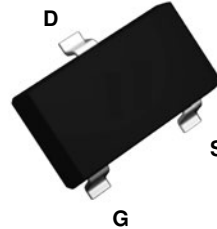
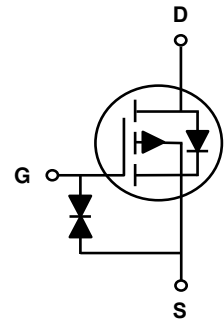


Main Product Characteristics

BV_{DSS}	-20V
$R_{DS(ON)}$	45m Ω (max)
I_D	-4.0A



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 GSFC3415C 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	Max.	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Drain Current-Continuous	I_D	-4.0	A
Drain Current-Pulsed ¹	I_{DM}	-30	A
Power Dissipation	P_D	1.40	W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	89.3	$^{\circ}C/W$
Junction Temperature	T_J	-55 to +150	$^{\circ}C$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}C$

Note:

1. Repetitive rating: pulse width limited by maximum junction temperature.

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20	-	-	V
Gate Threshold Voltage ²	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-0.35	-0.55	-0.9	V
Drain Leakage Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$	-	-	-1	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$	-	-	± 10	μA
Drain-Source On-Resistance ²	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-4A$	-	34	45	m Ω
		$V_{GS}=-2.5V, I_D=-4A$	-	44	70	m Ω
Forward Transconductance ²	g_{fs}	$V_{DS}=-5V, I_D=-4A$	8	-	-	S
Diode Forward Current ³	I_S	-	-	-	-4	A
Diode Forward Voltage ²	V_{SD}	$I_S=-4A, V_{GS}=0V$	-	-	-1.2	V
Dynamic and Switching Characteristics						
Input Capacitance ⁴	C_{iss}	$V_{GS}=0V, V_{DS}=-10V$ $F=1MHz$	-	950	-	pF
Output Capacitance ⁴	C_{oss}		-	165	-	
Reverse Transfer Capacitance ⁴	C_{rss}		-	120	-	
Total Gate Charge ⁴	Q_g	$V_{DS}=-10V,$ $V_{GS}=-4.5V, I_D=-4A$	-	12	-	nC
Gate-to-Source Charge ⁴	Q_{gs}		-	1.4	-	
Gate-to-Drain Charge ⁴	Q_{gd}		-	3.6	-	
Turn-on Delay Time ⁴	$t_{d(on)}$	$V_{DD}=-10V, V_{GS}=-4.5V,$ $R_L=2.5\Omega, R_G=3\Omega$	-	12	-	nS
Rise Time ⁴	t_r		-	10	-	
Turn-Off Delay Time ⁴	$t_{d(off)}$		-	19	-	
Fall Time ⁴	t_f		-	25	-	

Notes:

2. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Surface mounted on FR4 board, $t \leq 10$ sec.
4. Guaranteed by design, not subject to production testing.

