



-20V P-Channel Enhancement Mode MOSFET

DESCRIPTION

The up8301 is the P-Channel logic enhancement mode power field effect transistor is produced using high cell density. advanced trench technology to provide excellent $R_{DS(ON)}$.

This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application , and low in-line power loss are needed in a very small outline surface mount package.

FEATURE

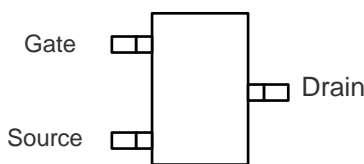
- 20V/-3.2A, $R_{DS(ON)} < 100m\Omega @ V_{GS} = -4.5V$
- 20V/-2.0A, $R_{DS(ON)} < 130m\Omega @ V_{GS} = -2.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability
- This is a Full RoHS compliance
- SOT-23 package design

APPLICATIONS

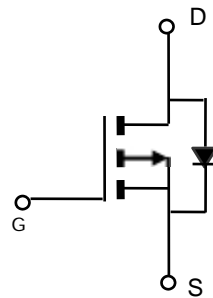
- Power Management in Note book
- Portable Equipment
- DSC
- LCD Display inverter
- Battery Powered System
- DC/DC Converter
- Load Switch

P-Channel Enhancement Mode

PIN CONFIGURATION



TOP VIEW
SOT-23



P-Channel

PART NUMBER INFORMATION

<p>up8301X-XX X</p> <p>Lead Plating Code</p> <p>Handling Code</p> <p>Package Code</p>	<p>Lead Plating Code G : Lead-free product. This product is RoHS compliant</p> <p>Handling Code TR : Tape&Reel</p> <p>Package Code S : SOT-23</p>
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■ ORDERING INFORMATION

Part Number	Package Code	Package	Shipping
up8301S-TRG	S	SOT-23	3000 / Tape&Reel

- ※ Year Code : 0 ~ 9
- ※ Week Code : A ~ Z(1~26) ; a ~ z(27~52)
- ※ SOT-23 : Only available in tape and reel packaging. (A reel contains 3000 devices)
- ※ G : Lead-free product. This product is RoHS compliant.

■ ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless otherwise noted)

Symbol	Parameter	Typical	Unit
V _{DSS}	Drain-Source Voltage	-20	V
V _{GSS}	Gate-Source Voltage	±12	V
I _D	Continuous Drain Current (T _J =150 °C)	V _{GS} =-4.5V -3.2	A
I _{DM}	Pulsed Drain Current	-10	A
I _S	Continuous Source Current (Diode Conduction)	-1.6	A
P _D	Power Dissipation	T _A =25 °C 0.8 T _A =70 °C	W
T _J	Operation Junction Temperature	150	°C
T _{STG}	Storage Temperature Range	-55/150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

Symbol	Parameter	Min	Typ	Max	Unit
R _{θJA}	Thermal Resistance-Junction to Ambient			120	°C/W



■ ELECTRICAL CHARACTERISTICS (T_A = 25°C Unless otherwise noted)

