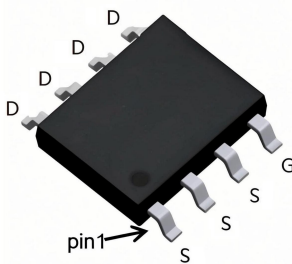


P-Channel 30V(D-S) MOSFET

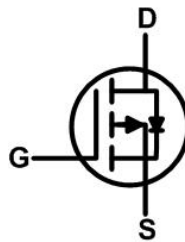
Product summary		
V_{DS}	-30	V
$R_{DS(ON)}$ (at $V_{GS}=-10V$) Typ.	30	m Ω
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$) Typ.	46	m Ω
I_D ($T_A=25^\circ C$)	-5.1	A

Features
<ul style="list-style-type: none"> • High density cell design for low $R_{DS(ON)}$ • Trench Power LV MOSFET technology • High Speed switching
Applications
<ul style="list-style-type: none"> • Power management functions • Load switch

Pin Configuration



SOP8



Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECHA9435A	SOP8	13"	4000pcs

Absolute Maximum Ratings (at $T_A=25^\circ C$ Unless Otherwise Noted)

Symbol	Parameter	Rating	Units	
V_{DS}	Drain-Source Voltage	-30	V	
V_{GS}	Gate-Source Voltage	± 20	V	
I_D	Continuous Drain Current at $V_{GS}=10V^A$	$T_A=25^\circ C$	-5.1	A
		$T_A=100^\circ C$	-4.1	A
I_{DM}	Pulse Drain Current Tested ^B	-20	A	
P_D	Power Dissipation	2.5	W	
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to +150	$^\circ C$	

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient ^A	50	$^\circ C/W$

Electrical Characteristics (at $T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V$	--	--	-1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	--	--	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.5	-2.4	V
$R_{DS(on)}$	Drain-Source On-State Resistance ^B	$V_{GS}=-10V, I_D=-4A$	--	30	43	m Ω
		$V_{GS}=-4.5V, I_D=-3.5A$	--	46	59	m Ω
V_{SD}	Forward Voltage	$I_S=-4A, V_{GS}=0V$	--	--	-1.2	V
Dynamic Parameters ^C						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-15V$ $f=1\text{MHz}$	--	719	--	pF
C_{oss}	Output Capacitance		--	78	--	pF
C_{rss}	Reverse Transfer Capacitance		--	64	--	pF
Q_g	Total Gate Charge	$V_{DS}=-15V, I_D=-5.1A$ $V_{GS}=-10V$	--	14.2	--	nC
Q_{gs}	Gate-Source Charge		--	3.2	--	nC
Q_{gd}	Gate-Drain Charge		--	2	--	nC
$t_{D(on)}$	Turn-on Delay Time	$V_{DD}=-15V$ $I_D=-5.1A, R_G=3\Omega,$ $V_{GS}=-10V$	--	7.4	--	ns
t_r	Turn-on Rise Time		--	37	--	ns
$t_{D(off)}$	Turn-off Delay Time		--	31.6	--	ns
t_f	Turn-off Fall Time		--	42	--	ns
t_{rr}	Reverse recovery time		--	30	--	ns
Q_{rr}	Reverse recovery charge	$I_F=-5.1A,$ $di/dt=100\text{ A}/\mu\text{S}$	--	5.3	--	nC

A. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

B. The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

C. Guaranteed by design, not subject to production testing.

Typical Characteristics

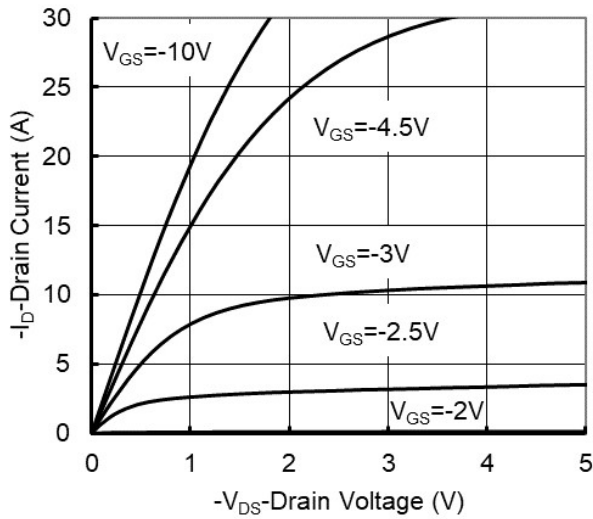


Figure1. Output Characteristics

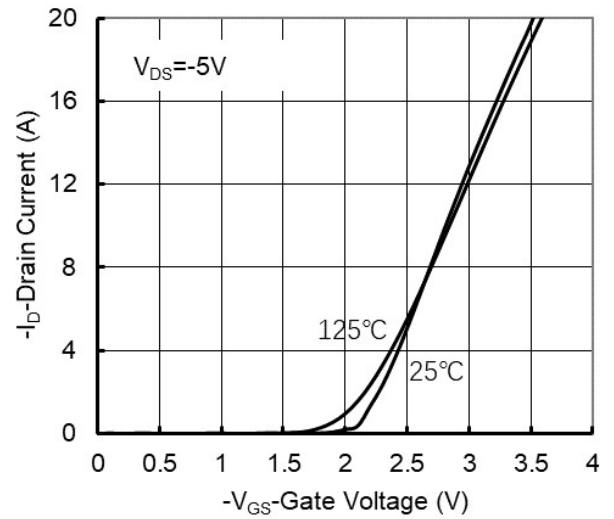


Figure2. Transfer Characteristics

