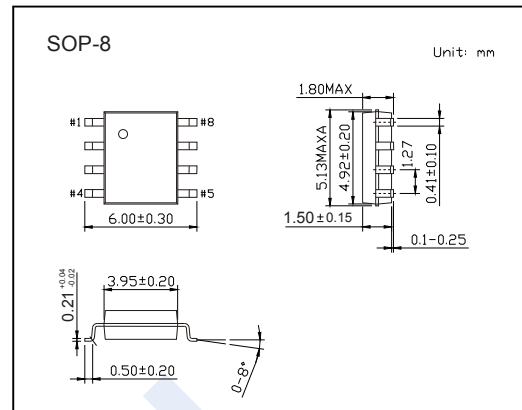
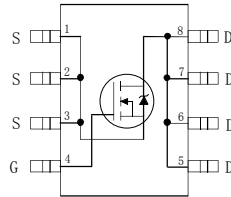


## N-Channel Enhancement MOSFET

## IRF7805Z (KRF7805Z)

## ■ Features

- $V_{DS} (V) = 30V$
- $I_D = 16 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 6.8m\Omega (V_{GS} = 10V)$
- HEXFET Power MOSFET

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_A = 25^\circ C$	16
		$T_A = 70^\circ C$	12
Pulsed Drain Current	$I_{DM}$	120	A
Avalanche Current	$I_{AR}$	12	A
Single Pulse Avalanche Energy	$E_{AS}$	72	mJ
Power Dissipation	$P_D$	$T_A = 25^\circ C$	2.5
		$T_A = 70^\circ C$	1.6
Thermal Resistance.Junction- to-Ambient	$R_{thJA}$	50	$^\circ C/W$
Thermal Resistance.Junction- to-Case	$R_{thJC}$	20	$^\circ C/W$
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55 to 150	$^\circ C$

## N-Channel Enhancement MOSFET

## IRF7805Z (KRF7805Z)

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =250 μA, V <sub>GS</sub> =0V	30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V			1	μA
		V <sub>DS</sub> =24V, V <sub>GS</sub> =0V, T <sub>J</sub> =125°C			150	
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μA	1.35		2.25	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =16A		5.5	6.8	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =13A		7.0	8.7	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =12A	64			S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =15V, f=1MHz		2080		pF
Output Capacitance	C <sub>oss</sub>			480		
Reverse Transfer Capacitance	C <sub>rss</sub>			220		
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		1.0	2.1	Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =15V, I <sub>D</sub> =12A		18	27	nC
Gate Source Charge	Q <sub>gs1</sub>			4.7		
Gate Source Charge	Q <sub>gs2</sub>			1.6		
Gate Drain Charge	Q <sub>gd</sub>			6.2		
Gate Charge Overdrive	Q <sub>godr</sub>			5.5		
Switch Charge(Q <sub>gd</sub> +Q <sub>gs2</sub> )	Q <sub>sw</sub>			7.8		
Output Charge	Q <sub>oss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =16V		10		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =15V, I <sub>D</sub> =12A		11		ns
Turn-On Rise Time	t <sub>r</sub>			10		
Turn-Off DelayTime	t <sub>d(off)</sub>			14		
Turn-Off Fall Time	t <sub>f</sub>			3.7		
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =12A, di/dt=100A/μs, V <sub>DD</sub> =15V		29	44	nC
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>			20	30	
Maximum Body-Diode Continuous Current	I <sub>S</sub>				3.1	A
Pulsed Source Current	I <sub>SM</sub>				120	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =12A, V <sub>GS</sub> =0V			1	V

