30V P-Channel Enhancement-Mode MOSFET

●APPLICATIONS

1)Advanced trench process technology

2)High Density Cell Design For Ultra Low On-Resistance.

3)We declare that the material of product compliant with
   RoHS requirements and Halogen Free.

●FEATURES

1)V_{DS} =-30V

2)RDS(ON) < 70mΩ (VGS = - 10V)

3)RDS(ON) < 80mΩ (VGS = -4.5V)

4)RDS(ON) < 120mΩ (VGS = -2.5V)

LP3401LT1G

SOT– 23 (TO–236AB)

●DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LP3401LT1G	A1	3000/Tape&Reel
LP3401LT1G	A1	10000/Tape&Reel

●MAXIMUM RATINGS(Ta = 25℃)

Parameter		Symbol	Limits	Unit
Drain−to−Source Voltage		V_{DSS}	-30	V
Gate−to−Source Voltage		V_{GS}	±12	V
Continuous Drain Current	$T_A = 25°C$	ID	-4.2	A
	$T_A = 75°C$		-3.5	
Pulsed Drain Current		IDM	-30	A
Maximum Power Dissipation	$T_A = 25°C$	PD	1.4	W
	$T_A = 75°C$		1.00	
Junction and Storage Temperature Range		TJ, Tstg	−55 to +150	°C

●THERMAL CHARACTERISTICS (Ta = 25℃)

Parameter		Symbol	Typ.	Max.	Unit
Maximum Junction-to-Ambient	t ⩽ 10s	$R_{\theta JA}$	65	90	°C/W
Maximum Junction-to-Ambient	Steady-State		85	125	°C/W
Maximum Junction-to-Lead	Steady-State	$R_{\theta JL}$	43	60	°C/W

●ELECTRICAL CHARACTERISTICS (Ta= 25℃)

STATIC

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Voltage	BV_{DSS}	-30	–	–	V	I_D=-250μA, V_{GS}=0V
Zero Gate Voltage Drain Current	I_{DSS}	–		-5	V	V_{DS}=-24V, V_{GS}=0V
Gate-Body leakage current	I_{GSS}	–	–	±100	nA	V_{DS}=0V, V_{GS}=±12V
Gate Threshold Voltage	$V_{GS(th)}$	-0.7	-1	-1.3	V	V_{DS}=V_{GS}, I_D=-250μA
On state drain current	$I_{D(ON)}$	-25	–		A	V_{GS}=-4.5V, V_{DS}=-5V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	–	–	70	mΩ	V_{GS}=-10V, I_D=-4.2A
		–	–	80	mΩ	V_{GS}=-4.5V, I_D=-4A
		–	–	120		V_{GS}=-2.5V, I_D=-1A
Forward Transconductance	g_{FS}	7	11		S	V_{DS}=-5V, I_D=-5A
Diode Forward Voltage	V_{SD}		-0.75	-1		I_S=-1A,V_{GS}=0V
Maximum Body-Diode Continuous Current	I_S			-2.2		

DYNAMIC PARAMETERS

Input Capacitance	Ciss		954		pF	V_{GS}=0V, V_{DS}=-15V, f=1MHz
Output Capacitance	Coss		115		pF	
Reverse Transfer Capacitance	Crss		77		pF	
Gate resistance	Rg		6		Ω	V_{GS}=0V, V_{DS}=0V, f=1MHz

SWITCHING PARAMETERS

Total Gate Charge	QG	–	9.4	–	nc	V_{GS}=-4.5V, V_{DS}=-15V, I_D=-4A, I_D=-4.5A
Gate−to−Source Gate Charge	QGS	–	2	–		
Gate−to−Drain Charge	QGD	–	3	–		
Turn−On Delay Time	td(on)	–	6.3	–	ns	V_{GS}=-10V, V_{DS}=-15V, R_L=3.6Ω, R_{GEN}=6Ω
Rise Time	tr	–	3.2	–		
Turn−Off Delay Time	td(off)	–	38.2	–		
Fall Time	tf	–	12	–		
Body Diode Reverse Recovery Time	trr	–	20.2	–	ns	I_F=-4A, dI/dt=100A/μs
Body Diode Reverse Recovery Charge	Qrr		11.2		nc	I_F=-4A, dI/dt=100A/μs

