

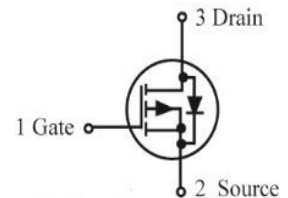
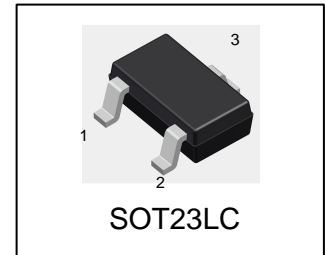
# LPB 2305LT1G

## S-LPB 2305LT1G

30V P-Channel Enhancement-Mode MOSFET

### 1. FEATURES

- $V_{DS} = -30V$
- $R_{DS(ON)}, V_{GS}@-10V, I_{DS}@-4.2A = 70m\Omega$
- $R_{DS(ON)}, V_{GS}@-4.5V, I_{DS}@-4.0A = 85m\Omega$
- $R_{DS(ON)}, V_{GS}@-2.5V, I_{DS}@-1.0A = 130m\Omega$
- 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

- Advanced trench process technology
- High density cell design for ultra low on-resistance.

### 3. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LPB2305LT1G	P05	3000/Tape&Reel
LPB2305LT3G	P05	10000/Tape&Reel

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

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	$V_{DSS}$	-30	V
Gate-to-Source Voltage – Continuous	$V_{GS}$	$\pm 14$	V
Drain Current			A
– Continuous $T_A = 25^\circ C$	ID	-4.2	
– Pulsed (Note 1)	IDM	-30	

### 5. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Power Dissipation	PD	1.4	W
Thermal Resistance, Junction-to-Ambient(Note 2)	$R_{\theta JA}$	140	$^\circ C/W$
Junction and Storage temperature	$T_J, T_{stg}$	$-55 \sim +150$	$^\circ C$

1.Repetitive Rating: Pulse width limited by the maximum junction temperature.

2.1-in<sup>2</sup> 2oz Cu PCB board.

**6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)**
**OFF CHARACTERISTICS**

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = -250 $\mu$ Adc)	VBRDSS	-30	-	-	Vdc
Zero Gate Voltage Drain Current (VGS = 0, VDS = -24 Vdc)	IDSS	-	-	-1	$\mu$ Adc
Gate–Body Leakage Current, Forward (VGS = 14 Vdc)	IGSSF	-	-	100	nAdc
Gate–Body Leakage Current, Reverse (VGS = -14 Vdc)	IGSSR	-	-	-100	nAdc

**ON CHARACTERISTICS (Note 3)**

Forward Transconductance (VDS = -5Vdc, ID = -5Adc)	gfs	7.0	11	-	S
Gate Threshold Voltage (VDS = VGS, ID = -250 $\mu$ Adc)	VGS(th)	-0.7	-	-1.3	Vdc
Static Drain–Source On–State Resistance (VGS = -10 Vdc, ID = -4.2 Adc) (VGS = -4.5 Vdc, ID = -4 Adc) (VGS = -2.5 Vdc, ID = -1 Adc)	RDS(on)	-	53 64 86	70 85 130	m $\Omega$

**DYNAMIC CHARACTERISTICS**

Input Capacitance (VGS = 0 V, f = 1.0MHz, VDS = -15 V)	Ciss	-	826.18	-	pF
Output Capacitance (VGS = 0 V, f = 1.0MHz, VDS = -15 V)	Coss	-	90.74	-	pF
Reverse Transfer Capacitance (VGS = 0 V, f = 1.0MHz, VDS = -15 V)	Crss	-	53.18	-	pF

