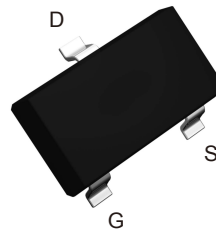
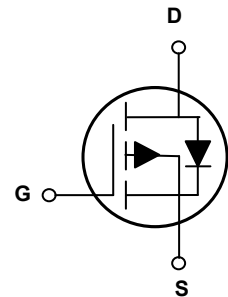


Main Product Characteristics

$V_{(BR)DSS}$	-20V
$R_{DS(ON)}$	200m Ω (Max.)
I_D	-2.5A



SOT-23



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 GSFC02025 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 ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current	I_D	-2.5	A
Peak Drain Current, Pulsed ¹	I_{DM}	-20	A
Power Dissipation ²	P_D	0.5	W
Max. Thermal Resistance from Junction to Ambient ²	$R_{\theta JA}$	250.0	$^{\circ}\text{C/W}$
Max. Thermal Resistance from Junction to Ambient ³		100.0	$^{\circ}\text{C/W}$
Operating Junction Temperature Range	T_J	-55 to +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^{\circ}\text{C}$

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-250\mu\text{A}$	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-16\text{V}$	-	-	-1	μA
Gate-Source Leakage	I_{GSS}	$V_{GS}=\pm 8\text{V}$	-	-	± 100	nA
On State Drain Current	$I_{D(ON)}$	$V_{DS}=-5\text{V}, V_{GS}=-4.5\text{V}$	-5	-	-	A
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-0.4	-	-1.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-4.5\text{V}, I_D=-1.3\text{A}$	-	100	200	m Ω
		$V_{GS}=-2.5\text{V}, I_D=-1.1\text{A}$	-	-	270	
Forward Transconductance	g_{fs}	$V_{DS}=-5\text{V}, I_D=-2.5\text{A}$	-	6.9	-	S
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-10\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$	-	337	-	pF
Output Capacitance	C_{oss}		-	71	-	
Reverse Transfer Capacitance	C_{rss}		-	50	-	
Total Gate Charge	Q_g	$V_{GS}=-4.5\text{V}, V_{DS}=-10\text{V}, I_D=-2.5\text{A}$	-	4.7	-	nC
		$V_{GS}=-2.5\text{V}, V_{DS}=-10\text{V}, I_D=-2.5\text{A}$	-	2.8	-	
Gate-Source Charge	Q_{gs}	$V_{GS}=-4.5\text{V}, V_{DS}=-10\text{V}, I_D=-2.5\text{A}$	-	0.8	-	
Gate-Drain Charge	Q_{gd}		-	1.5	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-10\text{V}, I_D=-2.5\text{A}, V_{GS}=-4.5\text{V}, R_G=4.7\Omega$	-	10.7	-	nS
Turn-On Rise Time	t_r		-	40	-	
Turn-Off Delay Time	$t_{d(off)}$		-	19	-	
Turn-Off Fall Time	t_f		-	10	-	
Gate Resistance	R_g	$V_{DS}=0\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$	-	18.4	-	Ω
Drain-Source Ratings and Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	$I_S=-0.42\text{A}$	-	-	-1.2	V
Body-Diode Continuous Current	I_S	-	-	-	-2.5	A
Body Diode Reverse Recovery Time	t_{rr}	$I_S=-2.5\text{A}, di/dt=50\text{A}/\mu\text{s}$	-	7.4	-	nS
Body Diode Reverse Recovery Charge	Q_{rr}		-	1.2	-	nC

Notes:

1. Pulse test: Pulse width $\leq 100\mu\text{s}$, duty cycle $\leq 2\%$, repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^{\circ}\text{C}$.
2. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
3. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.

