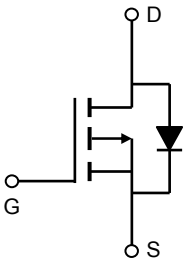
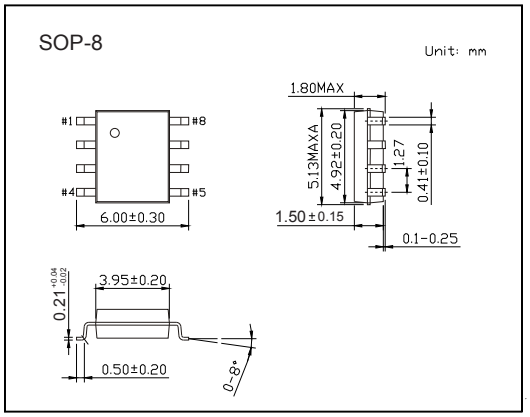
P-CHANNEL ENHANCEMENT MODE MOSFET

RC4435

■ Features

- $V_{DS\ (V)}$ =-30V
- I_D =-9 A (V_{GS} =-20V)
- $R_{DS(ON)}$ < 16mΩ (V_{GS} =-10V)
- $R_{DS(ON)}$ < 28mΩ (V_{GS} =-5V)





■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±25	
Continuous Drain Current	T_A=25°C	I_D	-9	A
	T_A=70°C		-8	
Pulsed Drain Current		I_{DM}	-80	
Avalanche Current		I_{AR}	-20	
Repetitive Avalanche Energy	L=0.3mH	E_{AR}	60	mJ
Power Dissipation	T_A=25°C	P_D	3.1	W
	T_A=70°C		2	
Thermal Resistance.Junction- to-Ambient	t ≤ 10s	R_{thJA}	40	℃/W
	Steady-State		75	
Thermal Resistance.Junction- to-Lead		R_{thJL}	24	
Junction Temperature		T_J	150	℃
Junction Storage Temperature Range		T_{stg}	-55 to 150	

■ Marking

Marking	****

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=-250μA, V_{GS}=0V	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V			-1	uA
		V_{DS}=-30V, V_{GS}=0V, T_J=55℃			-5	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±25V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=-250μA	-1.7		-3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-20V, I_D=-11A			16	mΩ
		V_{GS}=-20V, I_D=-11A T_J=125℃			19	
		V_{GS}=-10V, I_D=-10A			18	
		V_{GS}=-5V, I_D=-5A			28	
On state drain current	$I_{D(ON)}$	V_{GS}=-10V, V_{DS}=-5V	-80			A
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-10A		22		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f=1MHz		1130	1400	pF
Output Capacitance	C_{oss}			240		
Reverse Transfer Capacitance	C_{rss}			155		
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz	1		8	Ω
Total Gate Charge (10V)	Q_g	V_{GS}=-10V, V_{DS}=-15V, I_D=-10A		18	24	nC
Total Gate Charge (4.5V)				9.5		
Gate Source Charge	Q_{gs}			5.5		
Gate Drain Charge	Q_{gd}			3.3		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=-10V, V_{DS}=-15V, R_L=1.5Ω, R_{GEN}=3Ω		8.7		ns
Turn-On Rise Time	t_r			8.5		
Turn-Off DelayTime	$t_{d(off)}$			18		
Turn-Off Fall Time	t_f			7		
Body Diode Reverse Recovery Time	t_{rr}	I_F=-10A, dI/dt=100A/us		25	30	
Body Diode Reverse Recovery Charge	Q_{rr}			12		nC
Maximum Body-Diode Continuous Current	I_S				-3.5	A
Diode Forward Voltage	V_{SD}	I_S=-1A,V_{GS}=0V			-1	V

Note : The static characteristics in Figures 1 to 6 are obtained using <300 μs pulses, duty cycle 0.5% max.

