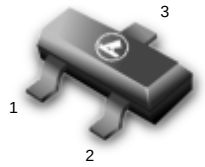
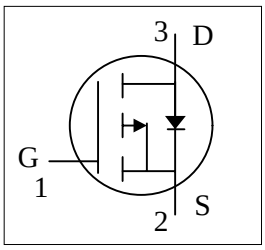
30V P-Channel Enhancement-Mode MOSFET

V_{DS}= -30V
$R_{DS(ON)}$, V_{gs}@-10V, I_{ds}@-5.3A = 70mΩ
$R_{DS(ON)}$, V_{gs}@-4.5V, I_{ds}@-4.2A = 100mΩ

LP9435LT1G
S-LP9435LT1G



SOT– 23 (TO–236AB)



Features

Advanced trench process technology
High Density Cell Design For Ultra Low On-Resistance
Improved Shoot-Through FOM
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
LP9435LT1G S-LP9435LT1G	P94	3000/Tape&Reel
LP9435LT3G S-LP9435LT3G	P94	10000/Tape&Reel

Maximum Ratings and Thermal Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter		Limit	Unit
V_{DS}	Drain-Source Voltage		-30	V
V_{GS}	Gate-Source Voltage		± 20	
I_D	Continuous Drain Current		-5.3	A
I_{DM}	Pulsed Drain Current [1)]		-20	
P_D	Maximum Power Dissipation	TA = 25°C	1.4	W
		TA = 75°C	0.8	
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55 to 150	°C
$R_{\theta JC}$	Junction-to-Case Thermal Resistance		50	°C/W
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance (PCB mounted) [2)]		90	

Note: 1. Repetitive Rating: Pulse width limited by the maximum junction temperature
2. 1-in^2 2oz Cu PCB board
3. Guaranteed by design; not subject to production testing

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
Static						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = -250uA	-30			V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS} = -4.5V, I_D = -4.2A		70.0	100.0	mΩ
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS} = -10V, I_D = -5.3A		50.0	70.0	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} =V_{GS}, I_D = -250uA	-1	-1.7	-3	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -24V, V_{GS} = 0V			1	uA
I_{GSS}	Gate Body Leakage	V_{GS} = ± 20V, V_{DS} = 0V			±100	nA
g_{fs}	Forward Transconductance	V_{DS} = -10V, I_D = -5.3A		10		S
Dynamic[3)]						
Q_g	Total Gate Charge	V_{DS} =-15V, I_D = -5.3A V_{GS} = -10V		28		nC
Q_{gs}	Gate-Source Charge			3		
Q_{gd}	Gate-Drain Charge			7		
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = -15V, R_L = 15Ω I_D = -1A, V_{GEN} = -10V R_G = 6		9		ns
t_r	Turn-On Rise Time			15		
$t_{d(off)}$	Turn-Off Delay Time			75		
t_f	Turn-Off Fall Time			40		
C_{iss}	Input Capacitance	V_{DS} = -15V, V_{GS} = 0V f = 1.0 MHz		745		pF
C_{oss}	Output Capacitance			440		
C_{rss}	Reverse Transfer Capacitance			120		
Source-Drain Diode						
I_S	Max. Diode Forward Current				-2.6	A
V_{SD}	Diode Forward Voltage	I_S = -2.6A, V_{GS} = 0V			-1.3	V

