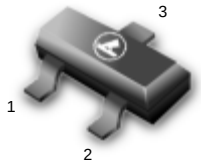
16V P-Channel Enhancement-Mode MOSFET

LP2307LT1G
S-LP2307LT1G

V_{DS}= -16V

$R_{DS(ON)}$, Vgs@-4.5V, Ids@-4.7A = 70 mΩ

$R_{DS(ON)}$, Vgs@-2.5V, Ids@-1.0A = 110 mΩ



SOT– 23 (TO–236AB)

Features

Advanced trench process technology

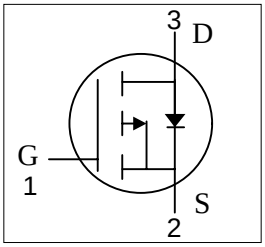
High Density Cell Design For Ultra Low On-Resistance

S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

▼ Simple Drive Requirement

▼ Small Package Outline

▼ Surface Mount Device



Ordering Information

Device	Marking	Shipping
LP2307LT1G S-LP2307LT1G	P07	3000/Tape&Reel
LP2307LT3G S-LP2307LT3G	P07	10000/Tape&Reel

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-16	V
V_{GS}	Gate-Source Voltage	±8	V
I_D@T_A=25℃	Continuous Drain Current[3]	-4.7	A
I_D@T_A=70℃	Continuous Drain Current[3]	-3.3	A
I_{DM}	Pulsed Drain Current[1]	-20	A
P_D@T_A=25℃	Total Power Dissipation	1.1	W
P_D@T_A=70℃	Total Power Dissipation	0.7	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-a	Thermal Resistance Junction-ambient[3]	110	℃/W

LP2307LT1G , S-LP2307LT1G

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	-16	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-4.5V, I_D=-4.7A	-	48	70	mΩ
		V_{GS}=-2.7V, I_D=-3.8A	-	63	100	mΩ
		V_{GS}=-2.5V, I_D=-1.0A	-	65	110	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	-0.6	-0.85	-1.4	V
g_{fs}	Forward Transconductance	V_{DS}=-10V, I_D=-4.7A	-	8	-	S
I_{DSS}	Drain-Source Leakage Current (T_j=25°C)	V_{DS}=-16V, V_{GS}=0V	-	-	-1	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±8V, V_{DS}=0V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=-4.7A	-	24	36	nC
Q_{gs}	Gate-Source Charge	V_{DS}=-10V	-	18	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=-4.5V	-	2.7	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=-10V	-	22	35	ns
t_r	Rise Time	I_D=-1A	-	35	55	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=6Ω ,V_{GS}=-4.5V	-	45	70	ns
t_f	Fall Time	R_D=10Ω	-	25	40	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	985	1580	pF
C_{oss}	Output Capacitance	V_{DS}=-15V	-	180	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	160	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
I_S	Max Diode Forward Current				-1.7	A
V_{SD}	Diode Forward Voltage	I_S=-1.7A, V_{GS}=0V			-1.2	V

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse width ≤300us , duty cycle ≤2%.

3.Surface mounted on 1 in^2 copper pad of FR4 board ; 270℃/W when mounted on min. copper pad.

