

LP2301ALT1G

S-LP2301ALT1G

20V P-Channel Enhancement-Mode MOSFET

1. FEATURES

- $V_{DS} = -20V$
- $R_{DS(ON)}, V_{GS@-2.5V}, I_{DS@-2.0A} = 150m\Omega$
- $R_{DS(ON)}, V_{GS@-4.5V}, I_{DS@-2.8A} = 110m\Omega$
- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.

2. APPLICATIONS

- Power management in note book
- Portable equipment
- Battery powered system
- Load switch
- DSC

3. DEVICE MARKING AND ORDERING INFORMATION

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

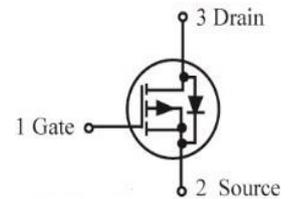
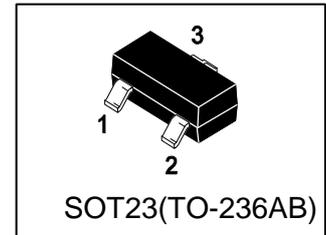
4. MAXIMUM RATINGS($T_a = 25^\circ C$)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DSS}	-20	V
Gate-to-Source Voltage – Continuous	V_{GS}	± 8	V
Drain Current(Note 1)			A
– Continuous $T_A = 25^\circ C$	I_D	-2	
– Pulsed	I_{DM}	-10	

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Maximum Power Dissipation	PD	0.7	W
Thermal Resistance, Junction-to-Ambient(Note 1)	$R_{\theta JA}$	175	$^\circ C/W$
Junction and Storage temperature	T_J, T_{stg}	$-55 \sim +150$	$^\circ C$

1. The device mounted on 1in² FR5 board with 2 oz copper.



6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

OFF CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = -250μA)	VBRDSS	-20	-	-	V
Zero Gate Voltage Drain Current (VGS = 0, VDS = -20 V)	IDSS	-	-	-1	μA
Gate–Body Leakage Current, Forward (VGS = 8 V)	IGSSF	-	-	100	nA
Gate–Body Leakage Current, Reverse (VGS = - 8 V)	IGSSR	-	-	-100	nA

ON CHARACTERISTICS (Note 2)

Gate Threshold Voltage (VDS = VGS, ID = -250μA)	VGS(th)	-0.4	-0.6	-	V
Static Drain–Source On–State Resistance (VGS = -4.5 V, ID = -2.8 A) (VGS = -2.5 V, ID = -2 A)	RDS(on)	-	90 110	110 150	mΩ

DYNAMIC CHARACTERISTICS

Input Capacitance (VGS = 0 V, f = 1.0MHz, VDS= -15 V)	Ciss	-	480	-	pF
Output Capacitance (VGS = 0 V, f = 1.0MHz, VDS= -15 V)	Coss	-	46	-	pF
Reverse Transfer Capacitance (VGS = 0 V, f = 1.0MHz, VDS= -15 V)	Crss	-	10	-	pF