### N-Channel Enhancement MOSFET

### IRF7805Z (KRF7805Z)

■ Typical Characteristics

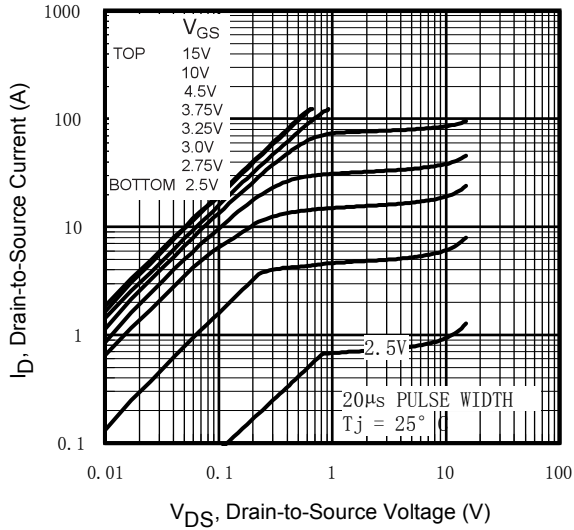


Fig 1. Typical Output Characteristics

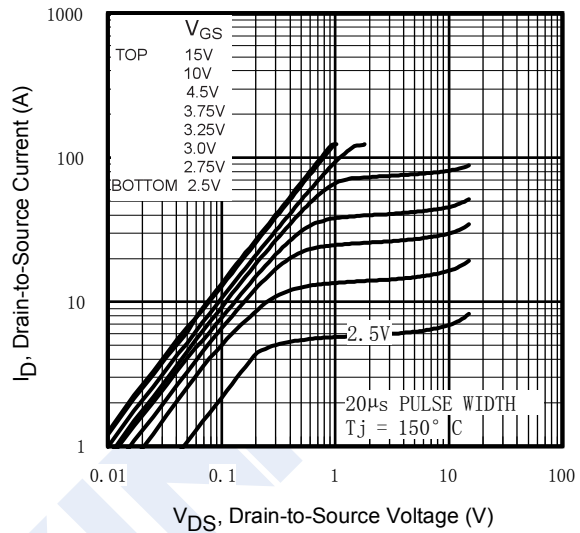


Fig 2. Typical Output Characteristics

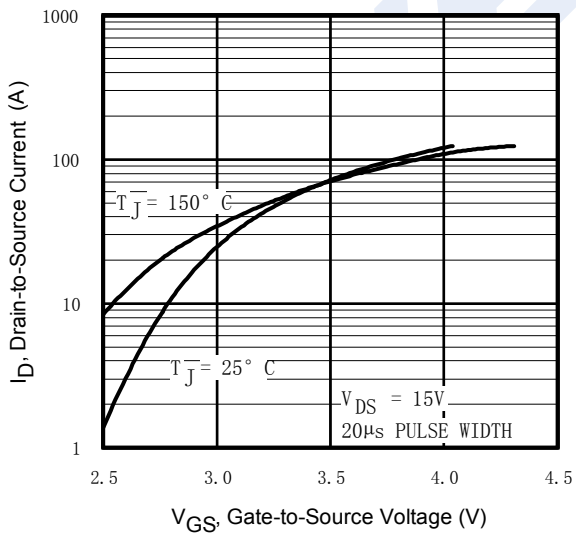


Fig 3. Typical Transfer Characteristics

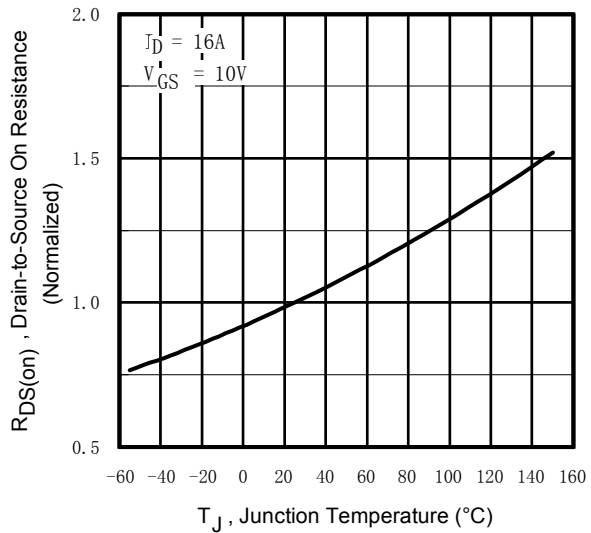


Fig 4. Normalized On-Resistance Vs. Temperature

## N-Channel Enhancement MOSFET

### IRF7805Z (KRF7805Z)

■ Typical Characteristics

