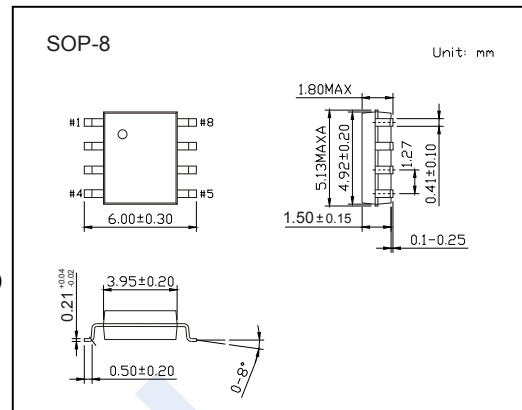
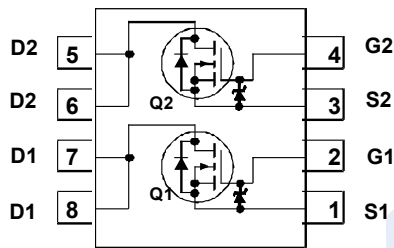


N-Channel Enhancement MOSFET

FDS89161 (KDS89161)

■ Features

- $V_{DS} (V) = 100V$
- $I_D = 2.7 A$
- $R_{DS(ON)} < 105m\Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 160m\Omega$ ($V_{GS} = 4.5V$)
- High performance trench technology for extremely low $r_{DS(on)}$
- CDM ESD Protection Level > 2KV typical

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

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	V_{DS}	100	V	
Gate-Source Voltage	V_{GS}	± 20		
Continuous Drain Current	I_D	Continuous	2.7	A
		Pulsed	15	
Single Pulse Avalanche Energy (Note1)	EAS	13	mJ	
Power Dissipation	P_D	$T_c=25^\circ C$	31	W
		$T_a=25^\circ C$	1.6	
Thermal Resistance.Junction- to-Ambient	R_{thJA}	78	$^\circ C/W$	
Thermal Resistance.Junction- to-Case	R_{thJC}	4		
Junction Temperature	T_J	150	$^\circ C$	
Storage Temperature Range	T_{stg}	-55 to 150		

Note 1.Starting $T_J = 25^\circ C$, $L = 0.3 mH$, $I_{AS} = 25 A$, $V_{DD} = 27 V$, $V_{GS} = 10V$.

2. $78^\circ C/W$ when mounted on a 1 in2pad of 2 oz coppe

N-Channel Enhancement MOSFET

FDS89161 (KDS89161)

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250 μA, V _{GS} =0V	100			V
Breakdown Voltage Temperature coefficient	ΔV _{DSS} /ΔT _J	I _D =250 μA, referenced to 25°C		68		mV/°C
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±10	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250 μA	1	1.7	2.2	V
Gate to Source Threshold Voltage Temperature Coefficient	ΔV _{GS(th)} /ΔT _J	I _D =250 μA, referenced to 25°C		-6		mV/°C
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =2.7A		81	105	mΩ
		V _{GS} =4.5V, I _D =2.1A		110	160	
		V _{GS} =10V, I _D =2.7A T _J =125°C		140	182	
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =2.7A		7.8		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =50V, f=1MHz		227	302	pF
Output Capacitance	C _{oss}			44	58	
Reverse Transfer Capacitance	C _{rss}			3	4	
Gate Resistance	R _g			0.9		
Total Gate Charge	Q _g	V _{GS} =0 to 10V	V _{DS} =50V, I _D =2.7A	3.8	5.3	nC
		V _{GS} =0 to 5V		2.1	2.9	
Gate Source Charge	Q _{gs}			0.7		
Gate Drain Charge	Q _{gd}			0.7		
Turn-On DelayTime	t _{d(on)}	V _{GS} =10V, V _{DS} =50V, I _D =2.7A, R _{GEN} =6 Ω		3.8	10	ns
Turn-On Rise Time	t _r			1.2	10	
Turn-Off DelayTime	t _{d(off)}			9.5	17	
Turn-Off Fall Time	t _f			1.6	10	
Body Diode Reverse Recovery Time	t _{rr}	I _F = 2.7A, di/dt= 100A/μs		31	56	nC
Body Diode Reverse Recovery Charge	Q _{rr}			20	36	
Diode Forward Voltage (Note 1)	V _{SD}	I _S =2.7A, V _{GS} =0V		0.8	1.3	V
		I _S =2A, V _{GS} =0V		0.8	1.2	

Note 1.Pulse Width < 300μs, Duty cycle < 2.0%.

