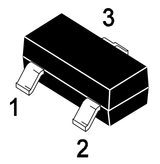
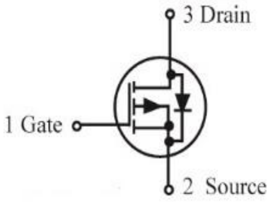
LP2305LT1G
S-LP2305LT1G

30V P-Channel Enhancement-Mode MOSFET



SOT23(TO-236)



1. FEATURES

- VDS = -30V
- RDS(ON), Vgs@-10V, Ids@-4.2A = 70mΩ
- RDS(ON), Vgs@-4.5V, Ids@-4.0A = 85mΩ
- RDS(ON), Vgs@-2.5V, Ids@-1.0A = 130mΩ
- 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
LP2305LT1G	P05	3000/Tape&Reel
LP2305LT3G	P05	10000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25ºC)

Parameter	Symbol	Limits	Unit
Drain–Source Voltage	VDSS	-30	V
Gate–to–Source Voltage – Continuous	VGS	±12	V
Drain Current			
– Continuous TA = 25°C(Note 2)	ID	-4.2	A
– Continuous TA = 25°C(Note 1)	IDM	-30	
Drain Current			
– Continuous TA = 25°C(Note 3)	ID	-2.4	A
– Continuous TA = 25°C(Note 3)	IDM	-9.6	

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Power Dissipation	PD	0.9	W
Power Dissipation(Note 3)	PD	0.625	W
Thermal Resistance,			
Junction–to–Ambient(Note 2)	RΘJA	140	ºC/W
Junction–to–Ambient(Note 3)	RΘJA	199	
Junction and Storage temperature	TJ,Tstg	−55~+150	ºC

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

2.1-in^2 2oz Cu PCB board.

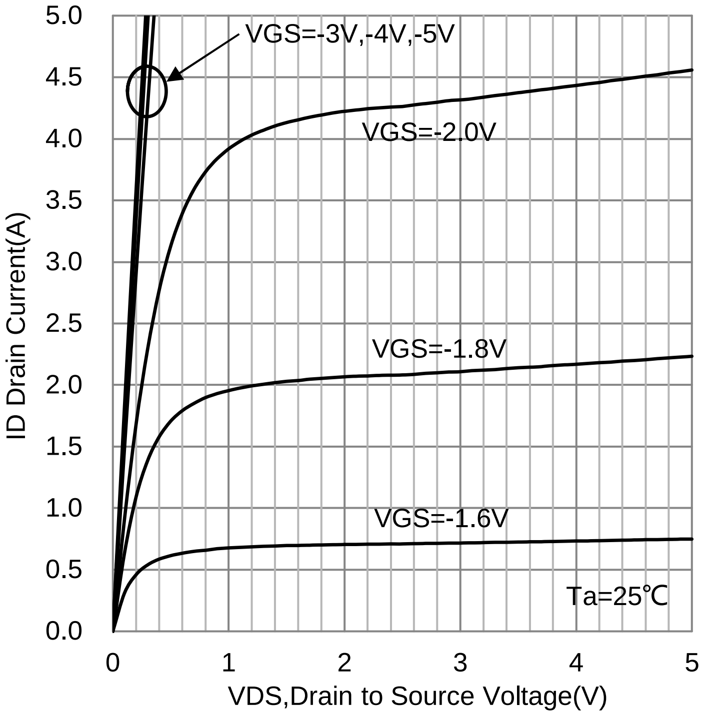
3.Surface mounted on FR4 board using the minimum recommended pad size.