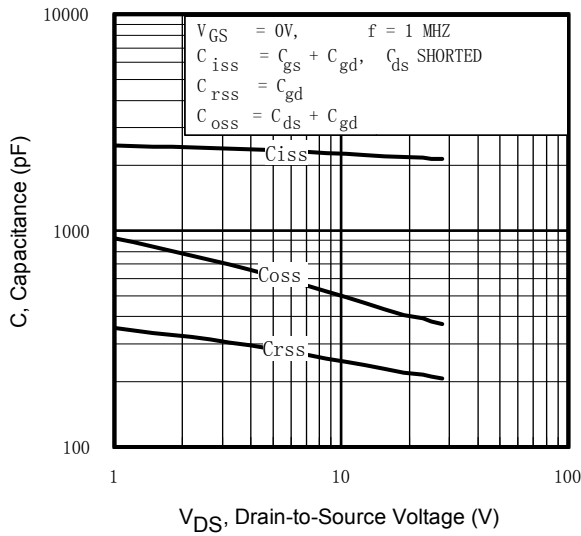


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

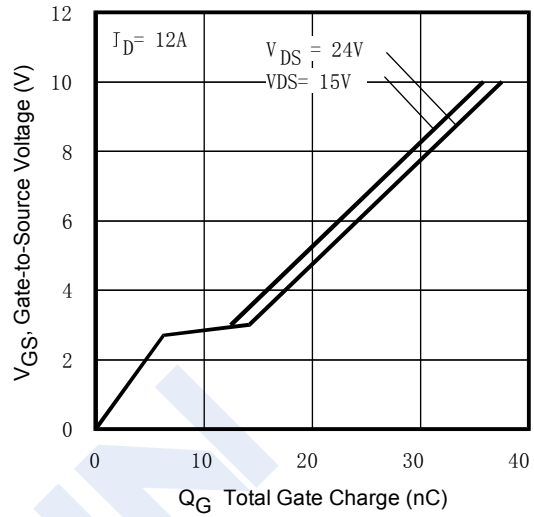


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

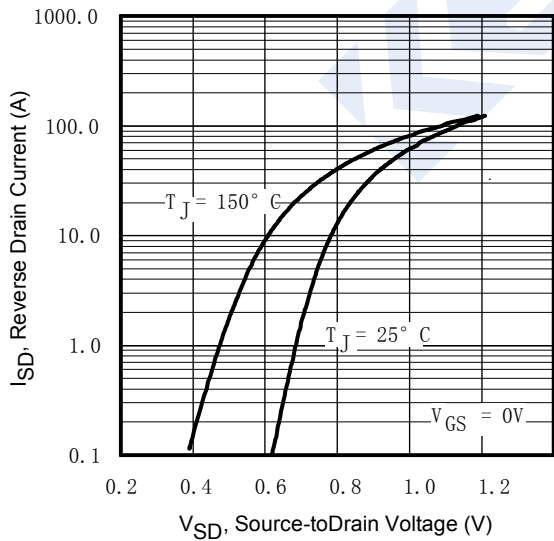


Fig 7. Typical Source-Drain Diode Forward Voltage

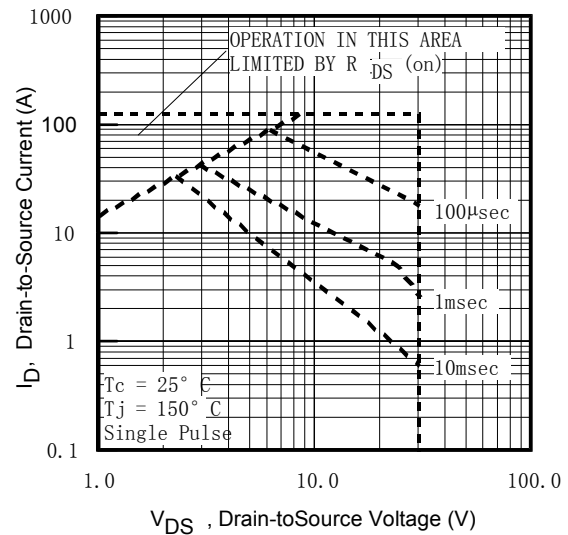


Fig 8. Maximum Safe Operating Area

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### N-Channel Enhancement MOSFET

