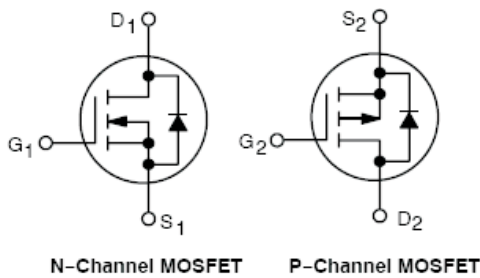
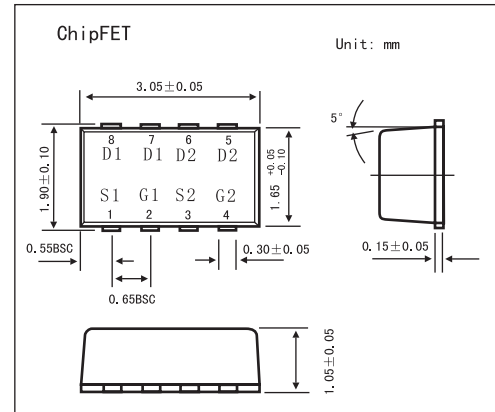


Power MOSFET

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 $T_A = 25^\circ\text{C}$ $T_A = 85^\circ\text{C}$ $t \leq 10\text{s}$	I_D	2.9	-3.2	A
		2.1	-2.3	
		3.9	-4.4	
Drain current Pulsed $t = 10 \mu\text{s}$ *1	I_{DM}	12	-13	A
Total power dissipation $t \leq 5\text{s}$	P_D	1.1		W
		3.1		W
Operating and Storage Temperature Range	T_J, T_{stg}	-55 to 150		$^\circ\text{C}$
Source Current (Body Diode)	I_S	2.5		A
Lead Temperature for Soldering Purposes	T_L	260		$^\circ\text{C}$
Junction-to-Ambient *1 Steady State $t \leq 10\text{s}$	$R_{\theta JA}$	113		$^\circ\text{C/W}$
		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	$V_{(BR)DSS}$	$I_D=250\mu A, V_{GS}=0V$	N-Ch	20		V	
		$I_D=-250\mu A, V_{GS}=0V$	P-Ch	-20			
Zero gate voltage drain current	I_{DSS}	$V_{DS}=16V, V_{GS}=0V$	N-Ch		1	μA	
		$V_{DS}=16V, V_{GS}=0V, T_J = 25^\circ C$			5.0		
		$V_{DS}=-16V, V_{GS}=0V$	P-Ch		-1		
		$V_{DS}=-16V, V_{GS}=0V, T_J = 125^\circ C$			-5		
Gate-to-Source Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 12V$	N-Ch		± 100	nA	
		$V_{DS} = 0V, V_{GS} = \pm 8V$	P-Ch		± 100		
Gate threshold voltage *1	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	N-Ch	0.6	1.2	V	
		$V_{DS} = V_{GS}, I_D = -250\mu A$	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	$m\Omega$
		$I_D=2.3A, V_{GS}=2.5V$			77	115	
Static drain-source on-state resistance *1	$R_{DS(on)}$	$I_D=-3.2A, V_{GS}=-4.5V$	P-Ch		64	80	$m\Omega$
		$I_D=-2.2A, V_{GS}=-2.5V$			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	$Q_{G(TOT)}$	$V_{GS} = 4.5V, V_{DS} = 10V, I_D = 2.9A$	N-Ch		2.3	nC	
		$V_{GS} = -4.5V, V_{DS} = -10V, I_D = -3.2A$	P-Ch		7.4		
Threshold Gate Charge	$Q_{G(TH)}$	$V_{GS} = 4.5V, V_{DS} = 10V, I_D = 2.9A$	N-Ch		0.2	nC	
		$V_{GS} = -4.5V, V_{DS} = -10V, I_D = -3.2A$	P-Ch		0.6		
Gate-to-Source Gate Charge	Q_{GS}	$V_{GS} = 4.5V, V_{DS} = 10V, I_D = 2.9A$	N-Ch		0.4	nC	
		$V_{GS} = -4.5V, V_{DS} = -10V, I_D = -3.2A$	P-Ch		1.4		
Gate-to-Drain "Miller" Charge	Q_{GD}	$V_{GS} = 4.5V, V_{DS} = 10V, I_D = 2.9A$	N-Ch		0.7	nC	
		$V_{GS} = -4.5V, V_{DS} = -10V, I_D = -3.2A$	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 $V_{GS}=4.5V, R_G=2.5\Omega *2$	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	$V_{GS}=-4.5V, R_G=2.5\Omega *2$	N-Ch		1.5	ns	
			P-Ch		12.4		
Forward Voltage *1	V_{SD}	$I_S=2.5A, V_{GS}=0V$	N-Ch		0.8	1.15	V
		$I_S=-2.5A, V_{GS}=0V$	P-Ch		-0.8	-1.2	

KTHD3100C

■ Electrical Characteristics Ta = 25°C

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