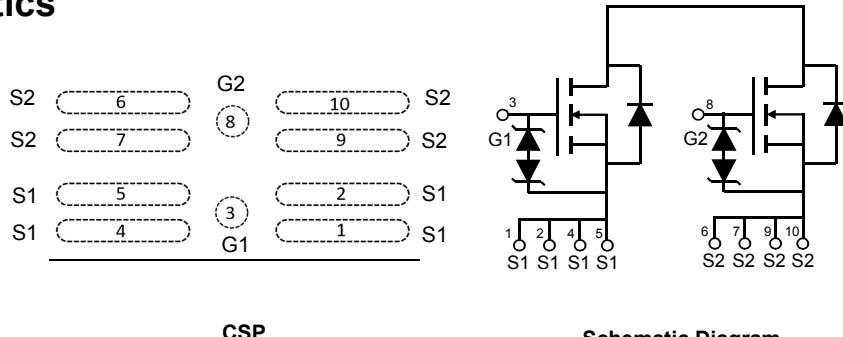


Main Product Characteristics

V_{SSS}	12V
$R_{SS(ON)} \text{ TYP}$	2.1mΩ @ 4.5V
	2.2mΩ @ 3.8V
	2.5mΩ @ 3.1V
	2.9mΩ @ 2.5V
I_S	14A



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 GSFCP0114 utilizes the latest techniques to achieve high cell density, low on-resistance and low gate charge. Embedded with ESD diodes, this device is extremely efficient and reliable for use as a load switch and battery protection application.

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

Parameter	Symbol	Max.	Unit
Source-Source Voltage	V_{SSS}	12	V
Gate-Source Voltage	V_{GSS}	±8	V
Source Current (DC) ¹	I_S	14	A
Source Current (Pulse) ^{1,2}	I_{SP}	140	A
Total Power Dissipation ¹	P_T	1.7	W
Channel Temperature	T_{ch}	+150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

Electrical Characteristics ($T_A=25^\circ C$ 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}	$V_{SS}=12V, V_{GS}=0V$	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V, V_{SS}=0V$	-	-	± 10	μA
Gate to Source Threshold Voltage	$V_{GS(th)}$	$V_{SS}=10V, I_S=1.11mA$	0.35	0.80	1.4	V
Static Source to Source On-Resistance	$R_{SS(ON)}$	$V_{GS}=4.5V, I_S=2A$	1.0	2.1	2.8	$m\Omega$
		$V_{GS}=3.8V, I_S=2A$	1.1	2.2	2.9	
		$V_{GS}=3.1V, I_S=2A$	1.3	2.5	4.0	
		$V_{GS}=2.5V, I_S=2A$	1.6	2.9	6.15	
Total Gate Charge ³	Q_g	$V_{SS}=20V, V_{GS}=6V, I_S=7A$	-	59.7	-	nC
Gate1 - Source1 Charge ³	Q_{g1s1}		-	33.1	-	
Gate1 - Source2 Charge ³	Q_{g1s2}		-	15.5	-	
Turn-On Delay Time ³	$t_{d(on)}$	$V_{DD}=10V, R_L=2.5\Omega$ $V_{GS}=4.5V$	-	1.92	-	μs
Turn-On Rise Time ³	t_r		-	3.70	-	
Turn-Off Delay Time ³	$t_{d(off)}$		-	16.6	-	
Turn-Off Fall Time ³	t_f		-	11.2	-	
Input Capacitance	C_{iss}	$V_{SS}=10V, V_{GS}=0V, F=1KHz$	-	3530	-	pF
Output Capacitance	C_{oss}		-	855	-	
Reverse Transfer Capacitance	C_{rss}		-	741	-	
Diode Forward Voltage ⁴	$V_{F(S-S)}$	$V_{GS}=0V, I_S=2A$	-	-	1.3	V

Notes:

1. Mounted on FR4 board (25.4 mm x 25.4 mm x t1.0 mm) using the minimum recommended pad size (36 μm Copper).
2. $t=10ms$, Duty Cycle=1%.
3. When FET1 is measured, G2 and S2 are short-circuited.
4. When FET1 is measured, FET2 is biased with $V_{G2S2}=4.5V$.

