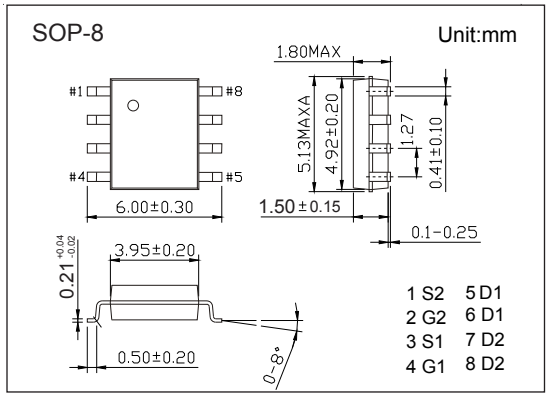
Dual P-Channel MOSFET
RC4805

■ Features

- $V_{DS\,(V)}$ = -30V
- I_D = -10A
- $R_{DS(ON)}$ < 23mΩ (V_{GS} = -10V)
- $R_{DS(ON)}$ < 34mΩ (V_{GS} = -4.5V)

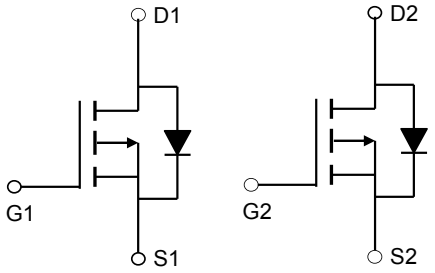


■ General Description

- Trench Power LV MOSFET technology
- High density cell design for Low $R_{DS(ON)}$
- High Speed switching

■ Applications

- Battery protection
- Load switch
- Power management



■ **Absolute Maximum Ratings** (T_A=25℃unless otherwise noted)

Parameter		Symbol	Maximum	Unit
Drain-source Voltage		V_{DS}	-30	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current	T_A=25℃ @ Steady State	I_D	-10	A
	T_A=70℃ @ Steady State		-8	
Pulsed Drain Current [A]		I_{DM}	-50	A
Total Power Dissipation @ T_A=25℃		P_D	3.0	W
Thermal Resistance Junction-to-Ambient @ Steady State [B]		$R_{\theta JA}$	42	℃/W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

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■ Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=-250μA	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V,V_{GS}=0V,T_C=25℃			-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=-250μA	-1.0	-1.5	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= -10V, I_D=-10A		19.5	23	mΩ
		V_{GS}= -4.5V, I_D=-5.0A		27.5	34	
Diode Forward Voltage	V_{SD}	I_S=-10A,V_{GS}=0V		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I_S				-10	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V,f=1MHZ		1500		pF
Output Capacitance	C_{oss}			178		
Reverse Transfer Capacitance	C_{rss}			146		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=-10V,V_{DS}=-15V,I_D=-6.0A		28.7		nC
Gate Source Charge	Q_{gs}			5.5		
Gate Drain Charge	Q_{gd}			5.4		
Reverse Recovery Charge	Q_{rr}	I_F= -9A, di/dt=500A/us		6.0		
Reverse Recovery Time	t_{rr}			14		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-10V,V_{DS}=-15V, I_D=-6.0A, R_{GEN}=2.5Ω		10		
Turn-on Rise Time	t_r			44		
Turn-off Delay Time	$t_{D(off)}$			54		
Turn-off Fall Time	t_f			59		

A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.

B. $R_{\theta JA}$ is the sum of the junction-to-lead and lead-to-ambient thermal resistance, where the lead thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JL}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

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■ Typical Performance Characteristics