N-Channel Enhancement MOSFET

FDS89161 (KDS89161)

■ Typical Characteristics

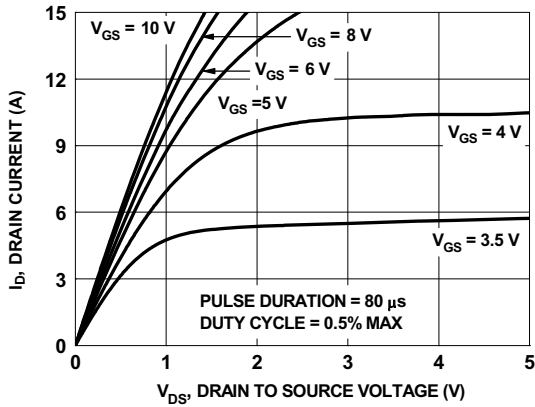


Figure 1. On-Region Characteristics

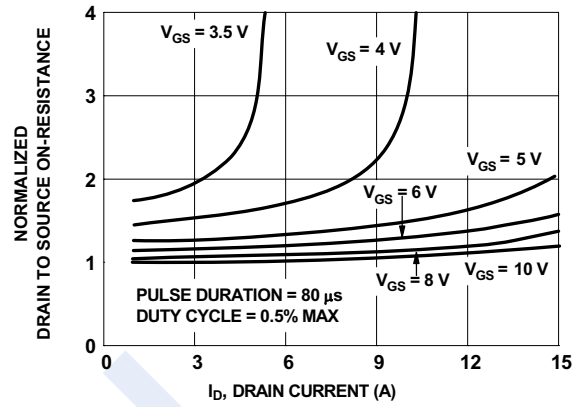


Figure 2. Normalized On-Resistance vs Drain Current and Gate Voltage

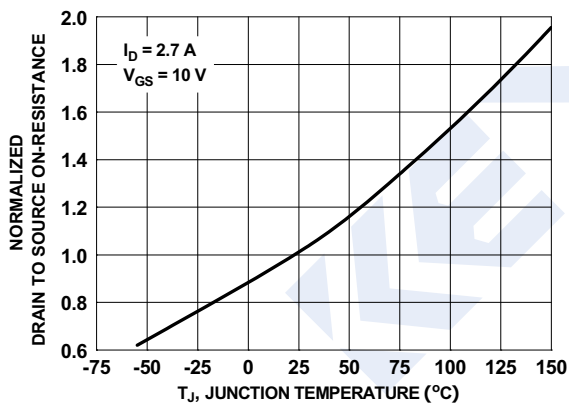


Figure 3. Normalized On-Resistance vs Junction Temperature

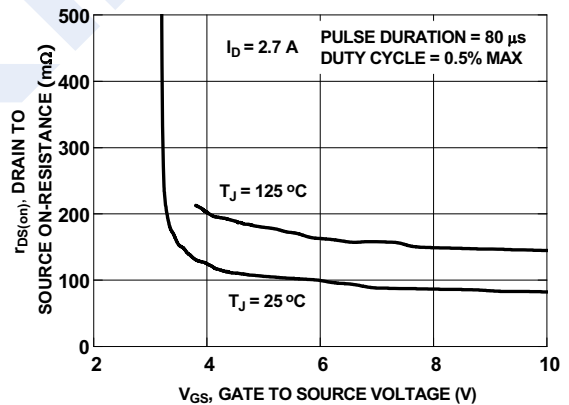


Figure 4. On-Resistance vs Gate to Source Voltage

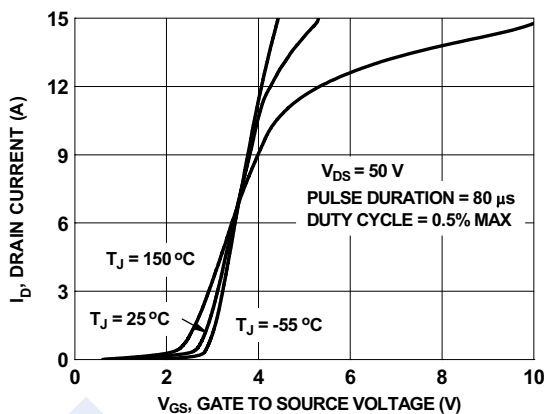


Figure 5. Transfer Characteristics

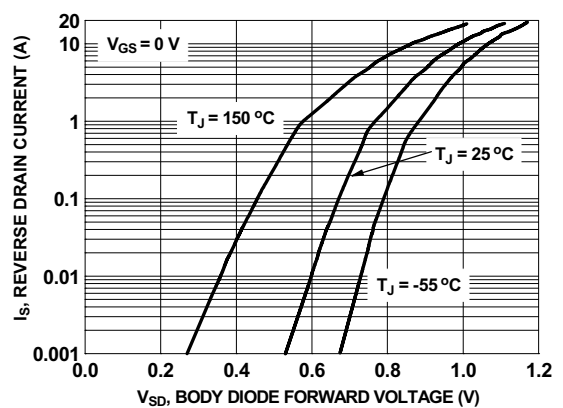


Figure 6. Source to Drain Diode Forward Voltage vs Source Current

N-Channel Enhancement MOSFET FDS89161 (KDS89161)

