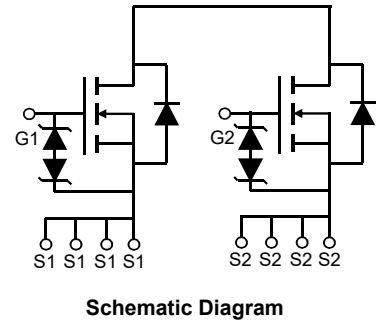
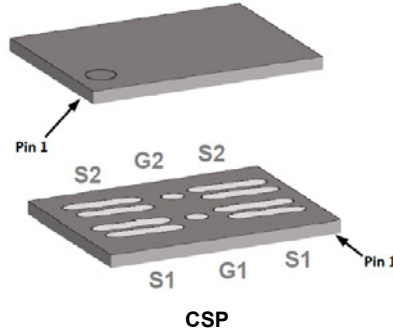


Main Product Characteristics

V_{SSS}	12V
$R_{SS(ON)}$	2.65mΩ(max.)
I_D	16A



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 GSFCP1216 utilizes the latest techniques to achieve high cell density and low on-resistance packaged in CSP package. Embedded with ESD diodes, this device is extremely efficient and reliable for use as 1-cell Lithium-ion battery charging and discharging switch.

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

Parameter	Symbol	Max.	Unit
Source-Source Voltage	V_{SSS}	12	V
Gate-Source Voltage	V_{GSS}	±8	V
Source Current(DC)- $T_A=25^{\circ}C$	I_S	16	A
Source Current(DC)- $T_A=70^{\circ}C$		12.8	A
Source Current (Pulse) ¹	I_{SP}	150	A
Total Dissipation- $T_A=25^{\circ}C$	P_T	2.0	W
Power Dissipation Derate above 25°C		0.016	W/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	65	°C/W
Channel Temperature Range	T_{ch}	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Parameters						
Source-Source Breakdown Voltage	BV_{SSS}	$V_{GS}=0V, I_S=1mA$	12	-	-	V
Zero Gate Voltage Source Current	I_{SSS}	$V_{SS}=12V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	-	-	1	μA
		$V_{SS}=10V, V_{GS}=0V, T_J=125^{\circ}\text{C}$	-	-	10	
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V, V_{SS}=0V$	-	-	± 10	μA
Gate to Source Threshold Voltage	$V_{GS(th)}$	$V_{SS}=V_{GS}, I_S=1.4mA$	0.4	0.8	1.4	V
Static Source to Source On-Resistance ³	$R_{SS(ON)}$	$V_{GS}=4.5V, I_S=6A$	1.45	2.0	2.65	m Ω
		$V_{GS}=3.8V, I_S=6A$	1.55	2.1	2.75	
		$V_{GS}=3.1V, I_S=6A$	1.7	2.5	4.1	
		$V_{GS}=2.5V, I_S=6A$	2.0	3.2	6.2	
Turn-On Delay Time ^{2,3}	$t_{d(on)}$	$V_{SS}=6V, R_g=6.0\Omega, V_{GS}=4.5V, I_D=6A$	-	25	-	nS
Turn-On Rise Time ^{2,3}	t_r		-	11	-	
Turn-Off Delay Time ^{2,3}	$t_{d(off)}$		-	157	-	
Turn-Off Fall Time ^{2,3}	t_f		-	50	-	
Total Gate Charge ^{2,3}	Q_g	$V_{SS}=6V, I_S=6A, V_{GS}=4.5V$	-	31	-	nC
Gate-Source Charge ^{2,3}	Q_{gs}		-	4.3	-	
Gate-Drain Charge ^{2,3}	Q_{gd}		-	7.5	-	
Input Capacitance	C_{iss}	$V_{SS}=6V, V_{GS}=0V, F=1kHz$	-	3340	-	pF
Output Capacitance	C_{oss}		-	1007	-	
Reverse Transfer Capacitance	C_{rss}		-	670	-	
Diode Forward Voltag	$V_{F(S-S)}$	$V_{GS}=0V, I_S=6A, T_J=25^{\circ}\text{C}$	-	-	1.2	V

Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

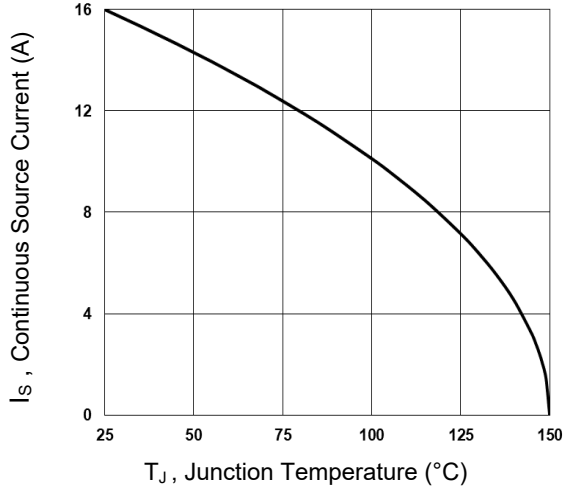


Fig.1 Continuous Source Current vs. T_c

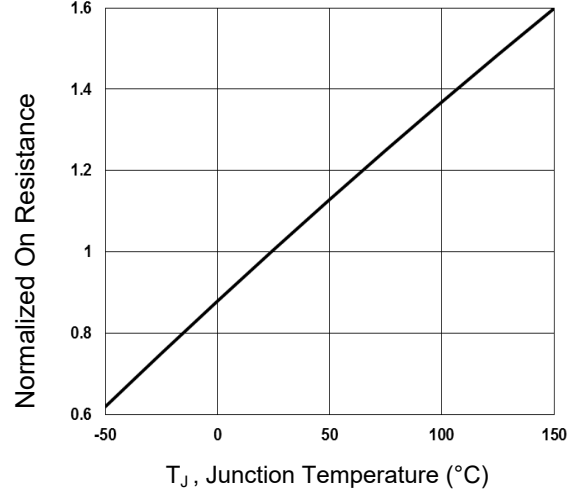


Fig.2 Normalized $R_{SS(ON)}$ vs. T_J

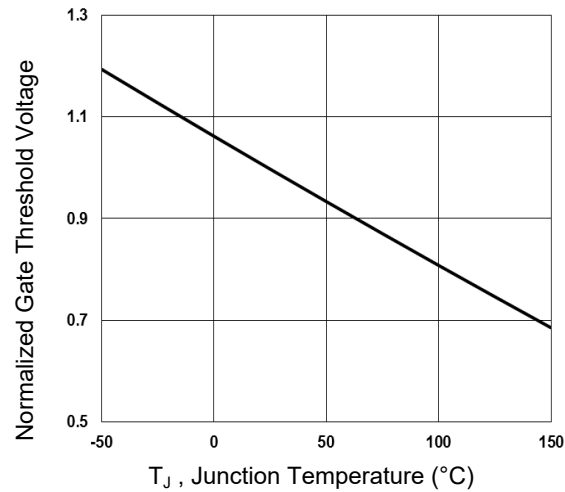


Fig.3 Normalized $V_{GS(th)}$ vs. T_J

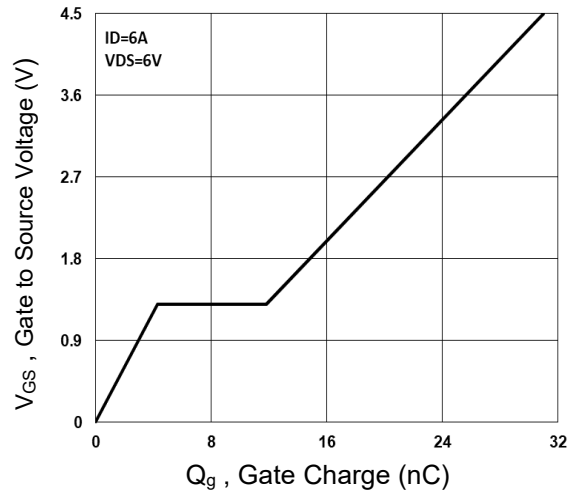


Fig.4 Gate Charge Waveform

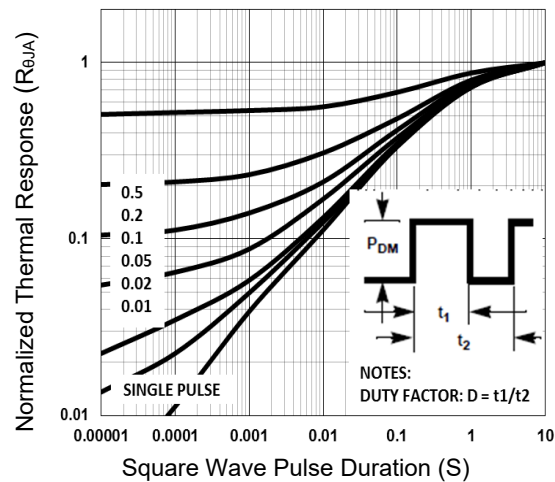


Fig.5 Normalized Transient Impedance

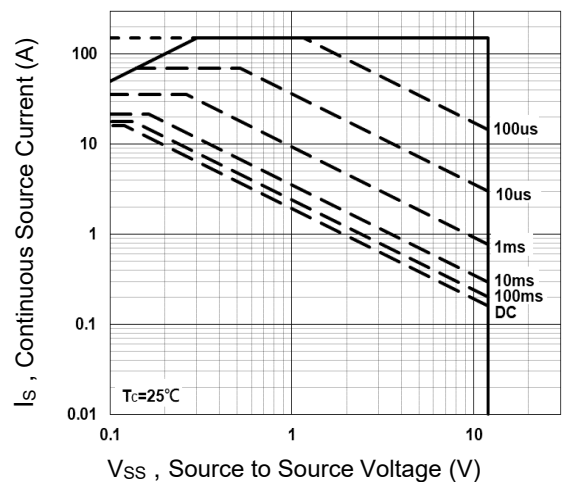
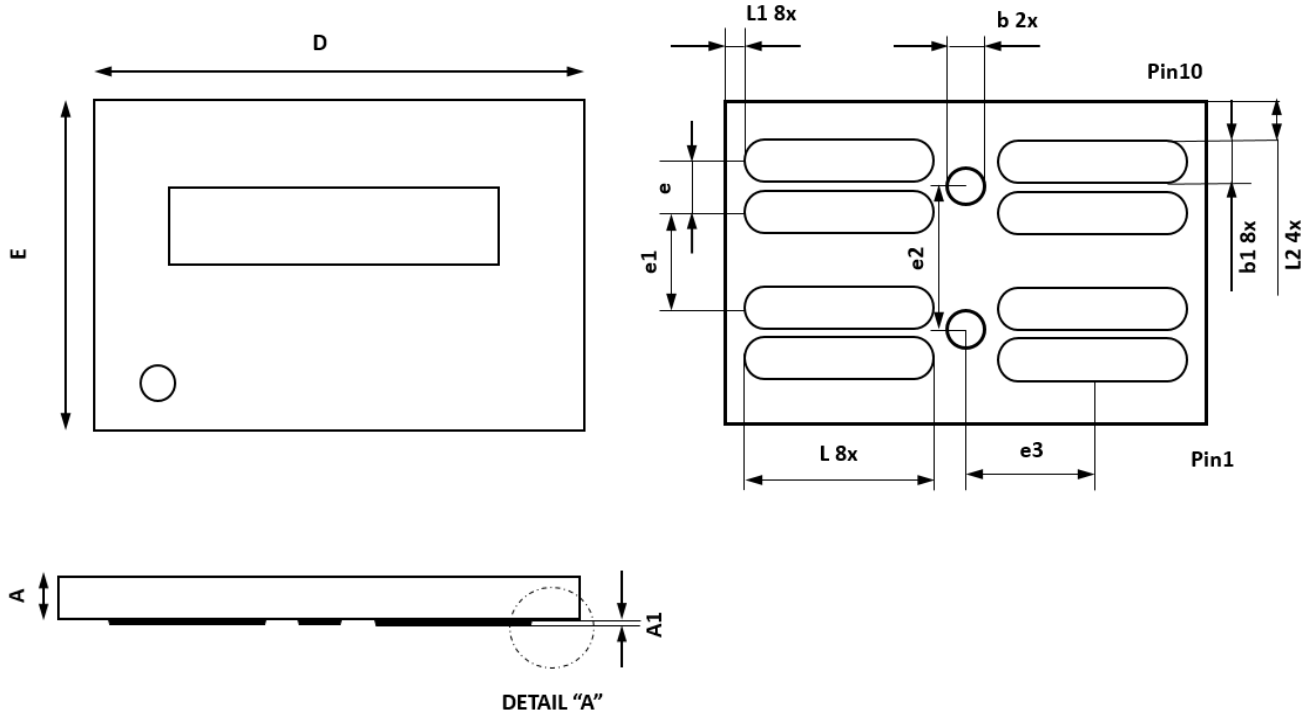


Fig.6 Maximum Safe Operation Area

Package Outline Dimensions (CSP)



Symbol	Dimension In Millimeters			Dimension In Inches		
	Min	Normal	Max	Min	Normal	Max
A	0.320	---	0.380	0.013	---	0.015
A1	---	---	0.005	---	---	0.000
D	2.900	3.000	3.100	0.114	0.118	0.122
E	1.900	2.000	2.100	0.075	0.079	0.083
b	0.200	0.250	0.300	0.008	0.010	0.012
b1	0.125	0.175	0.225	0.005	0.007	0.009
L	0.990	1.040	1.090	0.039	0.041	0.043
L1	0.045	0.085	0.125	0.002	0.003	0.005
L2	0.335	0.375	0.415	0.013	0.015	0.016
e	0.325 BSC			0.013 BSC		
e1	0.425 BSC			0.017 BSC		
e2	0.750 BSC			0.030 BSC		
e3	0.895 BSC			0.035 BSC		