LP3401LT1G

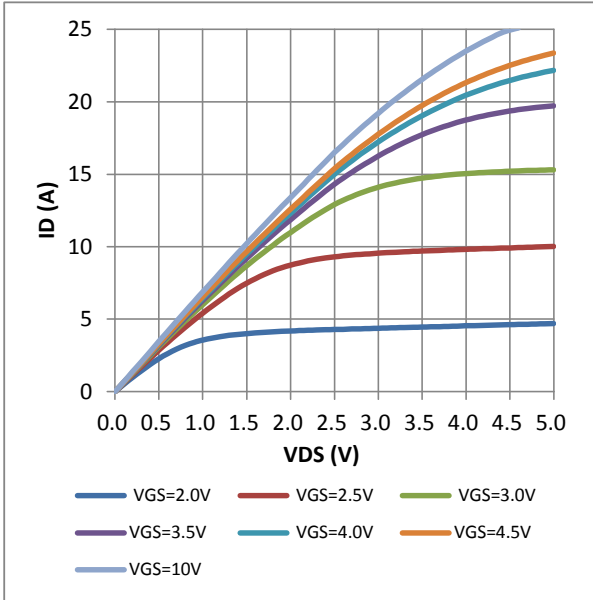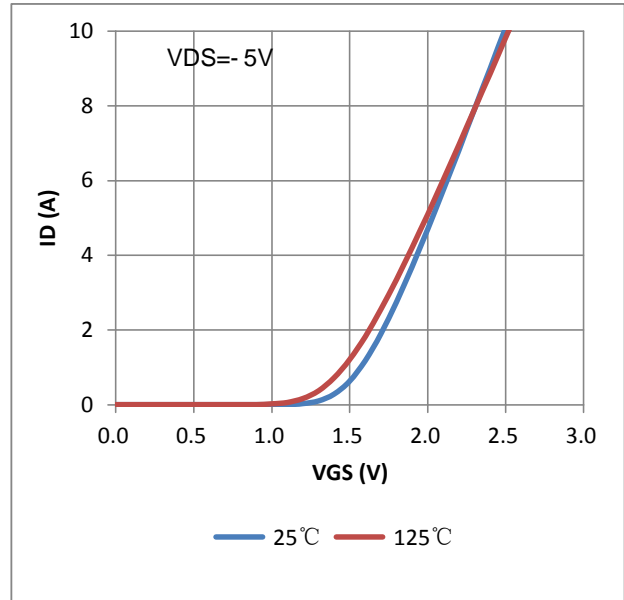## ELECTRICAL CHARACTERISTIC CURVES

FIG.1 On-Region Characteristics
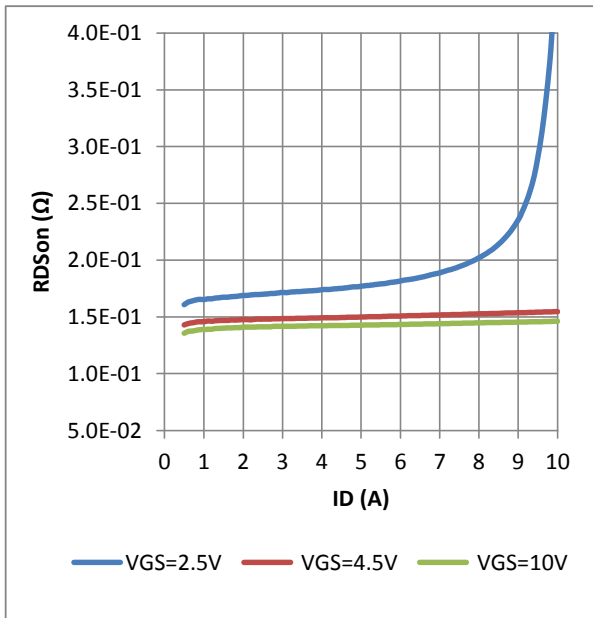

FIG.2 Transfer Characteristics

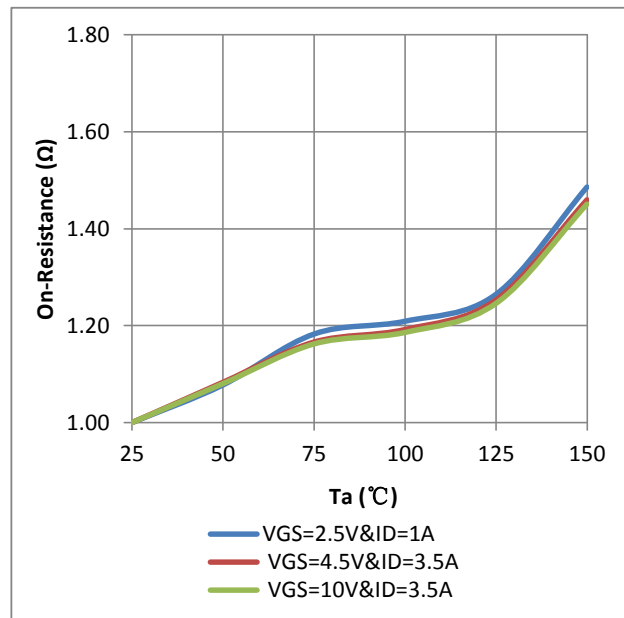FIG.3 On-Resistance vs. Drain Current
and Gate Voltage

