

20V P-Channel Enhancement-Mode MOSFET

FEATURES

- $R_{DS(ON)} \leq 110m\Omega @ V_{GS} = -4.5V$
- $R_{DS(ON)} \leq 150m\Omega @ V_{GS} = -2.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

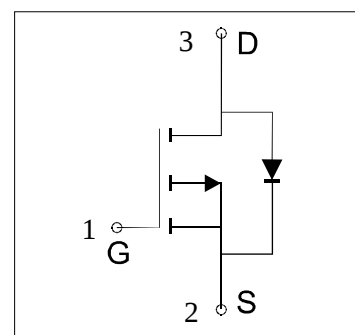
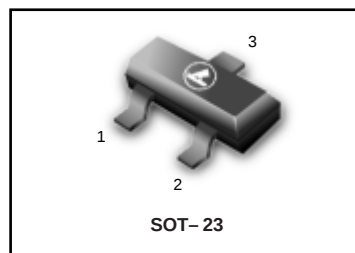
APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- Load Switch
- DSC
- We declare that the material of product are Halogen Free and compliance with RoHS requirements.

Ordering Information

Device	Marking	Shipping
LP2301ALT1G S-LP2301ALT1G	01A	3000/Tape&Reel
LP2301ALT3G S-LP2301ALT3G	01A	10000/Tape&Reel

LP2301ALT1G
S-LP2301ALT1G



Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 8	V
Continuous Drain Current ($T_J = 150^\circ\text{C}$)*	$T_A = 25^\circ\text{C}$	I_D	-2.0	A
	$T_A = 70^\circ\text{C}$		-1.6	
Pulsed Drain Current		I_{DM}	-10	A
Maximum Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	0.7	W
	$T_A = 70^\circ\text{C}$		0.45	
Operating Junction Temperature		T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55 to 150	$^\circ\text{C}$
Thermal Resistance-Junction to Ambient*	$R_{\theta JA}$	Typical	Maximum	$^\circ\text{C/W}$
		100	175	

