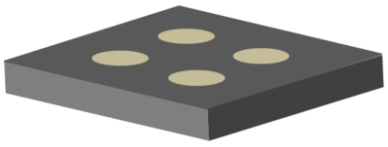
GP4412SP

20V Dual N-Channel MOSFET

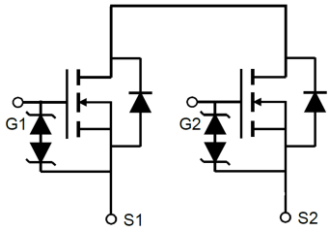
Product Summary

$V_{(BR)SSS}$	$R_{DS(on)TYP}$	I_{SS}
20V	31mΩ@4.5V	6A
	33mΩ@4.0V	
	34mΩ@3.8V	
	38mΩ@3.1V	
	46mΩ@2.5V	

CSPA1111-4



Schematic diagram



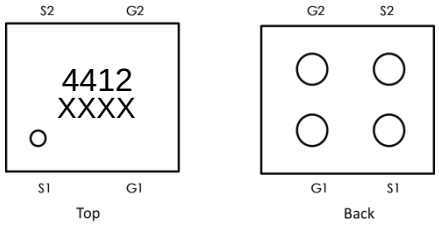
Feature

- Trench Technology
- Common-drain design
- Supper high density cell design
- ESD Diode−Protected Gate
- CSP

Application

- Lithium−ion Battery Charging and Discharging Switch

Marking and pin assignment:



ABSOLUTE MAXIMUM RATINGS (T_A = 25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Source to Source Voltage	V_{SSS}	20	V
Gate-Source Voltage	V_{GSS}	±12	V
Source Current(DC)[1]	I_S	6.0	A
Source Current (Pulse)[1,3]	I_{SP}	60	A
Total Dissipation	P_T	1.4	W
Channel Temperature	T_{ch}	150	℃
Storage Temperature	T_{STG}	-55 to +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_A = 25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Source-Source Breakdown Voltage	BV_{SSS}	V_{GS} = 0V , I_S = 250μA	20			V
Zero Gate Voltage Source Current	I_{SSS}	V_{SS} = 20V, V_{GS} = 0V			1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS} = ±8V, V_{SS} = 0V			±10	μA
On Characteristics						
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{SS} =10V, I_S = 1mA	0.5	0.8	1.3	V
Source-Source On-resistance	$R_{SS(on)}$	V_{GS} = 4.5V, I_S = 1A	21	31	36	mΩ
		V_{GS} = 4.0V, I_S = 1A	22	33	38	
		V_{GS} = 3.8V, I_S = 1A	23	34	40	
		V_{GS} = 3.0V, I_S = 1A	26	38	45	
		V_{GS} = 2.5V, I_S = 1A	30	46	60	
Dynamic Characteristics[4]						
Input Capacitance	C_{iss}	V_{SS} = 10V, V_{GS} = 0V, f =1.0MHz		416		pF
Output Capacitance	C_{oss}			76		
Reverse Transfer Capacitance	C_{rss}			58		
Gate Resistance	R_g	V_{SS} = 0V, V_{GS} = 0V		405		Ω
Switching Characteristics[4]						
Total Gate Charge	Q_g	V_{SS} = 15V, V_{GS} = 4.5V, I_S = 1A		8.4		nC
Gate-Source Charge	Q_{gs}			1.2		
Gate-Drain Charge	Q_{gd}			2.9		
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 10V, V_{GS} = 4.5V,I_S =3A		1		ns
Turn-on Rise Time	t_r			4		
Turn-off Delay Time	$t_{d(off)}$			10		
Turn-off Fall Time	t_f			10		
Source-Drain Diode Characteristics						
Diode Forward Voltage	$VF_{(S-S)}$	V_{GS} = 0V, I_S = 3A			1.2	V

Notes :