■ Typical Characteristics

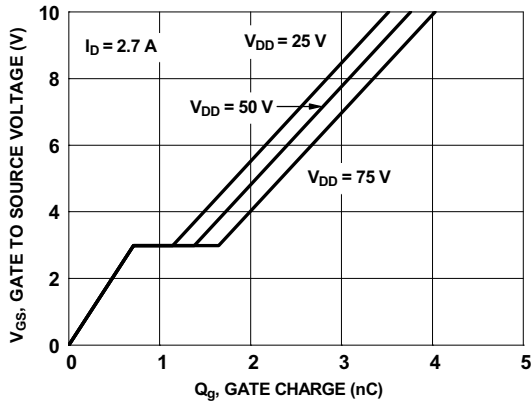


Figure 7. Gate Charge Characteristics

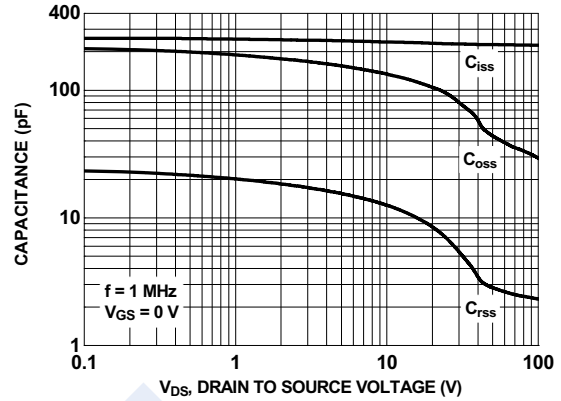


Figure 8. Capacitance vs Drain to Source Voltage

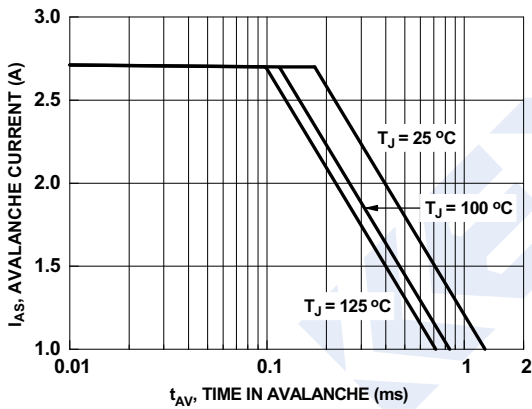


Figure 9. Unclamped Inductive Switching Capability

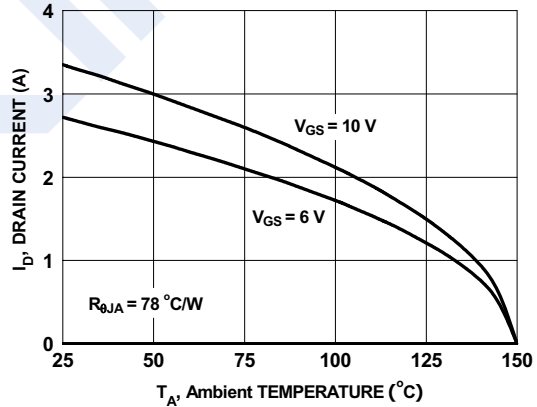


Figure 10. Maximum Continuous Drain Current vs Ambient Temperature

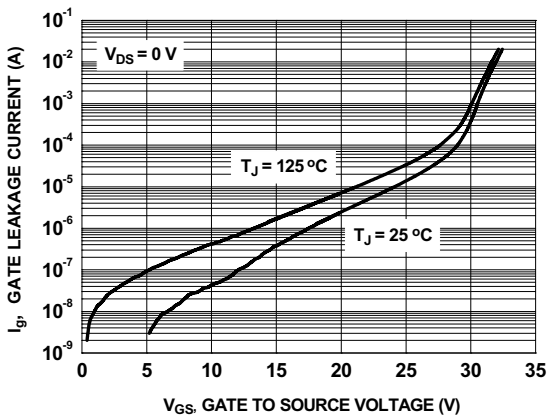


