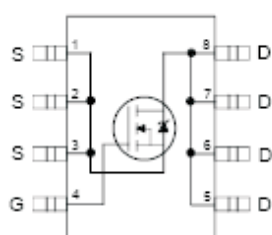


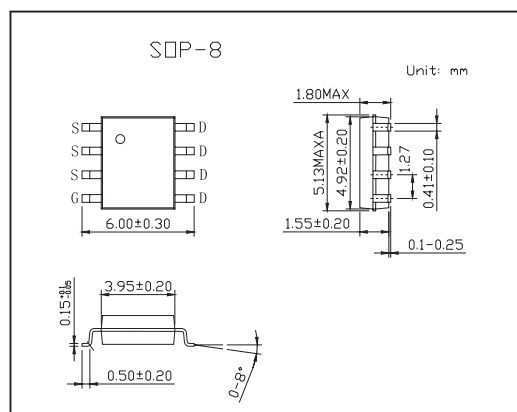
HEXFET[®] Power MOSFET

KRF7805Z

■ Features



Top View

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

Parameter	Symbol	Rating	Unit
Continuous Drain Current, $V_{GS} @ 10V, T_a = 25^\circ\text{C}$	I_D	16	A
Continuous Drain Current, $V_{GS} @ 10V, T_a = 70^\circ\text{C}$	I_D	12	
Pulsed Drain Current*1	I_{DM}	120	
Power Dissipation $T_a = 25^\circ\text{C}$ *1	P_D	2.5	W
Power Dissipation $T_a = 70^\circ\text{C}$ *1	P_D	1.6	W
Linear Derating Factor		0.02	W/ $^\circ\text{C}$
Gate-to-Source Voltage	V_{GS}	± 20	V
Drain-Source Voltage	V_{DS}	30	V
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to + 150	$^\circ\text{C}$
Junction-to-Ambient	$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$
Junction-to-Drain Lead	$R_{\theta JL}$	20	$^\circ\text{C}/\text{W}$
Single Pulse Avalanche Energy*3	E_{AS}	72	mJ
Avalanche Current *2	I_{AR}	12	A

*1 Pulse width $\leq 400 \mu\text{s}$; duty cycle $\leq 2\%$.

*2 Repetitive rating; pulse width limited by max. junction temperature.

*3 Starting $T_J = 25^\circ\text{C}$, $L = 0.94\text{mH}$, $R_G = 25 \Omega$, $I_{AS} = 12\text{A}$.

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■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250 \mu A$	30			V
Breakdown Voltage Temp. Coefficient	$\Delta V_{(BR)DSS} / \Delta T_J$	$I_D = 1mA, \text{Reference to } 25^\circ C$		0.023		V/°C
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 16A^{*1}$		5.5	44	$m\Omega$
		$V_{GS} = 4.5V, I_D = 13A^{*1}$		7.0		
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu A$	1.35		2.25	V
Gate Threshold Voltage Coefficient	$\Delta V_{GS(th)}$			-4.7		mV/°C
Forward Transconductance	g_{fs}	$V_{DS} = 15V, I_D = 12A^{*1}$	64			S
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS} = 24V, V_{GS} = 0V$			1.0	μA
		$V_{DS} = 24V, V_{GS} = 0V, T_J = 125^\circ C$			150	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS} = 20V$			100	nA
Gate-to-Source Reverse Leakage		$V_{GS} = -20V$			-100	
Total Gate Charge	Q_g	$I_D = 12A, V_{DS} = 15V, V_{GS} = 4.5V, ^{*1}$		18	27	nC
Gate-to-Source Charge	Q_{gs1}			4.7		
Gate-to-Source Charge	Q_{gs2}			1.6		
Gate-to-Drain ("Miller") Charge	Q_{gd}			6.2		
Gate Charge Overdrive	Q_{godr}			5.5		
Switch Charge ($Q_{gs2} + Q_{gd}$)	Q_{sw}			7.8		
Output Charge	Q_{oss}	$V_{DS} = 16V, V_{GS} = 0V$		10		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15V$		11		ns
Rise Time	t_r	$I_D = 12A$		10		
Turn-Off Delay Time	$t_{d(off)}$	$V_{GS} = 4.5V$		14		
Fall Time	t_f	Clamped Inductive Load		3.7		
Input Capacitance	C_{iss}	$V_{GS} = 0V$		2080		pF
Output Capacitance	C_{oss}	$V_{DS} = 15V$		480		
Reverse Transfer Capacitance	C_{rss}	$f = 1.0MHz$		220		
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode. 			3.1	A
Pulsed Source Current (Body Diode) *2	I_{SM}				120	
Diode Forward Voltage	V_{SD}	$T_J = 25^\circ C, I_S = 12A, V_{GS} = 0V^{*1}$			1.0	V
Reverse Recovery Time	t_{rr}	$T_J = 25^\circ C, I_F = 12A, V_{DD} = 15V$		29	440	ns
Reverse Recovery Charge	Q_{rr}	$di/dt = 100A/\mu s^{*1}$		20	30	nC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by $L_s + L_d$)				

*1 Pulse width $\leq 400 \mu s$; duty cycle $\leq 2\%$.

*2 Repetitive rating; pulse width limited by max