Features

★ Green Device Available
★ Super Low Gate Charge
★ Excellent CdV/dt effect decline
★ Advanced high cell density Trench technology

Product Summery

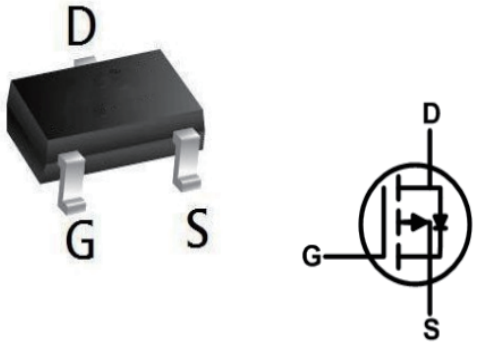
RoHS

BVDSS	RDSON	ID
-30V	42mΩ	-4.5A

Description

THE 3401A is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and efficiency for most of the small power switching and load switch applications.
The 3401A meet the RoHS and Green Product requireme n t with full function reliability approved.

SOT 23 Pin Configurations



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_A=25°C	Continuous Drain Current	-4.5	A
I_D@T_A=70°C	Continuous Drain Current	-3.6	A
I_{DM}	Pulsed Drain Current2	-16	A
P_D@T_A=25°C	Total Power Dissipation3	1.4	W
P_D@T_A=70°C	Total Power Dissipation3	0.9	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient 1	---	105	°C/W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient 1 (t ≤10s)	---	---	°C/W

Electrical Characteristics (T_J =25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = -250μA	-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} = ±12V	-	-	±100	nA
$V_{GS(th)}$	Gate-Threshold Voltage	V_{DS} = V_{GS}, I_D = -250μA	-0.7	-1	-1.3	V
$R_{DS(on)}$	Drain-Source on-Resistance3	V_{GS} = -10V, I_D = -4.2A		42	60	mΩ
		V_{GS} = -4.5V, I_D = -4A	-	52	75	
		V_{GS} = -2.5V, I_D = -1A	-	60	90	
Dynamic Characteristics 4						
C_{iss}	Input Capacitance	V_{DS} = -15V, V_{GS} =0V, f =1MHz	-	745	-	pF
C_{oss}	Output Capacitance		-	70	-	
C_{rss}	Reverse Transfer Capacitance		-	57	-	
Switching Characteristics 4						
Q_g	Total Gate Charge	V_{GS} = -4.5V, V_{DS} = -15V, I_D = -4.2A	-	8	-	nC
Q_{gs}	Gate−Source Charge		-	1.8	-	
Q_{gd}	Gate−Drain Charge		-	2.7	-	
$t_{d(on)}$	Turn-on Delay Time	V_{GS} = -10V, V_{DD} = -15V, I_D= -4.2A, R_{GEN} = 6Ω	-	7	-	ns
t_r	Rise Time		-	3	-	
$t_{d(off)}$	Turn-off Delay Time		-	30	-	
t_f	Fall Time		-	12	-	
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage 3	I_S = -4.2A, V_{GS} = 0V	-	-	-1.2	V
I_S	Continuous Source Current		-	-	-4.2	A

Note :
1.Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C
2.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
3.Pulse Test: Pulse width≤300μs, duty cycle≤2%.
4..This value is guaranteed by design hence it is not included in the production test.

