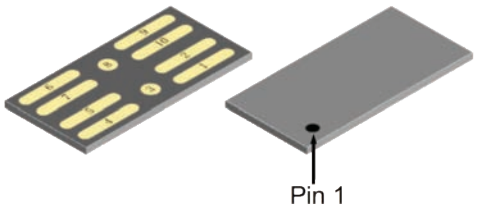
12V 2.4mohm Dual N-channel Trench MOSFET

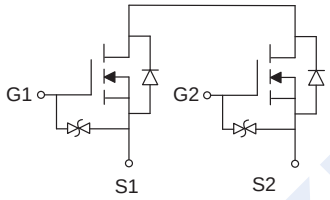
2KK5138CSP

■ Features

- V_{SS} = 12 V
- I_S = 13 A
- Trench MOSFET technology
- Extremely Low $R_{SS(ON)}$
- ESD HBM Class 2
- Common Drain Design

WLCSP - 2.92 X 1.43-10L





Equivalent circuit

■ Absolute Maximum Ratings (T_A = 25℃ unless otherwise noted)

Parameter		Symbol	Rating	Unit
Source - Source Voltage		V_{SS}	12	V
Gate-Source Voltage		V_{GS}	±8	
Source Current - Continuous (Note 1)	T_C = 25℃	I_S	13	A
	T_C = 100℃		10	
Source Current - Pulsed (Note 2)		I_{SM}	52	
Power Dissipation	T_C = 25℃	P_D	0.5	W
Thermal Resistance. Junction to Ambient (Note 3)		$R_{\theta JA}$	250	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Notes:

1. The max Source current rating base on silicon
2. Pulse Test: Pulse width ⩽ 300 us, Duty cycle ⩽ 2%
3. Mount on 1X1 inch 2oz FR - 4 PCB

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■ Electrical Characteristics (T_C = 25℃ unless othewise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Source-Source Breakdown Voltage	BV_{SSS}	V_{GS} = 0 V, I_S = 250 μA	12			V
Zero Gate Voltage Source Current	I_{SSS}	V_{SS} = 12 V, V_{GS} = 0 V			1	μA
Gate Leakage Current	I_{GSS}	V_{GS} = ±8 V, V_{SS} = 0 V			±10	
Gate Threshold voltage	$V_{GS(TH)}$	V_{SS} = V_{GS}, I_S = 1 mA	0.55	0.95	1.35	V
Source-Source on-state resistance	$R_{SS(ON)}$	V_{GS} = 4.5 V, I_S = 4 A		1.6	2.4	mΩ
		V_{GS} = 3.8 V, I_S = 4 A		1.8	2.7	
		V_{GS} = 3.1 V, I_S = 4 A		2.2	3.5	
		V_{GS} = 2.5 V, I_S = 4 A		3.5	5.5	
Forward Source to Source Voltage	V_{FSS}	V_{GS} = 0 V, I_S = 4 A		0.6	1.2	V
Dynamic Characteristics						
Input capacitance	C_{ISS}	V_{SS} = 10 V, V_{GS} = 0 V, F = 1 MHz		3500		pF
Output capacitance	C_{OSS}			450		
Reverse transfer capacitance	C_{RSS}			400		
Gate resistance	R_G	F = 1 MHz		1		KΩ
Switching Characteristics						
Turn On Delay Time	$T_{D(ON)}$	V_{SS} = 6 V, I_S = 4A, V_{GS} = 4.5 V, R_G = 3 Ω		0.6		ns
Rise Time	T_R			1.4		
Turn Off Delay Time	$T_{D(OFF)}$			6.6		
Fall Time	T_F			4		
Total Gate Charge	Q_G	V_{SS} = 6 V, I_S = 4 A, V_{GS} = 4.5 V		23		nC
Gate-Source Charge	Q_{GS}			11		
Gate-Drain Charge	Q_{GD}			5		

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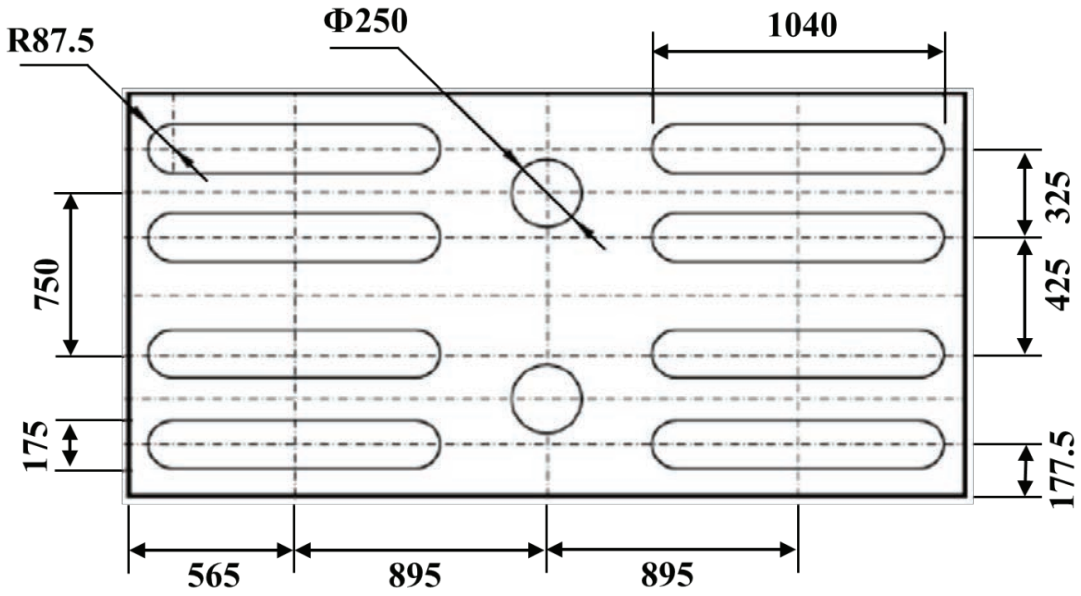
■ **WLCSP - 2.92 X 1.43-10L Package Outline Dimensions**

Bottom View



Side View