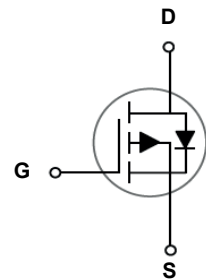
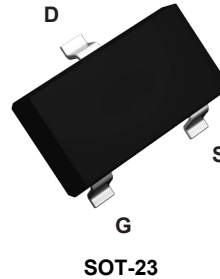


Main Product Characteristics

$V_{(BR)DSS}$	-30V
$R_{DS(ON)}$	55m Ω (Max)
I_D	-4.4A



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Low on-resistance and low gate charge.
- Featuring low switching and drive losses.
- Fast switching and reverse body recovery.
- High ruggedness and robustness.



Description

The GSFC3401 utilizes the latest techniques to achieve ultra high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in battery protection, load switch, power management and a wide variety of other applications.

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

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-to-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current, @ Steady-State ($T_A=25^\circ\text{C}$) ¹	I_D	-4.4	A
Continuous Drain Current, @ Steady-State ($T_A=100^\circ\text{C}$)		-3.5	A
Pulsed Drain Current ²	I_{DM}	-27	A
Power Dissipation ($T_A=25^\circ\text{C}$)	P_D	1.2	W
Linear Derating Factor ($T_A=25^\circ\text{C}$)		9.6	mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State) ³	$R_{\theta JA}$	105	$^\circ\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$	-	-	-1	μA
		$T_J=125^\circ\text{C}$	-	-	-50	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS}=12V$	-	-	100	nA
		$V_{GS}=-12V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-4.4A$	-	45	55	m Ω
		$V_{GS}=-4.5V, I_D=-4A$	-	52	66	
		$V_{GS}=-2.5V, I_D=-2A$	-	68	94	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.6	-0.9	-1.4	V
Forward Transconductance	gfs	$V_{DS}=-5V, I_D=-3.2A$	-	12	-	S
Dynamic and Switching Characteristic						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=-15V$ $F=1\text{MHz}$	-	800	-	pF
Output Capacitance	C_{oss}		-	60	-	
Reverse Transfer Capacitance	C_{rss}		-	58	-	
Total Gate Charge	Q_g	$I_D=-4.4A, V_{DS}=-15V,$ $V_{GS}=-10V$	-	16	-	nC
Gate-to-Source Charge	Q_{gs}		-	2.4	-	
Gate-to-Drain ("Miller") Charge	Q_{gd}		-	2.1	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=-10V, V_{DS}=-15V,$ $R_L=15\Omega, R_{GEN}=2.6\Omega,$ $I_D=-1A$	-	7	-	nS
Rise Time	t_r		-	1.8	-	
Turn-Off Delay Time	$t_{d(off)}$		-	21	-	
Fall Time	t_f		-	8	-	
Gate Resistance	R_g	$F=1\text{MHz}$	-	4.1	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	-4.4	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	-27	A
Diode Forward Voltage	V_{SD}	$I_S=-4.4A, V_{GS}=0V$	-	-0.8	-1.2	V

