

General Description

The MY3401A is the high cell density trench P-CH MOSFET, which provide excellent $R_{DS(ON)}$ and efficiency for most of the small power switching and load switch applications.

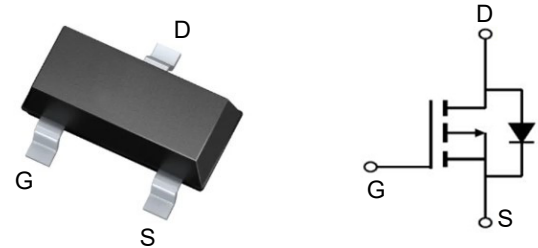


Features

V_{DSS}	-30	V
I_D	-4.2	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	41	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	51	m Ω

Application

- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effect decline



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY3401A	SOT-23-3L	X1DA	3000

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D@T_A=25^\circ\text{C}$	Continuous Drain Current	-4.5	A
$I_D@T_A=70^\circ\text{C}$	Continuous Drain Current	-3.6	A
I_{DM}	Pulsed Drain Current ²	-16	A
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation ³	1.4	W
$P_D@T_A=70^\circ\text{C}$	Total Power Dissipation ³	0.9	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

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

Electrical Characteristics ($T_J=25\text{ }^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -30V, V _{GS} = 0V	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{DS} = 0V, V _{GS} = ± 12V	-	-	± 100	nA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.7	-0.9	-1.3	V
Drain-Source on-Resistance ³	R _{DS(on)}	V _{GS} = -10V, I _D = -4.2A	-	41	50	mΩ
		V _{GS} = -4.5V, I _D = -4A	-	51	61	
		V _{GS} = -2.5V, I _D = -1A	-	64	80	
Dynamic Characteristics ⁴						
Input Capacitance	C _{iss}	V _{DS} = - 15V, V _{GS} =0V, f =1MHz	-	745	-	pF
Output Capacitance	C _{oss}		-	70	-	
Reverse Transfer Capacitance	C _{rss}		-	57	-	
Switching Characteristics ⁴						
Total Gate Charge	Q _g	V _{GS} = -4.5V, V _{DS} = -15V, I _D = -4.2A	-	8	-	nC
Gate-Source Charge	Q _{gs}		-	1.8	-	
Gate-Drain Charge	Q _{gd}		-	2.7	-	
Turn-on Delay Time	t _{d(on)}	V _{GS} = -10V, V _{DD} = -15V, I _D = -4.2A, R _{GEN} = 6Ω	-	7	-	ns
Rise Time	t _r		-	3	-	
Turn-off Delay Time	t _{d(off)}		-	30	-	
Fall Time	t _f		-	12	-	
Drain- Source Diode Characteristics						
Diode Forward Voltage ³	V _{SD}	I _S = -4.2A, V _{GS} = 0V	-	-	-1.2	V
Continuous Source Current	I _S				4.2	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^{\circ}\text{C}$
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 $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. This value is guaranteed by design hence it is not included in the production test.

