MOS Field Effect Transistor

KPA1793

■ Features

- Low on-state resistance

  N-channel $R_{DS(on)1}$ = 69 mΩ MAX. (V_{GS} = 10 V, I_D = 1.5 A)

  $R_{DS(on)2}$ = 72 mΩ MAX. (V_{GS} = 4.0 V, I_D = 1.5 A)

  $R_{DS(on)3}$ = 107 mΩ MAX. (V_{GS} = 2.5 V, I_D = 1.0 A)

- P-channel $R_{DS(on)1}$ = 115 mΩ MAX. (V_{GS} = -4.5 V, I_D = -1.5 A)

  $R_{DS(on)2}$ = 120 mΩ MAX. (V_{GS} = -4.0 V, I_D = -1.5 A)

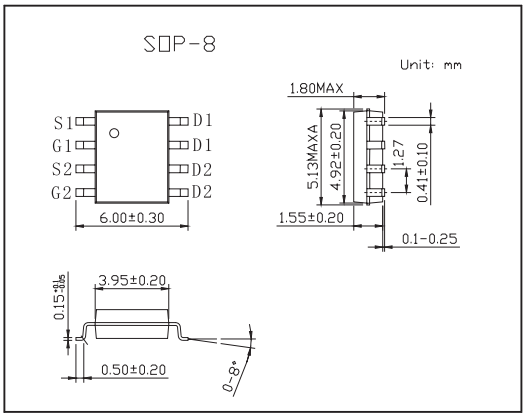
  $R_{DS(on)3}$ = 190 mΩ MAX. (V_{GS} = -2.5 V, I_D = -1.0 A)

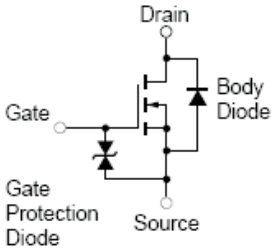
- Low input capacitance

  N-channel C_{iss} = 160 pF TYP.

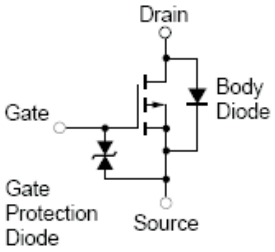
  P-channel C_{iss} = 370 pF TYP.

- Built-in gate protection diode
- Small and surface mount package





N-Channel



P-Channel

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	N-Channel	P- Channel	Unit
Drain to Source Voltage (V_{GS} = 0 V)	V_{DSS}	20	-20	V
Gate to Source Voltage (V_{DS} = 0 V)	V_{GSS}	±12	±12	V
Drain Current (DC)	$I_{D(DC)}$	±3	±3	A
Drain Current (pulse) *1	$I_{D(pulse)}$	±12	±12	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		℃

*1 PW ≤ 10 μs, Duty Cycle ≤ 1%

*2 Mounted on ceramic substrate of 5500 mm^2 X 2.2 mm

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20 V, V_{GS} = 0 V	N-Ch			10	μA
		V_{DS} = -20V, V_{GS} = 0 V	P- Ch			-10	
Gate Leakage Current	I_{GSS}	V_{GS} = ±12 V, V_{DS} = 0 V	N-Ch			±10	μA
		V_{GS} = ±12 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	0.5	1.0	1.5	V
		V_{DS} = -10 V, I_D = -1 mA	P- Ch	-0.5	-1.0	-1.5	
Forward Transfer Admittance	$\|y_{fs}\|$	V_{DS} = 10 V, I_D = 1.5 A	N-Ch	1.0			S
		V_{DS} = -10 V, I_D = -1.5 A	P- Ch	1.0			
Drain to Source On-state Resistance	$R_{DS(on)1}$	V_{GS} = 4.5 V, I_D = 1.5 A	N-Ch		55	69	mΩ
	$R_{DS(on)2}$	V_{GS} = 4.0 V, I_D = 1.5 A			57	72	mΩ
	$R_{DS(on)3}$	V_{GS} = 2.5 V, I_D = 1.0A			78	107	mΩ
	$R_{DS(on)1}$	V_{GS} = -4.5 V, I_D = -1.5 A	P- Ch		75	115	mΩ
	$R_{DS(on)2}$	V_{GS} = -4.0 V, I_D = -1.5 A			80	120	mΩ
	$R_{DS(on)3}$	V_{GS} = -2.5 V, I_D = -1.0 A			116	190	mΩ
Input Capacitance	C_{iss}	N-Channel	N-Ch		160		pF
		V_{DS} = 10 V,V_{GS} = 0 V,f = 1 MHz	P- Ch		370		
Output Capacitance	C_{oss}		N-Ch		60		pF
		P- Channel	P- Ch		110		
Reverse Transfer Capacitance	C_{rss}	V_{DS} = -10 V,V_{GS} = 0 V,f = 1 MHz	N-Ch		40		pF
			P- Ch		40		
Turn-on Delay Time	$t_{d(on)}$	N-Channel	N-Ch		17		ns
		V_{DD} = 15 V, I_D = 1.5 A,V_{GS} = 4 V	P- Ch		120		
Rise Time	t_r	R_G = 10 Ω	N-Ch		50		ns
			P- Ch		260		
Turn-off Delay Time	$t_{d(off)}$	P- Channel	N-Ch		86		ns
		V_{DD} = -15 V, I_D = -1.5 A,V_{GS} = -4 V	P- Ch		410		
Fall Time	t_f	R_G = 10 Ω	N-Ch		80		ns
			P- Ch		360		
Total Gate Charge	Q_G	N-Channel	N-Ch		3.1		nC
		I_D = 3.0 A,V_{DD} = 16 V,V_{GS} = 4.0 V	P- Ch		3.4		
Gate to Source Charge	Q_{GS}		N-Ch		0.7		nC
		P- Channel	P- Ch		1.3		
Gate to Drain Charge	Q_{GD}	I_D = -3.0 A,V_{DD} = -10 V,V_{GS} = -4.0 V	N-Ch		1.4		nC
			P- Ch		1.6		
Body Diode Forward Voltage Note	$V_{F(S-D)}$	I_F = 3 A, V_{GS} = 0 V	N-Ch		0.86		V
		I_F = 3 A, V_{GS} = 0 V	P- Ch		0.86		
Reverse Recovery Time	t_{rr}	I_F = 3 A, V_{GS} = 0 V,di/dt = 50 A/μs	N-Ch		70		ns
			P- Ch		24		
Reverse Recovery Charge	Q_{rr}		N-Ch		12		nC
			P- Ch		1.5		