Notes

1. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

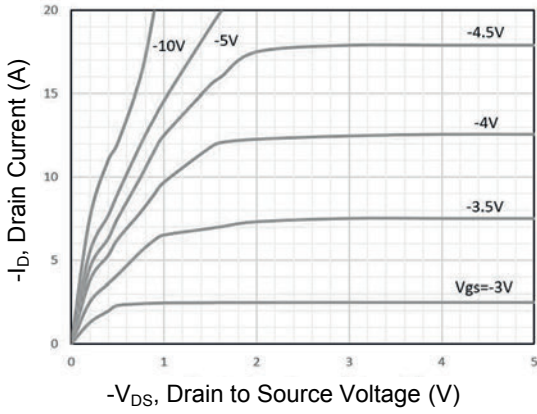


Figure 1. Typical Output Characteristics

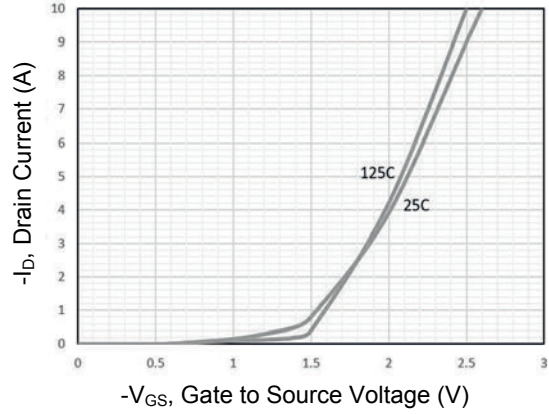


Figure 2. Typical Transfer Characteristics

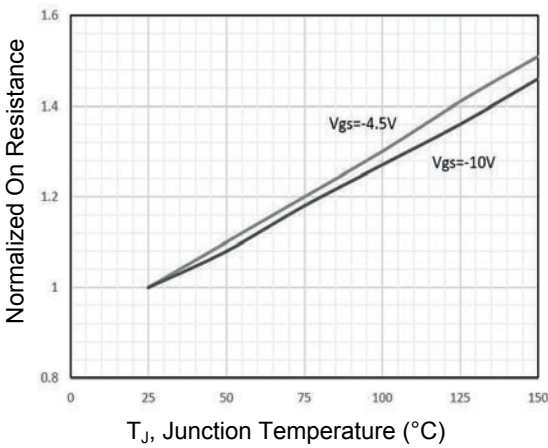


Figure 3. Normalized RON vs. TJ

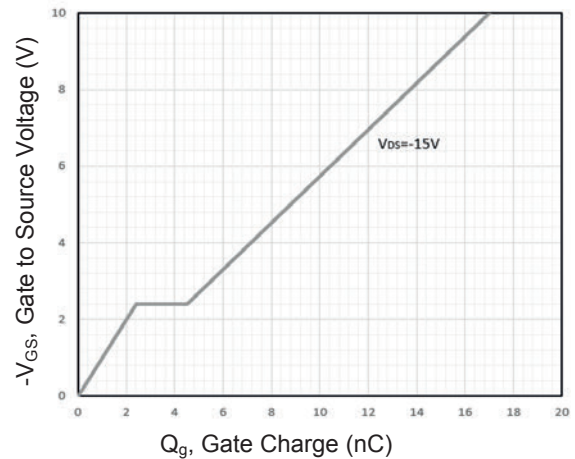


Figure 4. Gate Charge

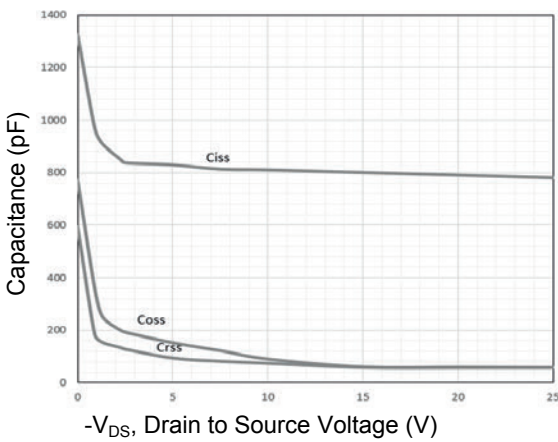


Figure 5. Typical Capacitance Characteristics

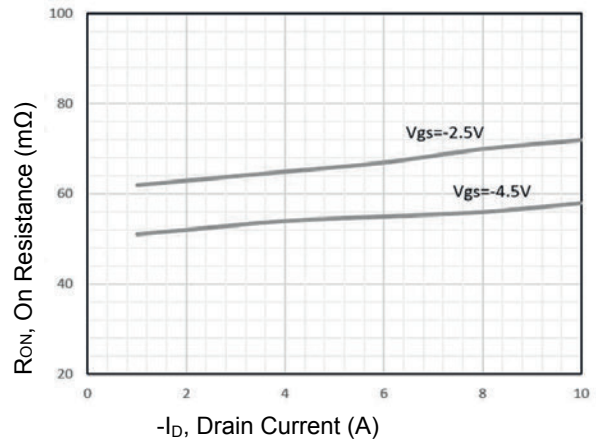
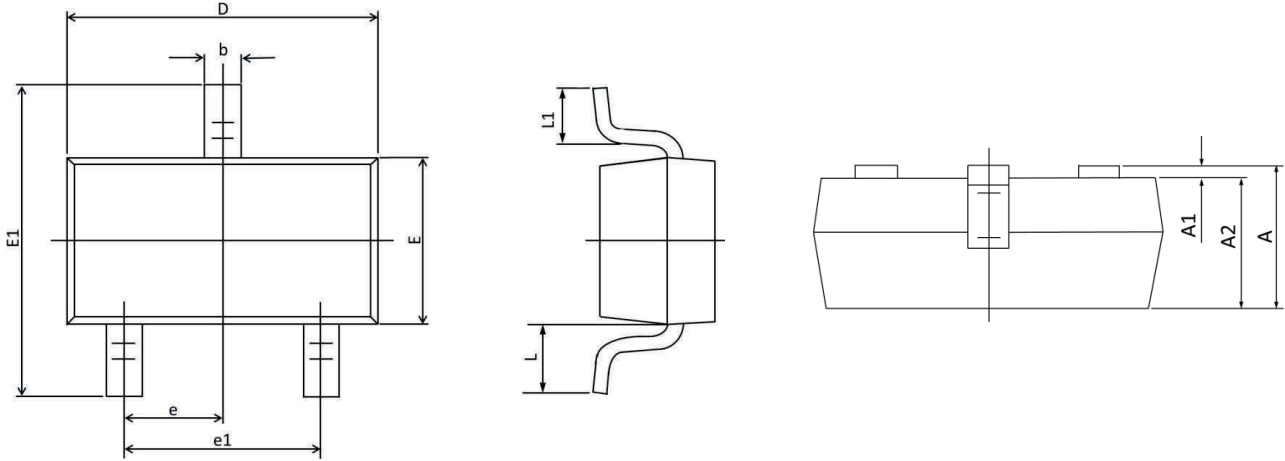


Figure 6. Typical Drain-Source on-Resistance

Package Outline Dimensions (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.047
A1	0.000	0.100	0.000	0.004
A2	0.900	1.150	0.035	0.045
b	0.300	0.500	0.012	0.020
D	2.800	3.040	0.110	0.120
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.95 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.55 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020

Order Information

Device	Package	Marking	Carrier	Quantity
GSFC3401	SOT-23	J235S	Tape & Reel	3,000pcs / Reel