Elektronische Bauelemente

SSF7401

-30V , -2A

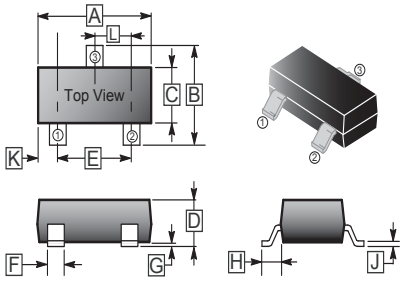
P-Ch Enhancement Mode MOSFET

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSF7401 uses advanced trench technology to provide excellent on-resistance, low gate charge and operation with gate voltage as low as 2.5V. It can be used for a wide variety of applications, including load switching, low current inverters and low current DC-DC converters. The SSF7401 is universally used for all commercial-industrial applications.

SOT-323



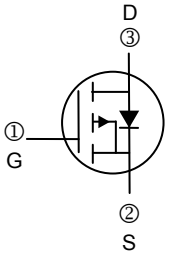
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.80	2.20	G	0.100 REF.	
B	1.80	2.45	H	0.525 REF.	
C	1.15	1.35	J	0.08	0.25
D	0.80	1.10	K	-	-
E	1.20	1.40	L	0.650 TYP.	
F	0.20	0.40			

FEATURES

- Small Package Outline
- Lower Gate Charge

MARKING CODE

7401



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-323	3K	7 inch

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	-30	V
Gate-Source Voltage		V_{GSS}	±12	V
Continuous Drain Current [3]	T_A=25°C	I_D	-2	A
	T_A=70°C		-1.5	A
Pulsed Drain Current [1,2]		I_{DM}	-10	A
Linear Derating Factor			0.0028	°C / W
Power Dissipation		P_D	0.35	W
Thermal Resistance Junction-Ambient [3]		$R_{\theta JA}$	360	°C / W
Operating Junction and Storage Temperature		T_J, T_{STG}	-55~150	°C

Note:
1. Pulse width limited by Max. junction temperature.
2. Pulse width≦300μs, duty cycle≦2%.
3. Surface mounted on FR4 board, t≦10sec

ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	-30	-	-	V	V_{GS}=0, I_D= -250μA
Gate Threshold Voltage		$V_{GS(th)}$	-0.5	-	-1.2	V	V_{DS}=V_{GS}, I_D= -250μA
Gate Body Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±12V
Zero Gate Voltage Drain Current	T_J = 25°C	I_{DSS}	-	-	-1	μA	V_{DS}= -30V, V_{GS}=0
	T_J = 70°C		-	-	-10		V_{DS}= -24V, V_{GS}=0
Drain-Source on-State Resistance		$R_{DS(ON)}$	-	-	120	mΩ	V_{GS} = -10V, I_D = -2A
			-	-	150		V_{GS} = -4.5V, I_D = -1.5A
			-	-	190		V_{GS} = -2.5V, I_D = -1A
Forward Transconductance		g_{FS}	-	4		S	V_{DS} = -5V, I_D = -1.2A
Gate Resistance		R_g	-	12	-	Ω	f=1.0MHz
Dynamic							
Total Gate Charge [2]		Q_g	-	5.06	-	nC	V_{DS}= -15V, V_{GS}= -4.5V, I_D= -1A
Gate-Source Charge		Q_{gs}	-	0.72	-		
Gate-Drain (“Miller”)Charge		Q_{gd}	-	1.58	-		
Input Capacitance		C_{iss}	-	409	-	pF	V_{DS}= -15V, V_{GS}=0, f =1MHz
Output Capacitance		C_{oss}	-	55	-		
Reverse Transfer Capacitance		C_{rss}	-	42	-		
Turn-On Time [2]		$t_{d(on)}$	-	6.2	-	ns	V_{DS}= -15V, R_L=15Ω, V_{GS}= -10V, R_G=3Ω
		t_r	-	3.2	-		
Turn-Off Time		$t_{d(off)}$	-	41.2	-		
		t_f	-	14.5	-		
Source-Drain Diode							
Diode Forward Voltage [2]		V_{SD}	-	-	-1	V	I_S= -1A,V_{GS}=0
Reverse Recovery Time [2]		T_{RR}	-	13.2	-	nS	I_S=-1A,V_{GS}=0, dI/dt=100A / μS
Reverse Recovery Charge		Q_{rr}	-	5.4	-	nC	
Continuous Source Current (Body Diode)		I_S	-	-	-0.5	A	V_D= V_G=0, V_S= -1V