* The device mounted on 1in² FR4 board with 2 oz copper

LP2301ALT1G , S-LP2301ALT1G

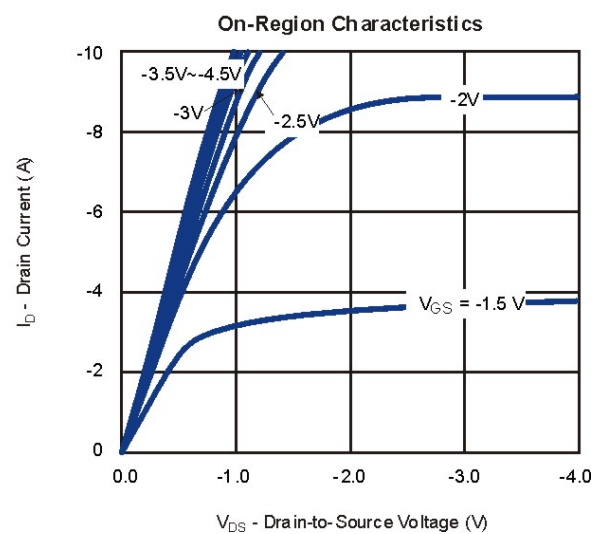
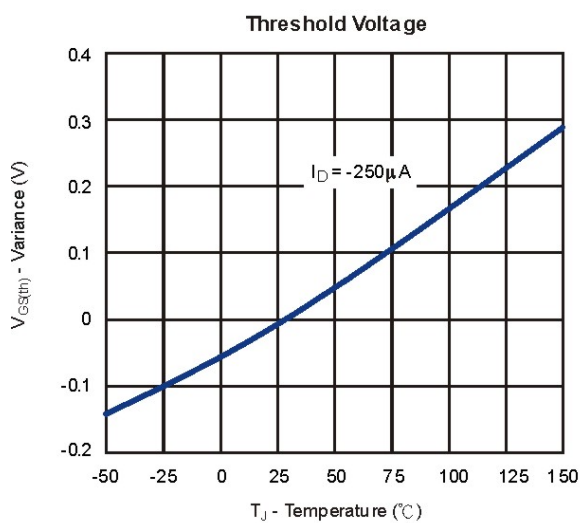
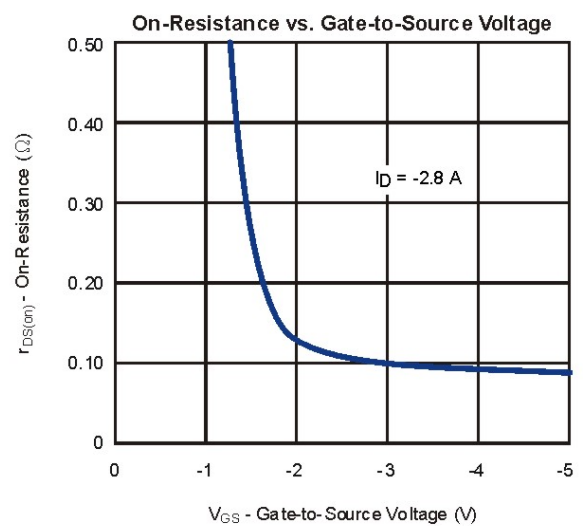
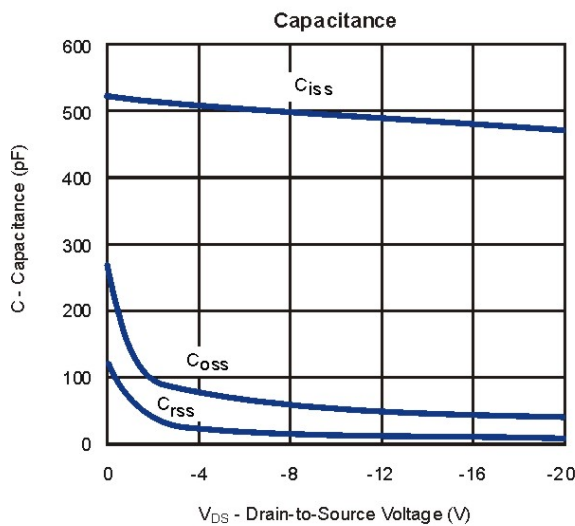
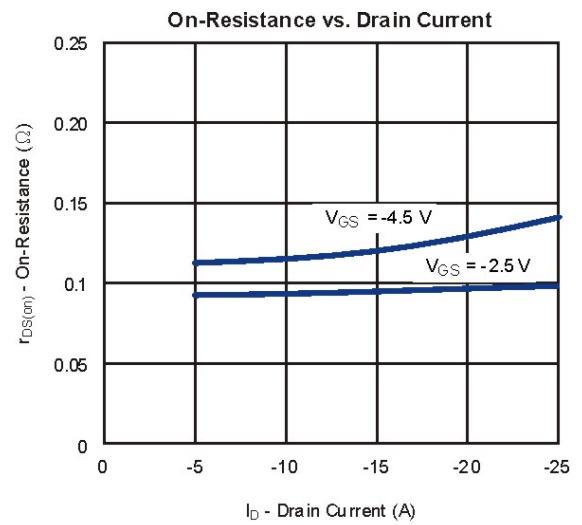
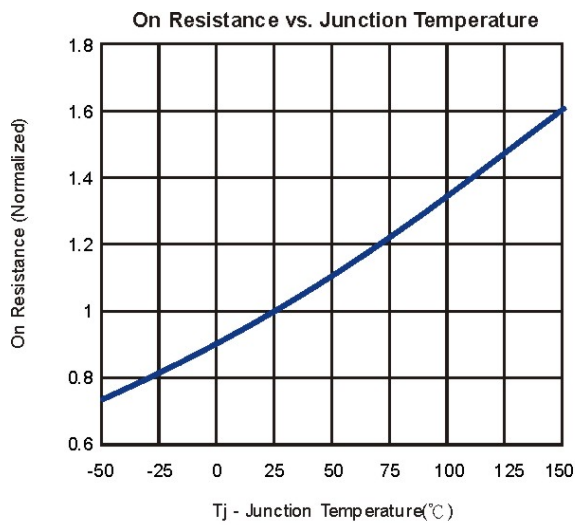
ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-20			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.6	-1	V
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 8V$			± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-20V, V_{GS}=0V$			-1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance ^a	$V_{GS}=-4.5V, I_D=-2.8A$		90	110	$m\Omega$
		$V_{GS}=-2.5V, I_D=-2.0A$		110	150	
V_{SD}	Diode Forward Voltage	$I_S=-1A, V_{GS}=0V$		-0.7	-1.4	V
DYNAMIC						
Q_g	Total Gate Charge	$V_{DS}=-6V, V_{GS}=-4.5V, I_D=-2.8A$		7.2		nC
Q_{gs}	Gate-Source Charge			2.2		
Q_{gd}	Gate-Drain Charge			1.2		
R_g	Gate resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$		7.5		Ω
C_{iss}	Input Capacitance	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		480		pF
C_{oss}	Output Capacitance			46		
C_{rss}	Reverse Transfer Capacitance			10		
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=-6V, R_L=6\Omega$ $R_{GEN}=6\Omega, V_{GS}=-4.5V$		50		ns
t_r	Turn-On Rise Time			30		
$t_{d(off)}$	Turn-Off Delay Time			40		
t_f	Turn-Off Fall time			11		