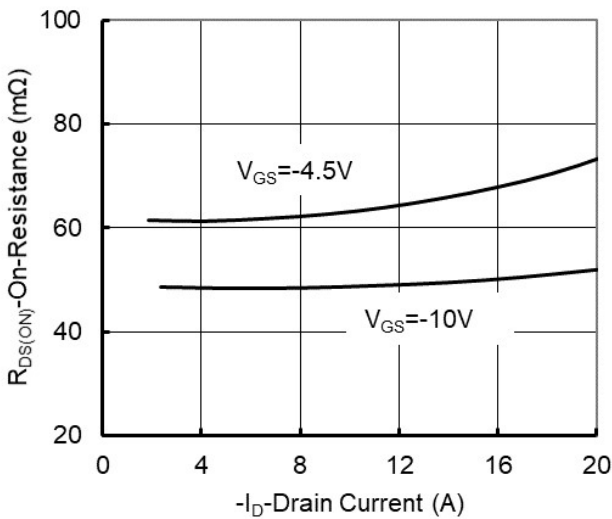


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

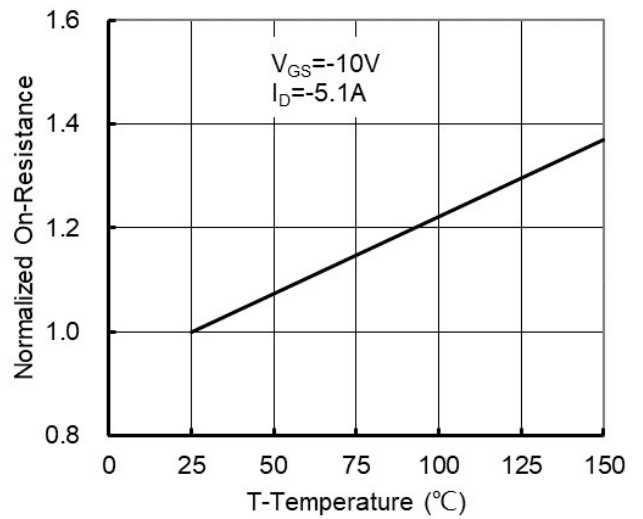


Figure 4: On-Resistance vs. Junction Temperature

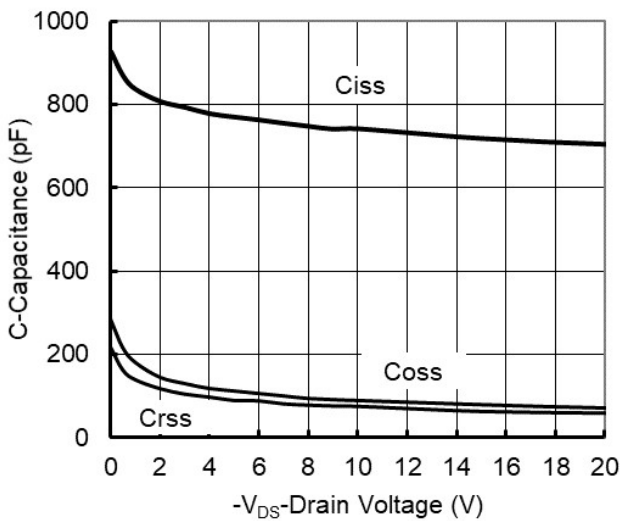


Figure5. Capacitance Characteristics

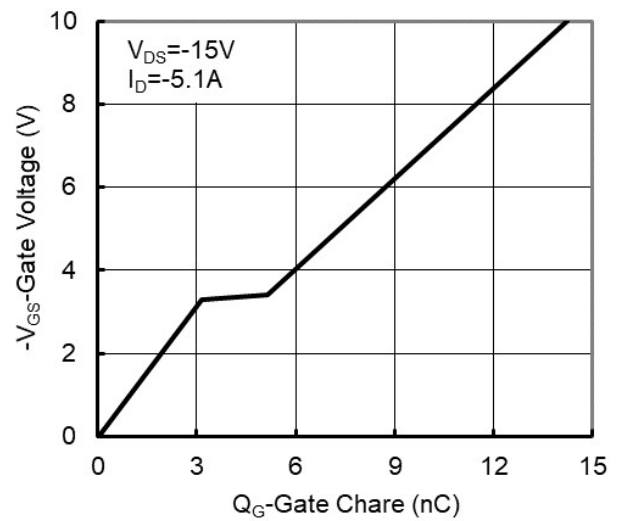


Figure6. Gate Charge