Typical Electrical and Thermal Characteristics

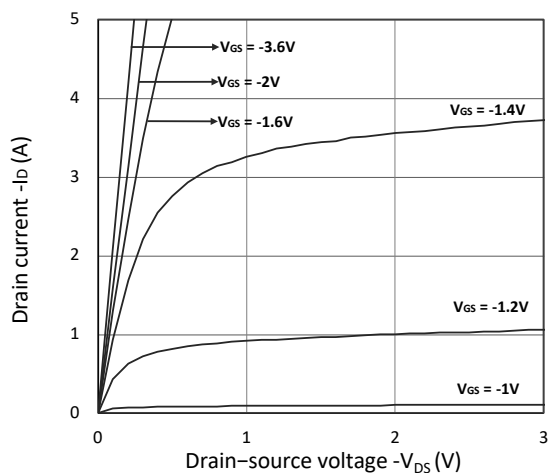


Figure 1. Output Characteristics

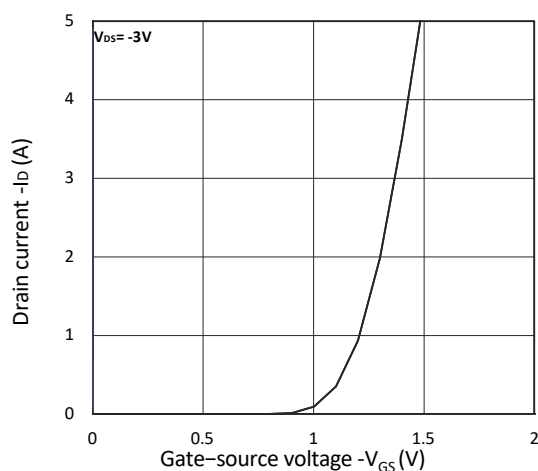


Figure 2. Transfer Characteristics

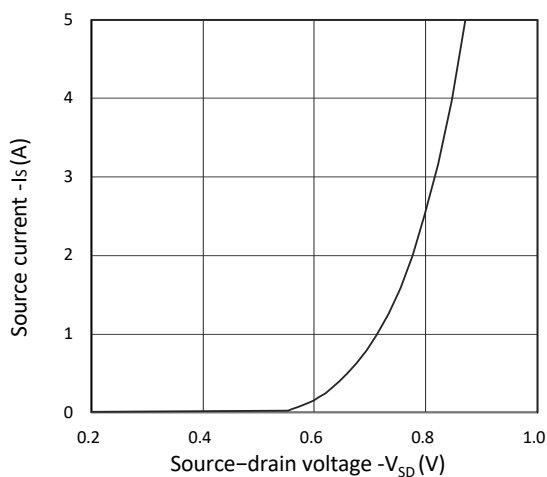


Figure 3. Forward Characteristics of Reverse

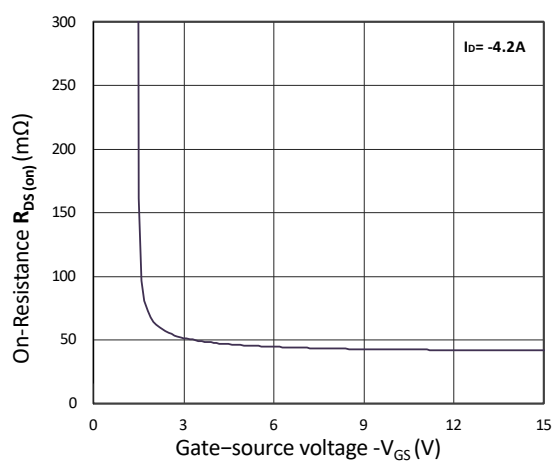


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