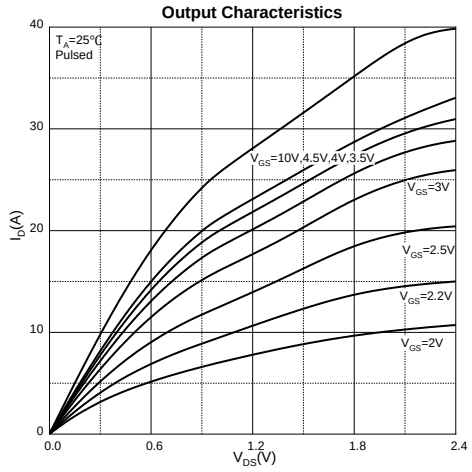
1.Mounted on FR-4 board (25.4 mm × 25.4 mm × t1.0 mm) with 1oz. Copper, using the minimum recommended pad size.

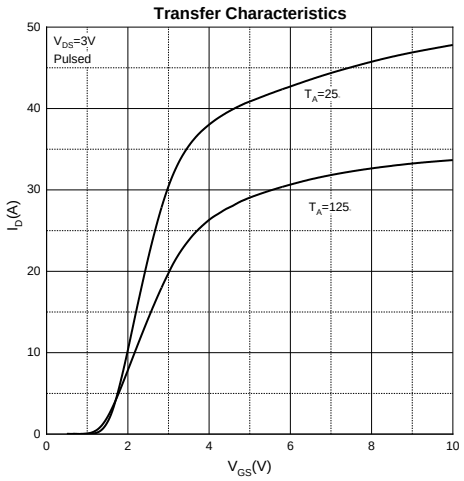
2.Mounted on Ceramic substrate (70 mm × 70 mm × t1.0 mm) with 2oz. Copper.

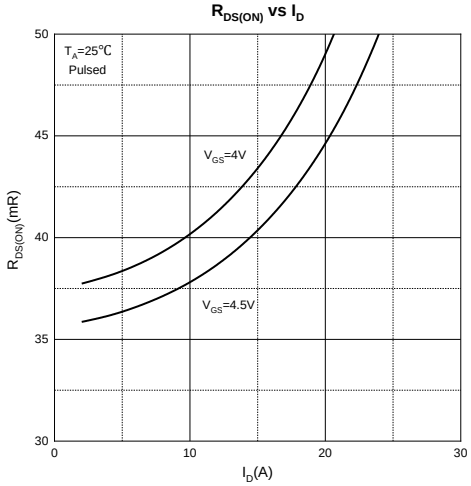
3.Pulse Test : Pulse Width = 10μs, duty cycle ≤ 1%.

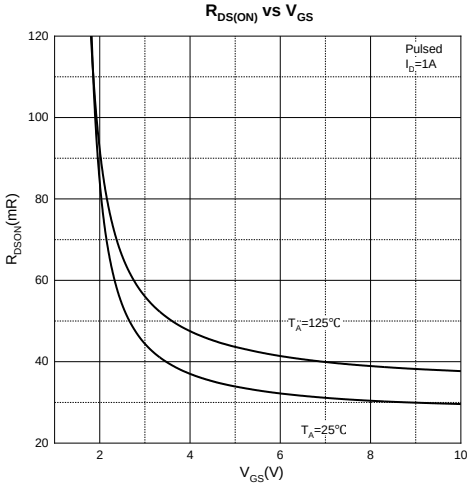
4.Guaranteed by design, not subject to production testing.