Typical Characteristics

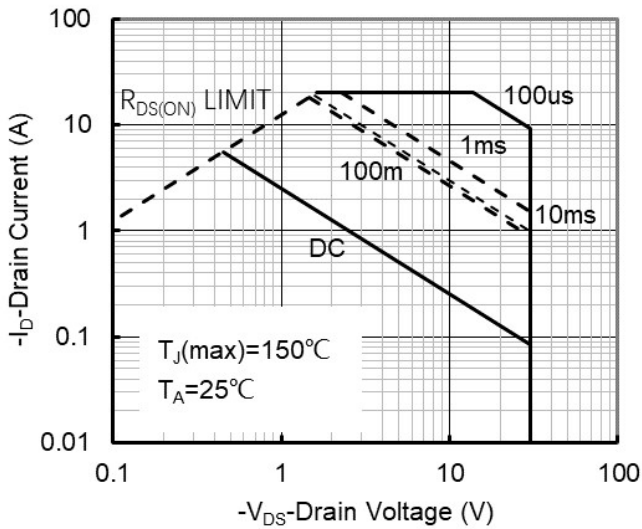


Figure 7. Safe Operation Area

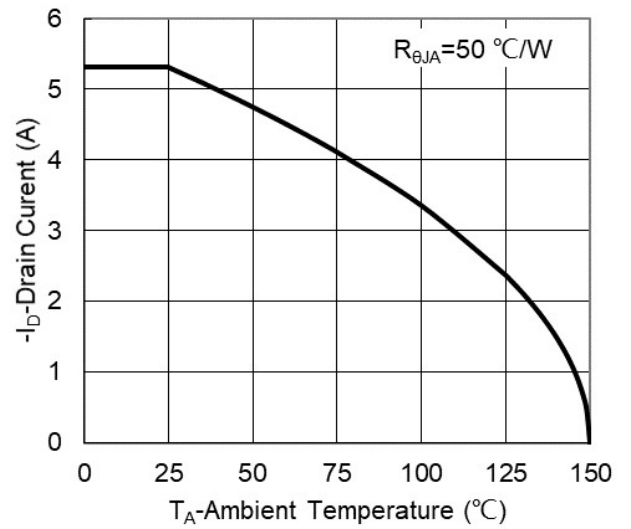


Figure 8. Maximum Continuous Drain Current vs Ambient Temperature

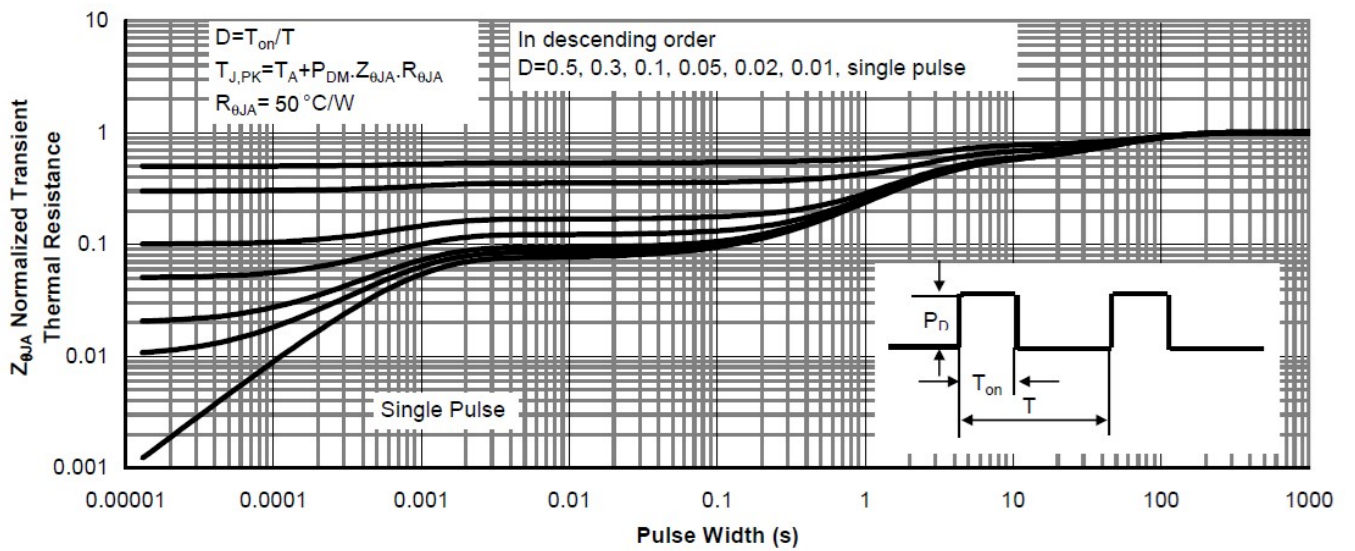
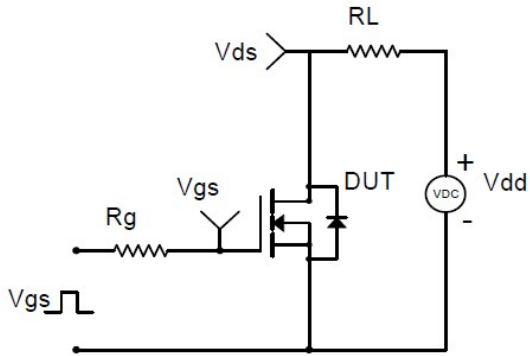
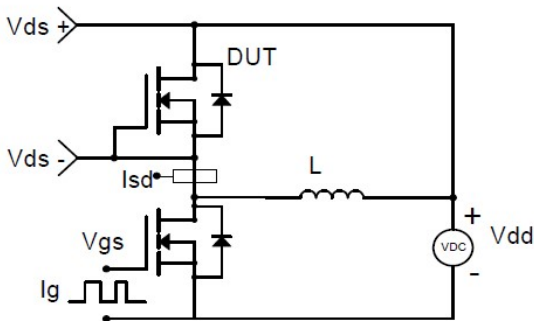