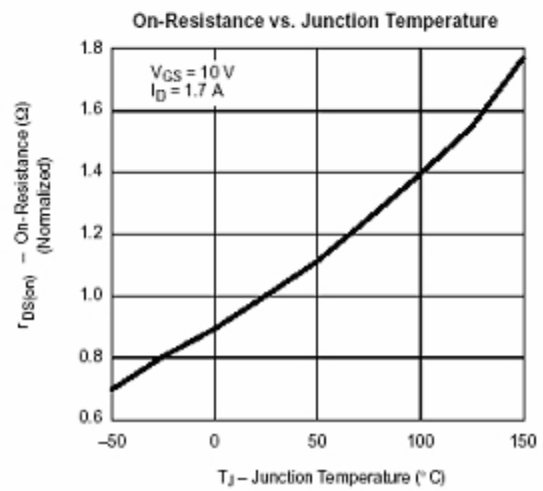
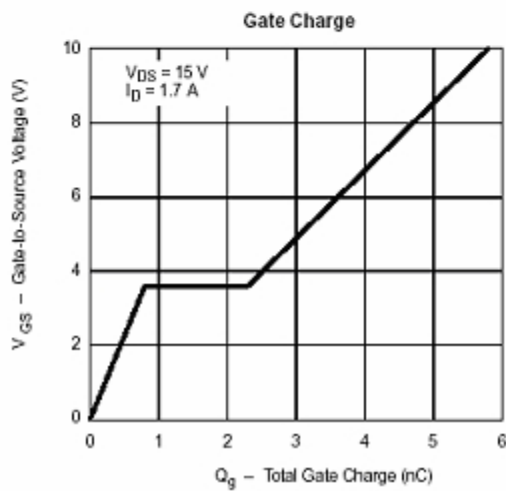
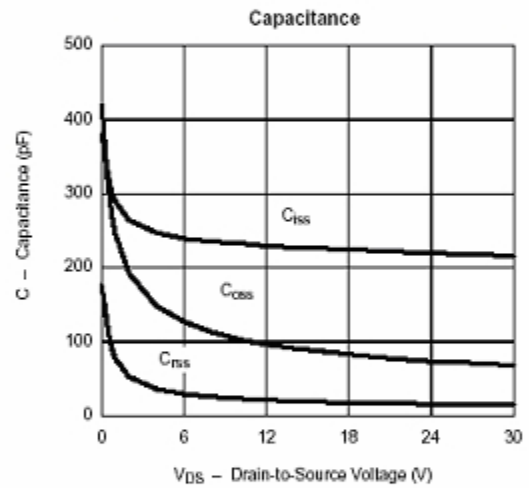
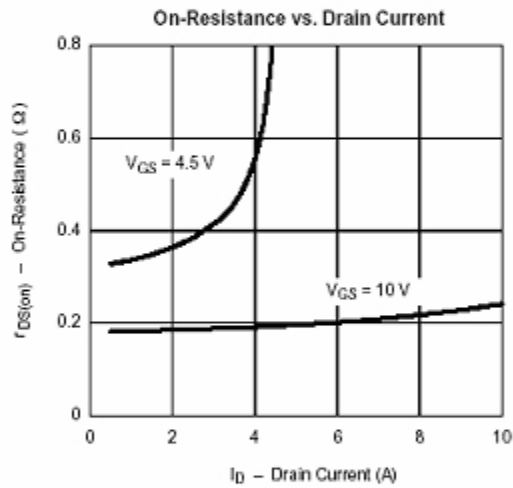
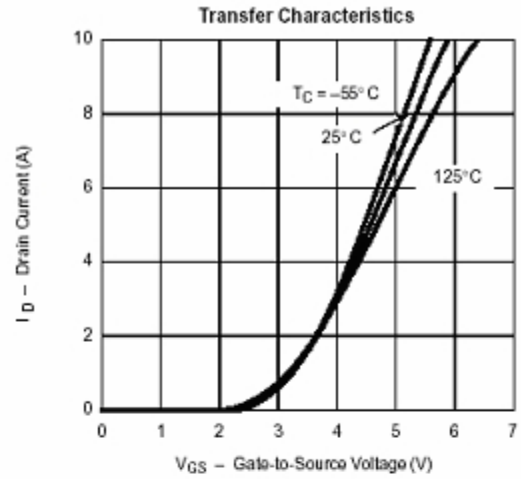
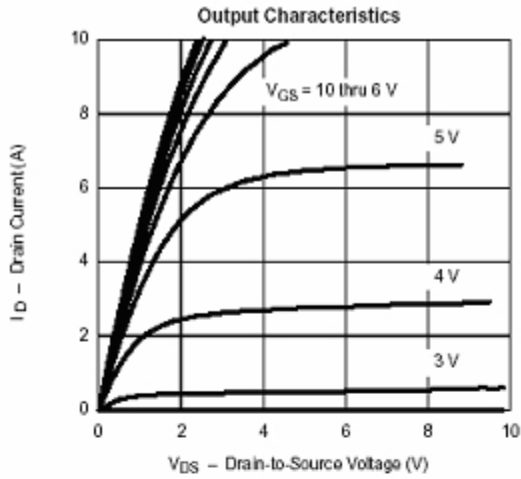
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.4		-1.0	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-20V, V _{GS} =0V			-1	μA
		V _{DS} =-20V, V _{GS} =0V T _J =55°C			-10	
R _{DS(ON)}	Drain-source On-Resistance	V _{GS} =-4.5V, I _D =-3.2A V _{GS} =-2.5V, I _D =-2.0A			100 130	mΩ
G _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-2.8A		6.5		S
Source-Drain Diode						
V _{SD}	Diode Forward Voltage	I _S =-1.6A, V _{GS} =0V		-0.8	-1.2	V
Dynamic Parameters						
Q _g	Total Gate Charge	V _{DS} =-6V V _{GS} =-4.5V I _D =-2.8A		5.8	10	nC
Q _{gs}	Gate-Source Charge			0.85		
Q _{gd}	Gate-Drain Charge			1.7		
C _{iss}	Input Capacitance	V _{DS} =-6V V _{GS} =0V f=1MHz		415		pF
C _{oss}	Output Capacitance			223		
C _{rss}	Reverse Transfer Capacitance			87		
t _{d(on)}	Turn-On Time	V _{DD} =-6V R _L =6Ω I _D =-1.0A V _{GEN} =-4.5V R _G =6Ω		13	25	nS
t _r				36	60	
t _{d(off)}	Turn-Off Time			42	70	
t _f				34	60	