**SWITCHING CHARACTERISTICS**

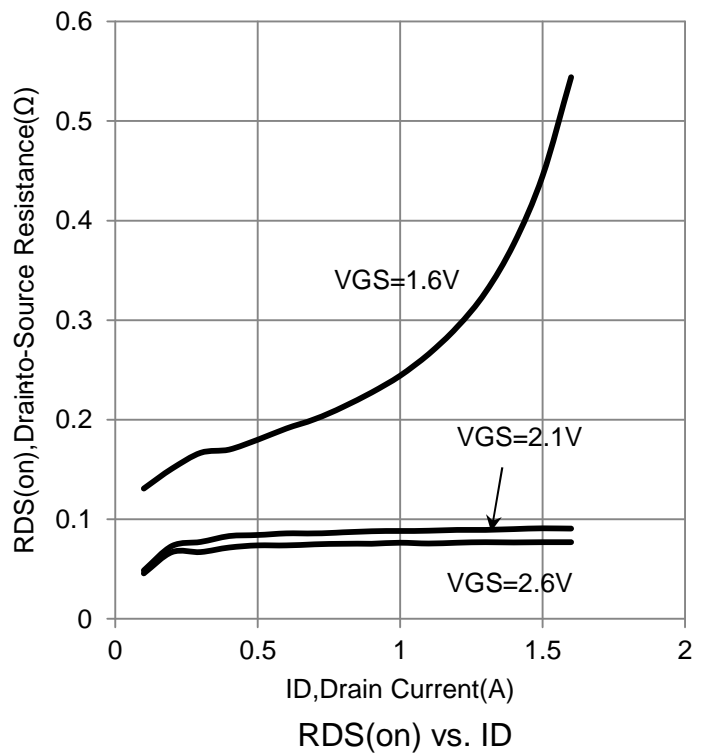
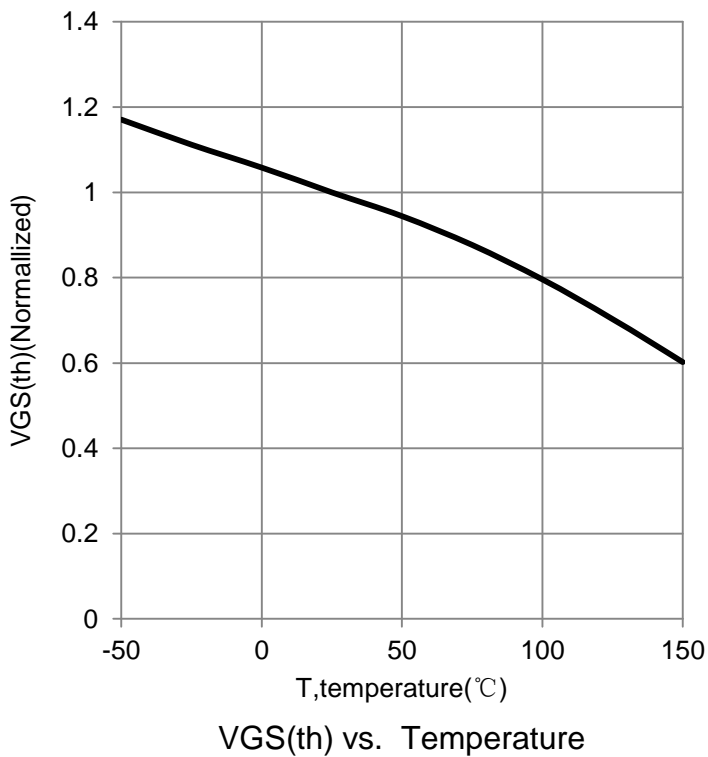
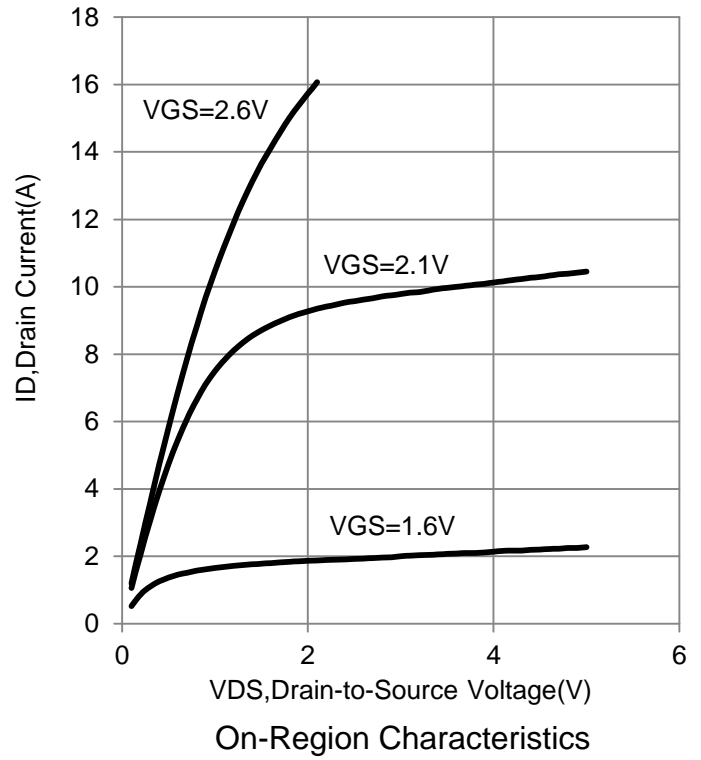
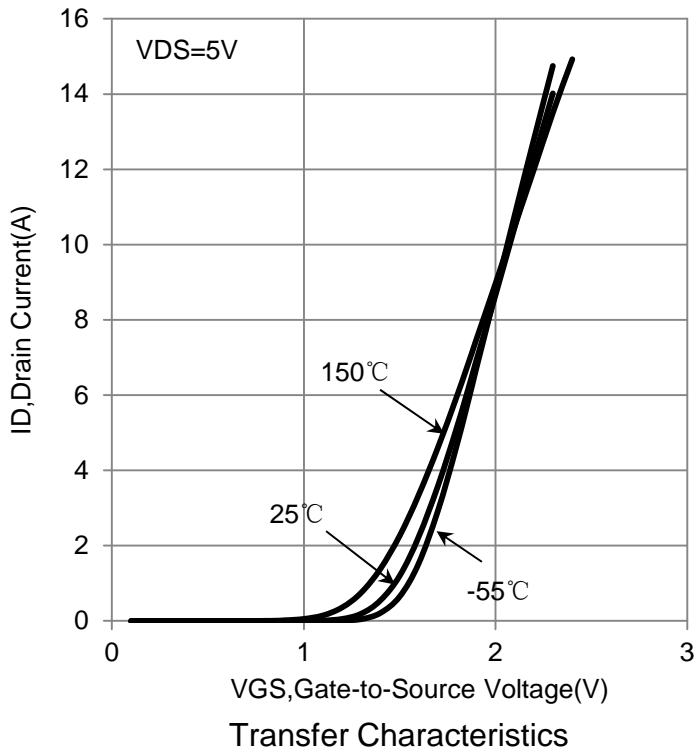
Turn-On Delay Time	(VDD = -15V, RL = 3.6 $\Omega$ ID = -1A, VGEN = -10V RG = 6 $\Omega$ )	td(on)	-	11.36	-	ns
Rise Time		tr	-	2.32	-	
Turn-Off Delay Time		td(off)	-	34.88	-	
Fall Time		tf	-	3.52	-	