P-Channel Typical Performance Characteristics

Figure1:Typical Output Characteristics

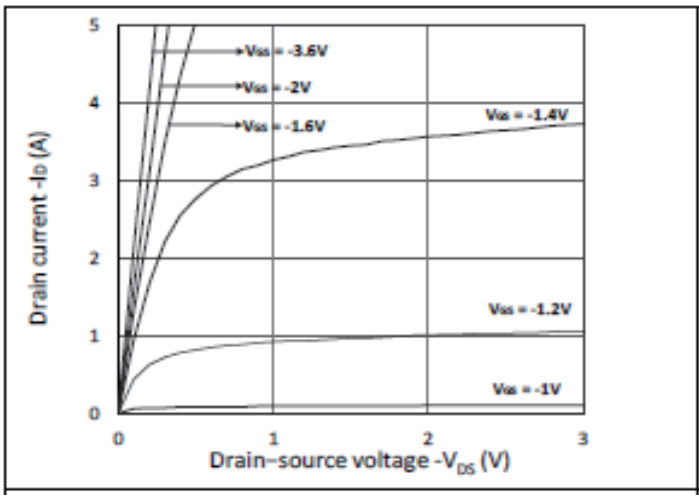


Figure 2:Transfer Characteristics

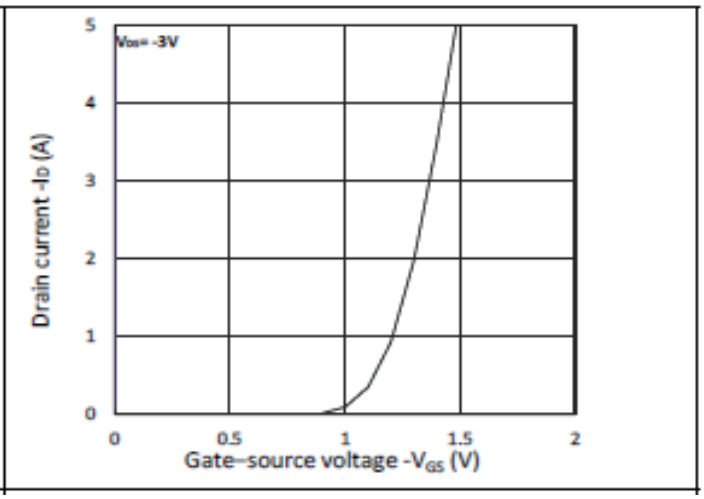


Figure 3:Forward Characteristics of Reve