6. ELECTRICAL CHARACTERISTICS (Ta= 25ºC)

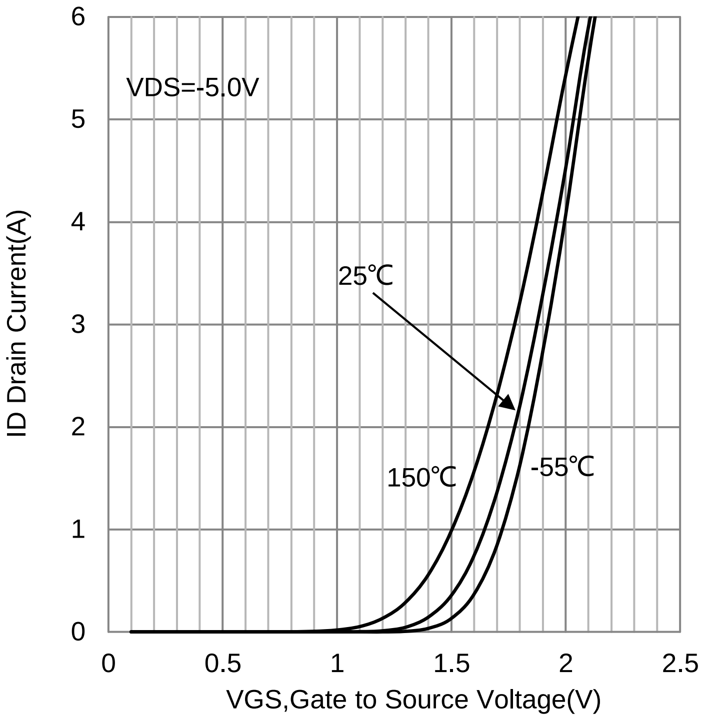
Characteristic		Symbol	Min.	Typ.	Max.	Unit
Static						
Drain–Source Breakdown Voltage (VGS = 0 V, ID = -250 μA)		VBRDSS	-30	-	-	V
Zero Gate Voltage Drain Current (VGS = 0 V, VDS = -24 V)		IDSS	-	-	-1	μA
Gate–Body Leakage Current, Forward (VGS = ± 12 V)		IGSS	-	-	± 100	nA
Gate Threshold Voltage (VDS = VGS, ID = -250 μA)		VGS(th)	-0.6	-	-1.3	V
Static Drain–Source On–State Resistance(Note 4) (VGS = -10 V, ID = -4.2 A) (VGS = -4.5 V, ID = -4 A) (VGS = -2.5 V, ID = -1 A)		RDS(on)	 - - -	 53 64 86	 70 85 130	mΩ
Dynamic						
Input Capacitance (VGS = 0 V, f = 1.0MHz,VDS= -15 V)		Ciss	-	716	-	pF
Output Capacitance (VGS = 0 V, f = 1.0MHz,VDS= -15 V)		Coss	-	47.5	-	pF
Reverse Transfer Capacitance (VGS = 0 V, f = 1.0MHz,VDS= -15 V)		Crss	-	37.4	-	pF
Total Gate Charge(VGS=-4.5V)	(VDS = -15 V, VGS=-10V,ID =-4.2A)	Qg	-	7.2	-	nC
Total Gate Charge(VGS=-10V)		Qg	-	14.8	-	
Gate to Source Charge		Qgs	-	1.36	-	
Gate to Drain Charge		Qgd	-	1.98	-	
Turn-On Delay Time	(VDS = -15 V, RL=15Ω ,VGEN =-10V,RG= 6.2Ω)	td(on)	-	6	-	ns
Rise Time		tr	-	5.4	-	
Turn-Off Delay Time		td(off)	-	125.5	-	
Fall Time		tf	-	27.8	-	
Forward Voltage (VGS = 0 V, ISD = -1 A)		VSD	-	-	-1	V

4.Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.