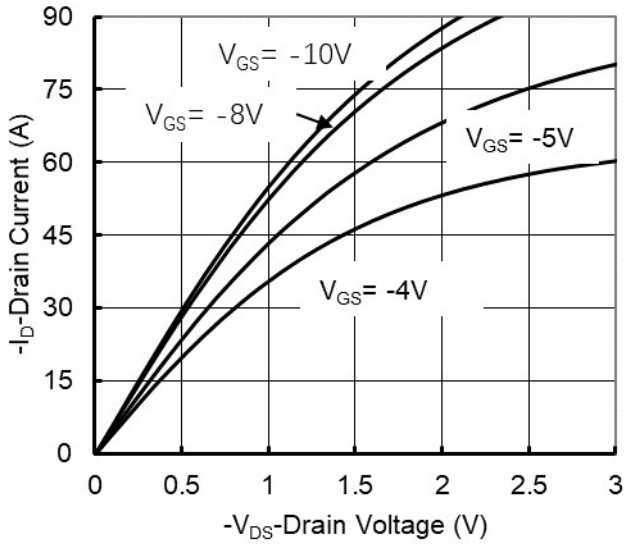

Figure 1. Output Characteristics

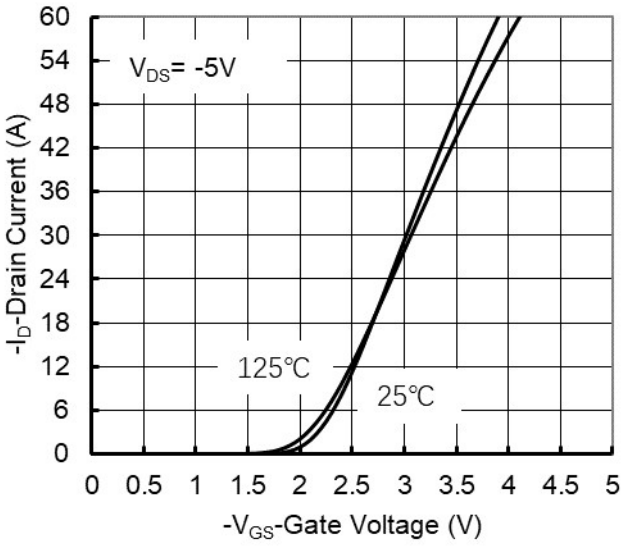

Figure 2. Transfer Characteristics

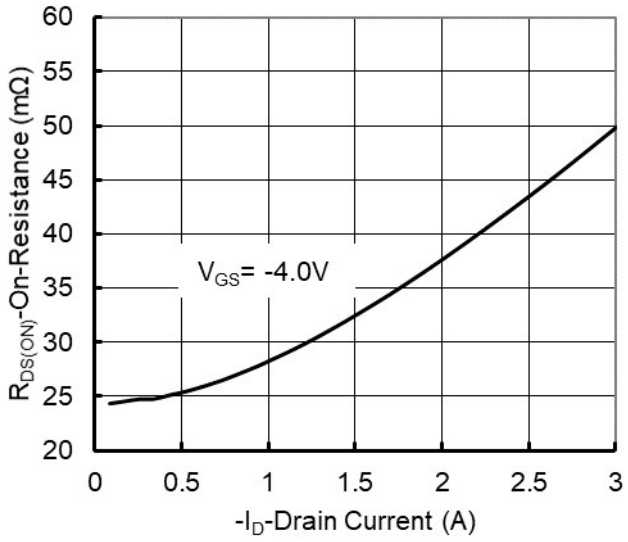

Figure 3. On-Resistance vs. Drain Current and Gate Voltage

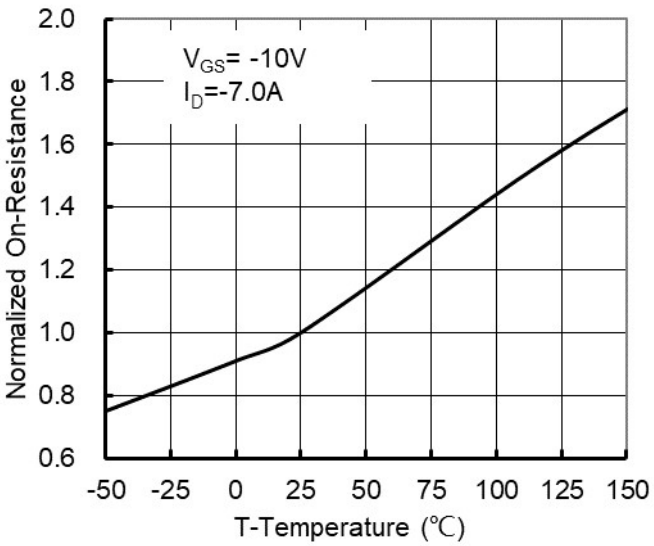