### IRF7805Z (KRF7805Z)

■ Typical Characteristics

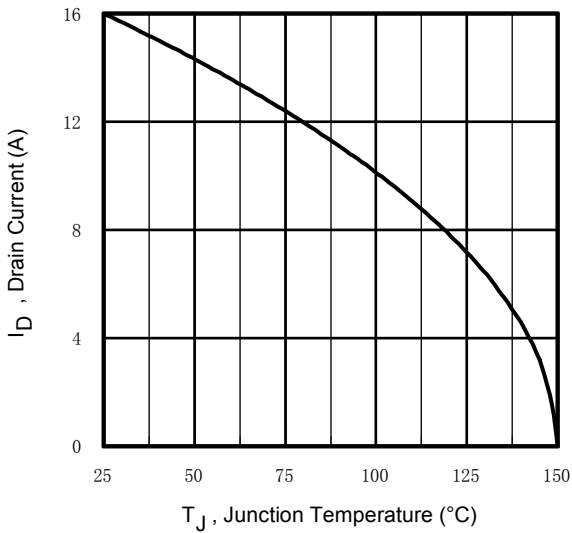


Fig 9. Maximum Drain Current Vs. Case Temperature

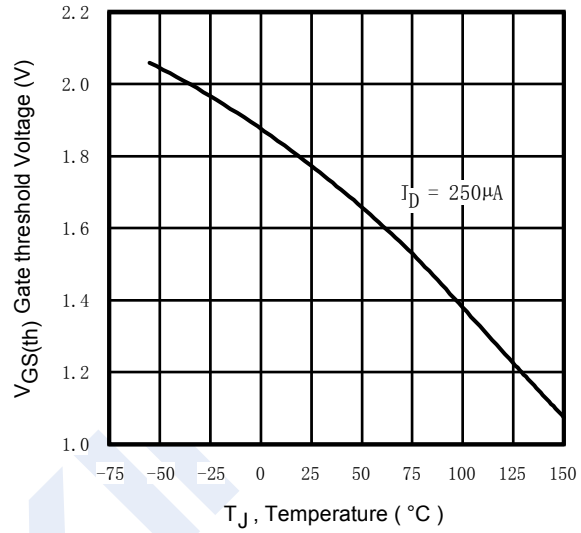


Fig 10. Threshold Voltage Vs. Temperature

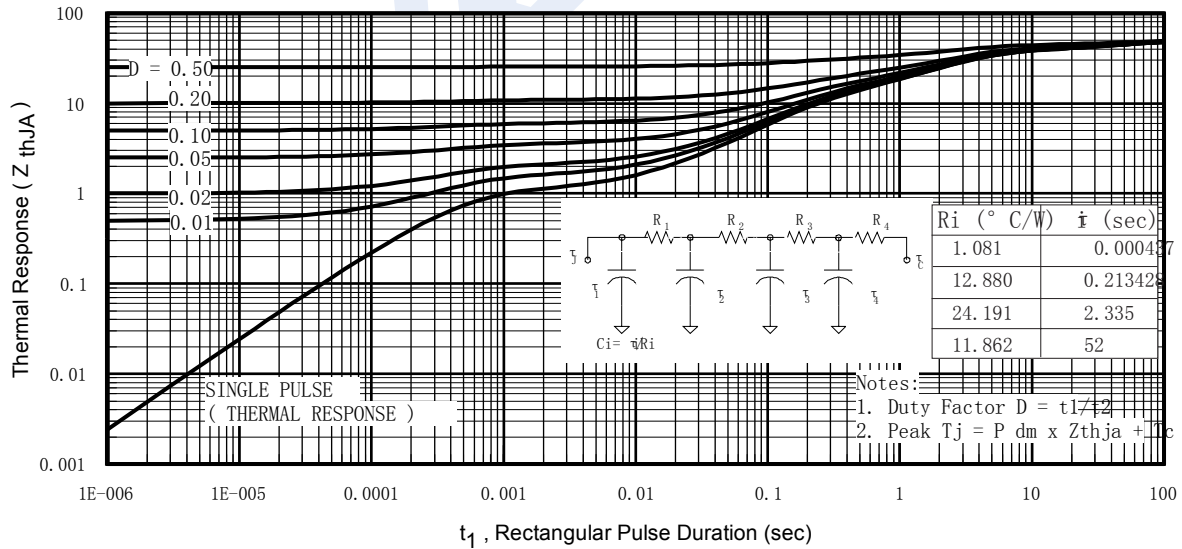


