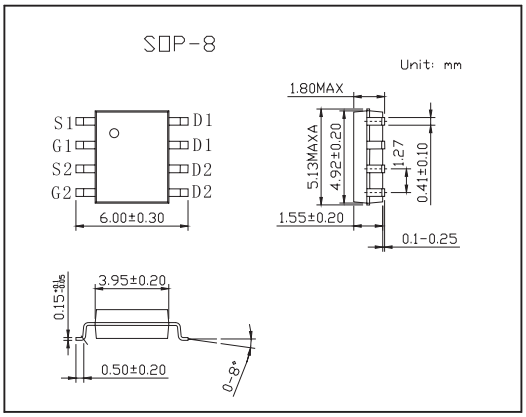
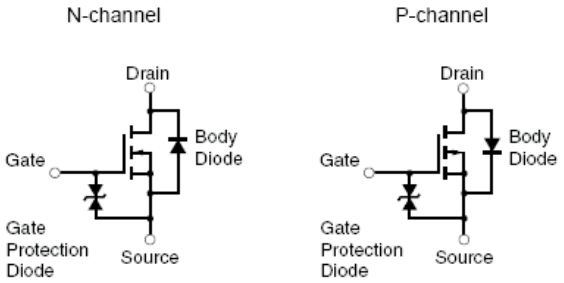
MOS Field Effect Transistor

KPA2790GR

Features

- Low on-state resistance
  - N-channel $R_{DS(on)1}$ = 28 mΩ MAX. (V_{GS} = 10 V, I_D = 3 A)
  - $R_{DS(on)2}$ = 40 mΩ MAX. (V_{GS} = 4.5 V, I_D = 3 A)
  - P-channel $R_{DS(on)1}$ = 60 mΩ MAX. (V_{GS} = -10 V, I_D = -3 A)
  - $R_{DS(on)2}$ = 80 mΩ MAX. (V_{GS} = -4.5 V, I_D = -3 A)
- Low input capacitance
  - N-channel C_{iss} = 500 pF TYP.
  - P-channel C_{iss} = 460 pF TYP.
- Built-in gate 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}	30	-30	V
Gate to Source Voltage (V_{DS} = 0 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		℃
Storage Temperature	T_{stg}	-55 to +150		℃
Single Avalanche Current *3	I_{AS}	6	-6	A
Single Avalanche Energy *3	E_{AS}	3.6	3.6	mJ

*1 PW ≤ 10 μs, Duty Cycle ≤ 1%

*2 Mounted on ceramic substrate of 2000 mm2 x 1.6 mm

*3 Starting Tch = 25℃, V_{DD} =1/2 X V_{DSS}, R_G = 25 Ω, L = 100 μH, V_{GS} = V_{GSS} → 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} = 30 V, V_{GS} = 0 V	N-Ch			10	μA
		V_{DS} = -30 V, 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	1.5		2.5	V
		V_{DS} = -10 V, I_D = -1 mA	P- Ch	-1.0		-2.5	
Forward Transfer Admittance	$\|y_{fs}\|$	V_{DS} = 10 V, I_D = 3 A	N-Ch	2			S
		V_{DS} = -10 V, I_D = -3 A	P- Ch	2			
Drain to Source On-state Resistance	$R_{DS(on)1}$	V_{GS} = 10 V, I_D = 3 A	N-Ch		21	28	mΩ
	$R_{DS(on)2}$	V_{GS} = 4.5 V, I_D = 3 A			28	40	mΩ
	$R_{DS(on)3}$	V_{GS} = 4.0 V, I_D = 3 A			34	53	mΩ
	$R_{DS(on)1}$	V_{GS} = -10 V, I_D = -3 A	P- Ch		43	60	mΩ
	$R_{DS(on)2}$	V_{GS} = -4.5 V, I_D = -3 A			58	80	mΩ
	$R_{DS(on)3}$	V_{GS} = -4.0 V, I_D = -3 A			65	110	mΩ
Input Capacitance	C_{iss}	N-Channel V_{DS} = 10 V,V_{GS} = 0 V,f = 1 MHz	N-Ch		500		pF
			P- Ch		460		
Output Capacitance	C_{oss}	P- Channel V_{DS} = -10 V,V_{GS} = 0 V,f = 1 MHz	N-Ch		135		pF
			P- Ch		130		
Reverse Transfer Capacitance	C_{rss}		N-Ch		77		pF
			P- Ch		77		
Turn-on Delay Time	$t_{d(on)}$	N-Channel V_{DD} = 15 V, I_D = 3 A,V_{GS} = 10 V R_G = 10 Ω	N-Ch		9.2		ns
			P- Ch		8.5		
Rise Time	t_r		N-Ch		8.8		ns
			P- Ch		4.8		
Turn-off Delay Time	$t_{d(off)}$	P- Channel V_{DD} = -15 V, I_D = -3 A,V_{GS} = -10 V R_G = 10 Ω	N-Ch		28		ns
			P- Ch		42		
Fall Time	t_f		N-Ch		7.4		ns
			P- Ch		19		
Total Gate Charge	Q_G	N-Channel I_D = 6 A,V_{DD} = 24 V,V_{GS} = 10 V	N-Ch		12.6		nC
			P- Ch		11		
Gate to Source Charge	Q_{GS}	P- Channel I_D = -6 A,V_{DD} = -24 V,V_{GS} = -10 V	N-Ch		1.7		nC
			P- Ch		1.7		
Gate to Drain Charge	Q_{GD}		N-Ch		3.8		nC
			P- Ch		3.3		
Body Diode Forward Voltage Note	$V_{F(S-D)}$	I_F = 6 A, V_{GS} = 0 V	N-Ch		0.85		V
		I_F = 6 A, V_{GS} = 0 V	P- Ch		0.92		
Reverse Recovery Time	t_{rr}	I_F = 6 A, V_{GS} = 0 V,di/dt = 100 A/μs	N-Ch		18		ns
			P- Ch		21		
Reverse Recovery Charge	Q_{rr}		N-Ch		11		nC
			P- Ch		12		