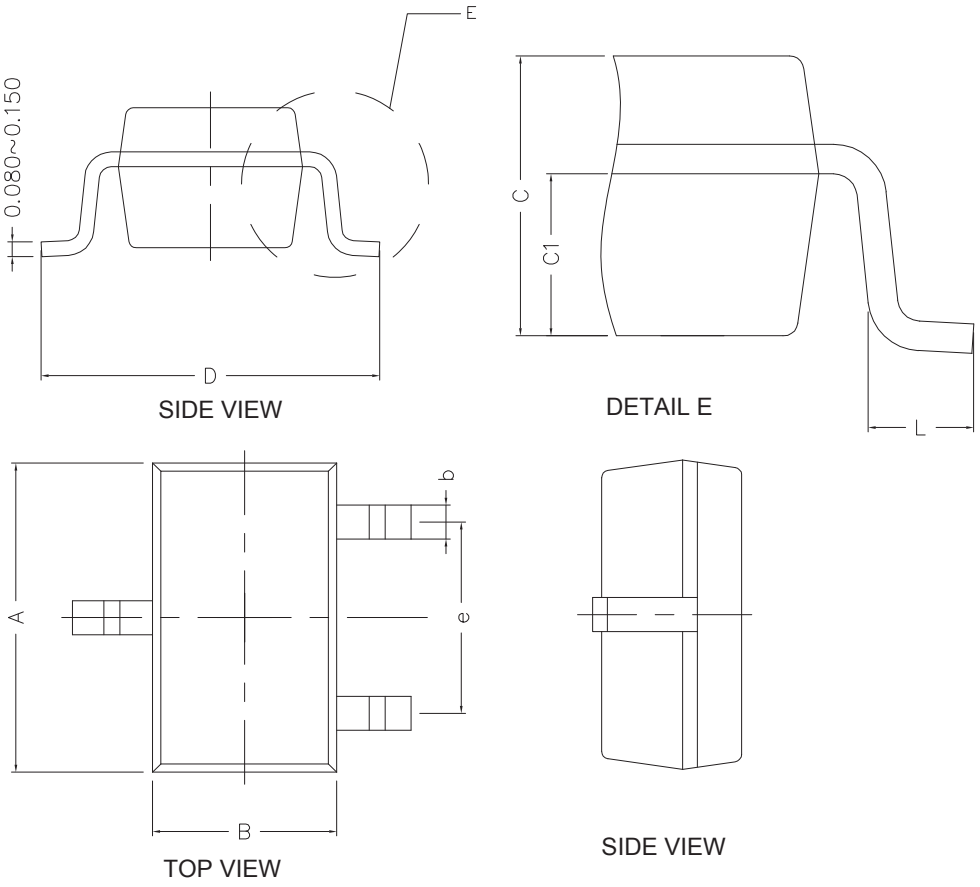


Figure 6. Capacitance Characteristics

Package Outline Dimensions (SOT-323)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.00	2.20	0.079	0.087
B	1.15	1.35	0.045	0.053
C	0.90	1.00	0.035	0.039
C1	0.50	0.60	0.020	0.024
D	2.10	2.50	0.083	0.098
L	0.22	0.50	0.009	0.020
b	0.20	0.40	0.008	0.016
e	1.30 TYP		0.051 TYP	

Order Information

Device	Package	Marking	Packaging	SPQ
GSFC123W	SOT-323	123	Tape & Reel	3,000 pcs / Reel