Typical Electrical and Thermal Characteristic Curves

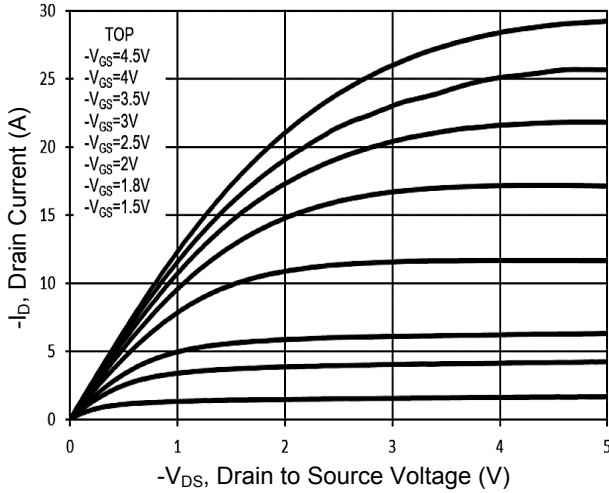


Figure 1. Typical Output Characteristics

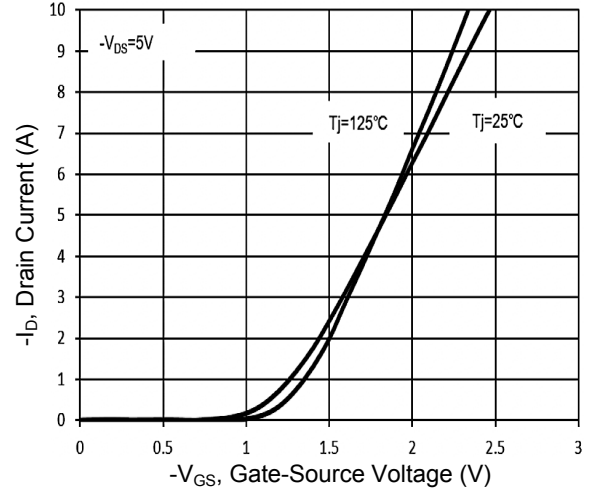


Figure 2. Typical Transfer Characteristics

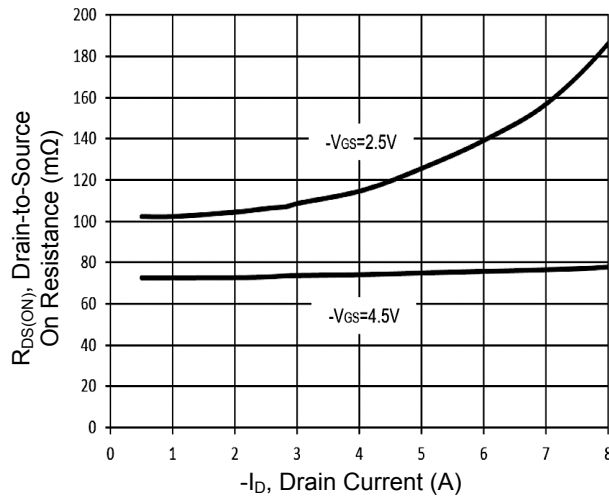


Figure 3. On-Resistance vs. Drain Current

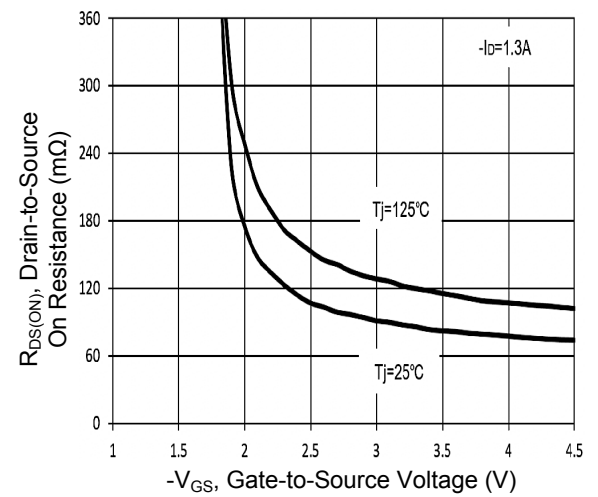


Figure 4. On-Resistance vs. Gate Voltage

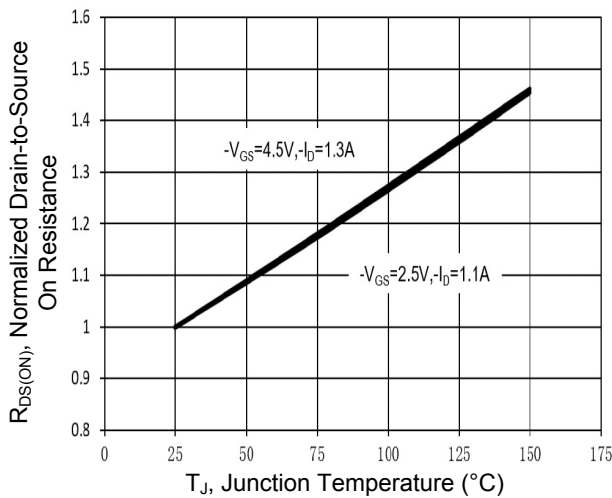


Figure 5. On-Resistance vs. T_J

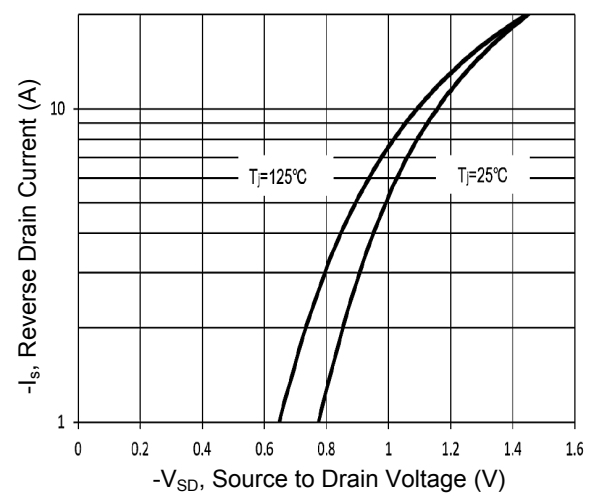