**SOURCE–DRAIN DIODE CHARACTERISTICS**

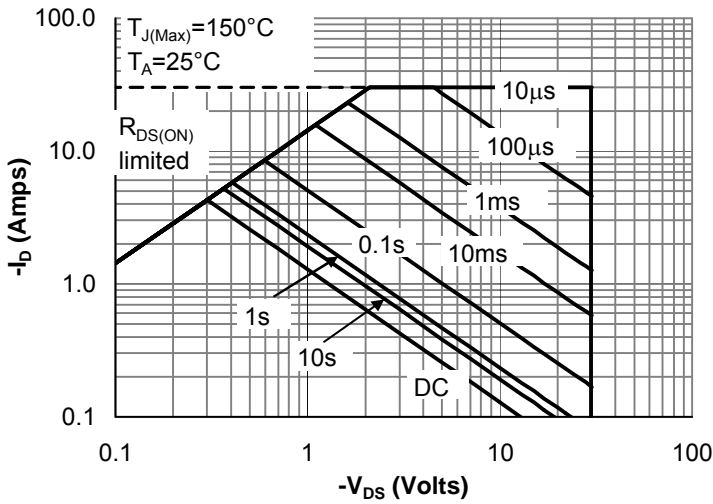
Forward Voltage (VGS = 0 Vdc, ISD = -1 Adc)	VSD	-	-	-1	V
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3. Pulse Test: Pulse Width  $\leq$  300  $\mu$ s, Duty Cycle  $\leq$  2.0%.

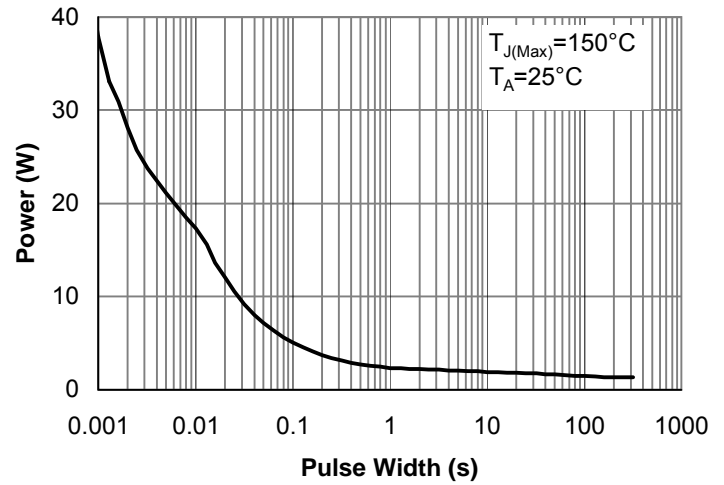
**7. ELECTRICAL CHARACTERISTICS CURVES**



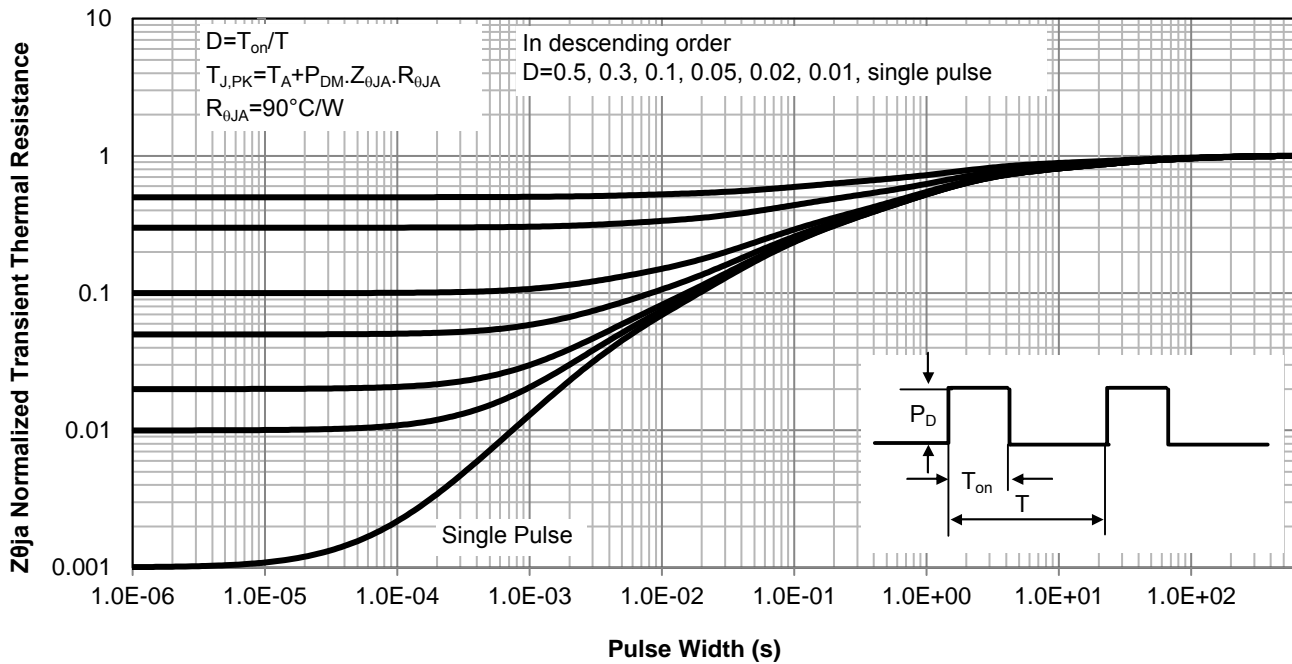
**7. ELECTRICAL CHARACTERISTICS CURVES (Con.)**