FIG.4 On-Resistance vs. Junction Temperature

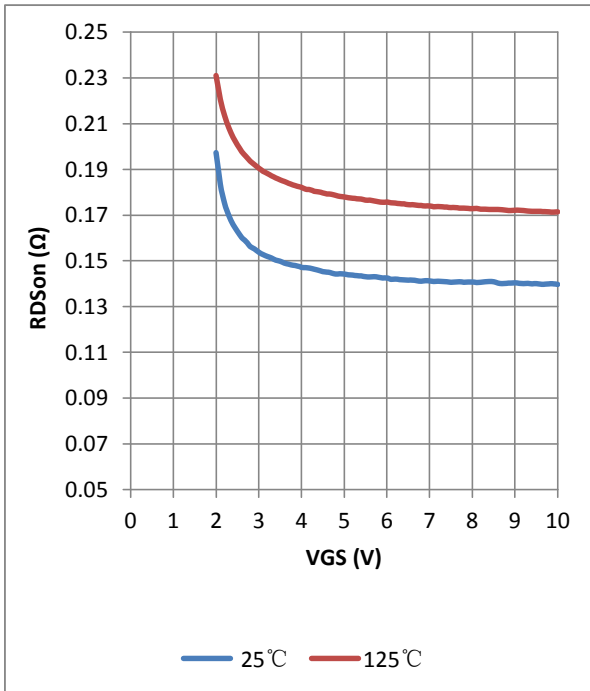**LP3401LT1G**

ELECTRICAL CHARACTERISTIC CURVES
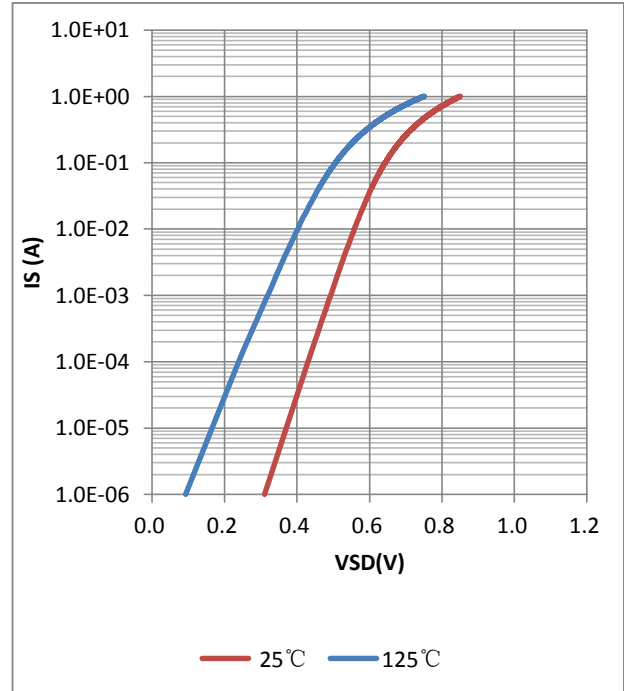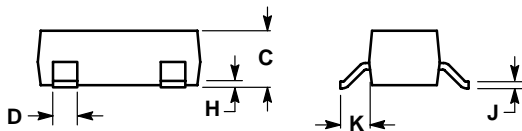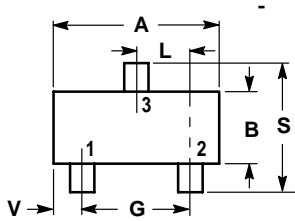

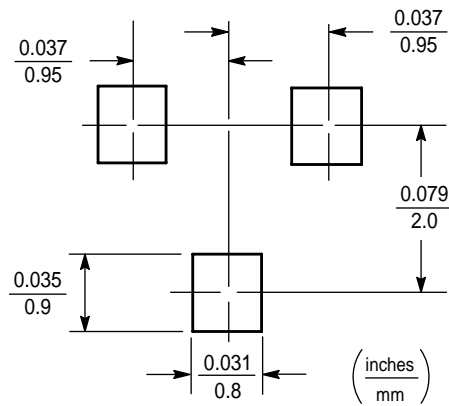FIG.5 On-Resistance vs. Gate-Source Voltage

FIG.6 Body-Diode Characteristics

LP3401LT1G

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

$\left(\dfrac{\text{inches}}{\text{mm}}\right)$

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