SWITCHING CHARACTERISTICS

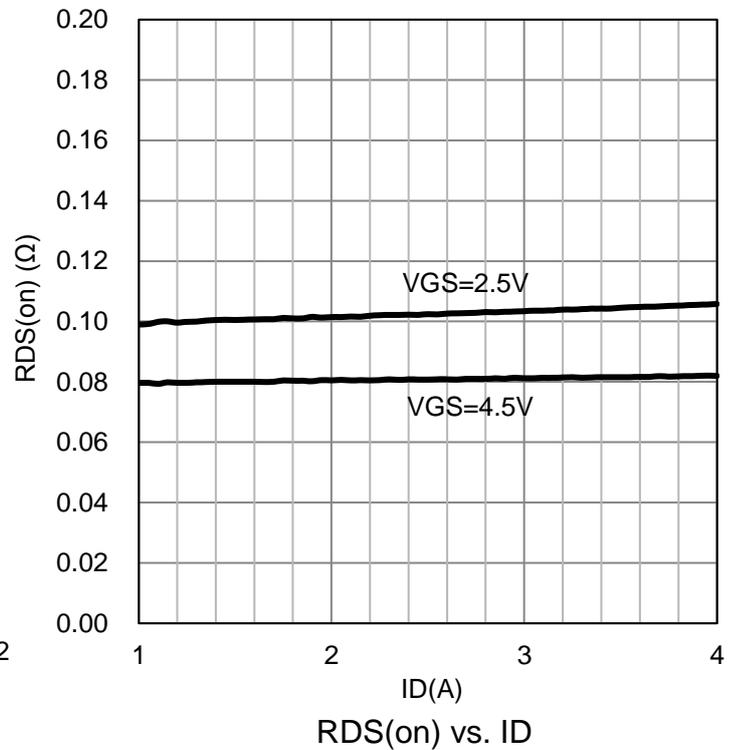
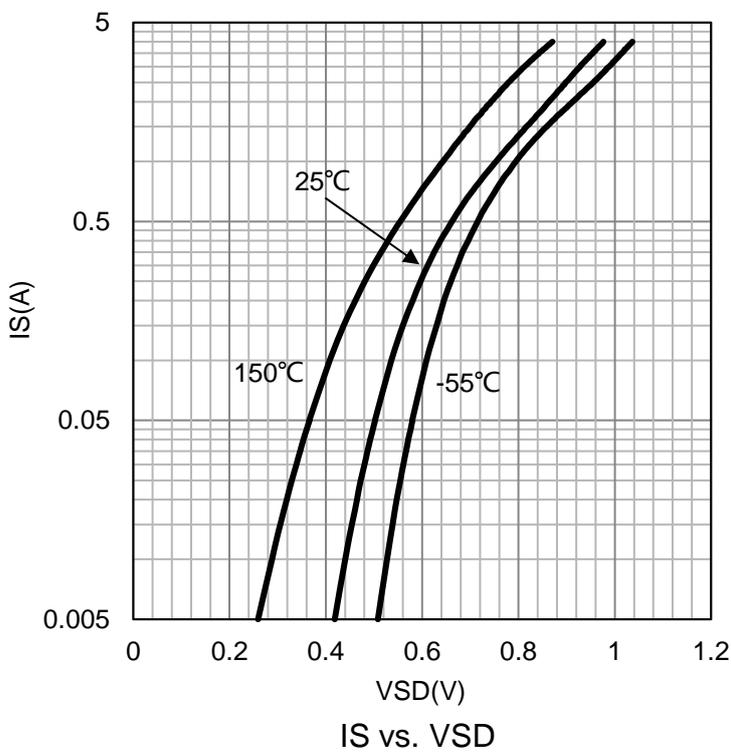
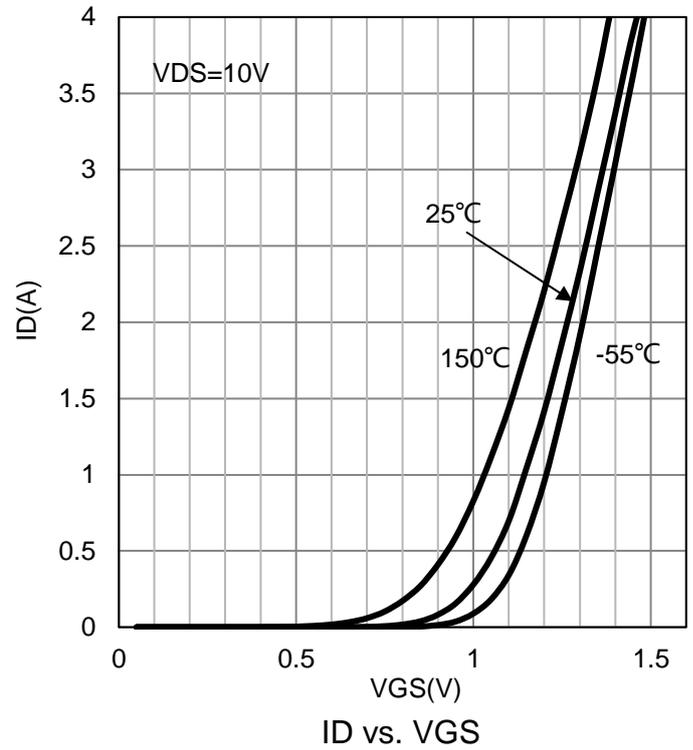
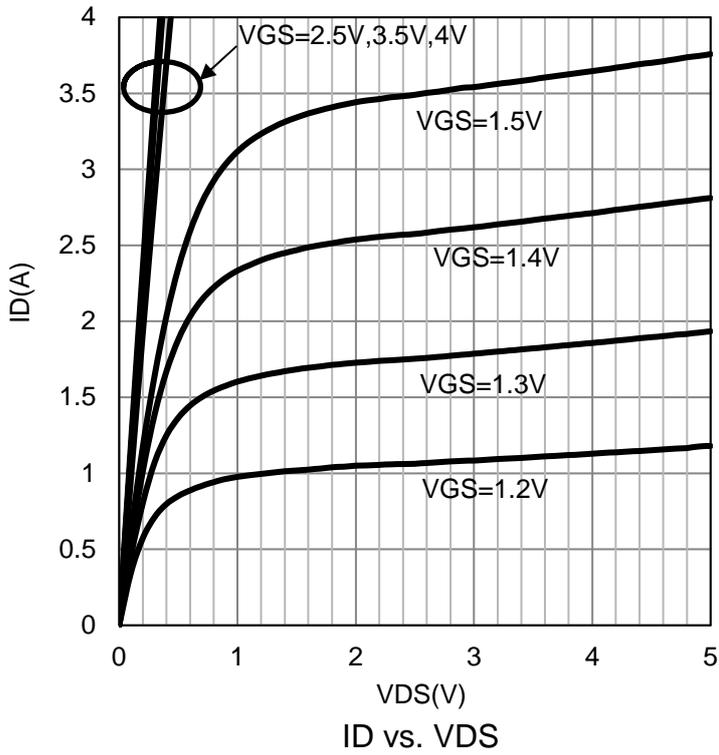
Turn-On Delay Time	(VDS=-6V, RL =6Ω, RGEN=6Ω, VGS=-4.5V)	td(on)	-	50	-	ns
Rise Time		tr	-	30	-	
Turn-Off Delay Time		td(off)	-	40	-	
Fall Time		tf	-	11	-	

