

Dual N-Channel 30V(D-S) MOSFET

Product summary		
V_{DS}	30	V
$R_{DS(ON)}$ (at $V_{GS}=10V$) Typ.	20	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$) Typ.	26	m Ω
I_D ($T_A=25^\circ C$)	8.5	A

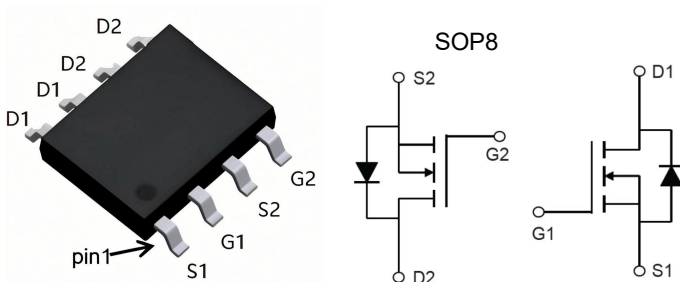
Features

- High density cell design for low $R_{DS(ON)}$
- Trench Power LV MOSFET technology
- Fast Switching Characteristic

Applications

- Power management functions
- Load Switch

Pin Configuration



Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECHA3404A	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 $V_{GS}=10V^A$	$T_A=25^\circ C$	8.5	A
		$T_A=100^\circ C$	6.7	A
I_{DM}	Pulse Drain Current Tested ^B	34	A	
P_D	Power Dissipation ^A	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	1.5	2.2	V
$R_{DS(on)}$	Drain-Source On-State Resistance ^B	$V_{GS}=10V, I_D=8.5A$	--	20	23	m Ω
		$V_{GS}=4.5V, I_D=6A$	--	26	32	m Ω
V_{SD}	Diode Forward Voltage	$I_S=8.5A, V_{GS}=0V$	--	--	1.2	V
I_S	Maximum Body-Diode Continuous Current		--	--	8.5	A
Dynamic Parameters ^C						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=15V$ $f=1MHz$	--	490	--	pF
C_{oss}	Output Capacitance		--	92	--	pF
C_{riss}	Reverse Transfer Capacitance		--	68	--	pF
Q_g	Total Gate Charge	$V_{DS}=15V, I_D=8.5A$ $V_{GS}=4.5V$	--	5.2	--	nC
Q_{gs}	Gate-Source Charge		--	0.9	--	nC
Q_{gd}	Gate-Drain Charge		--	1.3	--	nC
$t_{D(on)}$	Turn-on Delay Time	$V_{DD}=15V$ $I_D=8.5A, R_G=2.8\Omega,$ $V_{GS}=4.5V$	--	4.5	--	nS
t_r	Turn-on Rise Time		--	2.5	--	nS
$t_{D(off)}$	Turn-off Delay Time		--	14.5	--	nS
t_f	Turn-off Fall Time		--	3.5	--	nS

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

B. Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

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

Typical Characteristics

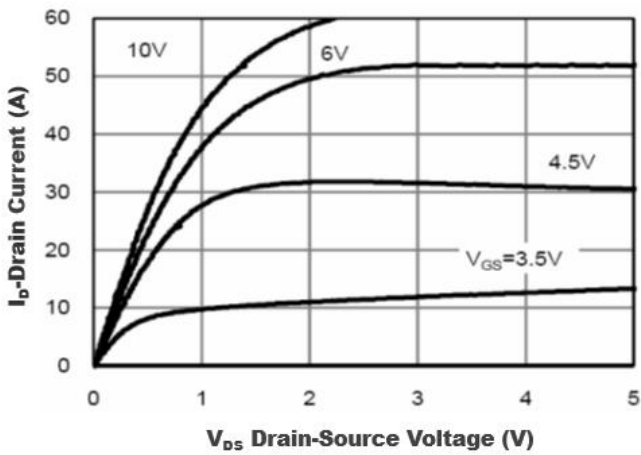


Figure1. Output Characteristics

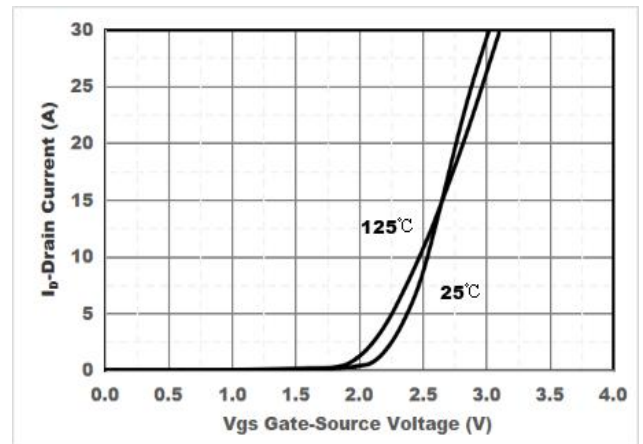


Figure2. Transfer Characteristics

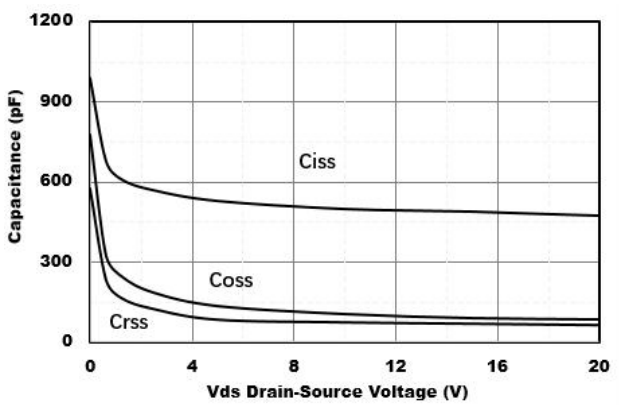


Figure3. Capacitance Characteristics

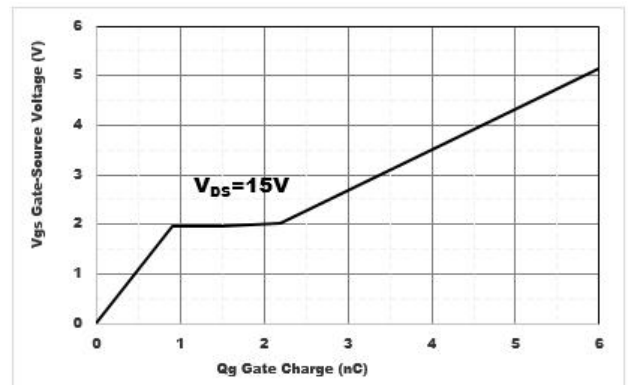


Figure4. Gate Charge

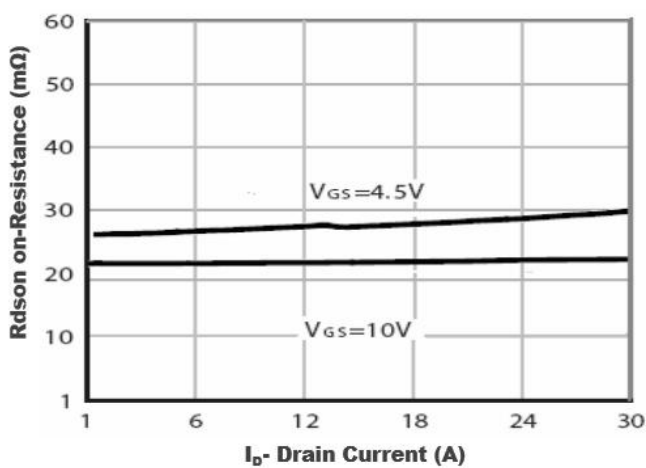


Figure5. Drain-Source on Resistance

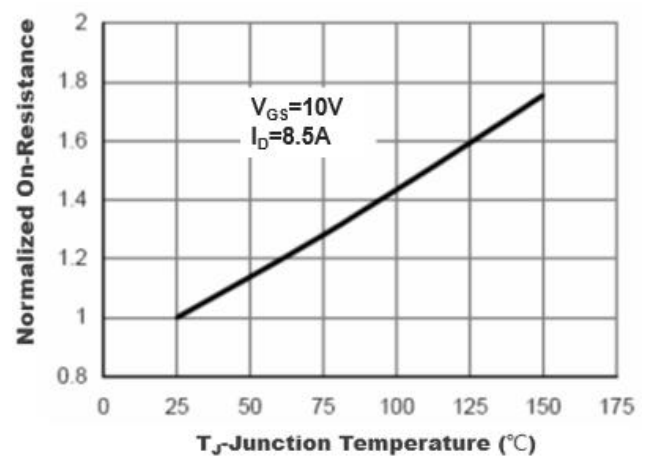


Figure6. Drain-Source on Resistance

Typical Characteristics

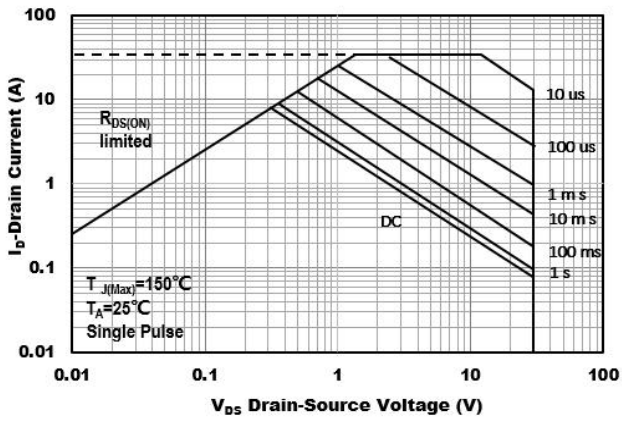


Figure7. Safe Operation Area

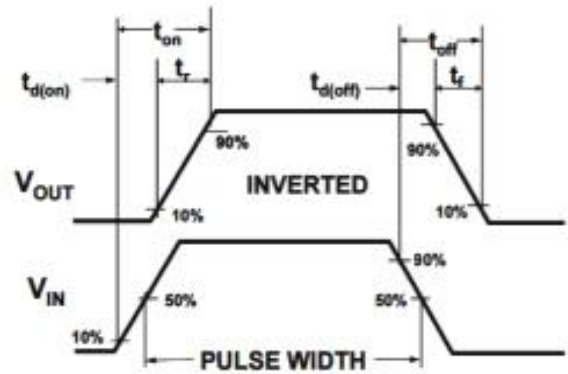
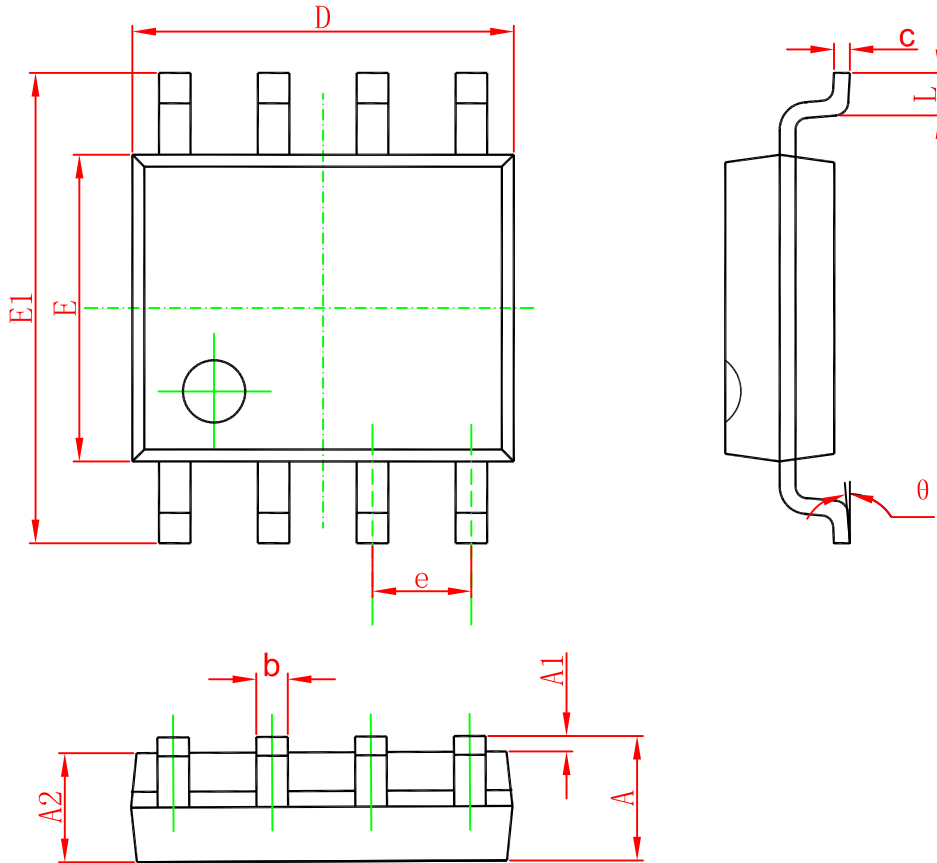


Figure8. Switching wave

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°