Typical Electrical and Thermal Characteristic Curves

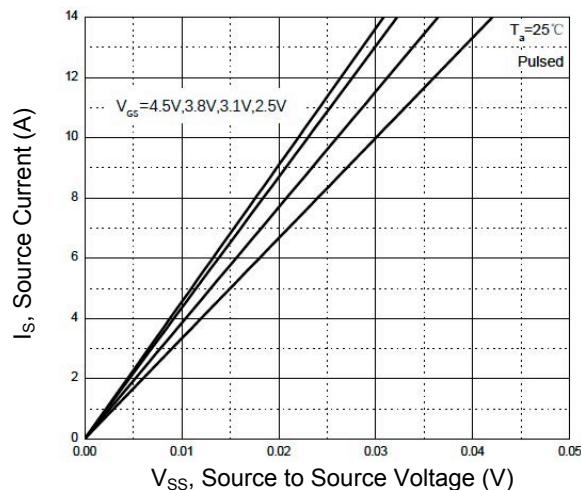


Figure 1. Output Characteristics

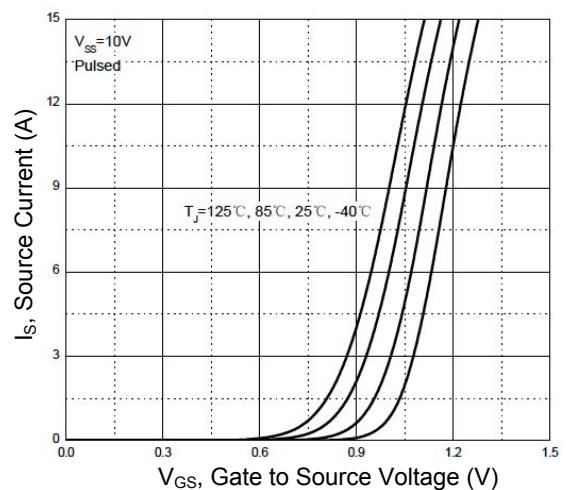


Figure 2. Transfer Characteristics

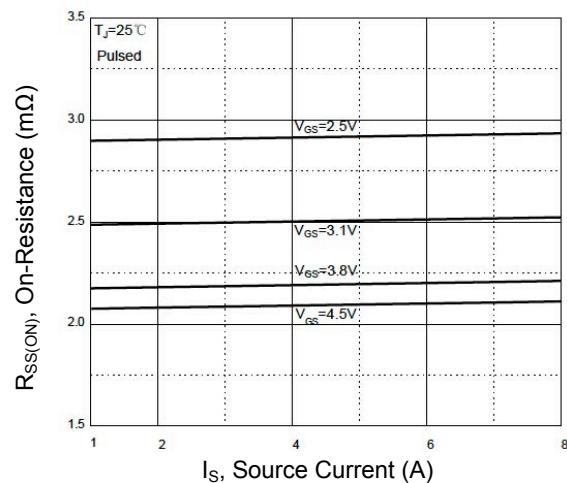


Figure 3. $R_{SS(ON)}$ -Source Current

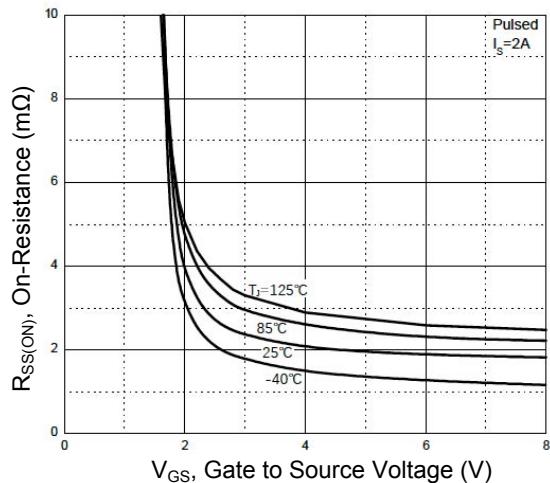


Figure 4. $R_{SS(ON)}$ -Gate to Source Voltage

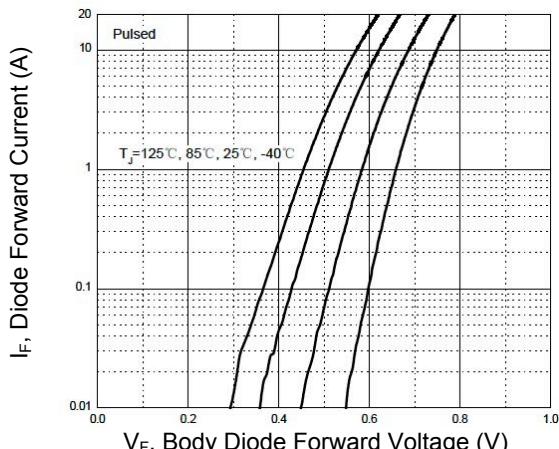