SOURCE–DRAIN DIODE CHARACTERISTICS

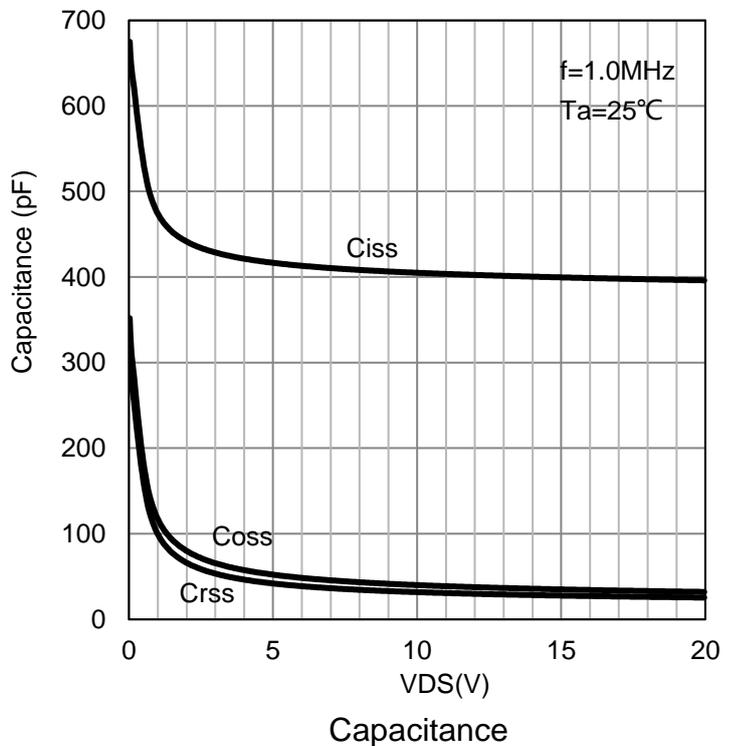
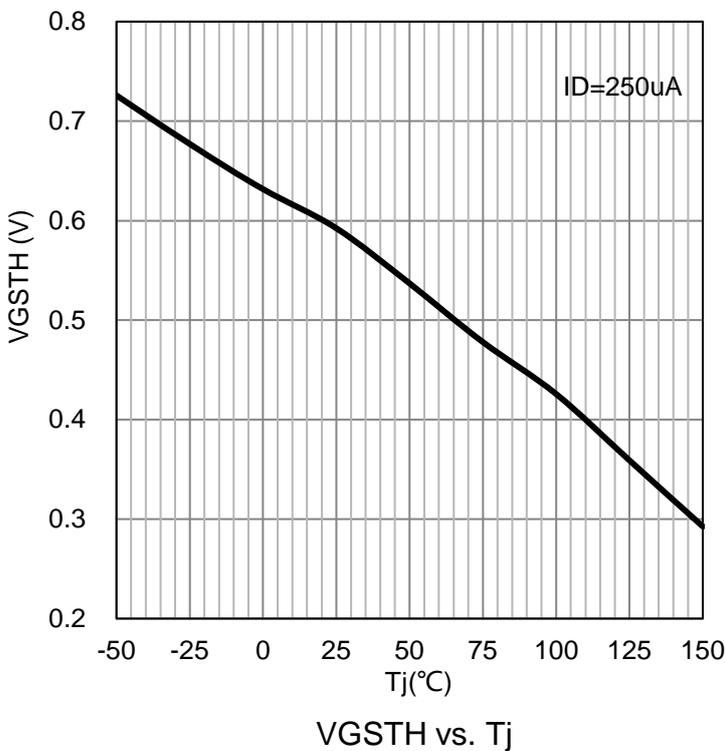
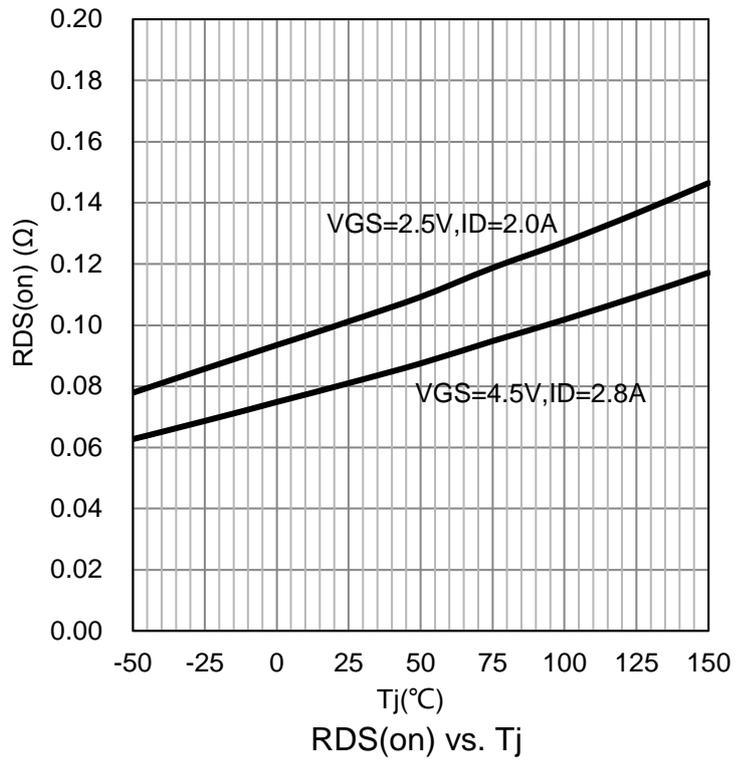
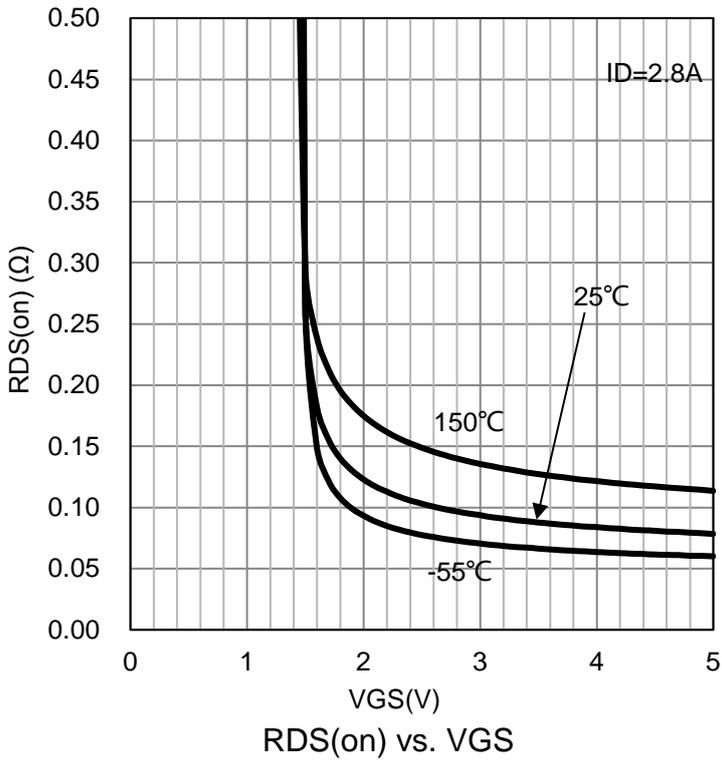
Forward Voltage (VGS = 0 V, ISD = -1 A)	VSD	-	-0.7	-1.4	V
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2.Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