Note : 1. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%

2. Static parameters are based on package level with recommended wire-bonding

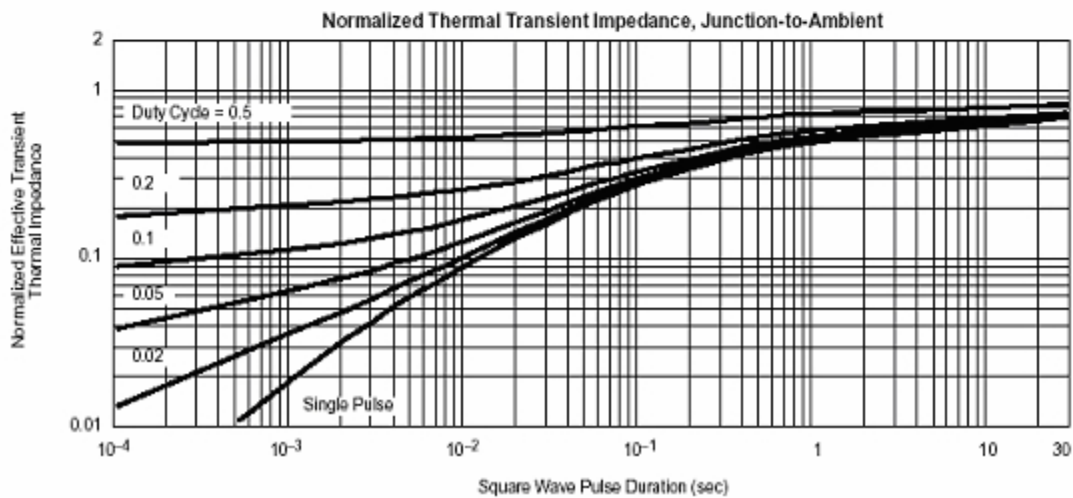
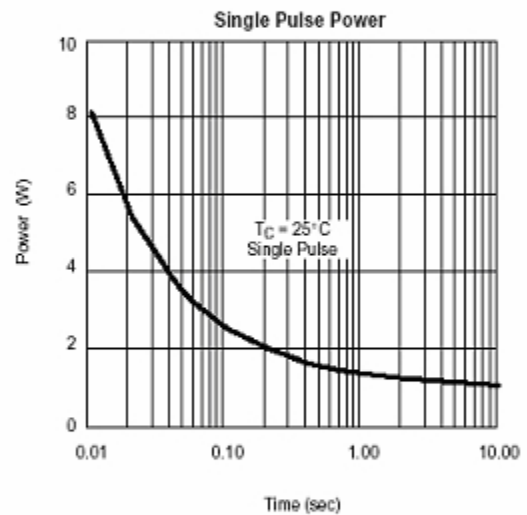
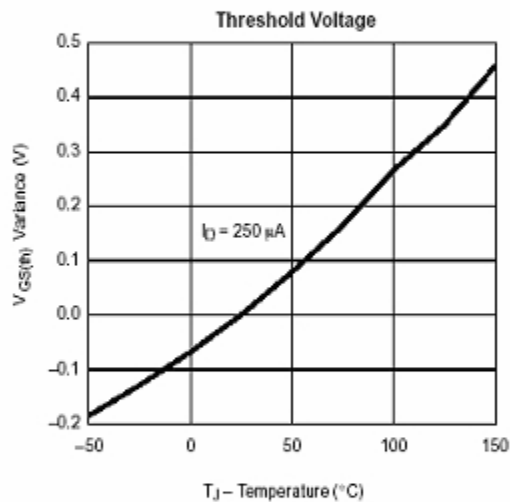
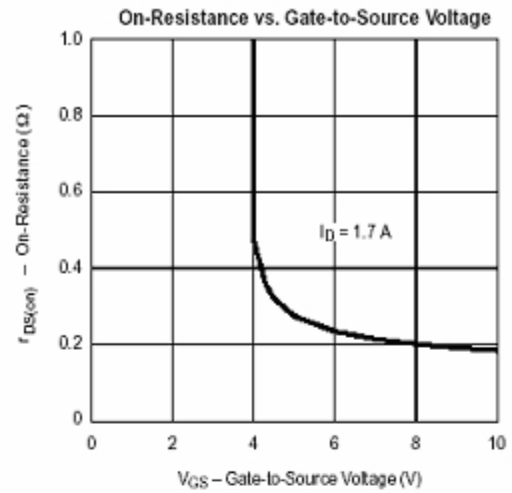
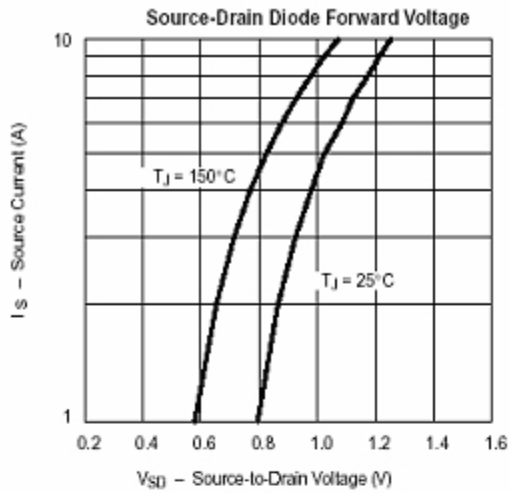


■ TYPICAL CHARACTERISTICS (25°C Unless Note)



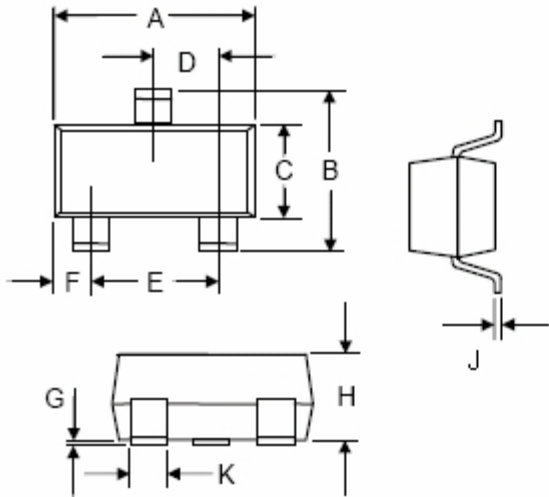


■ TYPICAL CHARACTERISTICS (25°C Unless Note)





■ SOT-23 PACKAGE DIMENSIONS



Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.110	0.120	2.80	3.04
B	0.83	0.098	2.10	2.64
C	0.47	0.055	1.20	1.40
D	0.35	0.041	0.89	1.03
E	0.70	0.081	1.78	2.05
F	0.18	0.024	0.45	0.60
G	0.001	0.0039	0.013	0.100
H	0.035	0.044	0.89	1.12
J	0.003	0.007	0.085	0.18
K	0.015	0.02	0.37	0.51