Figure 5. Forward Current vs. Forward Voltage

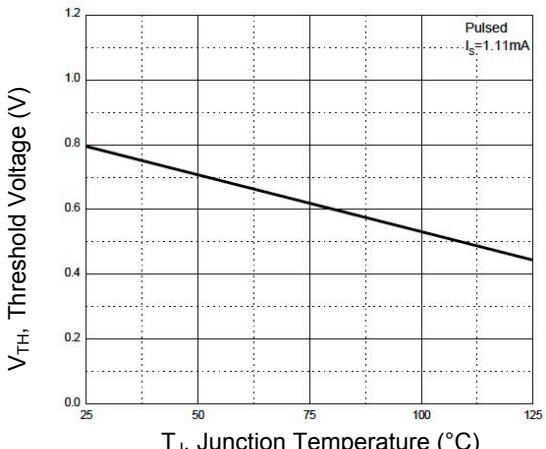


Figure 6. Threshold Voltage vs. Junction Temperature

Typical Electrical and Thermal Characteristic Curves

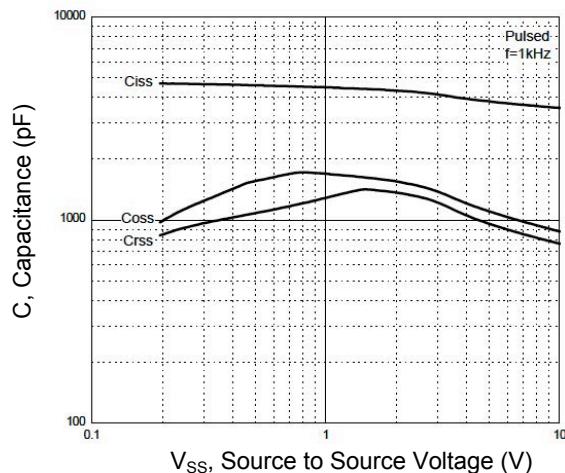


Figure 7. Capacitance Characteristics

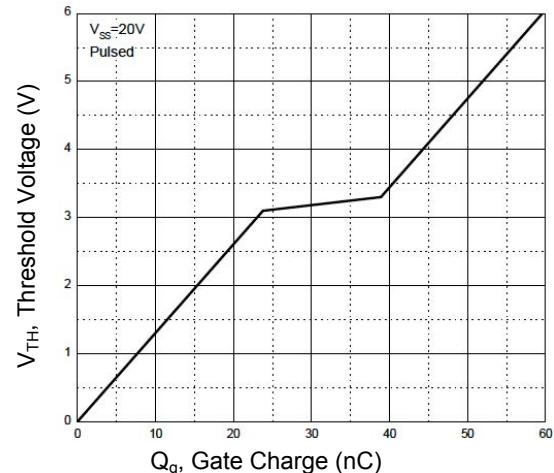


Figure 8. Gate Charge

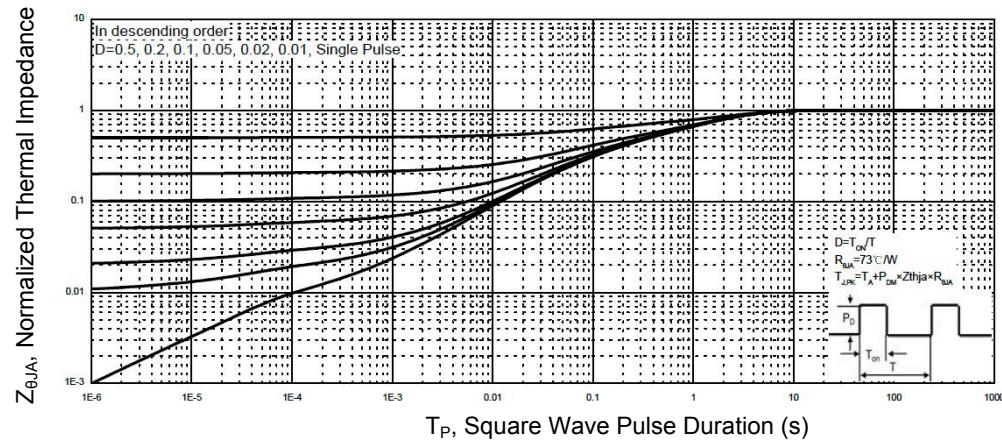


Figure 9. Normalized Maximum Transient Thermal Impedance