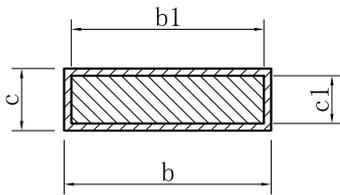
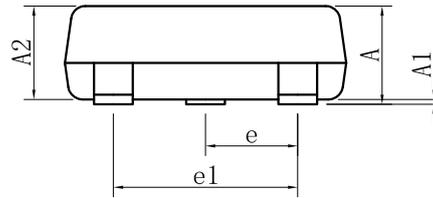
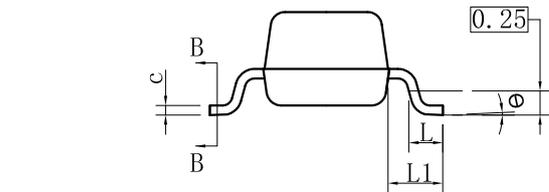
7. ELECTRICAL CHARACTERISTICS CURVES



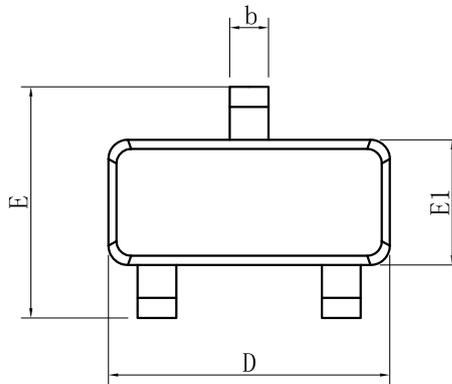
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



8. OUTLINE AND DIMENSIONS



SECTION B-B

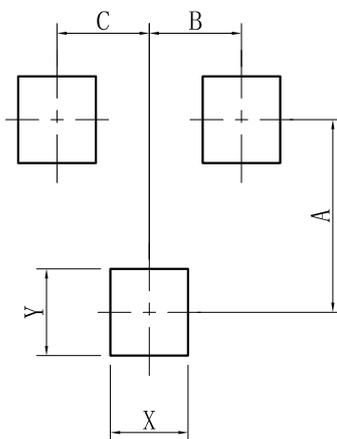


SOT23			
DIM	MIN	NOR	MAX
A	0.89	-	1.12
A1	0.01	-	0.10
A2	0.88	0.95	1.02
b	0.30	-	0.50
b1	0.30	0.40	0.45
c	0.08	-	0.20
c1	0.08	0.10	0.16
D	2.80	2.90	3.04
E	2.10	-	2.64
E1	1.20	1.30	1.40
e	0.95BSC		
e1	1.90BSC		
L	0.40	0.46	0.60
L1	0.54REF		
θ	0°	-	8°
All Dimensions in mm			

GENERAL NOTES

1. Top package surface finish $Ra0.4 \pm 0.2\mu m$
2. Bottom package surface finish $Ra0.7 \pm 0.2\mu m$
3. Side package surface finish $Ra0.4 \pm 0.2\mu m$

9. SOLDERING FOOTPRINT



SOT23	
DIM	(mm)
X	0.80
Y	0.90
A	2.00
B	0.95
C	0.95

DISCLAIMER

- Curve guarantee in the specification. The curve of test items with electric parameter is used as quality guarantee. The curve of test items without electric parameter is used as reference only.
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