Complementary 30-V (D-S) MOSFET

KI5504DC

■ PIN Configuration

ChipFET   Unit: mm

N-Channel MOSFET

P-Channel MOSFET
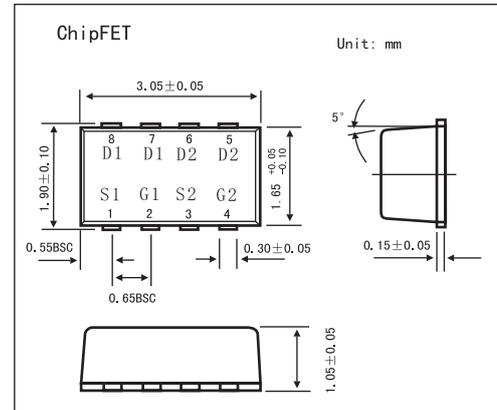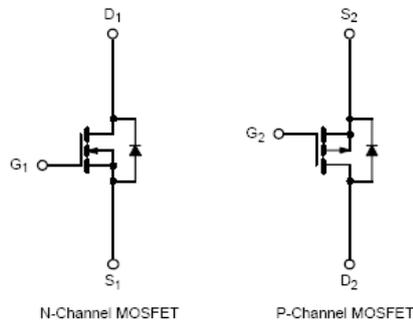
■ Absolute Maximum Ratings T_A = 25℃

Parameter	Symbol	N-Channel		P-Channel		Unit
		5 secs	Steady State	5 secs	Steady State	
Drain-Source Voltage	V_{DS}	30		-30		V
Gate-Source Voltage	V_{GS}	±20				V
Continuous Drain Current (T_J = 150℃)* T_A = 25℃	I_D	±3.9	±2.9	±2.8	±2.1	A
T_A = 85℃		±2.8	±2.1	±2.0	±1.5	A
Pulsed Drain Current	I_{DM}	±10				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$_D$ = 250μA	N-Ch	0.1			V
		V$_{DS}$ = V$_{GS}$, I$_D$ = -250 μA	P-Ch	-1.0			
Gate Body Leakage	I$_{GSS}$	V$_{DS}$ = 0 V V$_{GS}$ =±20 V	N-Ch			±100	nA
		V$_{DS}$ = 0 V V$_{GS}$ =±20 V	P-Ch			±100	
Zero Gate Voltage Drain Current	I$_{DSS}$	V$_{DS}$ = 24V, V$_{GS}$ = 0 V	N-Ch			1	nA
		V$_{DS}$ = -24V, V$_{GS}$ = 0 V	P-Ch			-1	
		V$_{DS}$ = 24 V, V$_{GS}$ = 0 V, T$_J$ = 85℃	N-Ch			5	μA
		V$_{DS}$ = -24V, V$_{GS}$ = 0 V, T$_J$ = 85℃	P-Ch			-5	
On State Drain Currenta	I$_{D(on)}$	V$_{DS}$ ≥5 V, V$_{GS}$ = 10 V	N-Ch	10			A
		V$_{DS}$ ≤-5 V, V$_{GS}$ = -10 V	P-Ch	-10			
Drain Source On State Resistance*	r$_{DS(on)}$	V$_{GS}$ = 10 V, I$_D$ = 11.8A	N-Ch		0.072	0.085	Ω
		V$_{GS}$ = -10 V, I$_D$ = -2.1A	P-Ch		0.137	0.165	
		V$_{GS}$ = 4.5 V, I$_D$ = 2.2A	N-Ch		0.120	0.143	
		V$_{GS}$ = -4.5 V, I$_D$ = -1.6A	P-Ch		0.240	0.290	
Forward Transconductance*	g$_{fs}$	V$_{DS}$ = 15 V, I$_D$ = 2.9A	N-Ch		6		S
		V$_{DS}$ = -15 V, I$_D$ = -2.1A	P-Ch		3		
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	N-Ch		5	7.5	nC
		V$_{DS}$ = 15V, V$_{GS}$ = 10V, I$_D$ = 2.9A	P-Ch		5.5	6.6	
Gate Source Charge	Q$_{gs}$		N-Ch		0.8		
		P-Channel	P-Ch		1.2		
Gate Drain Charge	Q$_{gd}$	V$_{DS}$ = -15 V, V$_{GS}$ = -10 V, I$_D$ = -2.1A	N-Ch		1.0		
			P-Ch		0.9		
Turn On Time	t$_{d(on)}$	N Channel	N-Ch		7	11	ns
		V$_{DD}$ = 15 V, R$_L$ = 15 Ω	P-Ch		8	12	
Rise Time	t$_r$	I$_D$= 1A, V$_{GEN}$ = 10V, R$_g$ = 6 Ω	N-Ch		12	18	
			P-Ch		11	18	
Turn Off Delay Time	t$_{d(off)}$	P-Channel	N-Ch		12	18	
		V$_{DD}$ = -15 V, R$_L$ = 15 Ω	P-Ch		14	21	
Fall Time	t$_f$	I$_D$= -1 A, V$_{GEN}$ = -10 V, R$_g$ = 6 Ω	N-Ch		7	11	
			P-Ch		8	12	
Source-Drain Reverse Recovery Time	t$_{rr}$	I$_F$ =0.9 A, di/dt = 100 A/μs	N-Ch		40	80	
		I$_F$ = -0.9 A, di/dt = 100 A/μs	P-Ch		40	80	

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