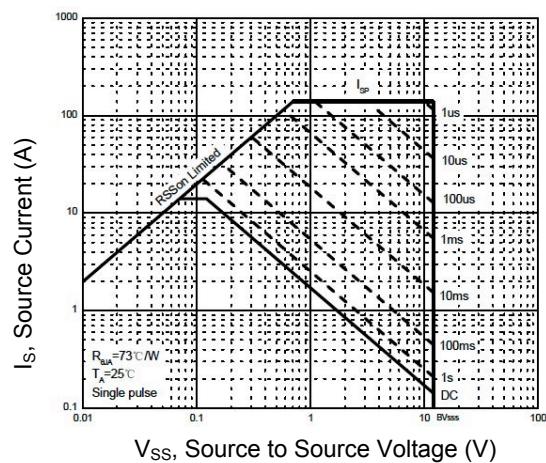
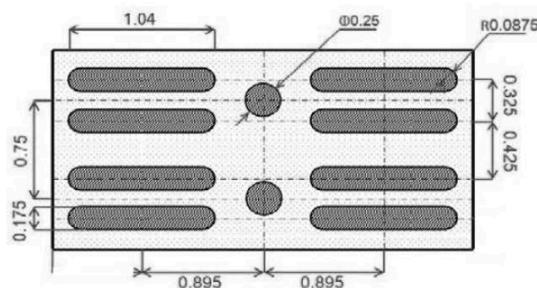
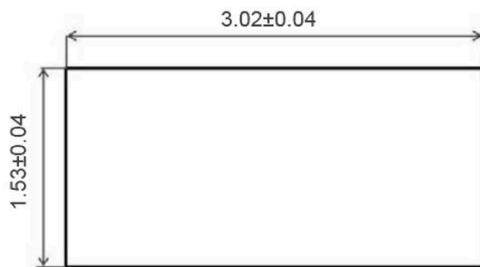


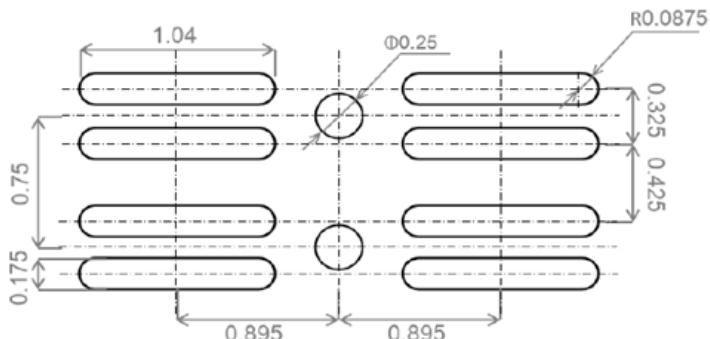
Figure 10. Maximum Forward Biased Safe Operating Area

Package Outline Dimensions (CSP)

(unit:mm)



Recommended Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.050\text{mm}$.
3. The pad layout is for reference purposes only.

unit:mm