LP2307LT1G , S-LP2307LT1G

TYPICAL ELECTRICAL CHARACTERISTICS

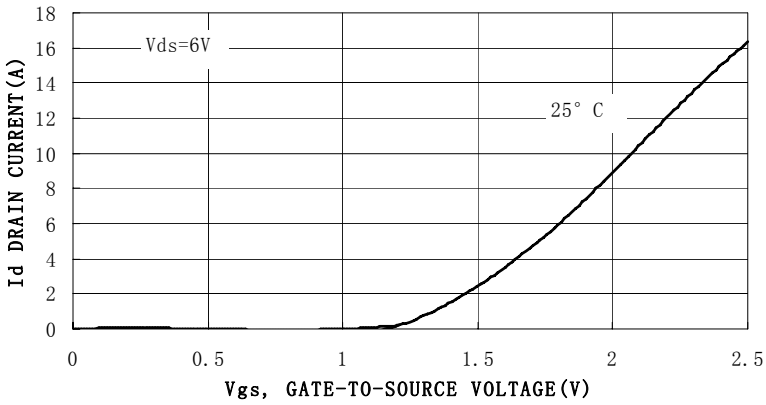


Figure 1. Transfer Characteristics

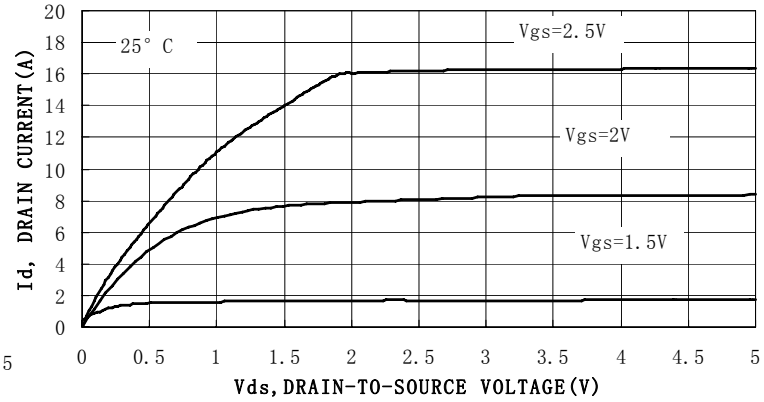


Figure 2. On–Region Characteristics

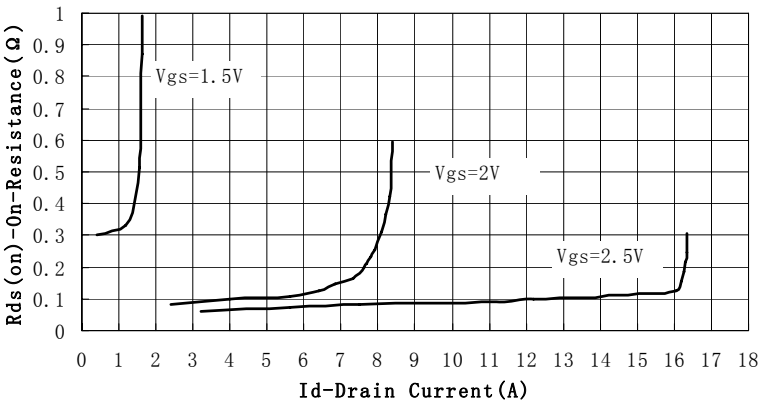


Figure 3. On–Resistance versus Drain Current

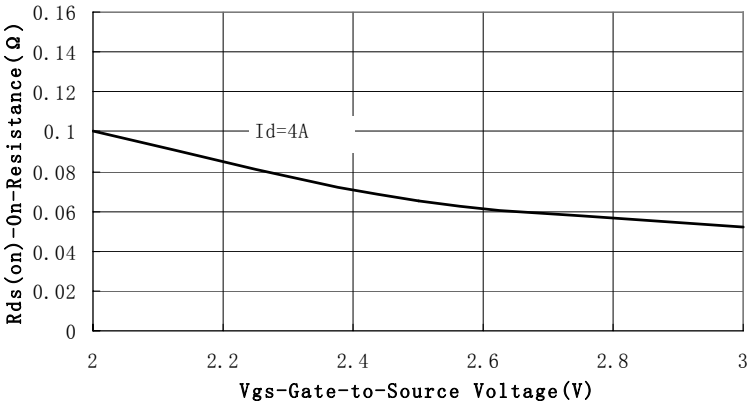


Figure 4. On-Resistance vs. Gate-to-Source Voltage

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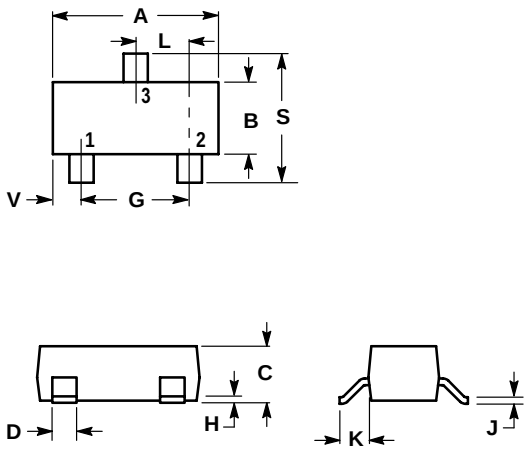

NOTES:

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