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

## N-Channel Enhancement MOSFET

## IRF7805Z (KRF7805Z)

## ■ Typical Characteristics

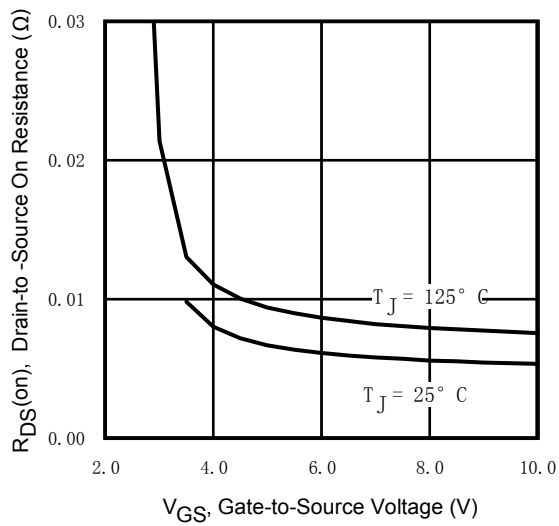


Fig 12. On-Resistance Vs. Gate Voltage

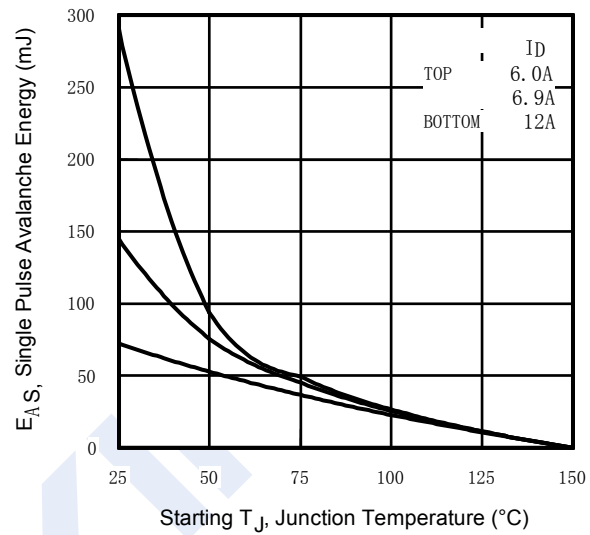


Fig 13c. Maximum Avalanche Energy Vs. Drain Current