Figure 4. On-Resistance vs. Junction Temperature

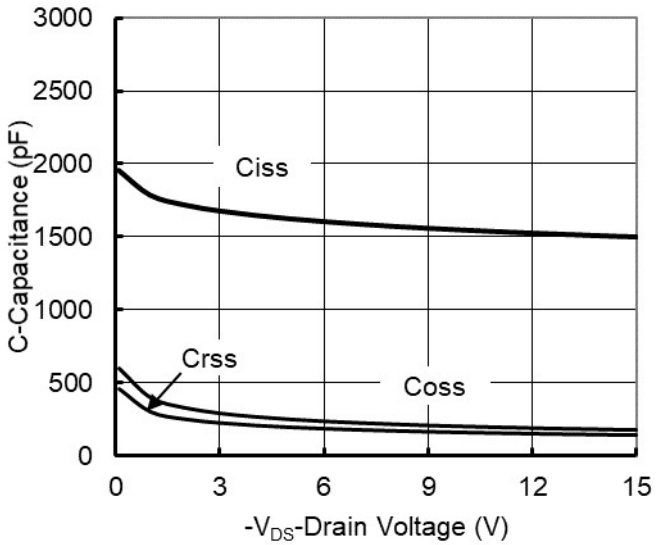

Figure 5. Capacitance Characteristics

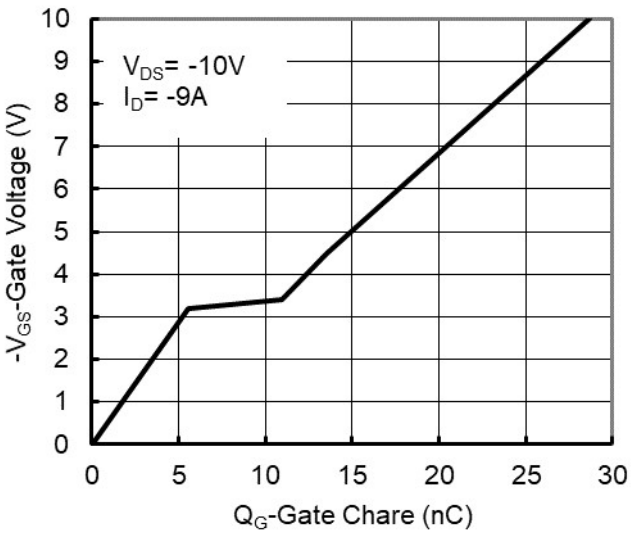

Figure 6. Gate Charge

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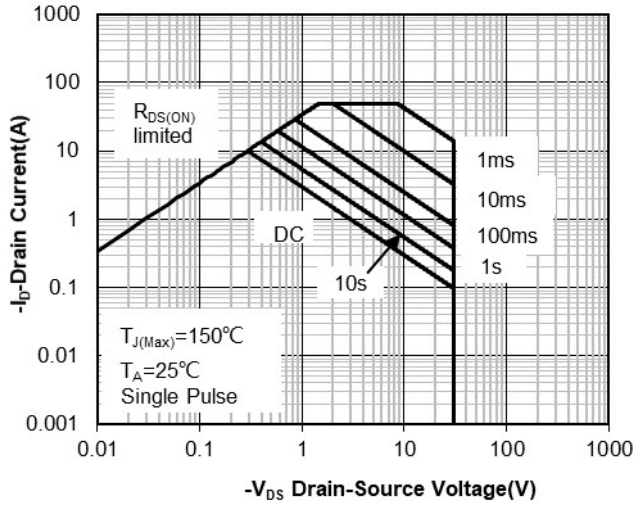

