

30V P-Channel Enhancement-Mode MOSFET

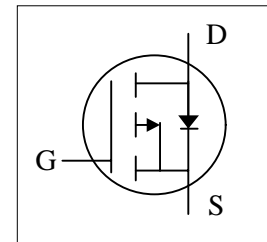
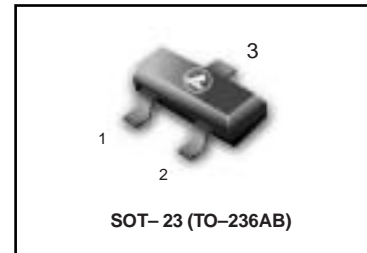
$V_{DS} = -30V$

$R_{DS(ON)}, V_{GS}@-10V, I_{ds}@-4.2A = 70m\Omega$

$R_{DS(ON)}, V_{GS}@-4.5V, I_{ds}@-4.0A = 85 m\Omega$

$R_{DS(ON)}, V_{GS}@-2.5V, I_{ds}@-1.0A = 130m\Omega$

LP2305LT1G



FEATURES

Advanced trench process technology
High Density Cell Design For Ultra Low On-Resistance

ORDERING INFORMATION

Device	Marking	Shipping
LP2305LT1G	P05	3000/Tape&Reel
LP2305LT3G	P05	10000/Tape&Reel

MAXIMUM RATINGS AND THERMAL CHARACTERISTICS ($T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 12	
Continuous Drain Current	I_D	-4.2	A
Pulsed Drain Current ¹⁾	I_{DM}	-30	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ C$
Total Power Dissipation	P_D	1.4	W
Junction-to-Ambient Thermal Resistance (PCB mounted) ²⁾	$R_{\theta JA}$	140	$^\circ C/W$

Note: 1. Repetitive Rating: Pulse width limited by the maximum junction temperature
2. 1-in 2oz Cu PCB board

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static ²⁾						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -4.2A$		53.0	70.0	m Ω
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -4A$		64.0	85.0	
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = -2.5V, I_D = -1A$		86.0	130.0	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.7		-1.3	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24V, V_{GS} = 0V$			-1	μA
Gate Body Leakage	I_{GSS}	$V_{GS} = \pm 12V, V_{DS} = 0V$			± 100	nA
Forward Transconductance	g_{fs}	$V_{DS} = -5V, I_D = -5A$	7	11		S
Dynamic ³⁾						
Total Gate Charge	Q_g	$V_{DS} = -15V, I_D = -4A$ $V_{GS} = -4.5V$		6.36		nC
Gate-Source Charge	Q_{gs}			1.79		
Gate-Drain Charge	Q_{gd}			1.42		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15V, R_L = 3.6\Omega$ $I_D = -1A, V_{GEN} = -10V$ $R_G = 6\Omega$		11.36		ns
Turn-On Rise Time	t_r			2.32		
Turn-Off Delay Time	$t_{d(off)}$			34.88		
Turn-Off Fall Time	t_f			3.52		
Input Capacitance	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V$ $f = 1.0\text{ MHz}$		826.18		pF
Output Capacitance	C_{oss}			90.74		
Reverse Transfer Capacitance	C_{rss}			53.18		
Source-Drain Diode						
Max. Diode Forward Current	I_S				-2.2	A
Diode Forward Voltage	V_{SD}	$I_S = -1.0A, V_{GS} = 0V$			-1	V

Note: 1. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

2. Static parameters are based on package level with recommended wire-bonding

3. Guaranteed by design; not subject to production testing

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TYPICAL ELECTRICAL CHARACTERISTICS