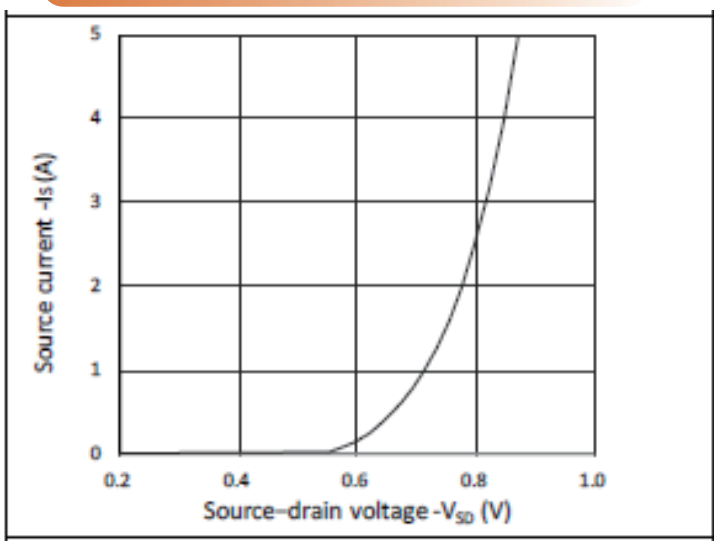


Figure 4: RDS(ON) vs. VGS

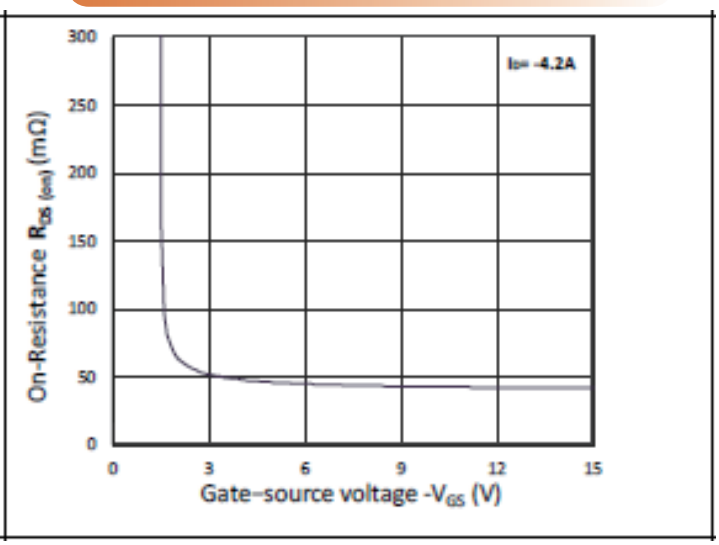


Figure 5: RDS(ON) vs. ID

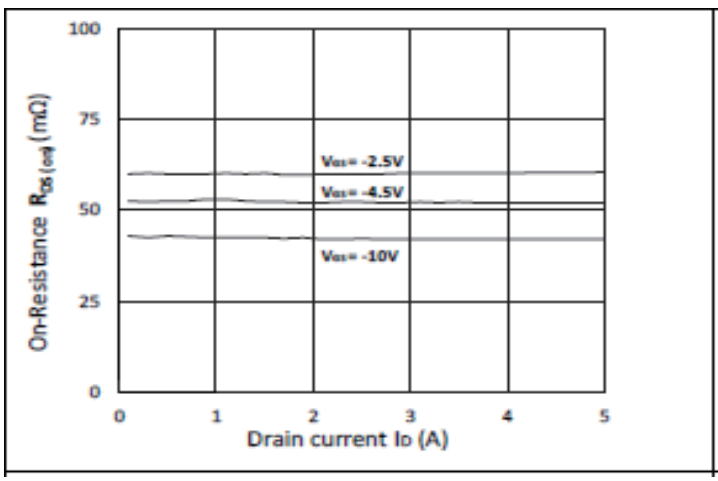
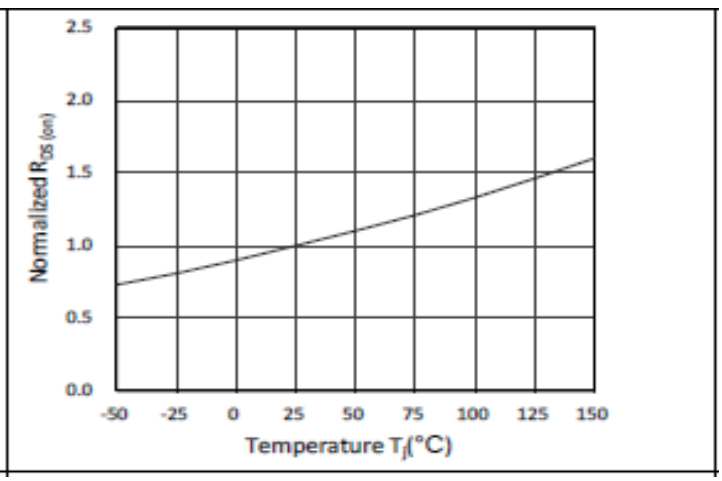


