MOS Field Effect Transistor

KPA1790

■ Features

- Dual chip type
- Low on-state resistance

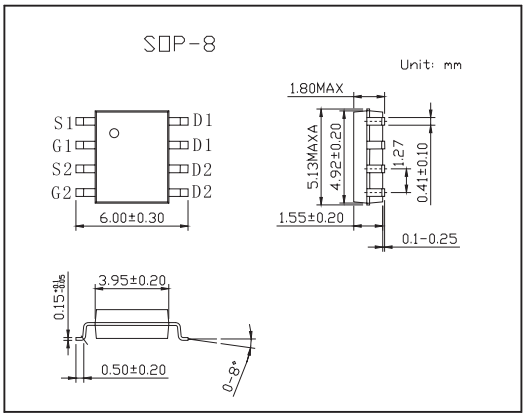
  N-channel $R_{DS(on)1}$ = 0.12Ω TYP. (V_{GS} = 10 V, I_D = 0.5 A)

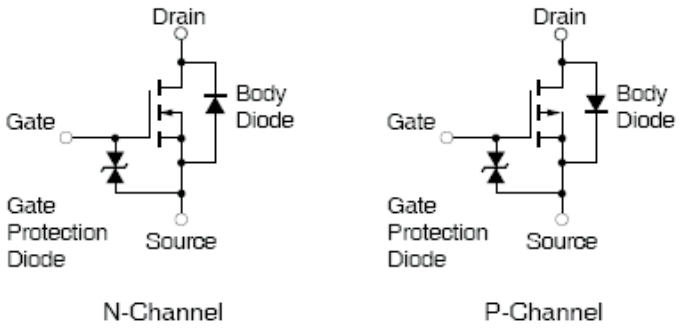
  $R_{DS(on)2}$ = 1.19Ω TYP. (V_{GS} = 4 V, I_D = 0.5 A)
- P-channel $R_{DS(on)1}$ = 0.45Ω TYP. (V_{GS} = -10 V, I_D = -0.35 A)

  $R_{DS(on)2}$ = 0.74Ω TYP. (V_{GS} = -4 V, I_D = -0.35 A)
- Low input capacitance

  N-channel C_{iss} = 180 pF TYP.

  P-channel C_{iss} = 230 pF TYP.
- Built-in G-S protection diode
- Small and surface mount package





■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	N-Channel	P- Channel	Unit
Drain to Source Voltage (V_{GS} = 0 V)	V_{DSS}	60	-60	V
Gate to Source Voltage (V_{DS} = 0 V)	V_{GSS}	±20	±20	V
Drain Current (DC)	$I_{D(DC)}$	±1.0	±0.7	A
Drain Current (pulse) *1	$I_{D(pulse)}$	±4.0	±2.8	A
Total Power Dissipation (1 unit) *2	P_T	1.7		W
Total Power Dissipation (2 units) *2	P_T	2		W
Channel Temperature	T_{ch}	150		℃
Storage Temperature	T_{stg}	-55 to +150		℃
Single Avalanche Current *3	I_{AS}	0.5	-0.35	A
Single Avalanche Energy *3	E_{AS}	0.02	0.01	mJ

*1. PW ≤ 10 μs, Duty Cycle ≤ 1%

*2. Mounted on ceramic substrate of 2000 mm^2 X 2.25 mm

*3. Starting T_{ch} = 25℃, V_{DD} = 30 V, R_G = 25 Ω , V_{GS} = 20 → 0 V

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60 V, V_{GS} = 0 V	N-Ch			10	μA
		V_{DS} = -60V, V_{GS} = 0 V	P- Ch			-10	
Gate Leakage Current	I_{GSS}	V_{GS} = ±16 V, V_{DS} = 0 V	N-Ch			±10	μA
		V_{GS} = ±16 V, V_{DS} = 0 V	P- Ch			±10	
Gate Cut-off Voltage	$V_{GS(off)}$	V_{DS} = 10 V, I_D = 1 mA	N-Ch	1.0	1.7	2.5	V
		V_{DS} = -10 V, I_D = -1 mA	P- Ch	-1.0	-1.7	-2.5	
Forward Transfer Admittance	$\lvert y_{fs} \rvert$	V_{DS} = 10 V, I_D = 0.5 A	N-Ch	1.0	1.7		S
		V_{DS} = -10 V, I_D = -0.35A	P- Ch	5.0			
Drain to Source On-state Resistance	$R_{DS(on)1}$	V_{GS} = 10 V, I_D = 0.5 A	N-Ch		0.12	0.26	Ω
	$R_{DS(on)2}$	V_{GS} = 4 V, I_D = 0.5 A			0.19	0.34	Ω
	$R_{DS(on)1}$	V_{GS} = -10 V, I_D = -0.35 A	P- Ch		0.45	0.6	Ω
	$R_{DS(on)2}$	V_{GS} = -4 V, I_D = -0.35 A			0.74	1.1	Ω
Input Capacitance	C_{iss}	N-Channel V_{DS} = 10 V,V_{GS} = 0 V,f = 1 MHz	N-Ch		180		pF
			P- Ch		230		
Output Capacitance	C_{oss}		N-Ch		100		pF
		P- Channel	P- Ch		100		
Reverse Transfer Capacitance	C_{rss}	V_{DS} = -10 V,V_{GS} = 0 V,f = 1 MHz	N-Ch		35		pF
			P- Ch		25		
Turn-on Delay Time	$t_{d(on)}$	N-Channel	N-Ch		1		ns
		V_{DD} = 30 V, I_D =0.5 A,V_{GS} = 10 V	P- Ch		1.9		
Rise Time	t_r	R_G = 10 Ω	N-Ch		1.4		ns
			P- Ch		1.7		
Turn-off Delay Time	$t_{d(off)}$	P- Channel	N-Ch		23		ns
		V_{DD} = -30 V, I_D = -0.35 A,V_{GS} = -10 V	P- Ch		30		
Fall Time	t_f	R_G = 10 Ω	N-Ch		17		ns
			P- Ch		15		
Total Gate Charge	Q_G	N-Channel	N-Ch		8		nC
		I_D = 1.0 A,V_{DD} = 48 V,V_{GS} = 10 V	P- Ch		7.6		
Gate to Source Charge	Q_{GS}		N-Ch		1		nC
		P- Channel	P- Ch		1		
Gate to Drain Charge	Q_{GD}	I_D = -0.7 A,V_{DD} = -48 V,V_{GS} = -10 V	N-Ch		3.5		nC
			P- Ch		2		
Body Diode Forward Voltage Note	$V_{F(S-D)}$	I_F = 1.0 A, V_{GS} = 0 V	N-Ch		0.75		V
		I_F = 0.7 A, V_{GS} = 0 V	P- Ch		0.85		
Reverse Recovery Time	t_{rr}	N-Channel	N-Ch		30		ns
		I_F = 1.0A, V_{GS} = 0 V,di/dt = 100 A/μs	P- Ch		58		
Reverse Recovery Charge	Q_{rr}	P-Channel	N-Ch		33		nC
		I_F = 0.7A, V_{GS} = 0 V,di/dt = 100 A/μs	P- Ch		130		