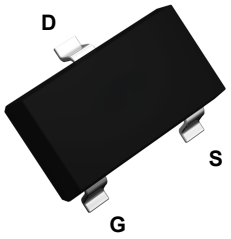
GOOD-ARK SEMICONDUCTOR

GSFC10300

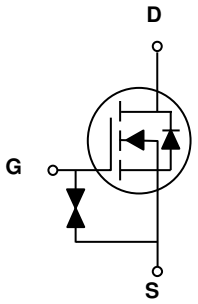
30V N-Channel MOSFET

Main Product Characteristics

V_{DS}	30V
$R_{DS(ON)}$	2.8Ω
I_D	380mA



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

RoHS Compliant

Description

The GSFC10300 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_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	380	mA
Peak Drain Current, Pulsed[1]	I_{DM}	1.2	A
Power Dissipation[2]	P_D	300	mW
Max. Thermal Resistance from Junction to Ambient[2]	$R_{\theta JA}$	417	°C/W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes:

1. Pulse test: Pulse width ≤ 100μs, duty cycle ≤ 2%, repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
2. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=250μA	30	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=30V	-	-	1	μA
Gate Leakage Current	I_{GSS}	V_{GS}=±16V	-	-	±10	μA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.5	-	1.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=250mA	-	-	2.8	Ω
		V_{GS}=4.5V, I_D=250mA	-	-	4.2	
		V_{GS}=2.5V, I_D=10mA	-	-	13	
Forward Transconductance	gfs	V_{DS}=5V, I_D=400mA	-	760	-	mS
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz	-	32	-	pF
Output Capacitance	C_{oss}		-	10.2	-	
Reverse Transfer Capacitance	C_{rss}		-	7.5	-	
Gate Charge Total	Q_g	V_{DS}=25V, I_D=1A, V_{GS}=10V	-	1.3	-	nC
		V_{DS}=25V, I_D=1A, V_{GS}=4.5V		0.85		
Gate to Source Charge	Q_{gs}	V_{DS}=25V, I_D=1A, V_{GS}=10V	-	0.45	-	
Gate to Drain Charge	Q_{gd}		-	0.3	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=30V, I_D=500mA, V_{GS}=10V, R_G=25Ω	-	5.4	-	nS
Turn-On Rise Time	t_r		-	2.7	-	
Turn-Off Delay Time	$t_{d(off)}$		-	5.8	-	
Turn-Off Fall Time	t_f		-	30	-	
Gate Resistance	R_g	V_{DS}=0V, f=1MHz	-	54	-	Ω
Drain-Source Ratings and Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	I_S=0.2A	-	-	1.2	V
Body-Diode Continuous Current	I_S	-	-	-	380	mA