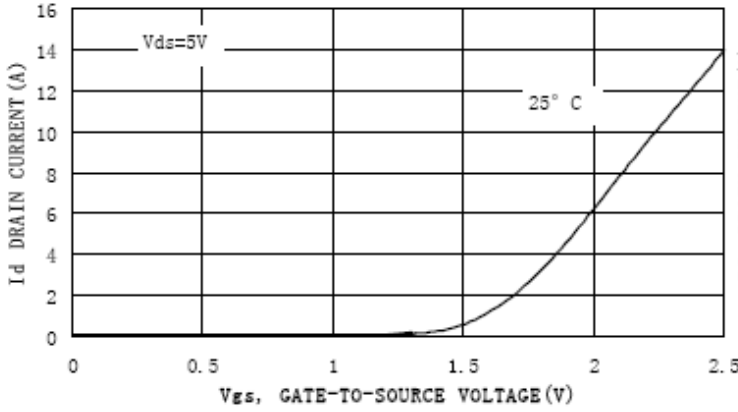


Figure 1. Transfer Characteristics

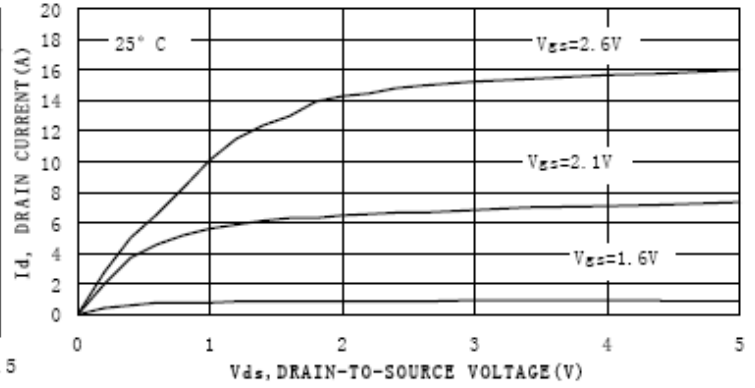


Figure 2. On-Region Characteristics

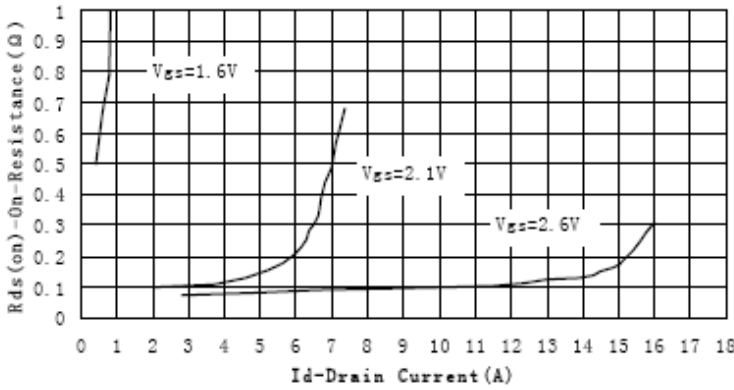


Figure 3. On-Resistance versus Drain Current

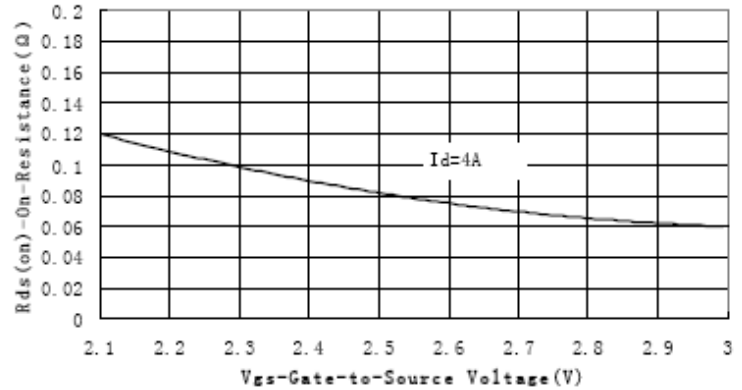


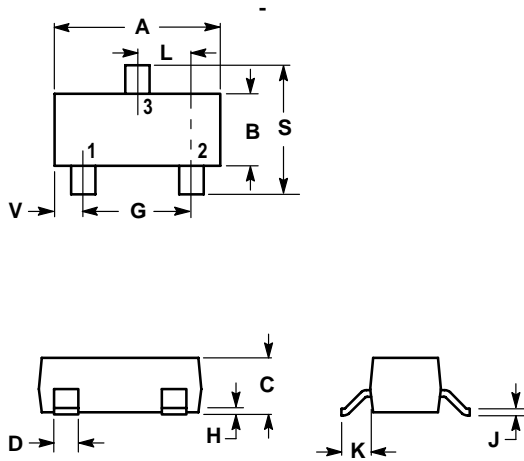
Figure 4. On-Resistance vs. Gate-to-Source Voltage

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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

