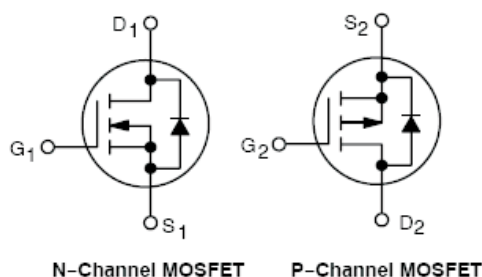
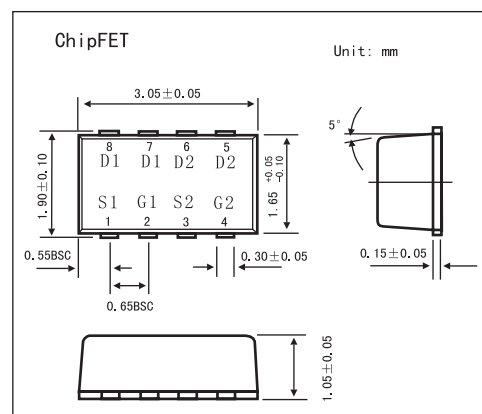


Power MOSFET

KTHD3100C

■ Features

- Complementary N-Channel and P-Channel MOSFET
- Leadless SMD Package Provides Great Thermal Characteristics
- Trench P-Channel for Low On Resistance
- Low Gate Charge N-Channel for Test Switching

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

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-source voltage	V _{DSS}	20		V
Gate-source voltage	V _{GSS}	± 12	± 8.0	V
Drain current Continuous *1 T _A = 25℃ T _A = 85℃ t≤10s	I _D	2.9	-3.2	A
		2.1	-2.3	
		3.9	-4.4	
Drain current Pulsed t = 10 μ s *1	I _{DM}	12	-13	A
Total power dissipation t≤5s	P _D	1.1		W
		3.1		W
Operating and Storage Temperature Range	T _J , T _{stg}	-55 to 150		℃
Source Current (Body Diode)	I _S	2.5		A
Lead Temperature for Soldering Purposes	T _L	260		℃
Junction-to-Ambient *1 Steady State t≤10s	R θ JA	113		℃/W
		60		

*1 Surface Mounted on FR4 board using 1 in sq pad size

KTHD3100C

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-source breakdown voltage	V _{(BR) DSS}	I _D =250 μ A, V _{GS} =0V	N-Ch	20		V
		I _D =-250 μ A, V _{GS} =0V	P-Ch	-20		
Zero gate voltage drain current	I _{DSS}	V _{DS} =16V, V _{GS} =0V	N-Ch		1	μ A
		V _{DS} =16V, V _{GS} =0V, T _J = 25°C			5.0	
		V _{DS} =-16V, V _{GS} =0V	P-Ch		-1	
		V _{DS} =-16V, V _{GS} =0V, T _J = 125°C			-5	
Gate-to-Source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = $\pm$ 12 V	N-Ch		$\pm$ 100	nA
		V _{DS} = 0 V, V _{GS} = $\pm$ 8 V	P-Ch		$\pm$ 100	
Gate threshold voltage *1	V _{GS (th)}	V _{DS} = V _{GS} , I _D = 250 μ A	N-Ch	0.6	1.2	V
		V _{DS} = V _{GS} , I _D = -250 μ A	P-Ch	-0.45	-1.5	
Static drain-source on-state resistance *1	R _{DS (on)}	I _D =2.9A, V _{GS} =4.5A	N-Ch	58	80	m Ω
		I _D =2.3A, V _{GS} =2.5V		77	115	
Static drain-source on-state resistance *1	R _{DS (on)}	I _D =-3.2A, V _{GS} =-4.5V	P-Ch	64	80	m Ω
		I _D =-2.2A, V _{GS} =-2.5V		85	110	
Forward Transconductance	g _{FS}	I _D =2.9A, V _{DS} =10V	N-Ch	6.0		S
		I _D =-3.2A, V _{DS} =-10V	P-Ch	8.0		
Input capacitance	C _{iss}	N-Channel V _{DS} =10V, V _{GS} =0V, f=1MHz	N-Ch	165		pF
			P-Ch	680		
Output capacitance	C _{oss}	P-Channel	N-Ch	80		pF
			P-Ch	100		
Reverse transfer capacitance	C _{rss}	V _{DS} =-10V, V _{GS} =0V, f=1MHz	N-Ch	25		pF
			P-Ch	70		
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 4.5 V, V _{DS} = 10 V, I _D = 2.9 A	N-Ch	2.3		nC
		V _{GS} = -4.5 V, V _{DS} = -10 V, I _D = -3.2 A	P-Ch	7.4		
Threshold Gate Charge	Q _{G(TH)}	V _{GS} = 4.5 V, V _{DS} = 10 V, I _D = 2.9 A	N-Ch	0.2		
		V _{GS} = -4.5 V, V _{DS} = -10 V, I _D = -3.2 A	P-Ch	0.6		
Gate-to-Source Gate Charge	Q _{GS}	V _{GS} = 4.5 V, V _{DS} = 10 V, I _D = 2.9 A	N-Ch	0.4		
		V _{GS} = -4.5 V, V _{DS} = -10 V, I _D = -3.2 A	P-Ch	1.4		
Gate-to-Drain "Miller" Charge	Q _{GD}	V _{GS} = 4.5 V, V _{DS} = 10 V, I _D = 2.9 A	N-Ch	0.7		
		V _{GS} = -4.5 V, V _{DS} = -10 V, I _D = -3.2 A	P-Ch	2.5		
Turn-on delay time	t _{d (on)}	I _D =2.9A, V _{DD} =10V	N-Ch	6.3		ns
		I _D =-3.2A, V _{DD} =-10V	P-Ch	5.8		
Rise time	t _r	N-Channel V _{GS} =4.5V, R _G =2.5 Ω *2	N-Ch	10.7		ns
			P-Ch	11.7		
Turn-off delay time *1	t _{d (off)}	P-Channel	N-Ch	9.6		ns
			P-Ch	16		
Fall time *1	t _f	V _{GS} =-4.5V, R _G =2.5 Ω *2	N-Ch	1.5		ns
			P-Ch	12.4		
Forward Voltage *1	V _{SD}	I _S =2.5 A, V _{GS} =0V	N-Ch	0.8	1.15	V
		I _S =-2.5 A, V _{GS} =0 V	P-Ch	-0.8	-1.2	

KTHD3100C

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Reverse Recovery Time	t _{rr}	N-Channel	N-Ch		12.5		ns
			P-Ch		13.5		
	t _a	V _{GS} = 0 V,dis/dt = 100 A/μs,I _S =1.5 A	N-Ch		9		
			P-Ch		9.5		
	t _b	P-Channel V _{GS} = 0 V,dis/dt = 100 A/μs,I _S =1.5A	N-Ch		3.5		
			P-Ch		4		
Reverse Recovery Storage Charge	Q _{RR}		N-Ch		6		nC
			P-Ch		6.5		

*1 Pulse Test: Pulse Width ≤250 μs, Duty Cycle ≤2%.

*2 Switching characteristics are independent of operating junction temperature.