Figure 7. Safe Operation Area

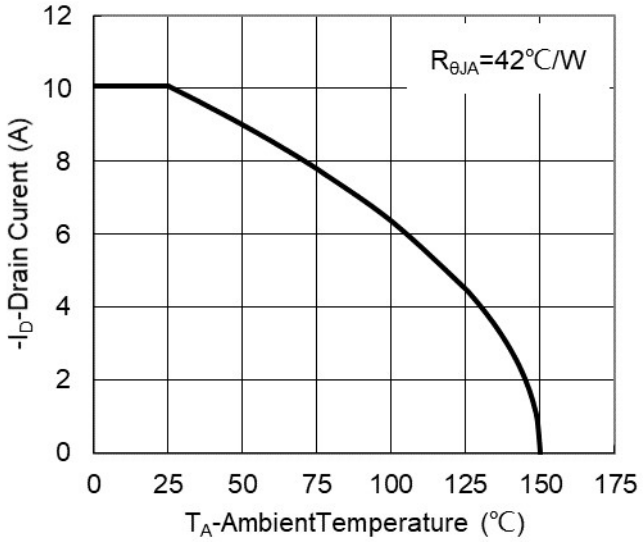

Figure 8. Maximum Continuous Drain Current vs Ambient Temperature

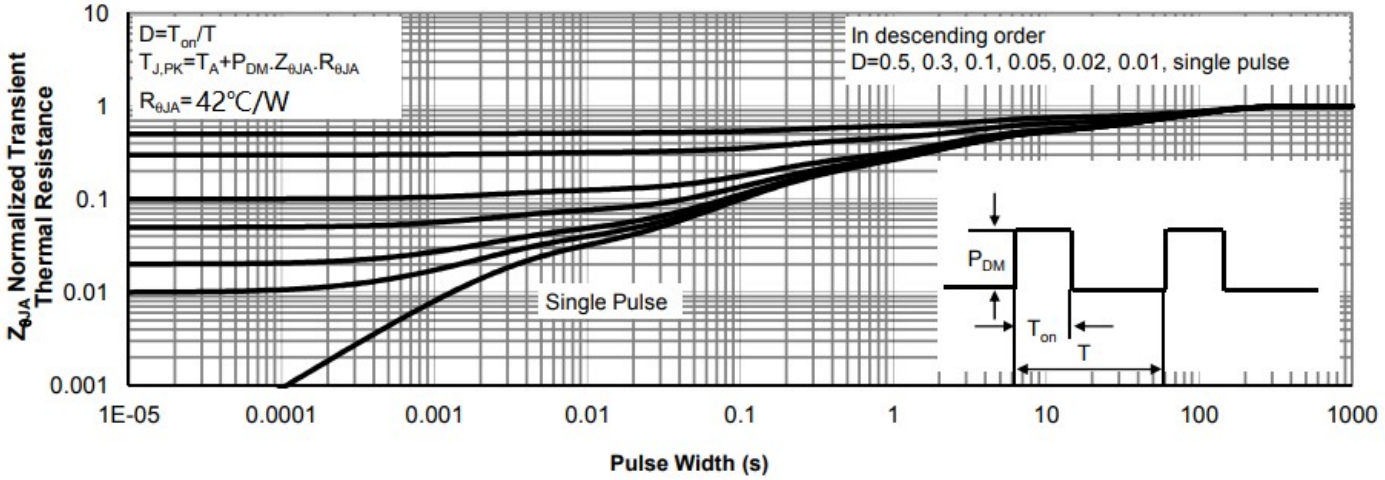

Figure 9. Normalized Maximum Transient Thermal Impedance

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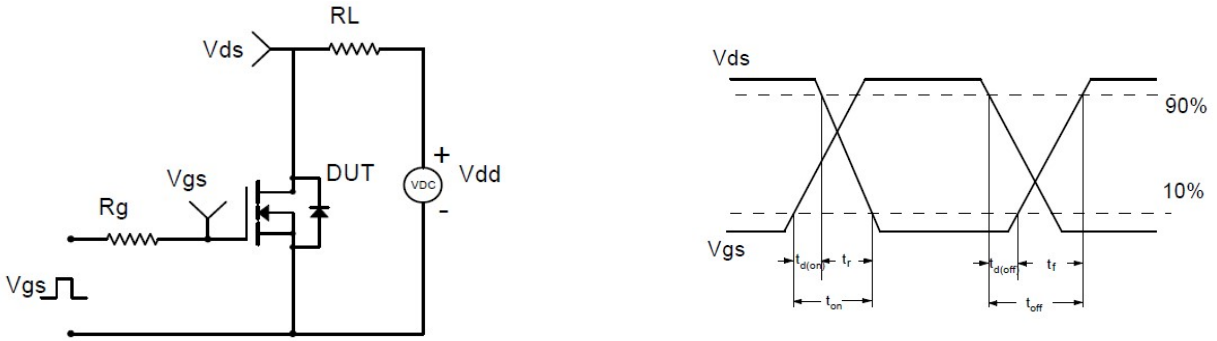