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■ Typical Characterisitics

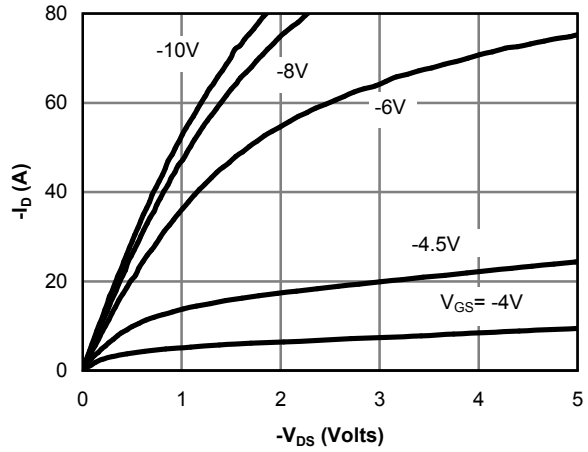

Figure 1: On-Region Characteristics

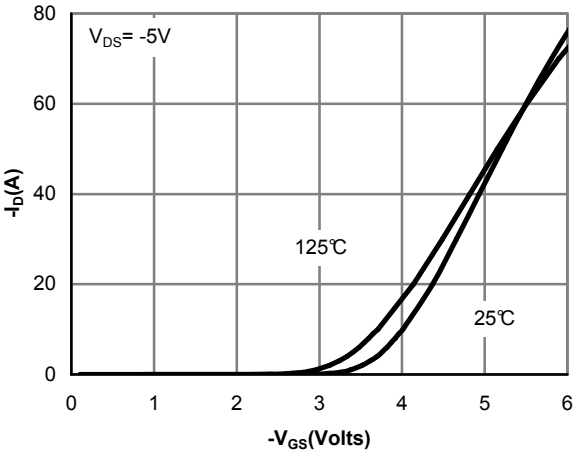

Figure 2: Transfer Characteristics

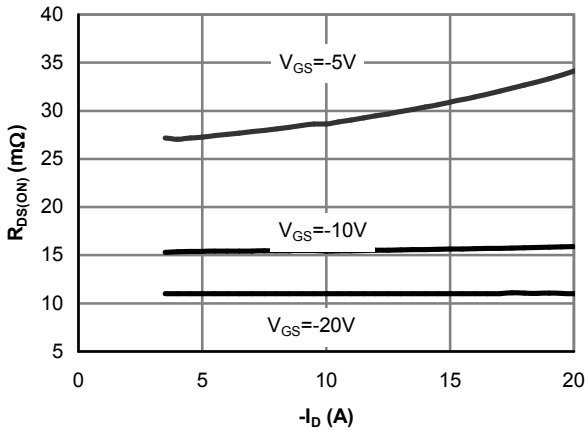

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

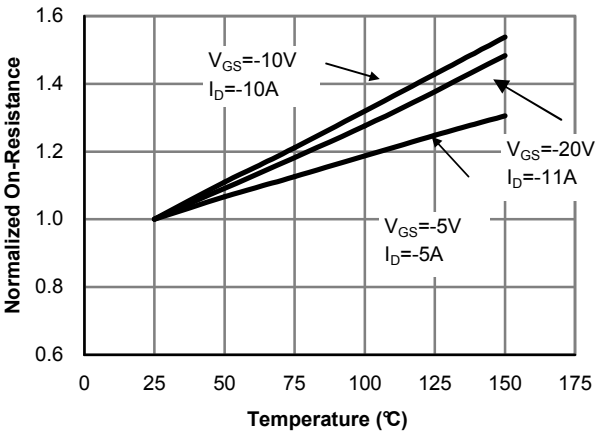