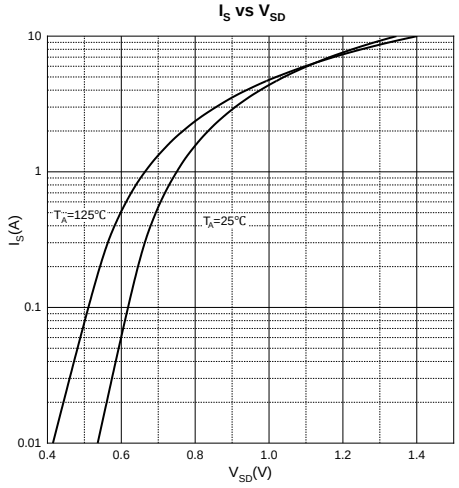
Typical Characteristics

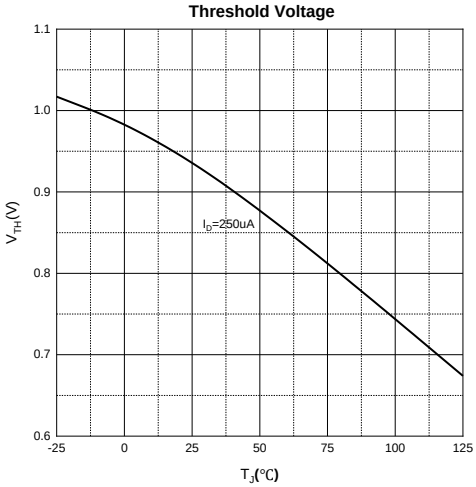




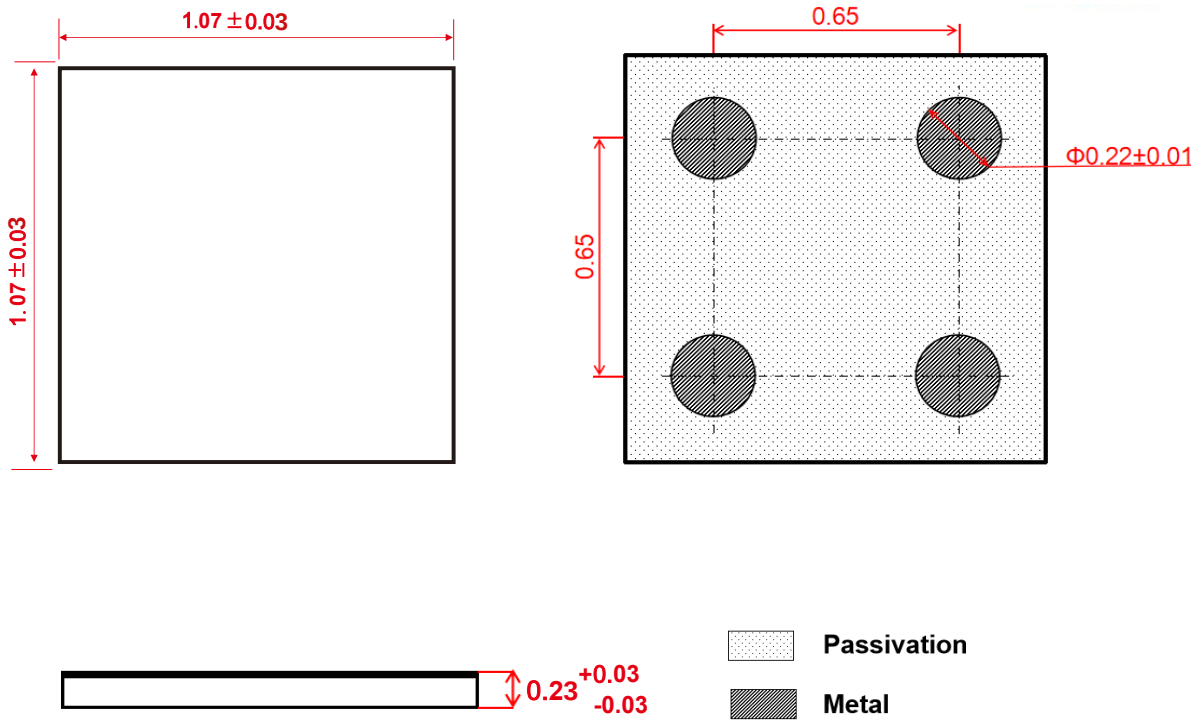








CSPA1111-4 Package Outline Dimensions(Unit:mm)



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