Figure 11. Gate Leakage Current vs Gate to Source Voltage

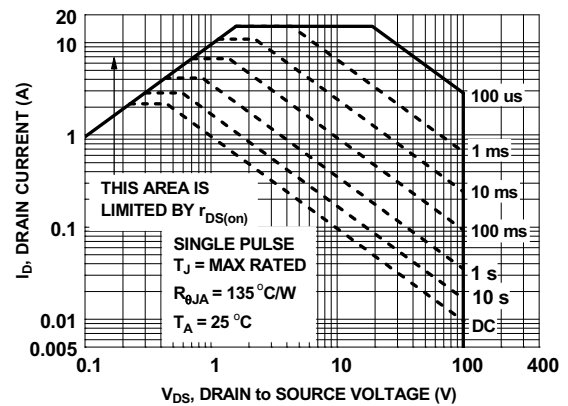


Figure 12. Forward Bias Safe Operating Area

N-Channel Enhancement MOSFET

FDS89161 (KDS89161)

■ Typical Characteristics

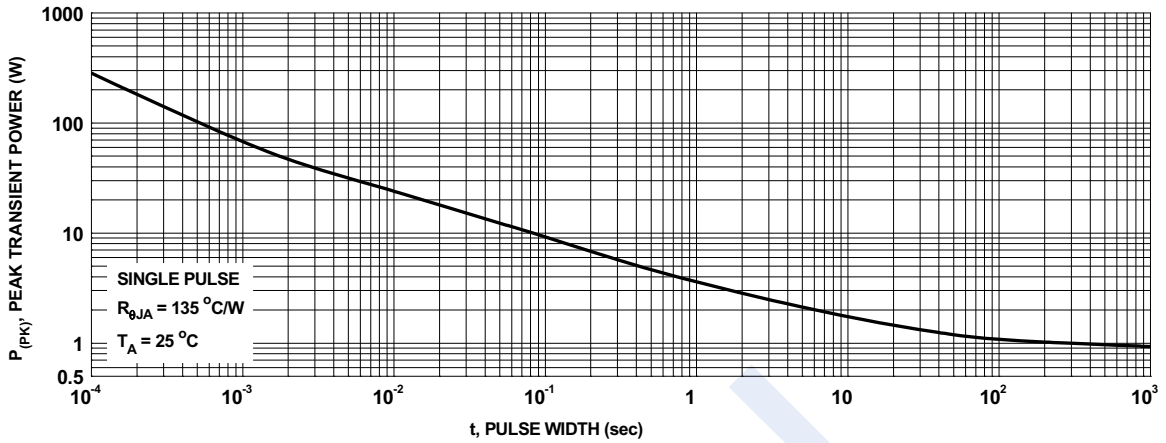


Figure 13. Single Pulse Maximum Power Dissipation

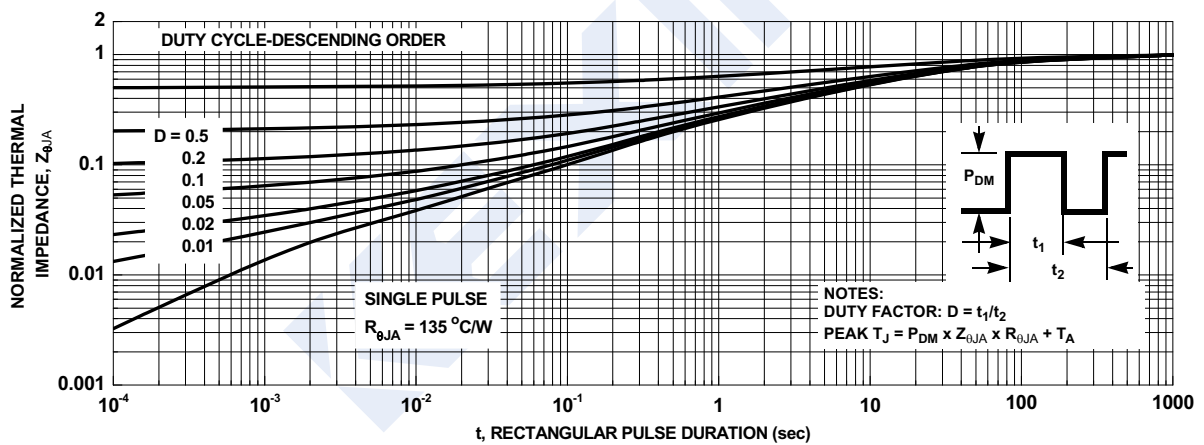


Figure 14. Junction-to-Ambient Transient Thermal Response Curve