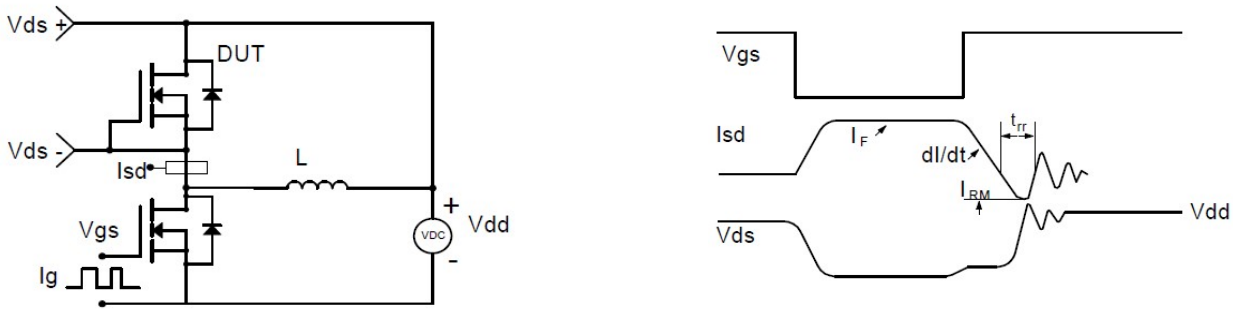
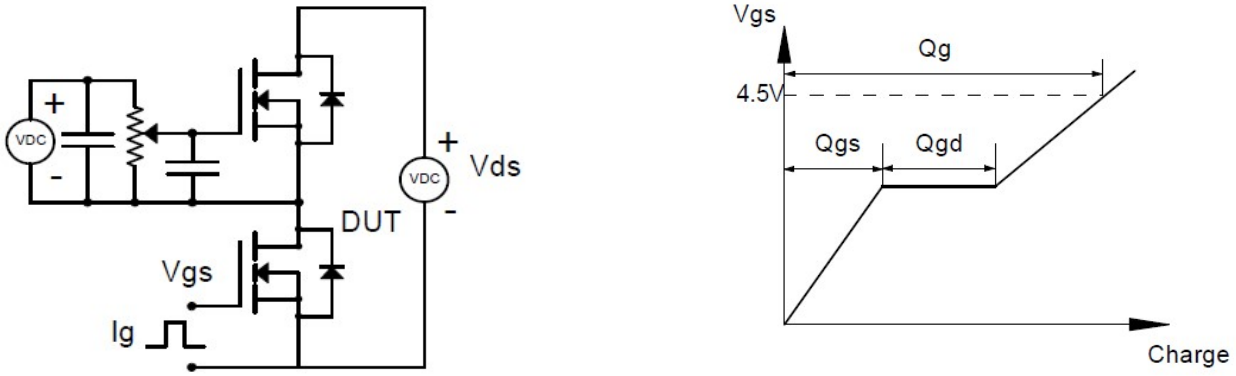


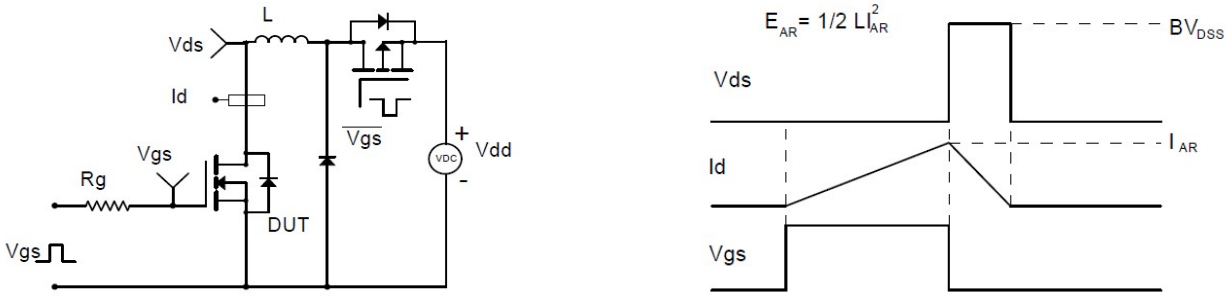
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Gate Charge Test Circuit & Waveform



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms