

MOS Field Effect Transistor

KPA2790GR

■ Features

● Low on-state resistance

N-channel $R_{DS(on)1} = 28 \text{ m}\Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 3 \text{ A)}$

$R_{DS(on)2} = 40 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.5 \text{ V, } I_D = 3 \text{ A)}$

● P-channel $R_{DS(on)1} = 60 \text{ m}\Omega \text{ MAX. (} V_{GS} = -10 \text{ V, } I_D = -3 \text{ A)}$

$R_{DS(on)2} = 80 \text{ m}\Omega \text{ MAX. (} V_{GS} = -4.5 \text{ V, } I_D = -3 \text{ A)}$

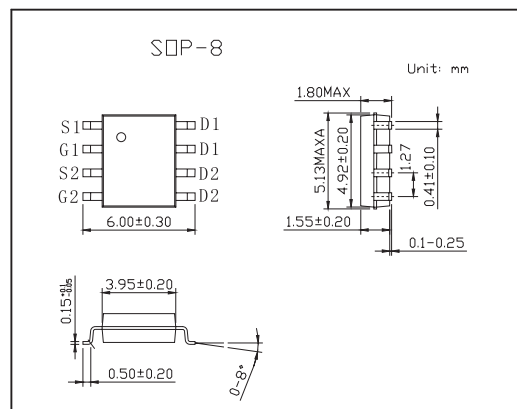
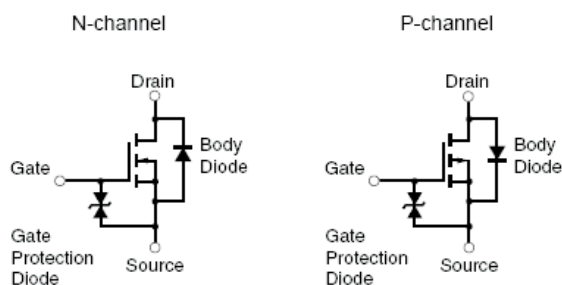
● Low input capacitance

N-channel $C_{iss} = 500 \text{ pF TYP.}$

P-channel $C_{iss} = 460 \text{ pF TYP.}$

● Built-in gate protection diode

● Small and surface mount package



■ 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	± 6	A
Drain Current (pulse) *1	$I_{D(pulse)}$	± 24	± 24	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		$^\circ\text{C}$
Single Avalanche Current *3	I_{AS}	6	-6	A
Single Avalanche Energy *3	E_{AS}	3.6	3.6	mJ

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

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

*3 Starting $T_{ch} = 25^\circ\text{C}$, $V_{DD} = 1/2 \times V_{DSS}$, $R_G = 25 \Omega$, $L = 100 \mu\text{H}$, $V_{GS} = V_{GSS} \rightarrow 0 \text{ V}$

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■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions		Min	Typ	Max	Unit
Zero Gate Voltage Drain Current	IDSS	VDS = 30 V, VGS = 0 V	N-Ch			10	μ A
		VDS = -30 V, VGS = 0 V	P- Ch			-10	
Gate Leakage Current	IGSS	VGS = ± 16 V, VDS = 0 V	N-Ch			± 10	μ A
		VGS = ± 16 V, VDS = 0 V	P- Ch			± 10	
Gate Cut-off Voltage	VGS(off)	VDS = 10 V, ID = 1 mA	N-Ch	1.5		2.5	V
		VDS = -10 V, ID = -1 mA	P- Ch	-1.0		-2.5	
Forward Transfer Admittance	yfs	VDS = 10 V, ID = 3 A	N-Ch	2			S
		VDS = -10 V, ID = -3 A	P- Ch	2			
Drain to Source On-state Resistance	RDS(on)1	VGS = 10 V, ID = 3 A	N-Ch		21	28	m Ω
	RDS(on)2	VGS = 4.5 V, ID = 3 A			28	40	m Ω
	RDS(on)3	VGS = 4.0 V, ID = 3 A			34	53	m Ω
	RDS(on)1	VGS = -10 V, ID = -3 A	P- Ch		43	60	m Ω
	RDS(on)2	VGS = -4.5 V, ID = -3 A			58	80	m Ω
	RDS(on)3	VGS = -4.0 V, ID = -3 A			65	110	m Ω
Input Capacitance	Ciss	N-Channel VDS = 10 V,VGS = 0 V,f = 1 MHz	N-Ch		500		pF
			P- Ch		460		
Output Capacitance	Coss	P- Channel VDS = -10 V,VGS = 0 V,f = 1 MHz	N-Ch		135		pF
			P- Ch		130		
Reverse Transfer Capacitance	Crss		N-Ch		77		pF
			P- Ch		77		
Turn-on Delay Time	td(on)	N-Channel VDD = 15 V, ID = 3 A,VGS = 10 V	N-Ch		9.2		ns
			P- Ch		8.5		
Rise Time	tr	RG = 10 Ω	N-Ch		8.8		ns
			P- Ch		4.8		
Turn-off Delay Time	td(off)	P- Channel VDD = -15 V, ID = -3 A,VGS = -10 V	N-Ch		28		ns
			P- Ch		42		
Fall Time	tf	RG = 10 Ω	N-Ch		7.4		ns
			P- Ch		19		
Total Gate Charge	QG	N-Channel ID = 6 A,VDD = 24 V,VGS = 10 V	N-Ch		12.6		nC
			P- Ch		11		
Gate to Source Charge	QGS	P- Channel ID = -6 A,VDD = -24 V,VGS = -10 V	N-Ch		1.7		nC
			P- Ch		1.7		
Gate to Drain Charge	QGD		N-Ch		3.8		nC
			P- Ch		3.3		
Body Diode Forward Voltage Note	VF(S-D)	IF = 6 A, VGS = 0 V	N-Ch		0.85		V
		IF = 6 A, VGS = 0 V	P- Ch		0.92		
Reverse Recovery Time	trr	IF = 6 A, VGS = 0 V,di/dt = 100 A/ μ s	N-Ch		18		ns
			P- Ch		21		
Reverse Recovery Charge	Qrr		N-Ch		11		nC
			P- Ch		12		