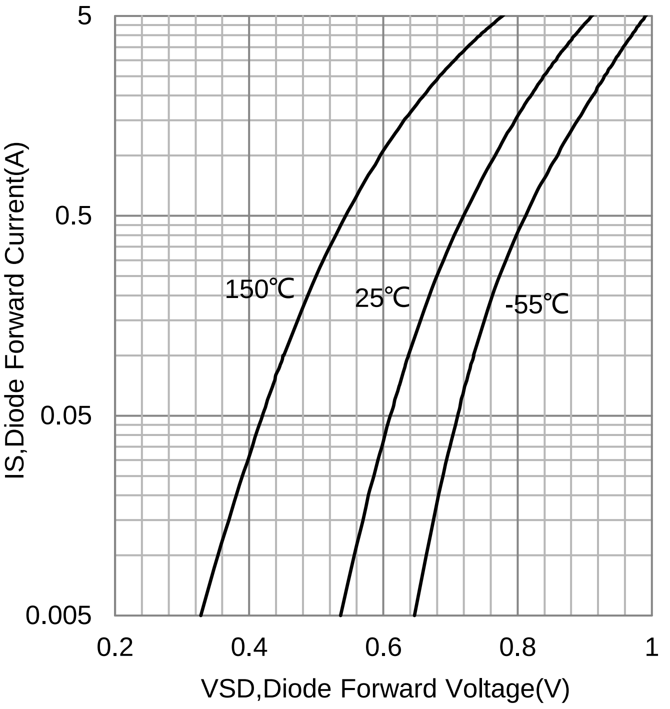
7. ELECTRICAL CHARACTERISTICS CURVES



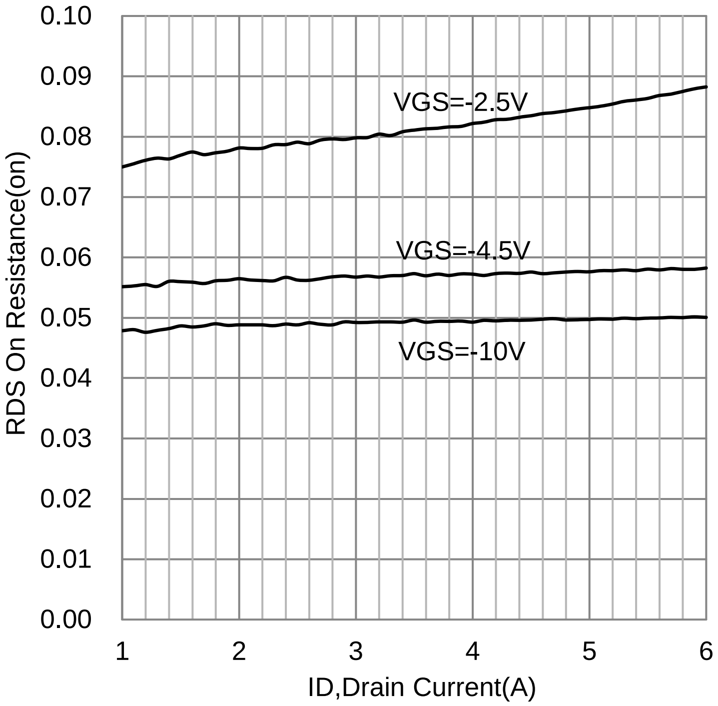
ID vs. VDS



ID vs. VGS

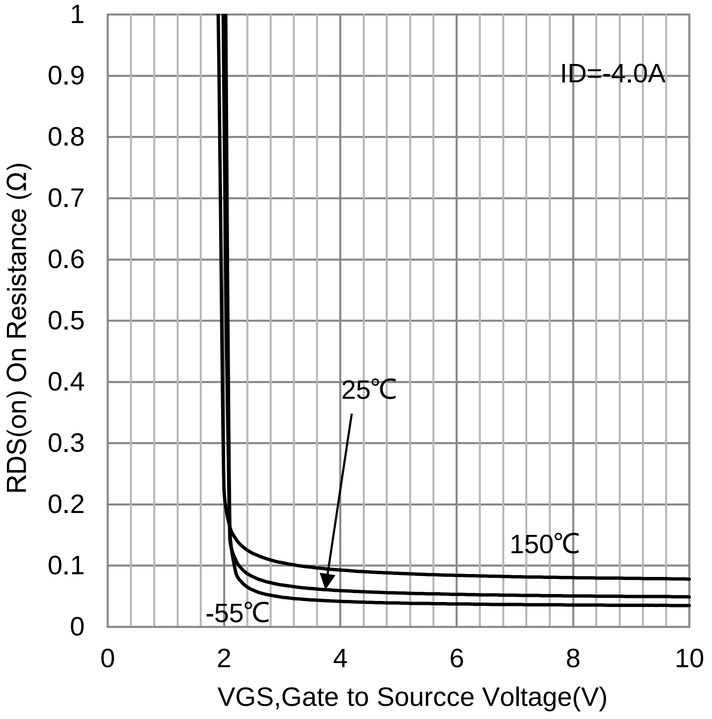