Notes: a. Pulse test; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

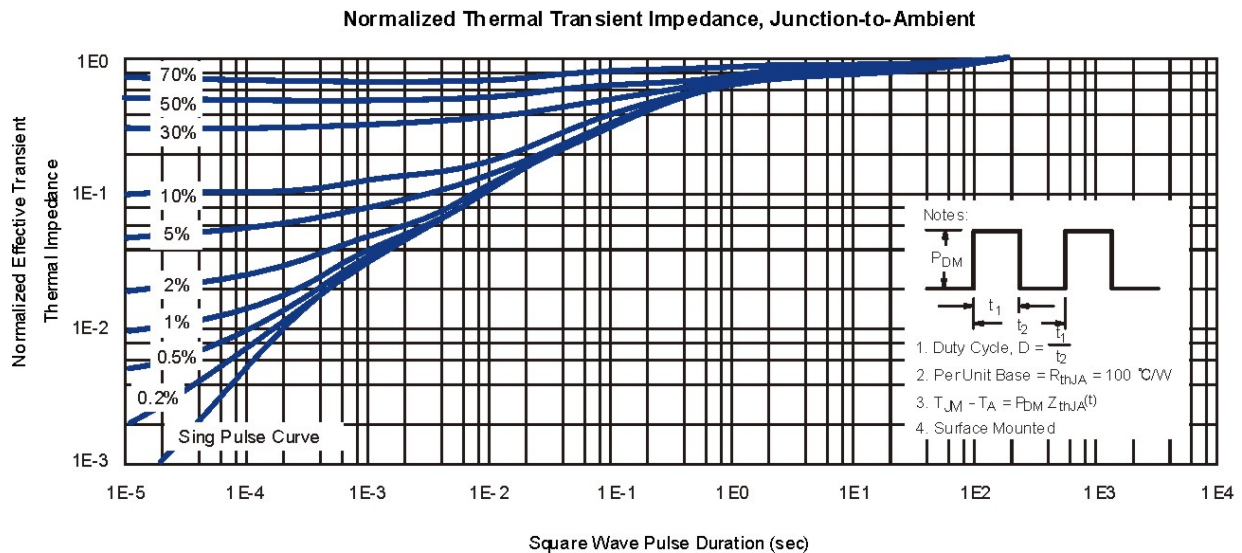
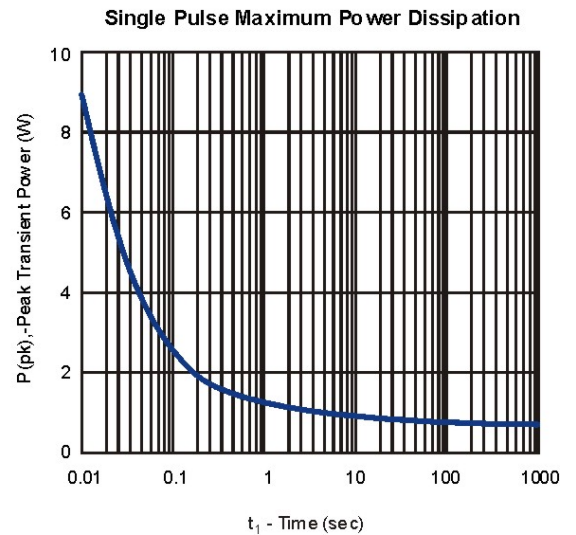
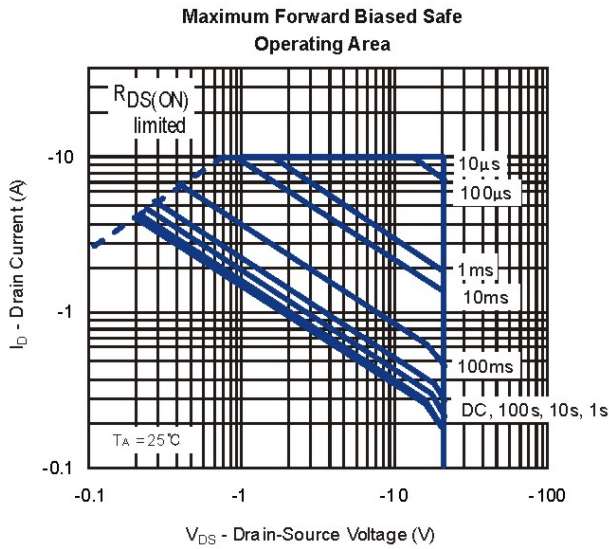
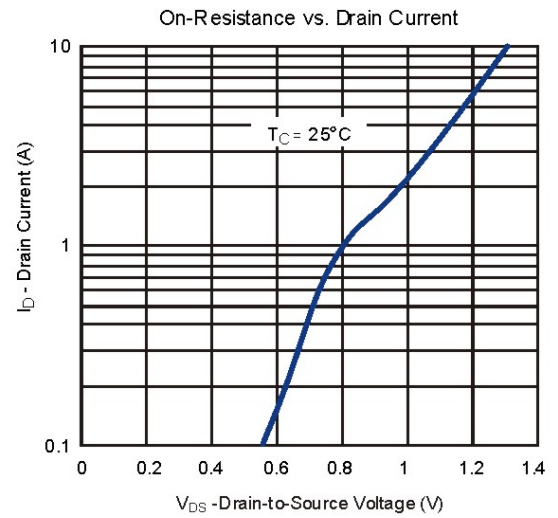
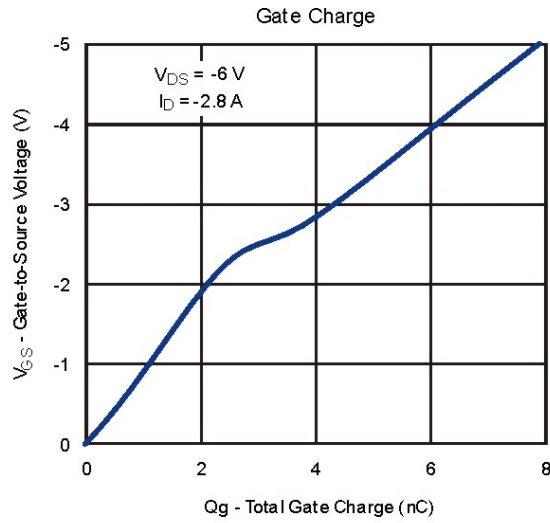
Typical Characteristics (T_J =25°C Noted)

LP2301ALT1G , S-LP2301ALT1G



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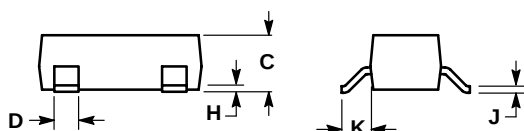
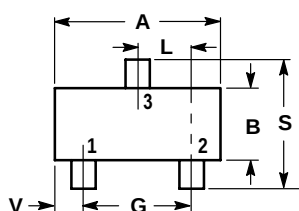


LP2301ALT1G , S-LP2301ALT1G

SOT-23

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