Figure 9. Normalized Maximum Transient Thermal Impedance

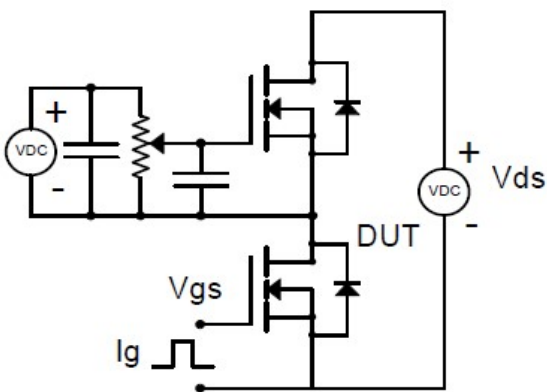
Typical Characteristics



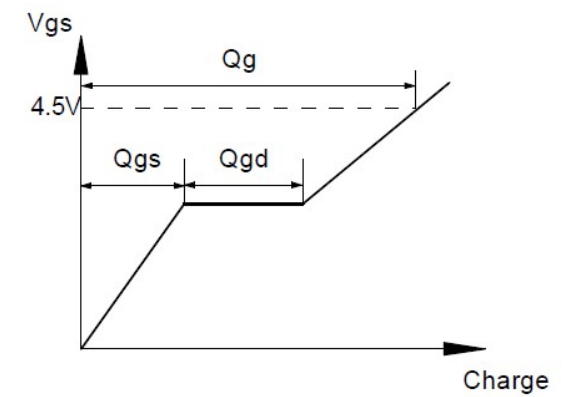
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

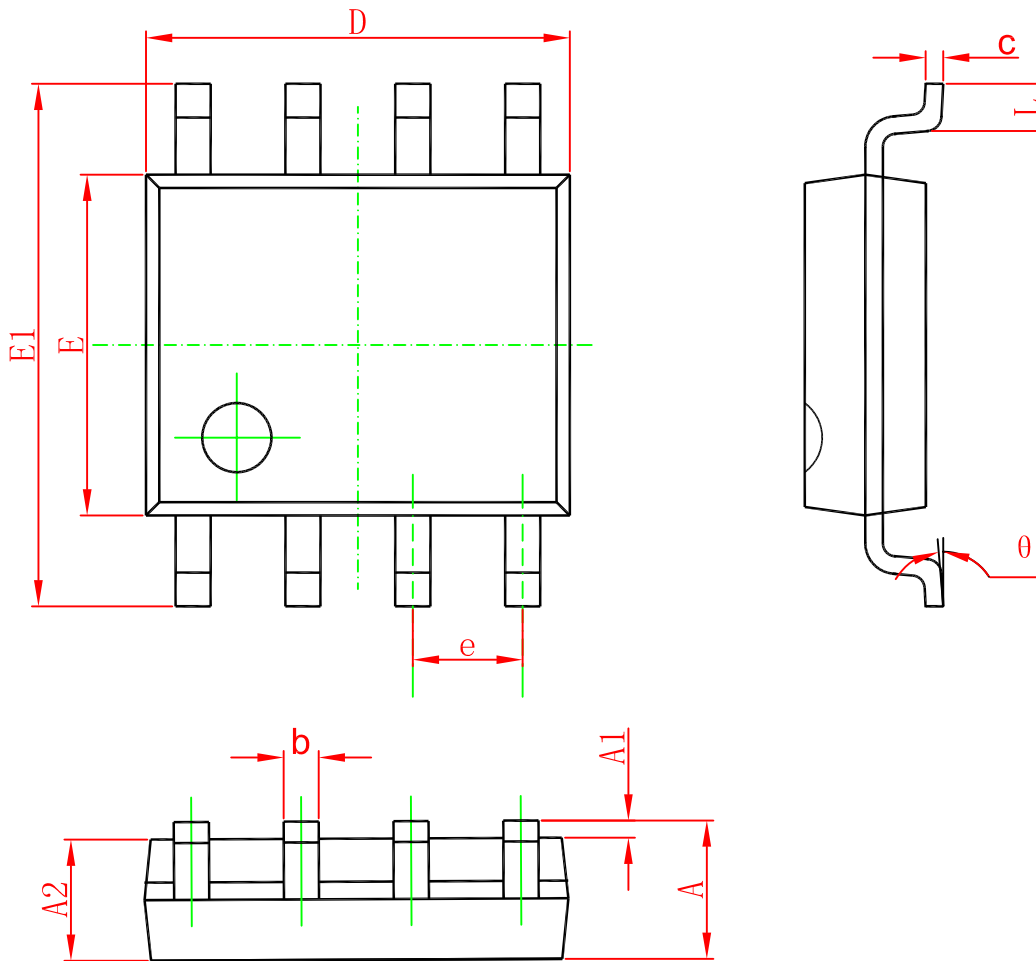


Gate Charge Test Circuit & Waveform



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

SOP8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°