Figure 6: Normalized RDS(on) vs. Temper



P-Channel Typical Performance Characteristics

Figure7:Capacitance

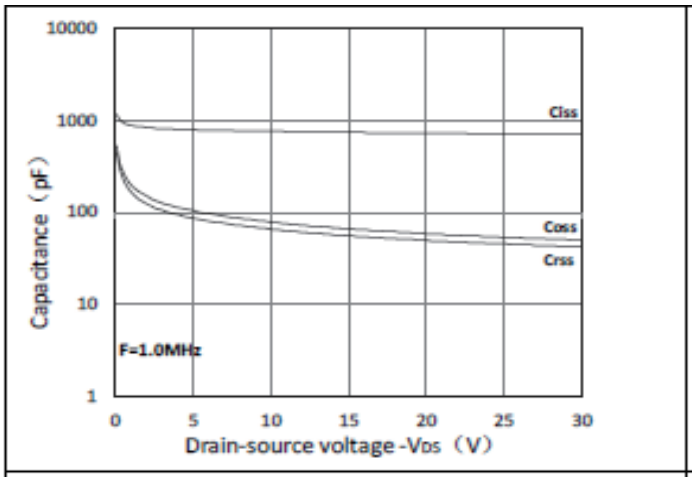


Figure 8: Safe Operating Area

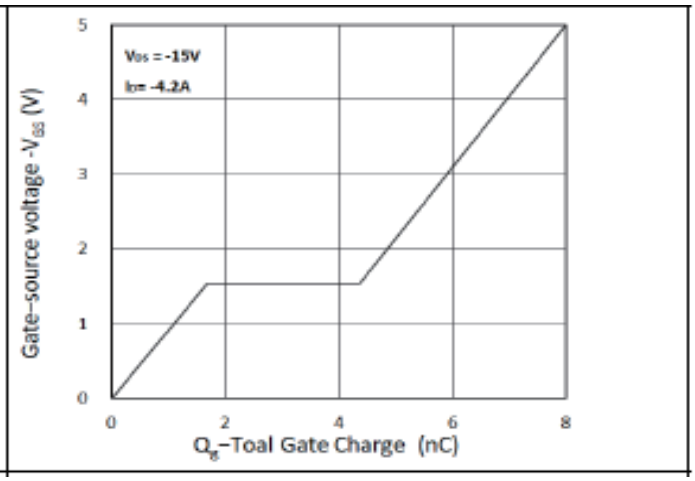


Figure9:Normalized Maximum Transient

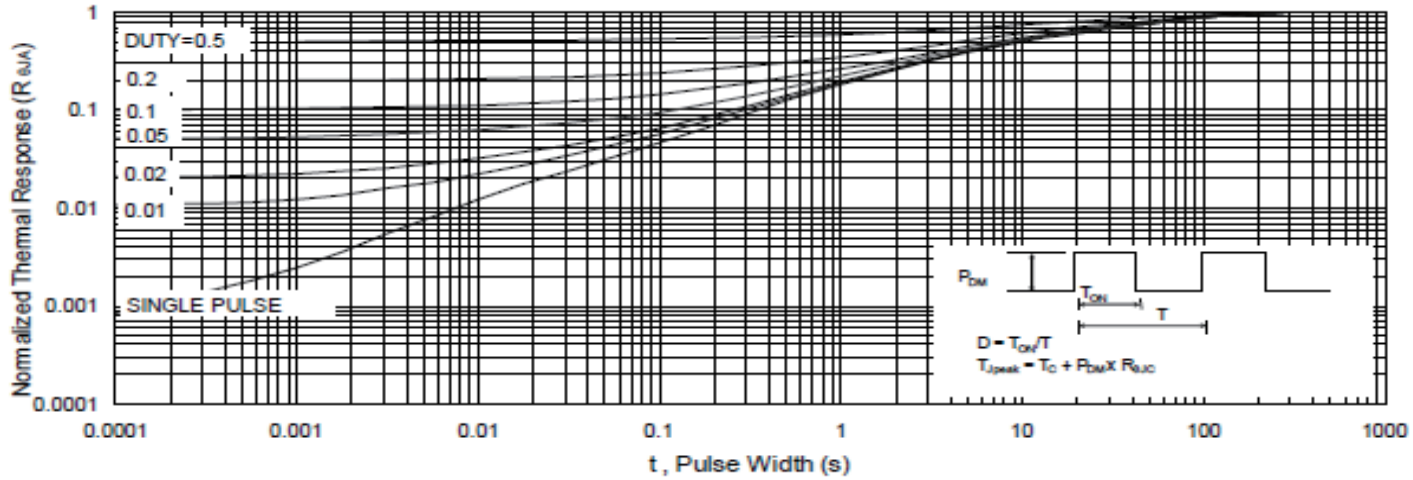


Figure10:Switching Time Waveform

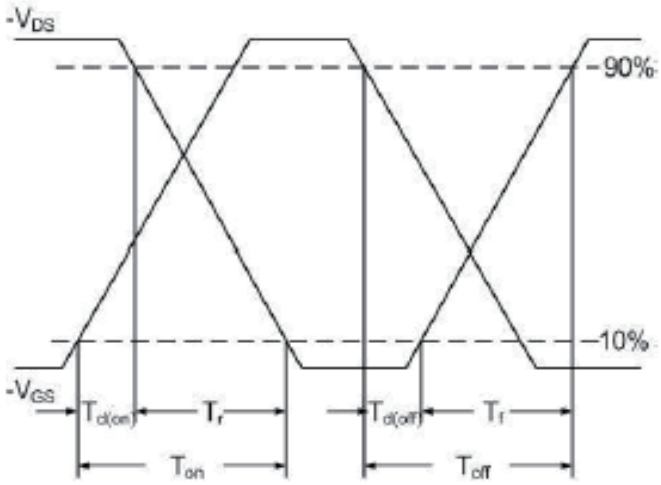
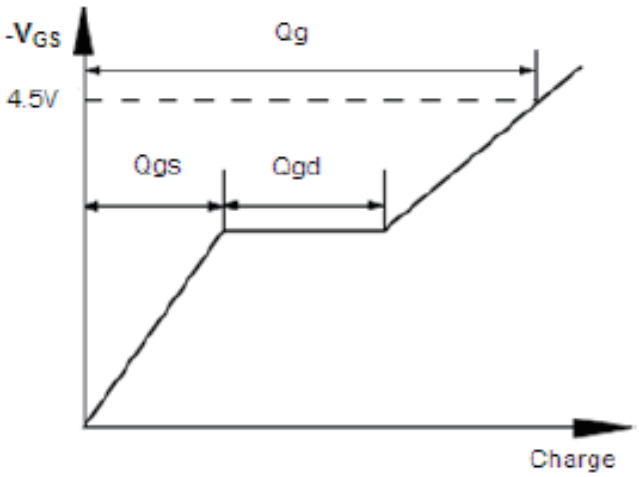