Note:
1. Pulse width limited by Max. junction temperature.
2. Pulse width≦300μs, duty cycle≦2%.
3. Surface mounted on FR4 board, t.≦10sec

CHARACTERISTIC CURVE

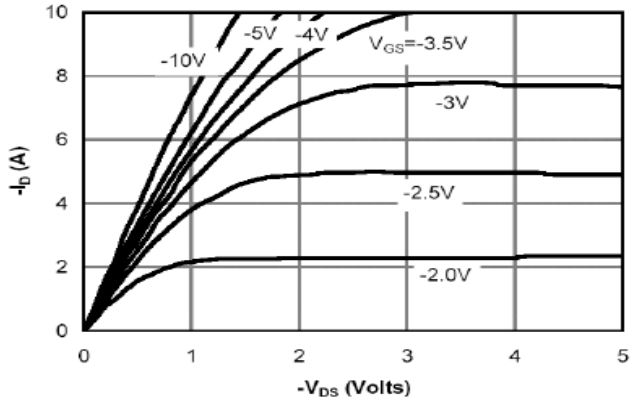


Fig 1. Typical Output Characteristics

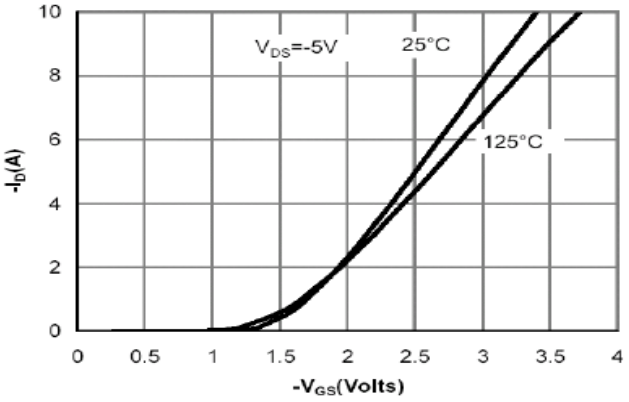


Fig 2. Transfer Characteristics

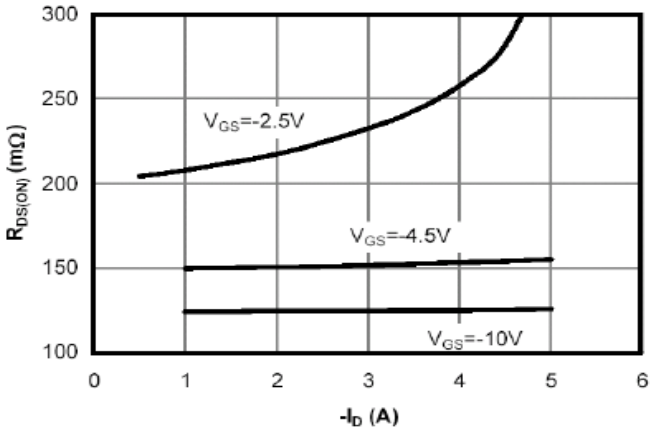