Typical Electrical and Thermal Characteristic Curves

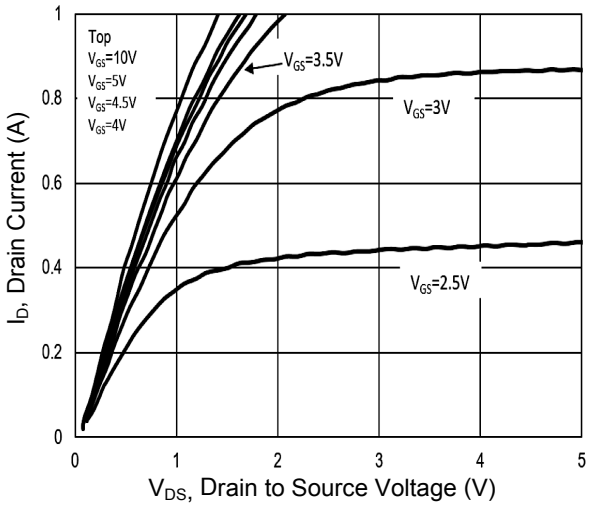


Figure 1. Typical Output Characteristics

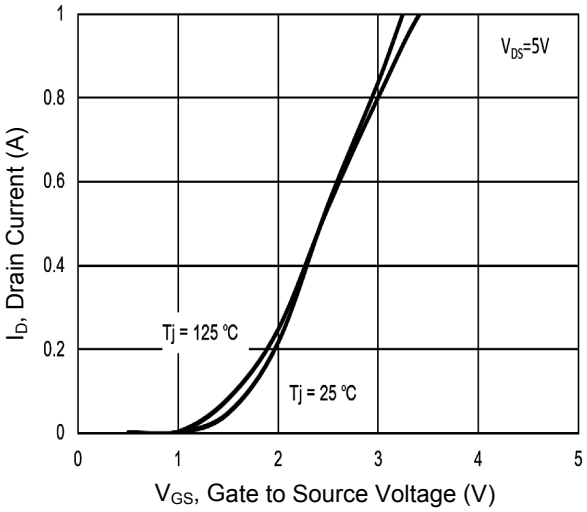


Figure 2. Typical Transfer Characteristics

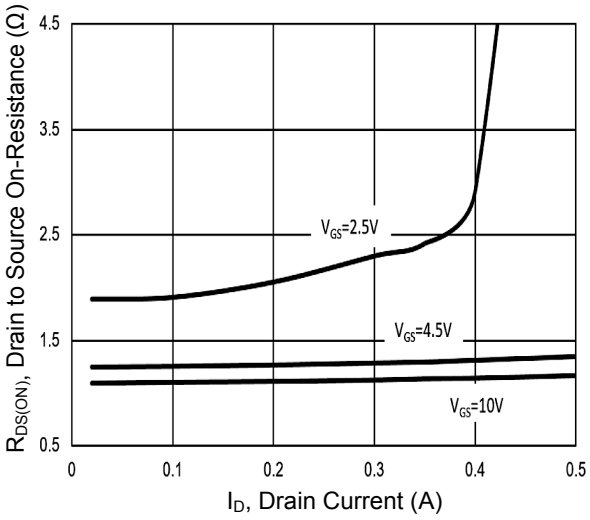


Figure 3. On Resistance vs. Drain Current

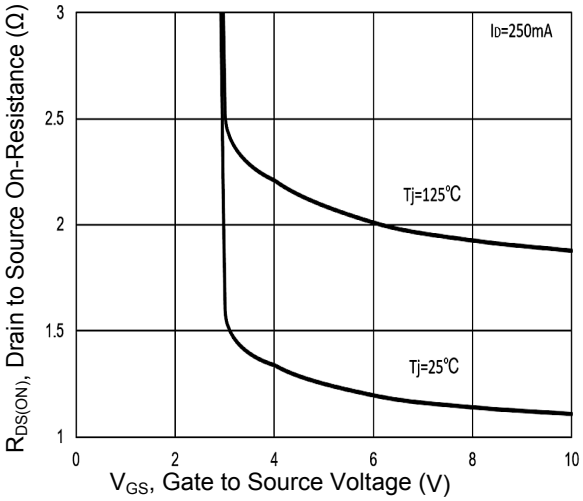


Figure 4. On-Resistance vs. Gate-Source Voltage

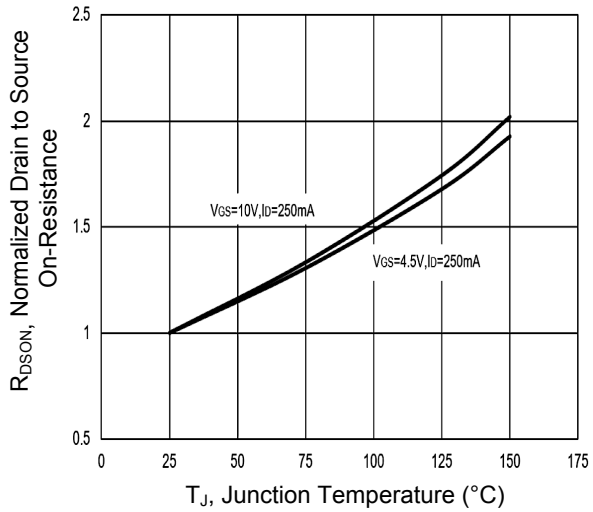


Figure 5. On-Resistance vs. T_J

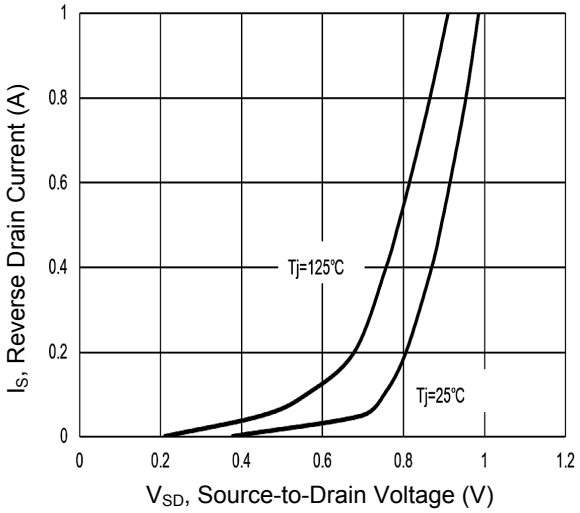