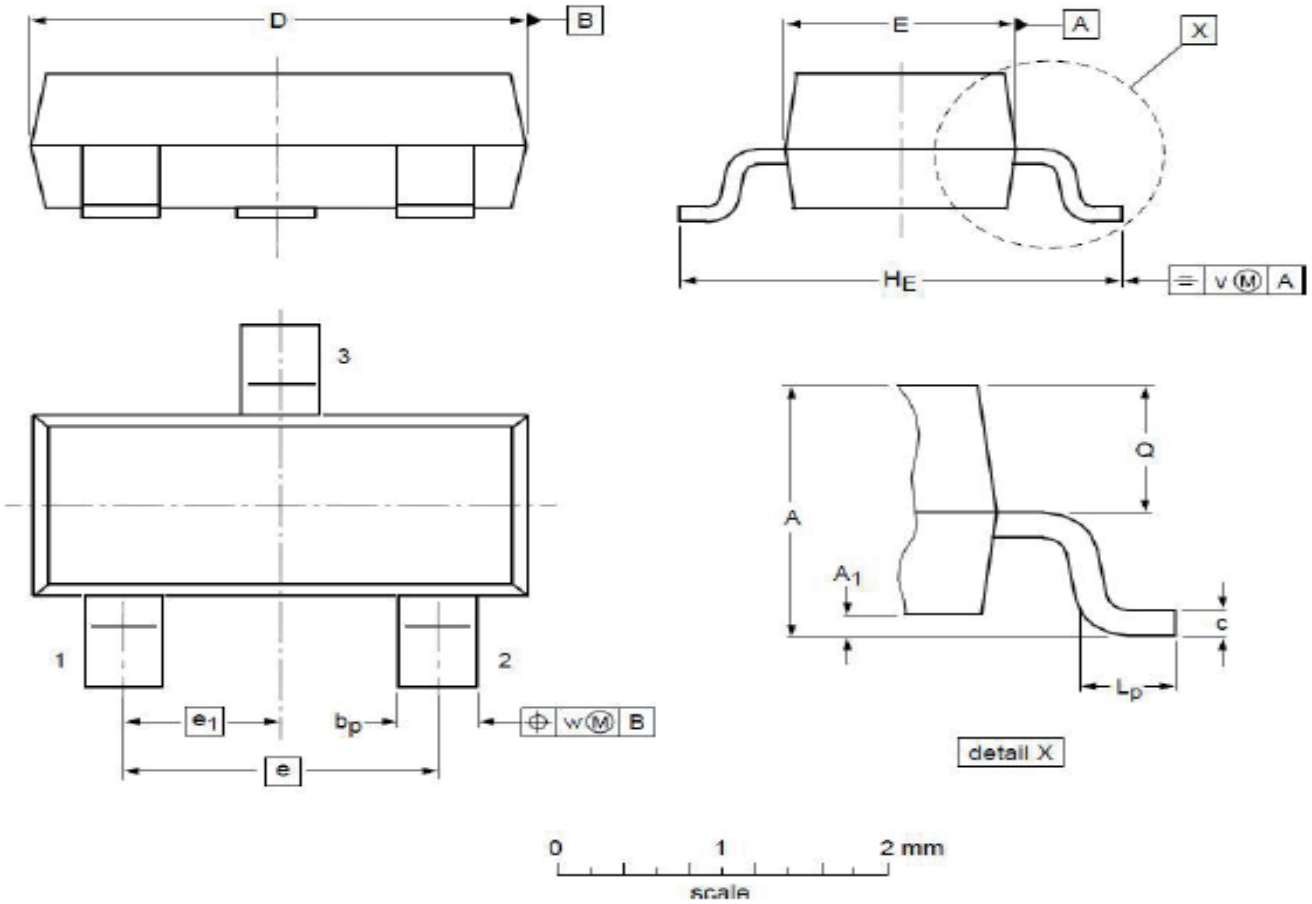


Figure 11: Gate Charge Waveform



PackageMechanicalData-SOT-23



DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.01	1.15	A_1	0.01	0.05	0.10
b_p	0.30	0.42	0.50	c	0.08	0.13	0.15
D	2.80	2.92	3.00	E	1.20	1.33	1.40
e	--	1.90	--	e_1	--	0.95	--
H_E	2.25	2.40	2.55	L_p	0.30	0.42	0.50
Q	0.45	0.49	0.55	v	--	0.20	--
w	--	0.10	--				

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