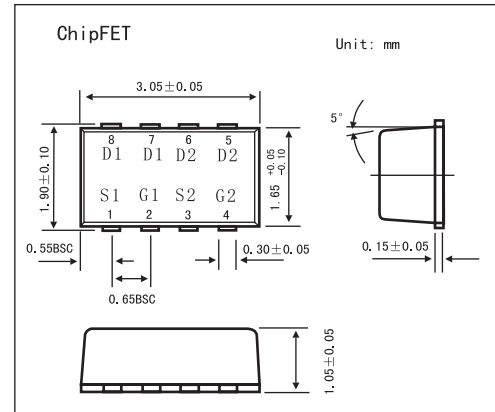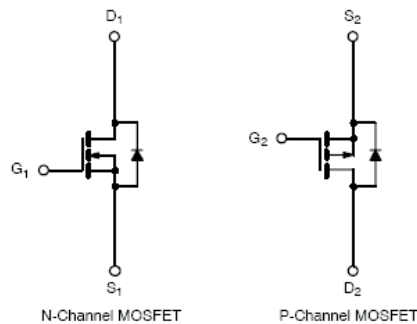# Complementary 20-V (D-S) MOSFET

KI5515DC

ChipFET   Unit: mm

■ Features

● TrenchFET Power MOSFETS

● Ultra Low $r_{DS(on)}$ and Excellent Power
   Handling In Compact Footprint

N-Channel MOSFET   P-Channel MOSFET

■ Absolute Maximum Ratings T$_A$ = 25℃

Parameter	Symbol	N-Channel		P-Channel		Unit
		5 secs	Steady State	5 secs	Steady State	
Drain-Source Voltage	V$_{DS}$	20		-20		V
Gate-Source Voltage	V$_{GS}$	±8				V
Continuous Drain Current (T$_J$ = 150℃)* T$_A$ = 25℃	I$_D$	5.9	4.4	-4.1	-3	A
T$_A$ = 85℃		4.2	3.1	-2.9	-2.2	A
Pulsed Drain Current	I$_{DM}$	20		-15		A
Continuous Source Current (Diode Conduction)*	I$_S$	1.8	0.9	-1.8	-0.9	A
Maximum Power Dissipation* T$_A$ = 25℃	P$_D$	2.1	1.1	2.1	1.1	W
T$_A$ = 85℃		1.1	0.6	1.1	0.6	W
Operating Junction and Storage Temperature Range	T$_J$, T$_{stg}$	-55 to 150				℃

*Surface Mounted on 1" X 1" FR4 Board.

■ Thermal Resistance Ratings

Parameter	Symbol		Typ	Max	Unit
Maximum Junction-to-Ambient*	t ≤5 sec	R$_{thJA}$	50	60	℃/W
	Steady State		90	110	
Maximum Junction-to-Case (Drain)	Steady State	R$_{thJF}$	30	40	

*Surface Mounted on 1" X 1" FR4 Board.

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■ Electrical Characteristics T$_J$ = 25℃

Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Gate Threshold Voltage	V$_{GS(th)}$	V$_{DS}$ = V$_{GS}$, I$_D$ = 250 μA	N-Ch	0.4		1.0	V
		V$_{DS}$ = V$_{GS}$, I$_D$ = -250 μA	P-Ch	-0.4		-1.0	
Gate Body Leakage	I$_{GSS}$	V$_{DS}$ = 0 V V$_{GS}$ =±8 V	N-Ch			±100	nA
		V$_{DS}$ = 0 V V$_{GS}$ =±8V	P-Ch			±100	
Zero Gate Voltage Drain Current	I$_{DSS}$	V$_{DS}$ = 20V, V$_{GS}$ = 0 V	N-Ch			1	
		V$_{DS}$ = -20V, V$_{GS}$ = 0 V	P-Ch			-1	
		V$_{DS}$ = 20 V, V$_{GS}$ = 0 V, T$_J$ = 85℃	N-Ch			5	μA
		V$_{DS}$ = -20V, V$_{GS}$ = 0 V, T$_J$ = 85℃	P-Ch			-5	
On State Drain Currenta	I$_{D(on)}$	V$_{DS}$ ≥5 V, V$_{GS}$ = 4.5 V	N-Ch	20			A
		V$_{DS}$ ≤-5 V, V$_{GS}$ = -4.5 V	P-Ch	-15			
Drain Source On State Resistance*	r$_{DS(on)}$	V$_{GS}$ = 4.5 V, I$_D$ = 4.4A	N-Ch		0.032	0.040	Ω
		V$_{GS}$ = -4.5 V, I$_D$ = -3.0A	P-Ch		0.069	0.086	
		V$_{GS}$ = 2.5 V, I$_D$ = 4.1A	N-Ch		0.036	0.045	
		V$_{GS}$ = -2.5 V, I$_D$ = -2.5A	P-Ch		0.097	0.121	
		V$_{GS}$ = 1.8 V, I$_D$ = 1.9A	N-Ch		0.042	0.052	
		V$_{GS}$ = -1.8 V, I$_D$ = -0.6A	P-Ch		0.137	0.171	
Forward Transconductance*	g$_{fs}$	V$_{DS}$ = 10 V, I$_D$ = 4.4A	N-Ch		22		S
		V$_{DS}$ = -10 V, I$_D$ = -3A	P-Ch		8		
Diode Forward Voltage*	V$_{SD}$	I$_S$ = 0.9A, V$_{GS}$ = 0 V	N-Ch		0.8	1.2	V
		I$_S$ = -0.9A, V$_{GS}$ = 0 V	P-Ch		-0.8	-1.2	
Total Gate Charge	Q$_g$	N-Channel V$_{DS}$ = 10V, V$_{GS}$ = 4.5V, I$_D$ = 4.4A	N-Ch		5	7.5	nC
			P-Ch		5.5	8.5	
Gate Source Charge	Q$_{gs}$	P-Channel V$_{DS}$ = -10 V, V$_{GS}$ = -4.5 V, I$_D$ = -3A	N-Ch		0.85		
			P-Ch		0.91		
Gate Drain Charge	Q$_{gd}$		N-Ch		1		
			P-Ch		1.6		
Turn On Time	t$_{d(on)}$	N Channel V$_{DD}$ = 10 V, R$_L$ = 10 Ω I$_D$= 1A, V$_{GEN}$ = 4.5V, R$_g$ = 6 Ω	N-Ch		20	30	ns
			P-Ch		18	30	
Rise Time	t$_r$		N-Ch		36	55	
			P-Ch		32	50	
Turn Off Delay Time	t$_{d(off)}$	P-Channel V$_{DD}$ = -10 V, R$_L$ = 10 Ω I$_D$= -1 A, V$_{GEN}$ = -4.5 V, R$_g$ = 6 Ω	N-Ch		30	45	
			P-Ch		42	65	
Fall Time	t$_f$		N-Ch		12	20	
			P-Ch		26	40	
Source-Drain Reverse Recovery Time	t$_{rr}$	I$_F$ =0.9 A, di/dt = 100 A/μs	N-Ch		45	90	
		I$_F$ = -0.9 A, di/dt = 100 A/μs	P-Ch		30	60	

* Pulse test; pulse width ≤300μs, duty cycle≤2%.

KEXIN