Electrical Characteristic Curves

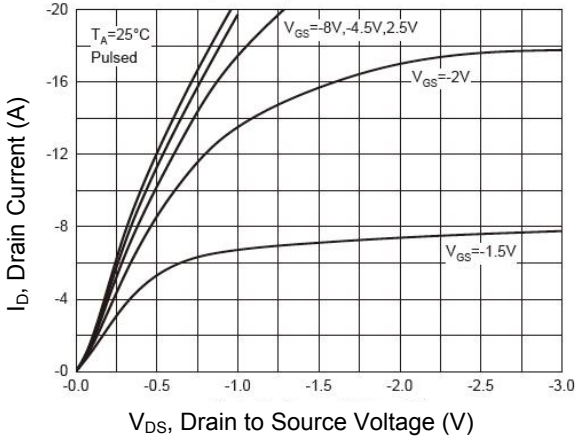


Figure 1. Typical Output Characteristics

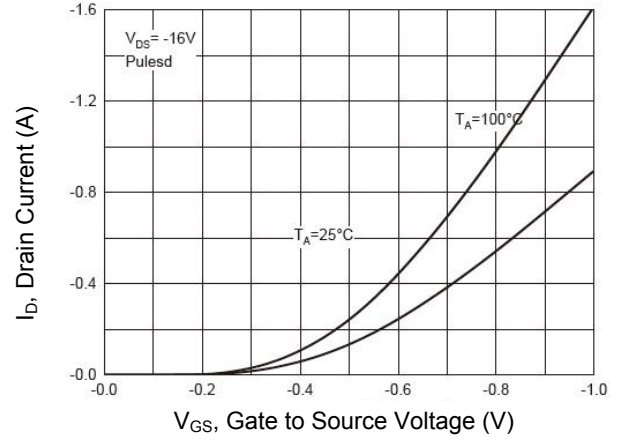


Figure 2. Transfer Characteristics

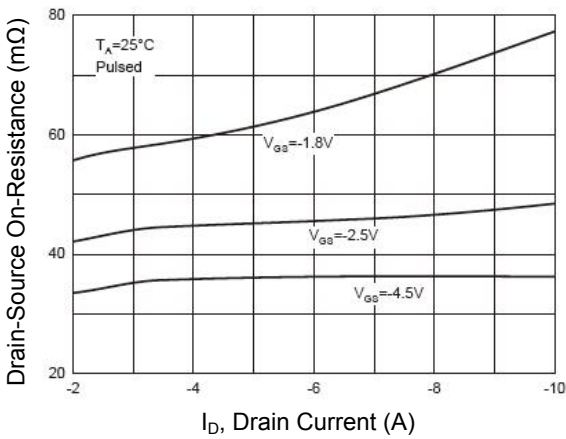


Figure 3. $R_{DS(ON)}$ vs. I_D

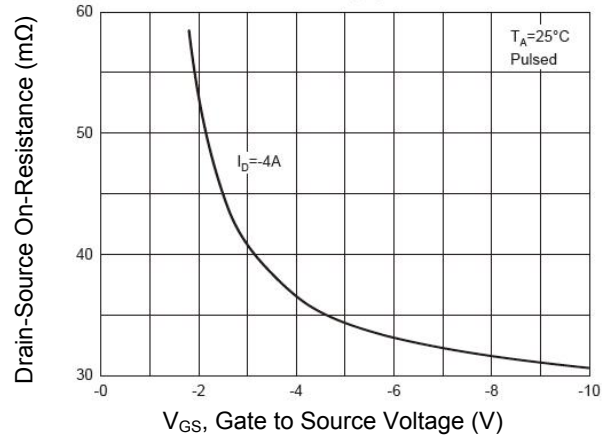


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

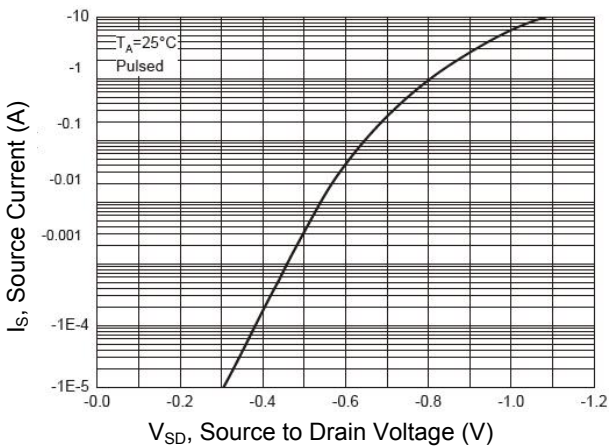


Figure 5. $I_S - V_{SD}$

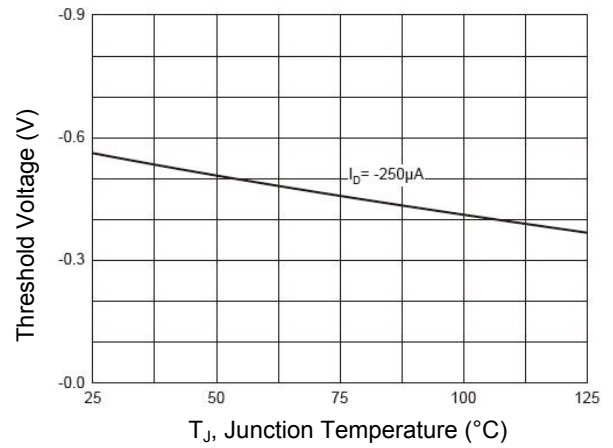
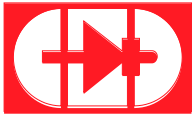
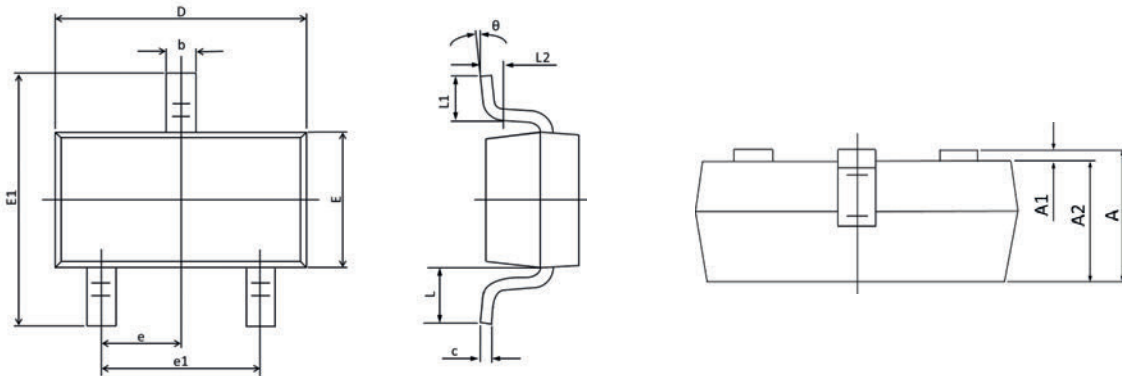


Figure 6. Threshold Voltage

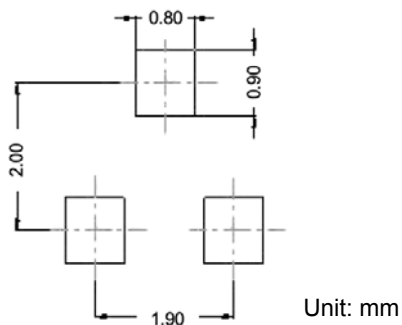


Package Outline Dimensions (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.370	0.510	0.015	0.020
c	0.085	0.180	0.003	0.007
D	2.800	3.040	0.110	0.120
E	1.200	1.400	0.047	0.055
E1	2.100	2.640	0.083	0.104
e	0.95 TYP.		0.037 TYP.	
e1	1.780	2.050	0.070	0.081
L	0.55 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
L2	0.25 TYP.		0.01 TYP.	
θ	0°	8°	0°	8°

Recommended Pad Layout



Order Information

Device	Package	Marking	Carrier	Quantity
GSFC3415C	SOT-23	3415	Tape & Reel	3,000 pcs / 7" Reel