Fig 3. On-Resistance v.s. Drain Current and Gate Voltage

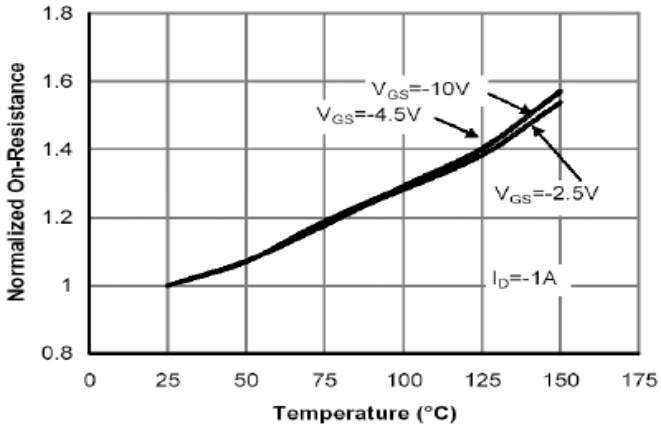


Fig 4. On-Resistance v.s. Junction Temperature

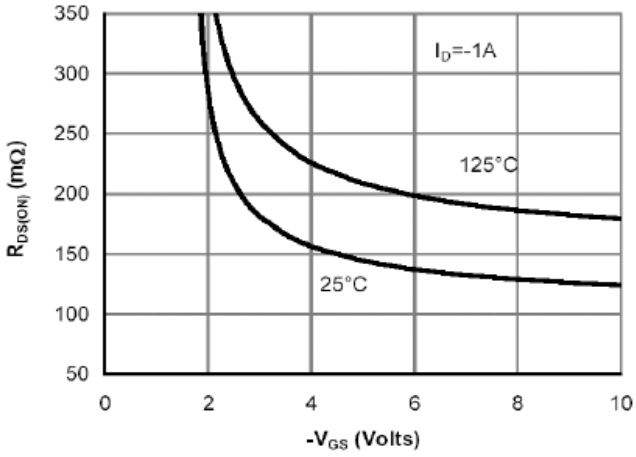


Fig 5. On-Resistance v.s. Gate-Source Voltage

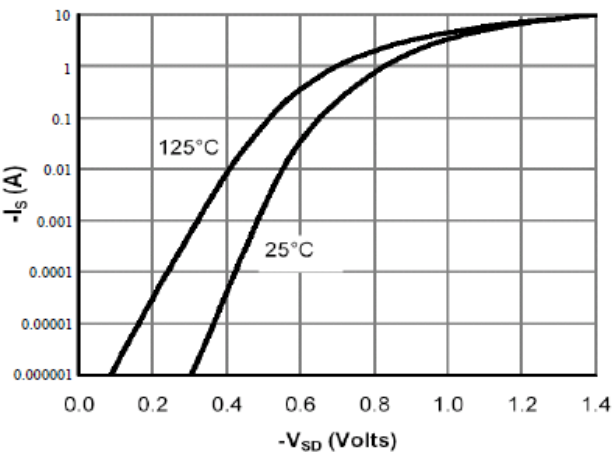


Fig 6. Body Diode Characteristics

CHARACTERISTIC CURVE

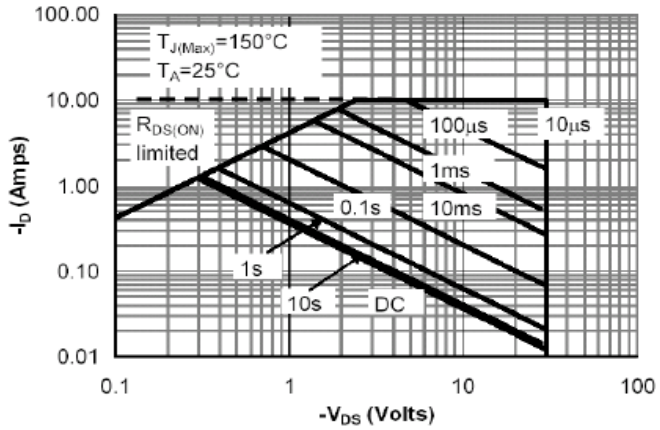


