

MOS Field Effect Transistor

KPA1792

■ Features

● Low on-state resistance

N-channel $R_{DS(on)1} = 26 \text{ m}\Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 3.4 \text{ A)}$

$R_{DS(on)2} = 36 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.5 \text{ V, } I_D = 3.4 \text{ A)}$

$R_{DS(on)3} = 42 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.0 \text{ V, } I_D = 3.4 \text{ A)}$

● P-channel $R_{DS(on)1} = 36 \text{ m}\Omega \text{ MAX. (} V_{GS} = -10 \text{ V, } I_D = -2.9 \text{ A)}$

$R_{DS(on)2} = 54 \text{ m}\Omega \text{ MAX. (} V_{GS} = -4.5 \text{ V, } I_D = -2.9 \text{ A)}$

$R_{DS(on)3} = 65 \text{ m}\Omega \text{ MAX. (} V_{GS} = -4.0 \text{ V, } I_D = -2.9 \text{ A)}$

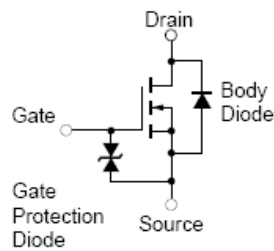
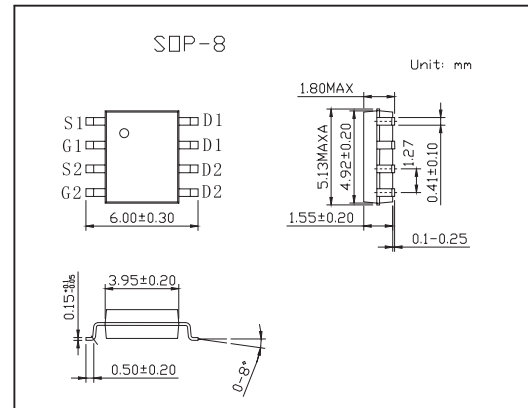
● Low input capacitance

N-channel $C_{iss} = 760 \text{ pF TYP.}$

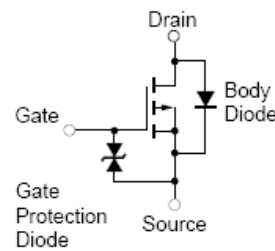
P-channel $C_{iss} = 900 \text{ pF TYP.}$

● Built-in gate protection diode

● Small and surface mount package



N-Channel



P-Channel

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

Parameter	Symbol	N-Channel	P- Channel	Unit
Drain to Source Voltage ($V_{GS} = 0 \text{ V}$)	V_{DSS}	30	-30	V
Gate to Source Voltage ($V_{DS} = 0 \text{ V}$)	V_{GSS}	± 20	± 20	V
Drain Current (DC)	$I_{D(DC)}$	± 6.8	± 5.8	A
Drain Current (pulse) *1	$I_{D(pulse)}$	± 27.2	± 23.2	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		$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150		$^\circ\text{C}$

*1 $PW \leq 10 \mu\text{s}$, Duty Cycle $\leq 1\%$

*2 Mounted on ceramic substrate of $2000 \text{ mm}^2 \times 1.6 \text{ mm}$

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■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V	N-Ch		10	μ A	
		V _{DS} = -30V, V _{GS} = 0 V	P- Ch		-1		
Gate Leakage Current	I _{GSS}	V _{GS} = ±16 V, V _{DS} = 0 V	N-Ch		±10	μ A	
		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	1.5	2.1	2.5	V
		V _{DS} = -10 V, I _D = -1 mA	P- Ch	-1.5	-2.0	-2.5	
Forward Transfer Admittance	y _{fs}	V _{DS} = 10 V, I _D = 3.4 A	N-Ch	3.0	7.5		S
		V _{DS} = -10 V, I _D = -2.9A	P- Ch	3.5	8.0		
Drain to Source On-state Resistance	R _{DS(on)1}	V _{GS} = 10 V, I _D = 3.4 A	N-Ch		20.5	26	m Ω
	R _{DS(on)2}	V _{GS} = 4.5 V, I _D = 3.4 A			27	36	m Ω
	R _{DS(on)3}	V _{GS} = 4.0 V, I _D = 3.4A			31	42	m Ω
	R _{DS(on)1}	V _{GS} = -10 V, I _D = -2.9 A	P- Ch		30	36	m Ω
	R _{DS(on)2}	V _{GS} = -4.5 V, I _D = -2.9 A			43	54	m Ω
	R _{DS(on)3}	V _{GS} = -4.0 V, I _D = -2.9 A			49	65	m Ω
Input Capacitance	C _{iss}	N-Channel V _{DS} = 10 V, V _{GS} = 0 V, f = 1 MHz	N-Ch	760		pF	
			P- Ch	900			
Output Capacitance	C _{oss}	P- Channel V _{DS} = -10 V, V _{GS} = 0 V, f = 1 MHz	N-Ch	250		pF	
			P- Ch	300			
Reverse Transfer Capacitance	C _{rss}	V _{DS} = -10 V, V _{GS} = 0 V, f = 1 MHz	N-Ch	95		pF	
			P- Ch	120			
Turn-on Delay Time	t _{d(on)}	N-Channel V _{DD} = 15 V, I _D = 3.4 A, V _{GS} = 10 V	N-Ch	20		ns	
			P- Ch	23			
Rise Time	t _r	R _G = 10 Ω	N-Ch	140		ns	
			P- Ch	220			
Turn-off Delay Time	t _{d(off)}	P- Channel V _{DD} = -15 V, I _D = -2.9 A, V _{GS} = -10 V	N-Ch	50		ns	
			P- Ch	90			
Fall Time	t _f	R _G = 10 Ω	N-Ch	30		ns	
			P- Ch	70			
Total Gate Charge	Q _G	N-Channel I _D = 6.8 A, V _{DD} = 24 V, V _{GS} = 10 V	N-Ch	14		nC	
			P- Ch	17			
Gate to Source Charge	Q _{GS}	P- Channel I _D = -5.8 A, V _{DD} = -24 V, V _{GS} = -10 V	N-Ch	2		nC	
			P- Ch	2.5			
Gate to Drain Charge	Q _{GD}	I _D = -5.8 A, V _{DD} = -24 V, V _{GS} = -10 V	N-Ch	5		nC	
			P- Ch	4.0			
Body Diode Forward Voltage Note	V _{F(S-D)}	I _F = 6.8 A, V _{GS} = 0 V	N-Ch	0.86		V	
		I _F = 5.8 A, V _{GS} = 0 V	P- Ch	0.85			
Reverse Recovery Time	t _{rr}	N-Channel I _F = 6.8A, V _{GS} = 0 V, di/dt = 100 A/μ s	N-Ch	30		ns	
			P- Ch	40			
Reverse Recovery Charge	Q _{rr}	P-Channel I _F = 5.8A, V _{GS} = 0 V, di/dt = 100 A/μ s	N-Ch	20		nC	
			P- Ch	30			