Note Pulse test: pulse width <= 300us, duty cycle<= 2%

TYPICAL ELECTRICAL CHARACTERISTICS

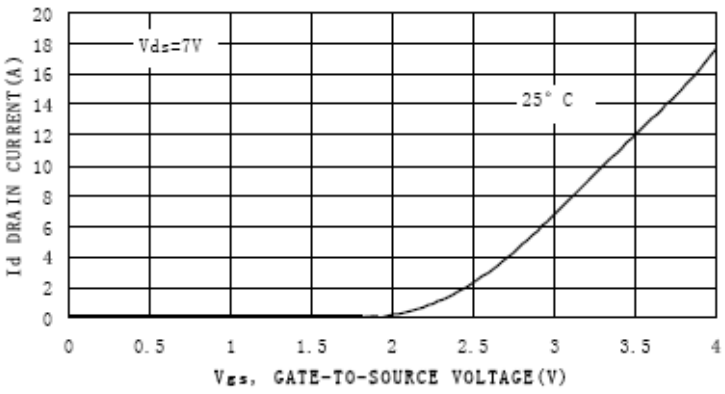


Figure 1. Transfer Characteristics

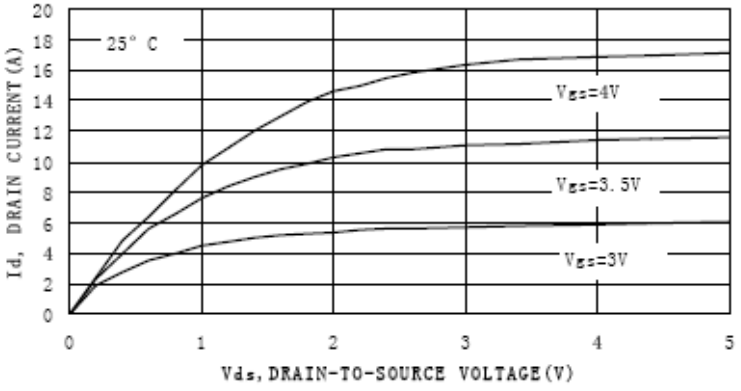


Figure 2. On–Region Characteristics

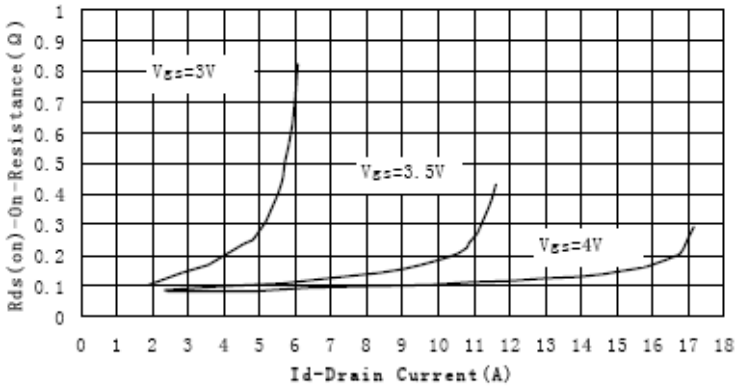


Figure 3. On–Resistance versus Drain Current

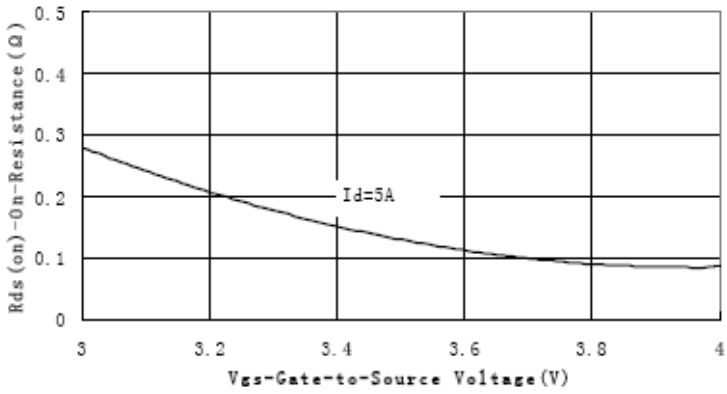


Figure 4. On-Resistance vs. Gate-to-Source Voltage

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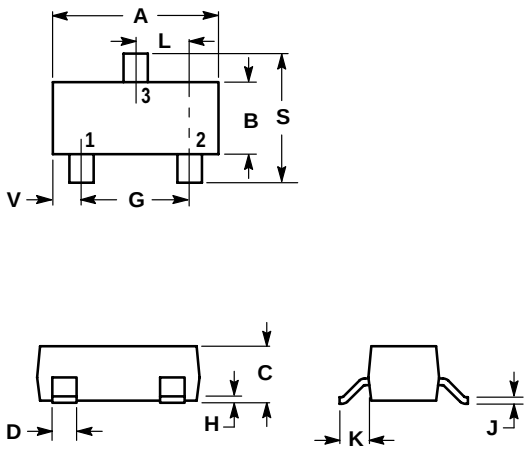

NOTES:

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