Figure 4: On-Resistance vs. Junction Temperature

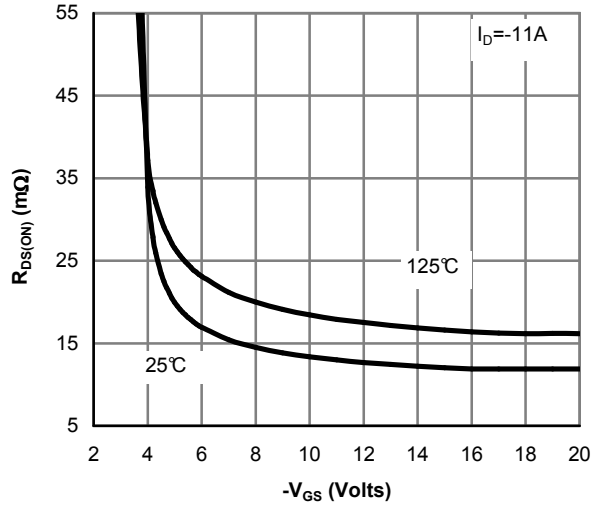

Figure 5: On Resistance vs Gate-Source Voltage

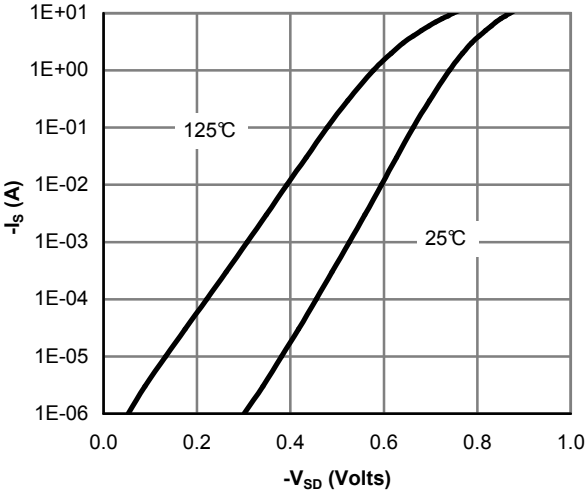

Figure 6: Body-Diode Characteristics

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■ Typical Characterisitics

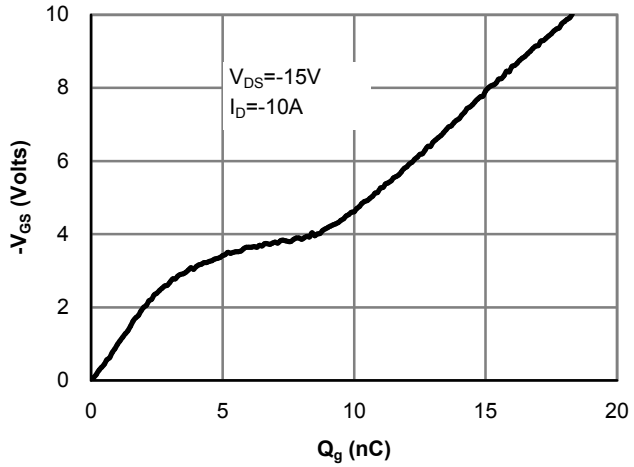

Figure 7: Gate-Charge Characteristics