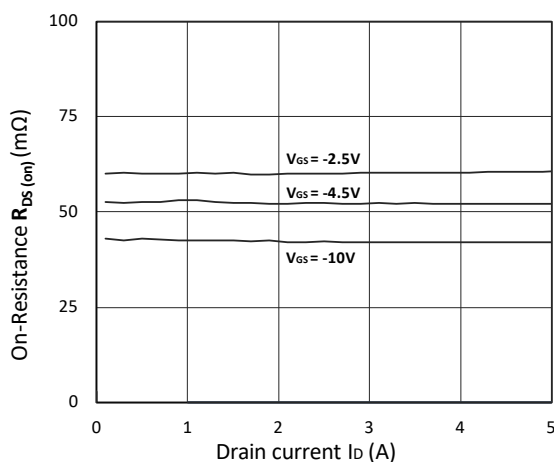


Figure 5. $R_{DS(ON)}$ vs. I_D

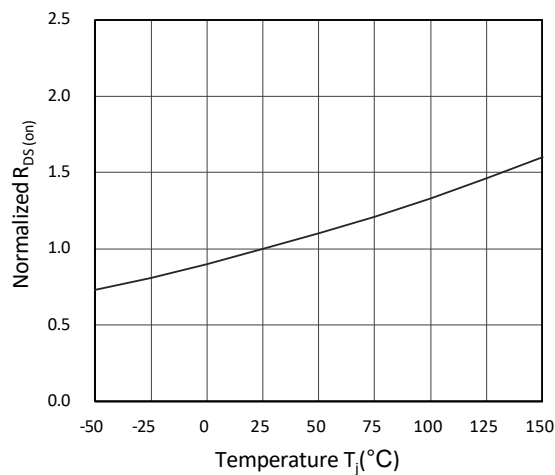


Figure 6. Normalized $R_{DS(ON)}$ vs. Temperature

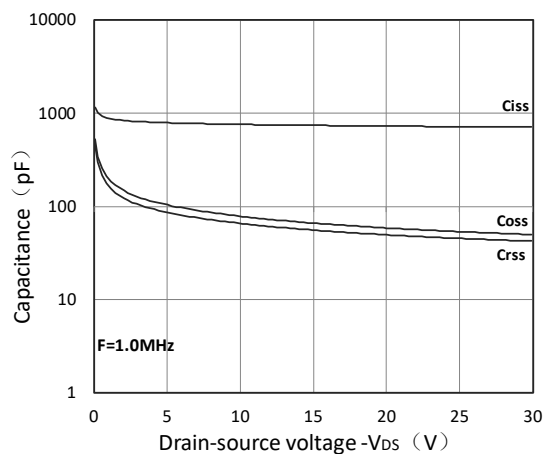


Figure 7. Capacitance Characteristics

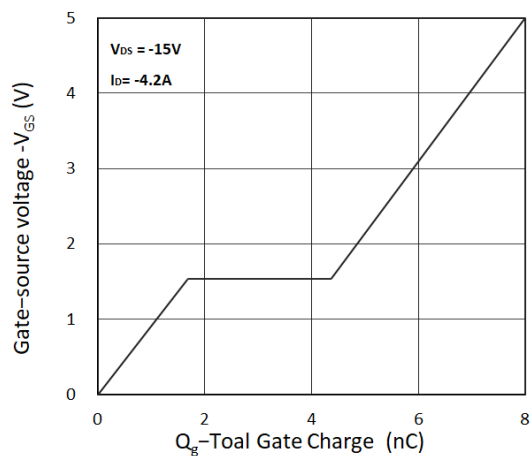


Figure 8. Gate Charge Characteristics