Figure 6. Typical Body-Diode Forward Characteristics

Typical Electrical and Thermal Characteristic Curves

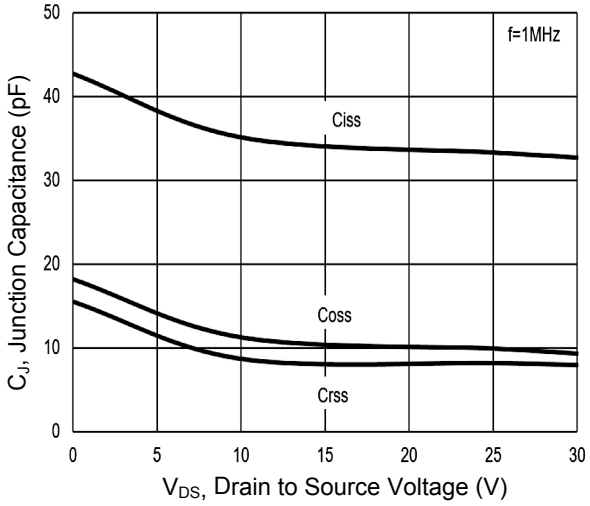


Figure 7. Typical Junction Capacitance

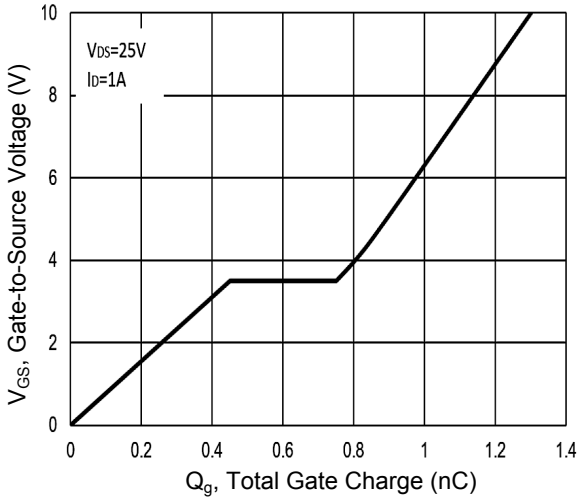


Figure 8. Gate Charge

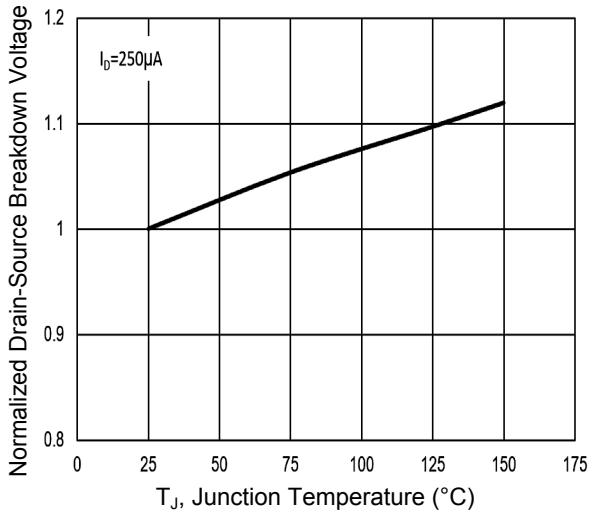


Figure 9. $V_{(BR)DSS}$ vs. Junction Temperature

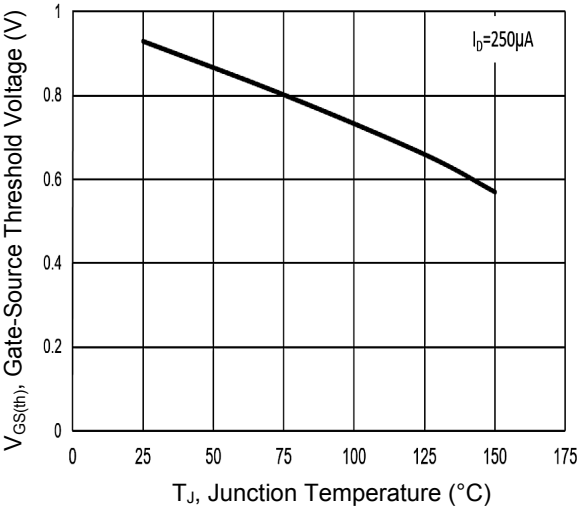
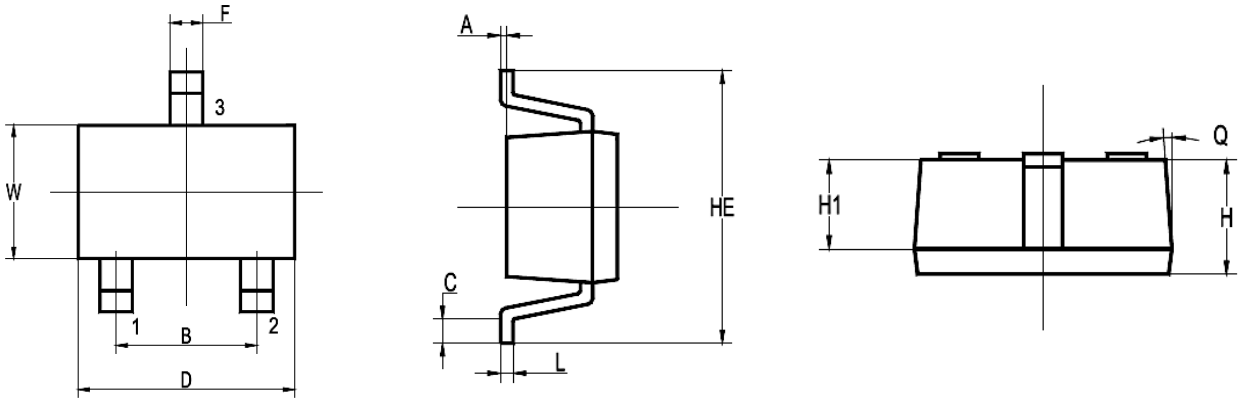


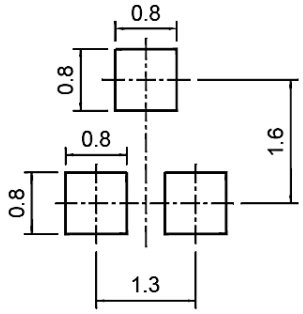
Figure 10. Gate Threshold Voltage vs. T_J

Package Outline Dimensions (SOT-323)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	-	0.100	-	0.004
B	1.200	1.400	0.047	0.055
C	0.200	-	0.008	-
D	1.900	2.100	0.075	0.083
H	0.800	1.000	0.031	0.039
H1	0.700 TYP.		0.028 TYP.	
HE	2.000	2.400	0.079	0.094
F	0.250	0.350	0.010	0.014
L	0.050	0.150	0.002	0.006
W	1.150	1.350	0.045	0.053
Q	-	5°	-	5°

Recommended Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purposes only.

Order Information

Device	Package	Marking	Carrier	Quantity
GSFC10300	SOT-323	LE	Tape & Reel	3,000 Pcs / Reel