Fig 7. Maximum Safe Operating Area

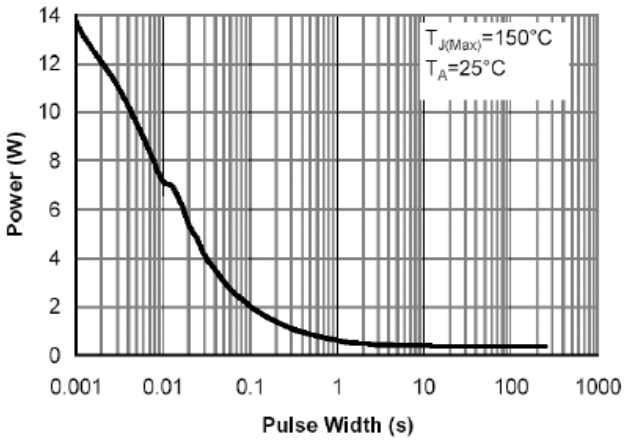


Fig 8. Single Pulse Power Rating Junction-to-Ambient

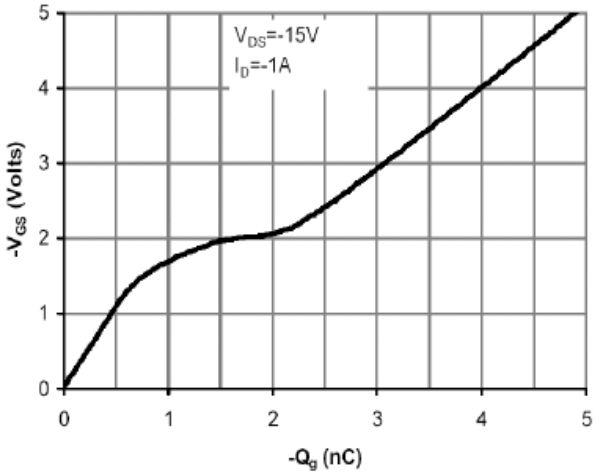


Fig 9. Gate Charge Characteristics

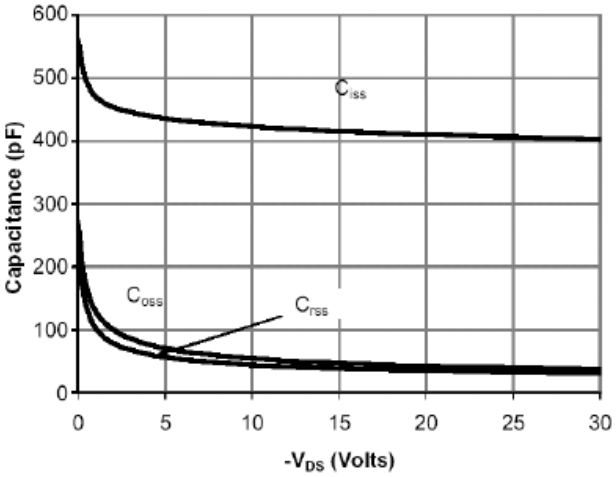


Fig 10. Typical Capacitance Characteristics

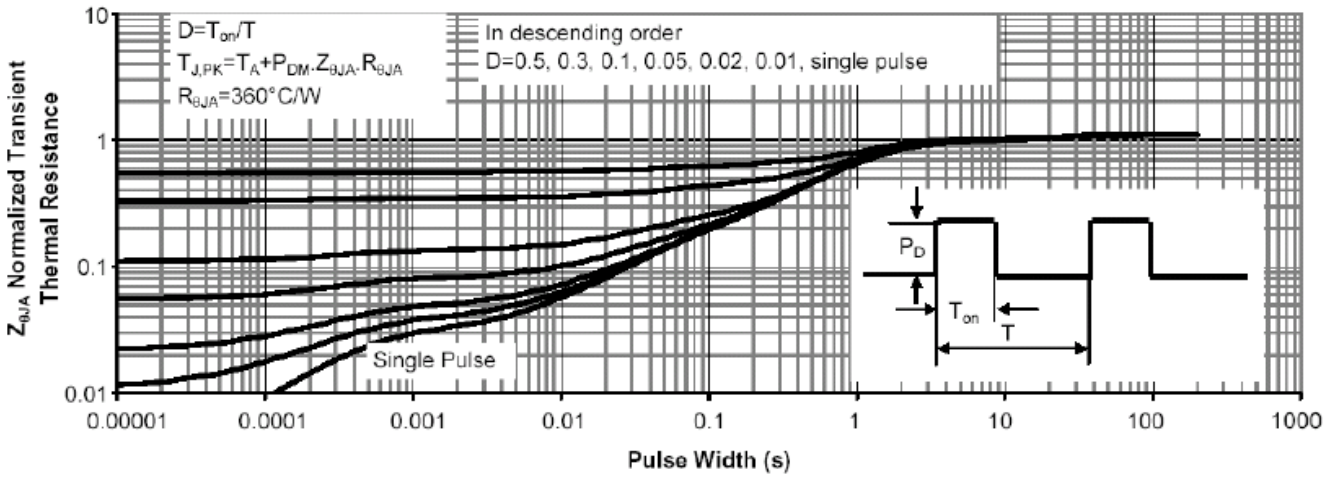


Fig 11. Normalized Maximum Transient Thermal Impedance