Figure 6. Typical Forward Characteristics

Typical Electrical and Thermal Characteristic Curves

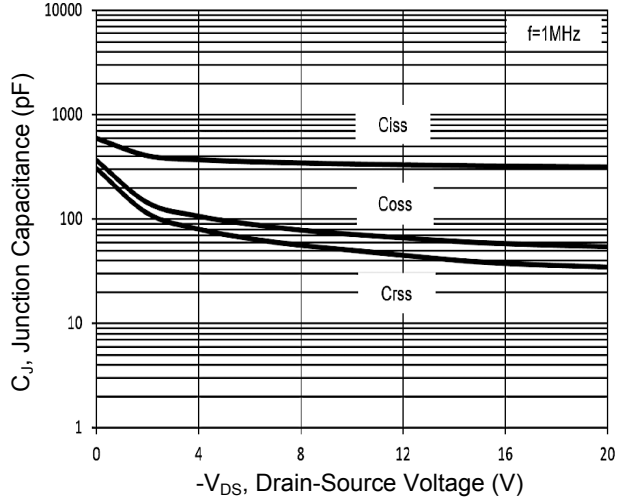


Figure 7. Typical Junction Capacitance

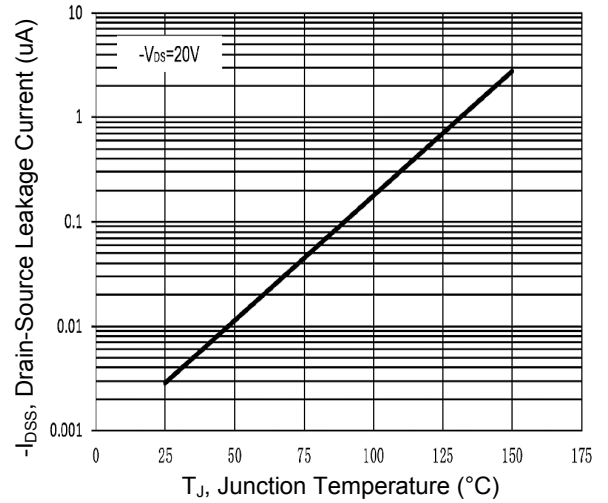


Figure 8. Drain-Source Leakage Current vs. T_J

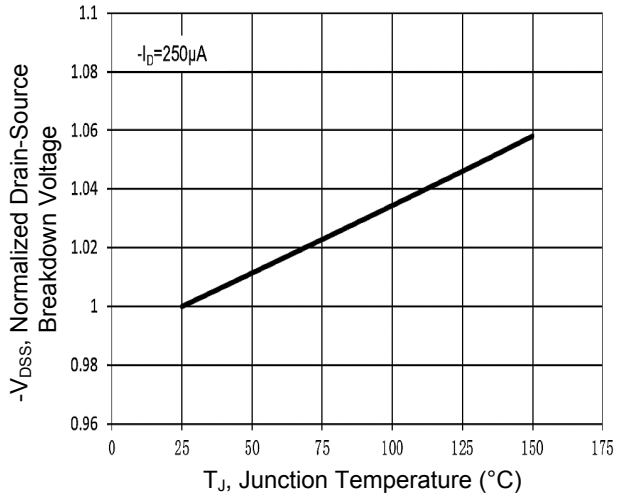


Figure 9. $V_{(BR)DSS}$ vs. Junction Temperature

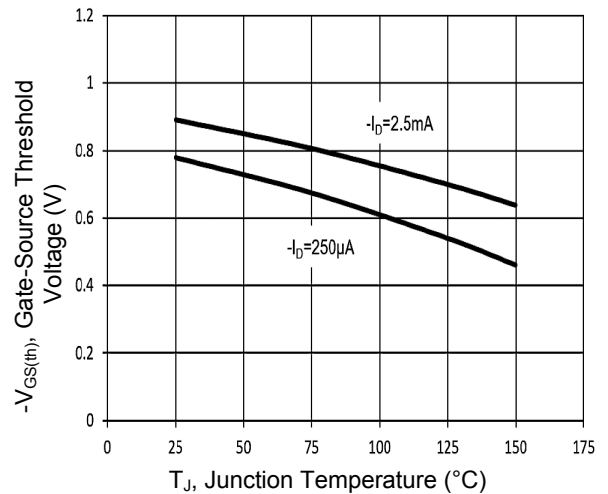


Figure 10. Gate Threshold Variation vs. T_J

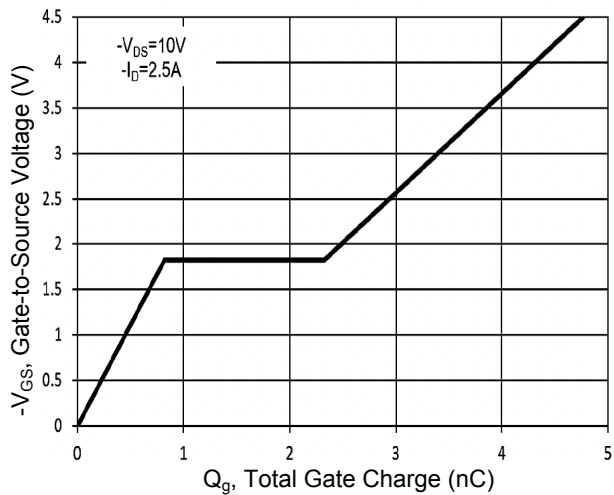
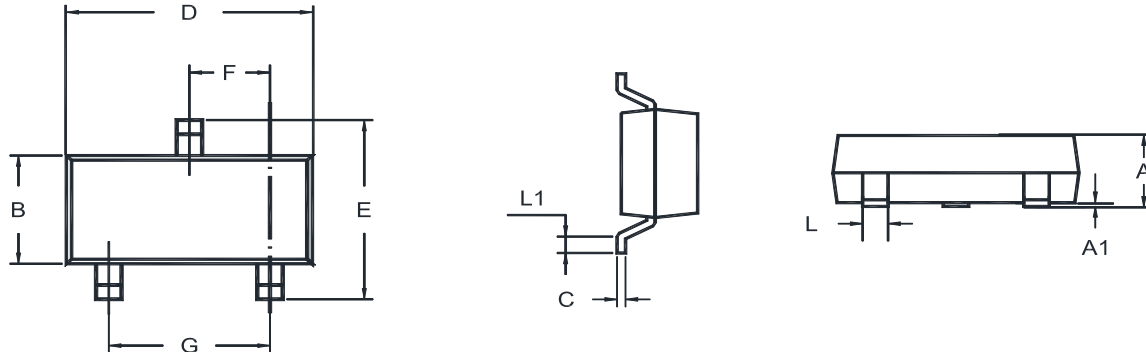


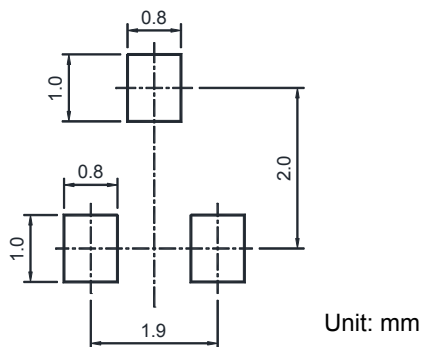
Figure 11. Gate Charge

Package Outline Dimensions (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.890	1.200	0.035	0.047
A1	0.013	0.100	0.001	0.004
B	1.200	1.400	0.047	0.055
C	0.080	0.190	0.003	0.007
D	2.800	3.040	0.110	0.120
E	2.200	2.600	0.087	0.102
F	0.890	1.020	0.035	0.040
G	1.780	2.040	0.070	0.080
L	0.370	0.510	0.015	0.020
L1	0.200	-	0.008	-

Recommended Pad Layout



Order Information

Device	Package	Marking	Carrier	Quantity
GSFC02025	SOT-23	MQ	Tape & Reel	3,000 Pcs / Reel