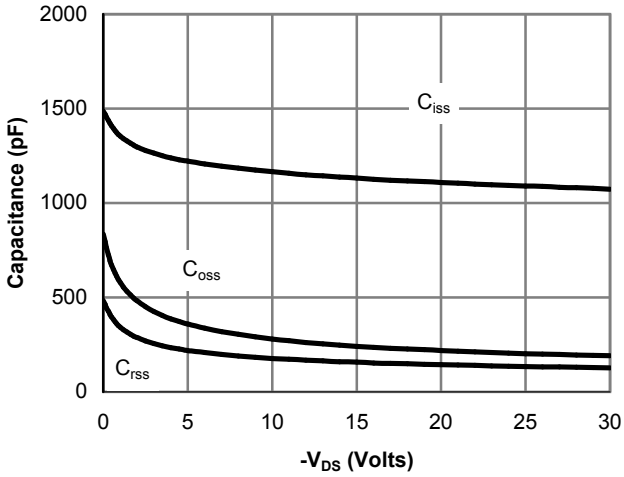

Figure 8: Capacitance Characteristics

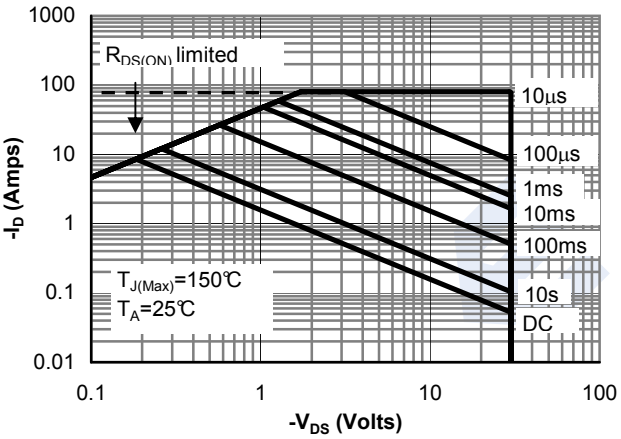

Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

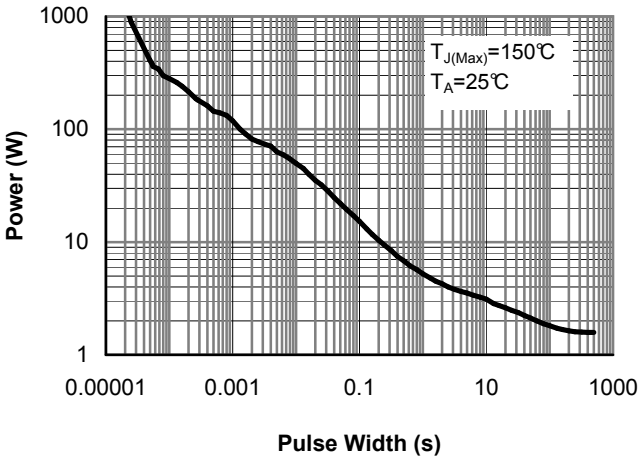

Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

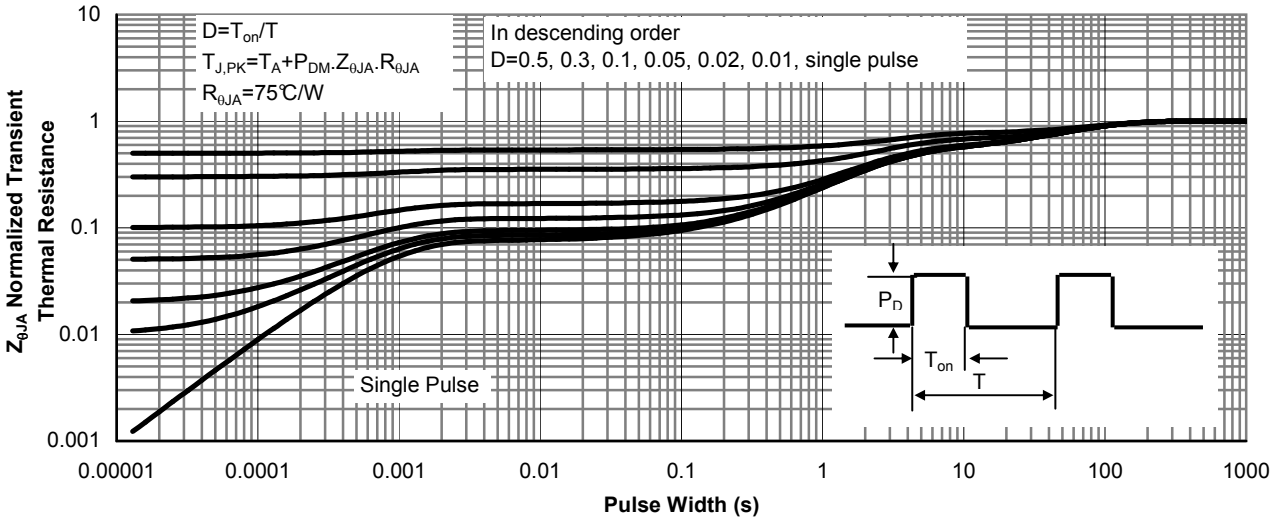

Figure 11: Normalized Maximum Transient Thermal Impedance(Note E)