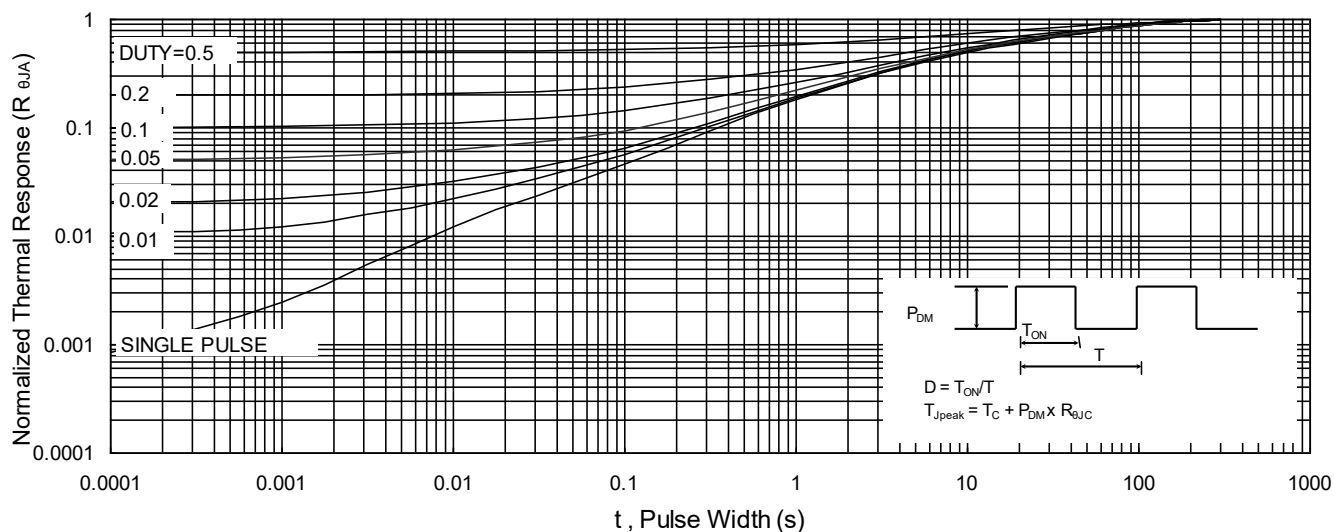


Fig.9 Normalized Maximum Transient Thermal Impedance

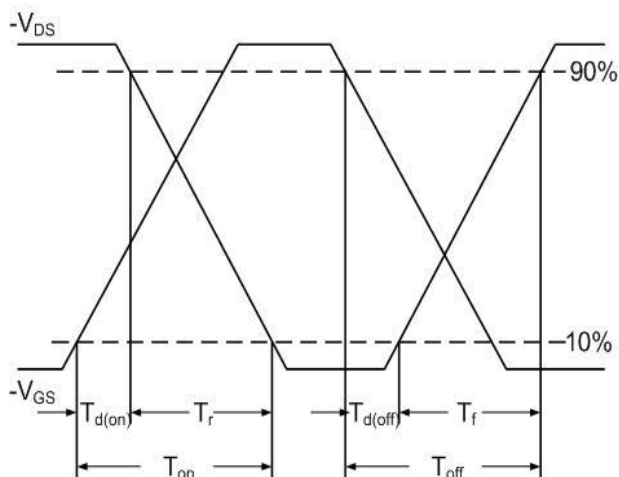


Fig.10 Switching Time Waveform

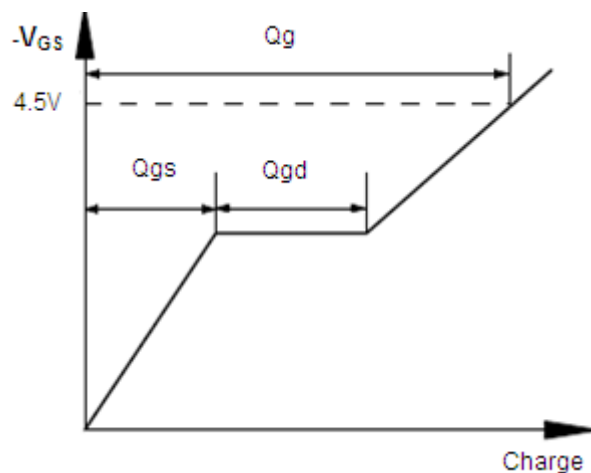
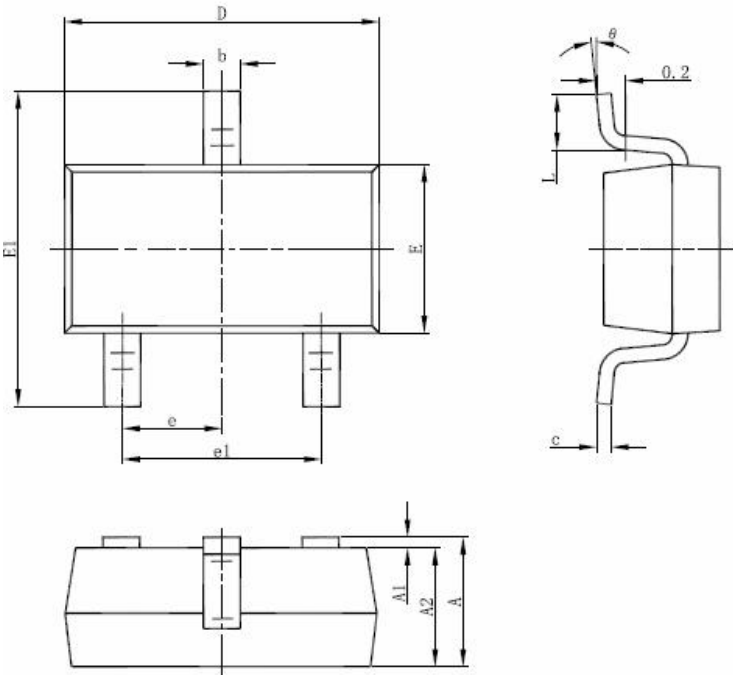


Fig.11 Gate Charge Waveform

Package Mechanical Data-SOT-23-3L



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°