Maximum Forward Biased Safe Operating Area



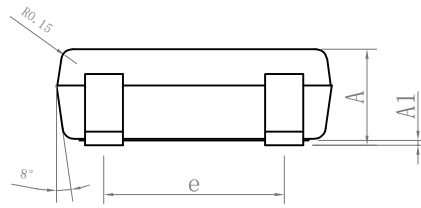
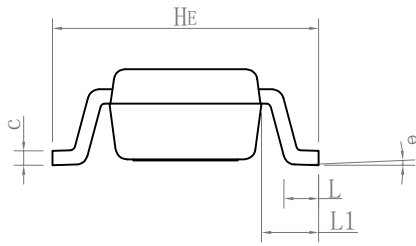
Single Pulse Power Rating Junction-to-Ambient



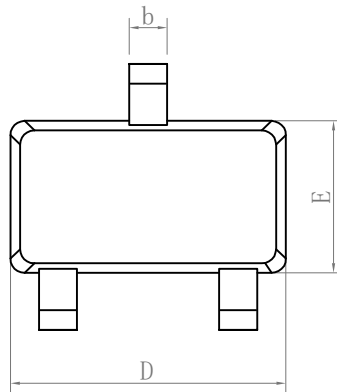
Normalized Maximum Transient Thermal Impedance

### 8. OUTLINE AND DIMENSIONS

SOT23-LC



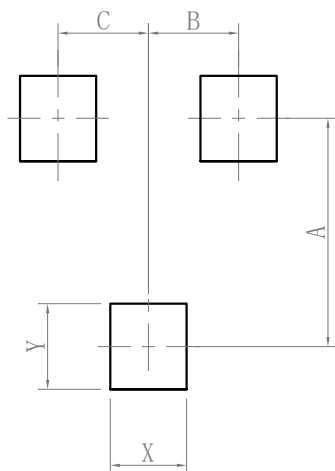
SOT23-LC			
DIM	MIN	NOR	MAX
A	0.90	1.00	1.10
A1	0.01	0.06	0.10
b	0.30	0.40	0.50
c	0.10	0.15	0.20
D	2.80	2.90	3.00
E	1.50	1.60	1.70
e	1.80	1.90	2.00
L	0.20	0.40	0.60
L1	0.45	0.60	0.75
HE	2.60	2.80	3.00
θ	0°	-	10°
All Dimensions in mm			



#### GENERAL NOTES

1. Top package surface finish Ra0.4±0.2um
2. Bottom package surface finish Ra0.7±0.2um
3. Side package surface finish Ra0.4±0.2um

### 9. SOLDERING FOOTPRINT



SOT23-LC	
DIM	(mm)
X	0.80
Y	0.90
A	2.40
B	0.95
C	0.95