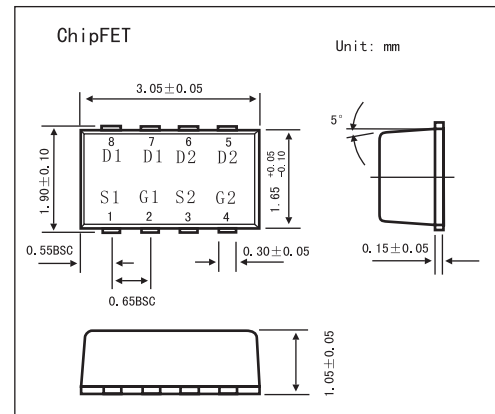
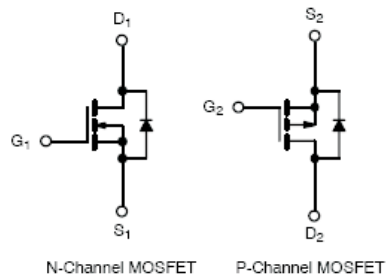


## Complementary 20-V (D-S) MOSFET

## KI5513DC

## ■ PIN Configuration

■ Absolute Maximum Ratings  $T_A = 25^\circ\text{C}$ 

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	$V_{GS}$	$\pm 12$				V	
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ )* $T_A = 25^\circ\text{C}$	$I_D$	4.2	3.1	-2.9	-2.1	A	
		$T_A = 85^\circ\text{C}$	3	2.2	-2.1	-1.5	A
Pulsed Drain Current	$I_{DM}$	10		-10		A	
Continuous Source Current (Diode Conduction)*	$I_S$	1.8	0.9	-1.8	-0.9	A	
Maximum Power Dissipation*	$P_D$	$T_A = 25^\circ\text{C}$	2.1	1.1	2.1	1.1	W
		$T_A = 85^\circ\text{C}$	1.1	0.6	1.1	0.6	W
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150				$^\circ\text{C}$	

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

## ■ Thermal Resistance Ratings

Parameter	Symbol	Typ	Max	Unit	
Maximum Junction-to-Ambient*	$R_{thJA}$	$t \leq 5 \text{ sec}$	50	60	$^\circ\text{C/W}$
		Steady State	90	110	
Maximum Junction-to-Case (Drain)	$R_{thJF}$	30	40		

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

## KI5513DC

■ Electrical Characteristics  $T_J = 25^\circ\text{C}$ 

Parameter	Symbol	Testconditions		Min	Typ	Max	Unit
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	N-Ch	0.6		1.5	V
		$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	P-Ch	-0.6		-1.5	
Gate Body Leakage	$I_{GSS}$	$V_{DS} = 0\text{V}, V_{GS} = \pm 12\text{V}$	N-Ch			$\pm 100$	nA
		$V_{DS} = 0\text{V}, V_{GS} = \pm 12\text{V}$	P-Ch			$\pm 100$	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 20\text{V}, V_{GS} = 0\text{V}$	N-Ch			1	
		$V_{DS} = -20\text{V}, V_{GS} = 0\text{V}$	P-Ch			-1	
		$V_{DS} = 20\text{V}, V_{GS} = 0\text{V}, T_J = 70^\circ\text{C}$	N-Ch			5	$\mu\text{A}$
		$V_{DS} = -20\text{V}, V_{GS} = 0\text{V}, T_J = 70^\circ\text{C}$	P-Ch			-5	
On State Drain Currenta	$I_{D(on)}$	$V_{DS} \geq 5\text{V}, V_{GS} = 4.5\text{V}$	N-Ch	10			A
		$V_{DS} \leq -5\text{V}, V_{GS} = -4.5\text{V}$	P-Ch	-10			
Drain Source On State Resistance*	$r_{DS(on)}$	$V_{GS} = 4.5\text{V}, I_D = 3.1\text{A}$	N-Ch		0.065	0.075	$\Omega$
		$V_{GS} = -4.5\text{V}, I_D = -2.1\text{A}$	P-Ch		0.130	0.155	
		$V_{GS} = 2.5\text{V}, I_D = 2.3\text{A}$	N-Ch		0.115	0.134	
		$V_{GS} = -2.5\text{V}, I_D = -1.7\text{A}$	P-Ch		0.215	0.260	
Forward Transconductance*	$g_{fs}$	$V_{DS} = 10\text{V}, I_D = 3.1\text{A}$	N-Ch		8		S
		$V_{DS} = -10\text{V}, I_D = -2.1\text{A}$	P-Ch		5		
Diode Forward Voltage*	$V_{SD}$	$I_S = 0.9\text{A}, V_{GS} = 0\text{V}$	N-Ch		0.8	1.2	V
		$I_S = -0.9\text{A}, V_{GS} = 0\text{V}$	P-Ch		-0.8	-1.2	
Total Gate Charge	$Q_g$	N-Channel $V_{DS} = 10\text{V}, V_{GS} = 4.5\text{V}, I_D = 3.1\text{A}$	N-Ch		4	6	nC
Gate Source Charge	$Q_{gs}$	P-Channel $V_{DS} = -10\text{V}, V_{GS} = -4.5\text{V}, I_D = -2.1\text{A}$	N-Ch		0.6		
			P-Ch		0.9		
Gate Drain Charge	$Q_{gd}$		N-Ch		1.3		
			P-Ch		0.6		
Turn On Time	$t_{d(on)}$	N Channel $V_{DD} = 10\text{V}, R_L = 10\Omega$	N-Ch		12	18	ns
Rise Time	$t_r$	$I_D = 1\text{A}, V_{GEN} = 4.5\text{V}, R_g = 6\Omega$	P-Ch		13	20	
			N-Ch		35	55	
Turn Off Delay Time	$t_{d(off)}$	P-Channel $V_{DD} = -10\text{V}, R_L = 10\Omega$	N-Ch		19	30	
			P-Ch		25	40	
Fall Time	$t_f$	$I_D = -1\text{A}, V_{GEN} = -4.5\text{V}, R_g = 6\Omega$	N-Ch		9	15	
			P-Ch		25	40	
Source-Drain Reverse Recovery Time	$t_{rr}$	$I_F = 0.9\text{A}, di/dt = 100\text{A}/\mu\text{s}$	N-Ch		40	80	
			P-Ch		40	80	

\* Pulse test; pulse width  $\leq 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .