

P-Channel 30V MOSFET

EX3401A

V_{DS} (V)	$R_{DS(on),max}$ (m Ω)	I_D (A)
-30V	60 @ $V_{GS} = -10V$	-3.6

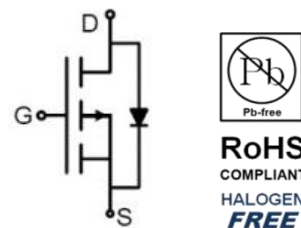
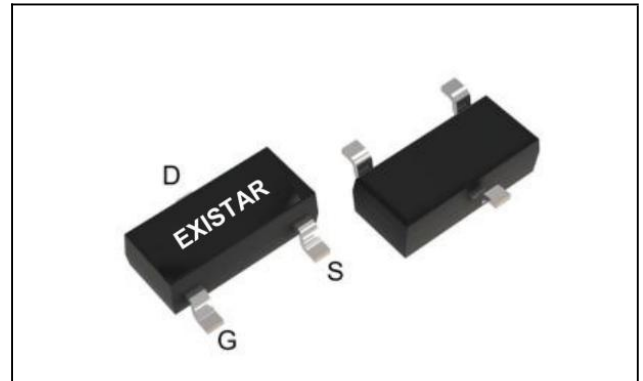
Features

- Low $R_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed
- 100% avalanche tested

Applications

- DC/DC conversion
- Load Switch
- Power Management

SOT-23



Package And Ordering Information

Ordering code	Package	Marking
EX3401A	SOT-23	3401A

Ordering Information

Package	Units/ Reel	Reels/ Inner Box	Units/ Inner Box
SOT-23	3000	15	45000

Key Performance Parameters

Parameter	Value	Unit
V _{DS} , min @ T _j (max)	-30	V
I _D , pulse	-14.4	A
R _{DS(ON)} , max @ V _{GS} = -10V	60	mΩ
Q _g	6.5	nC

Absolute Maximum Ratings at T_j=25°C Unless Otherwise Noted

Parameter		Symbol	Limit	Unit
Drain-source voltage		V _{DS}	-30	V
Gate-source voltage		V _{GS}	±20	
Continuous drain current	T _A =25°C	I _D	-3.6	A
	T _A =100°C		-2.3	
Pulsed drain current		I _{D,pulse}	-14.4	
Avalanche energy, single pulse		E _{AS}	20	mJ
Power dissipation	T _A =25°C	P _D	1.2	W
	T _A =100°C		0.5	
Operating junction and storage temperature range		T _J , T _{stg}	-55 To 150	°C

Thermal Characteristics

Parameter		Symbol	Max.	Unit
Thermal resistance, junction-to-case	Steady state	R _{θJC}	-	°C/W
Thermal resistance, junction-to-ambient	Steady state	R _{θJA}	103	

Electrical Characteristics at T_j=25°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Static						
Drain to source breakdown voltage	V _{(BR)DSS}	-30			V	V _{GS} = 0, I _D = -250 μA
Gate-source threshold voltage	V _{GS(th)}	-0.5		-1.4	V	V _{DS} = V _{GS} , I _D = -250 μA
Gate-body leakage	I _{GSS}			±100	nA	V _{DS} = 0 V, V _{GS} = ±10 V
Zero gate voltage drain current	I _{DSS}			1	μA	V _{DS} = -30 V, V _{GS} = 0 V
Drain-source on-resistance	R _{DS(on)}		46	60	mΩ	V _{GS} = -10 V, I _D = -2 A
Drain-source on-resistance	R _{DS(on)}		50	68	mΩ	V _{GS} = -4.5 V, I _D = -1.5 A
Forward transconductance	g _{fs}		8		S	V _{DS} = -5 V, I _D = -2 A

Gate resistance	R _g		6.7		Ω	f=1MHz
Gate Charge						
Total gate charge	Q _g		6.5		nC	V _{DS} = -15 V, I _D = -2 A, V _{GS} = -10 V
Gate-source charge	Q _{gs}		1.4			
Gate-drain charge	Q _{gd}		1.6			
Dynamic						
Turn-on delay time	t _{d(on)}		10		ns	V _{DS} = -15 V, V _{GS} = -10 V, R _L = 7.5 Ω, R _{GEN} = 3 Ω
Rise time	t _r		80			
Turn-off delay time	t _{d(off)}		150			
Fall time	t _f		350			
Input capacitance	C _{iss}		707		pF	V _{DS} = -15 V, V _{GS} = 0 V, f = 1MHz
Output capacitance	C _{oss}		54			
Reverse transfer capacitance	C _{rss}		45			
Body Diode						
Diode forward voltage	V _{SD}			1.2	V	V _{GS} = 0 V, I _F = -2 A
Reverse recovery time	t _{rr}		35		ns	I _s = -2 A, di/dt = 100 A/μs
Reverse recovery charge	Q _{rr}		5		nC	

Electrical Characteristics Diagrams

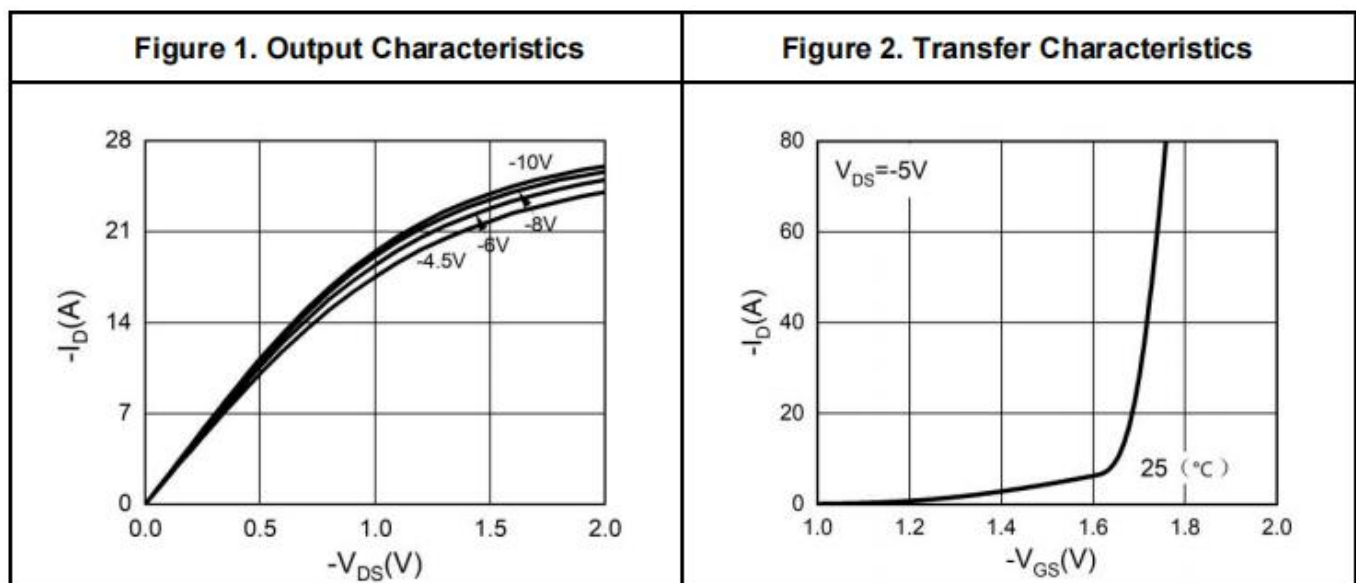


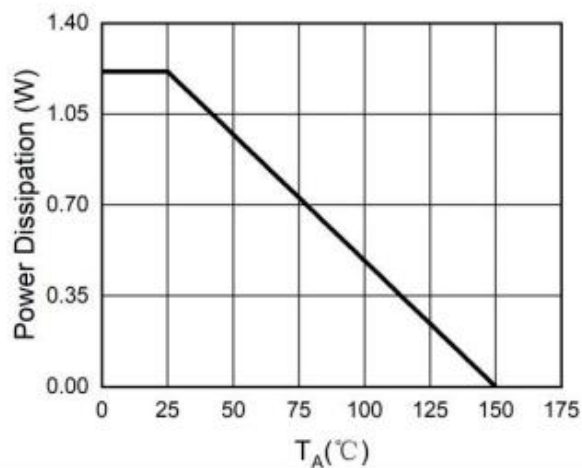
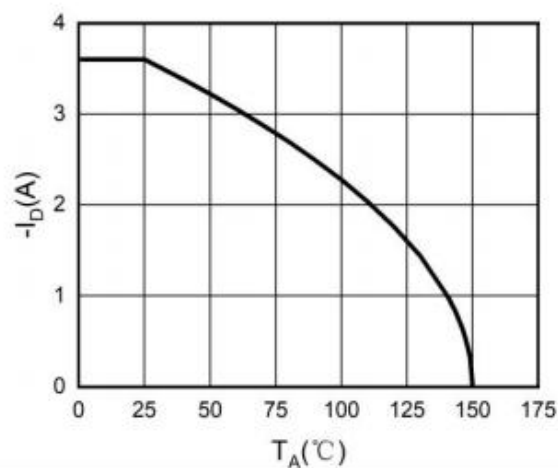
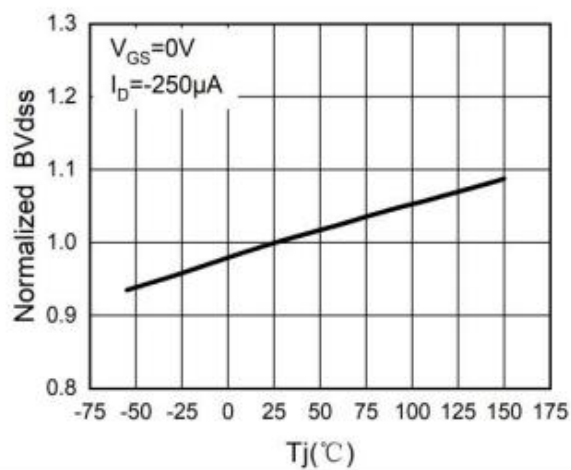
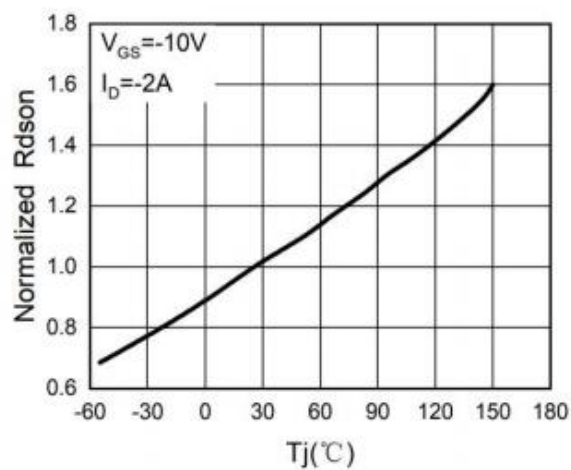
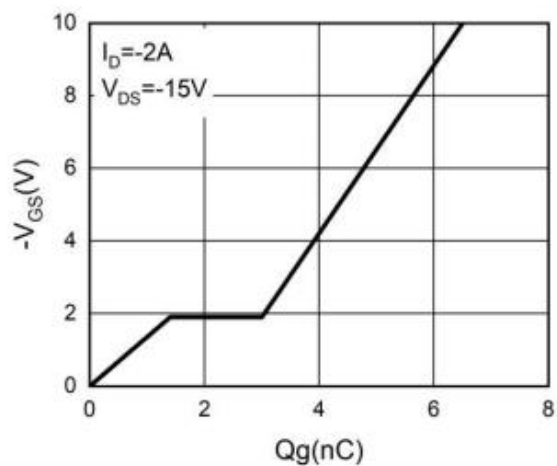
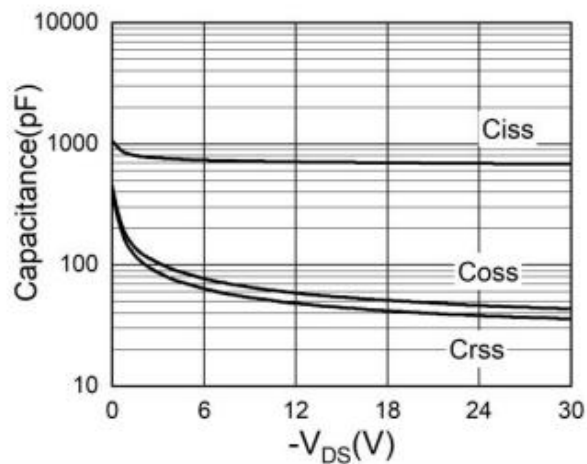
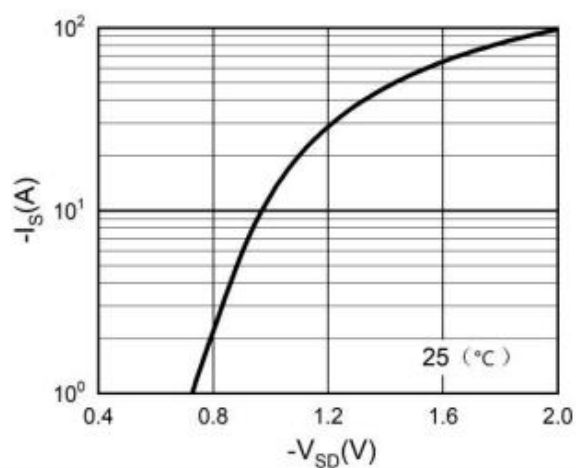
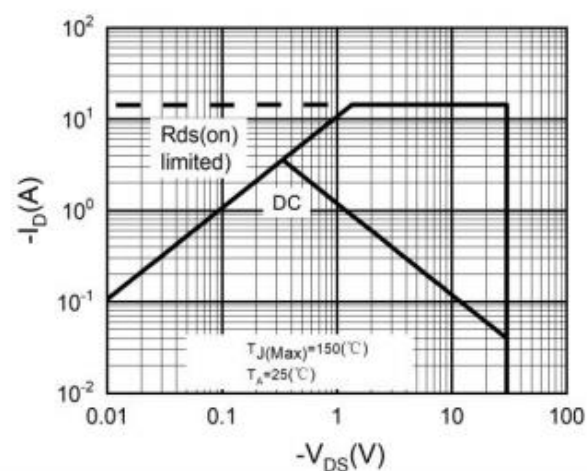
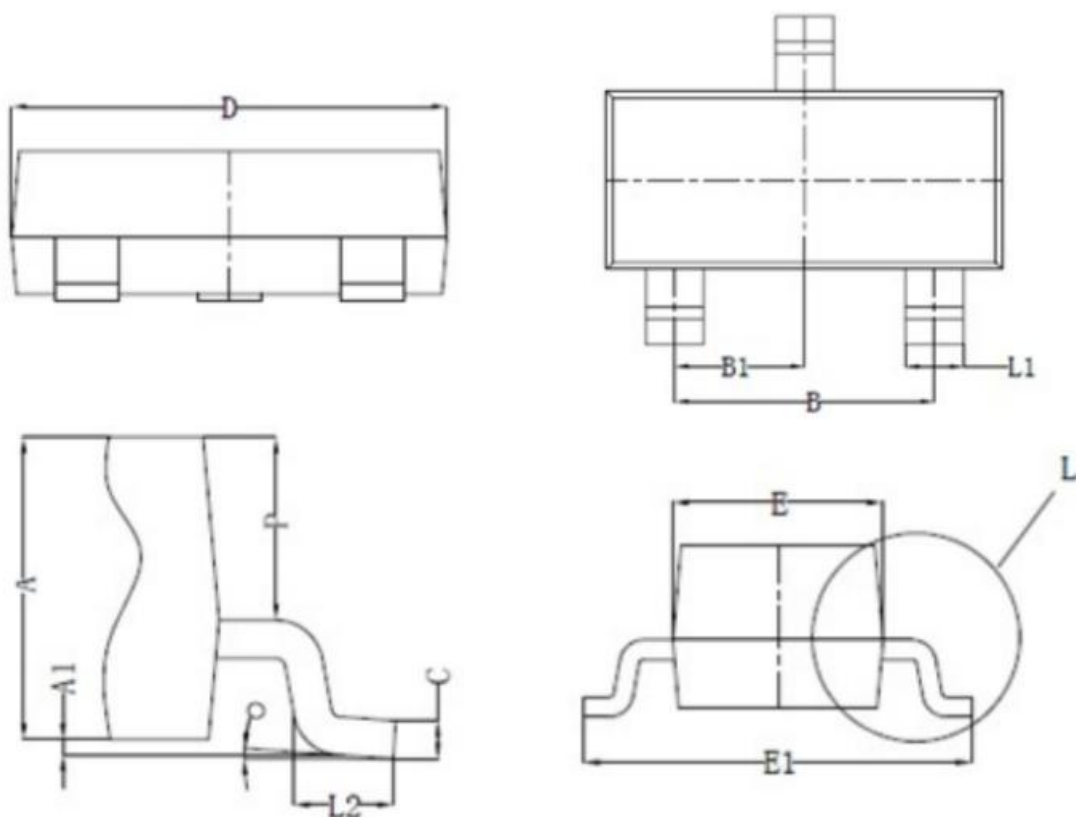
Figure 3. Power Dissipation

Figure 4. Drain Current

Figure 5. BV_{DSS} vs Junction Temperature

Figure 6. $R_{DS(ON)}$ vs Junction Temperature


Figure 7. Gate Charge Waveforms

Figure 8. Capacitance

Figure 9. Body-Diode Characteristics

Figure 10. Maximum Safe Operating Area


Package Outline Dimensions



Symbol	Dim in mm		
	Min	Nor	Max
A	0.900	1.000	1.100
A1	0.000	0.050	0.100
L1	0.350	0.400	0.550
C	0.100	0.110	0.120
D	2.800	2.900	3.000
E	1.250	1.300	1.350
E1	2.250	2.400	2.550
B	1.800	1.900	2.000
B1	0.950 TYP		
L2	0.200	0.350	0.450
P	0.550	0.575	0.600

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