IS vs. VSD

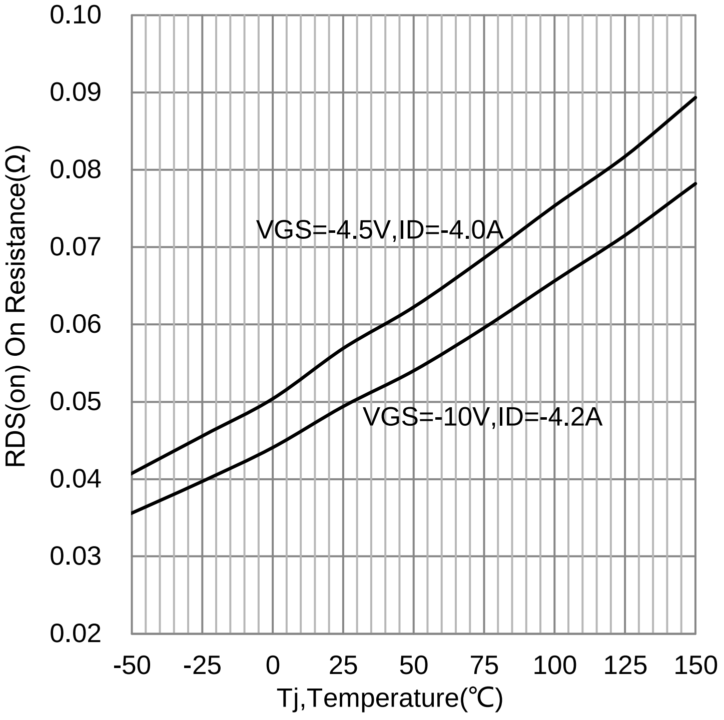


RDS(on) vs. ID

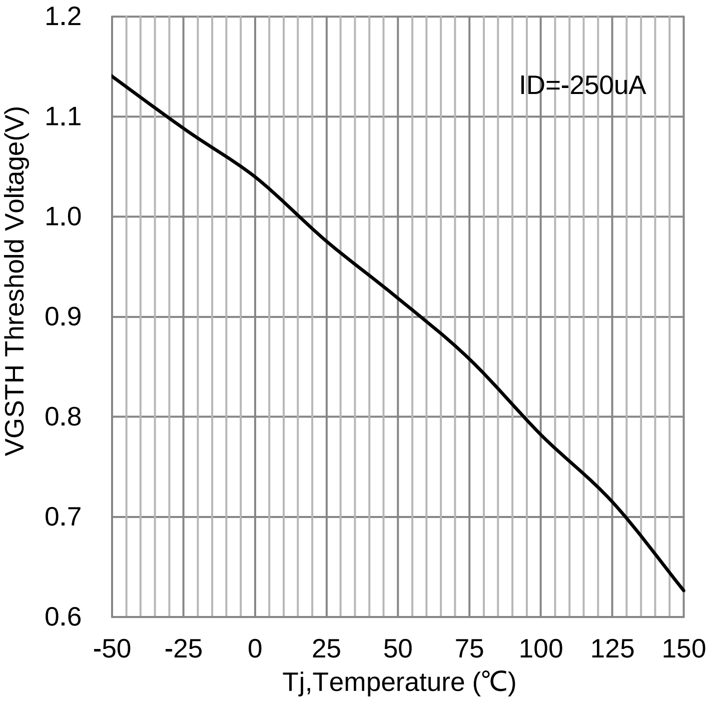
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



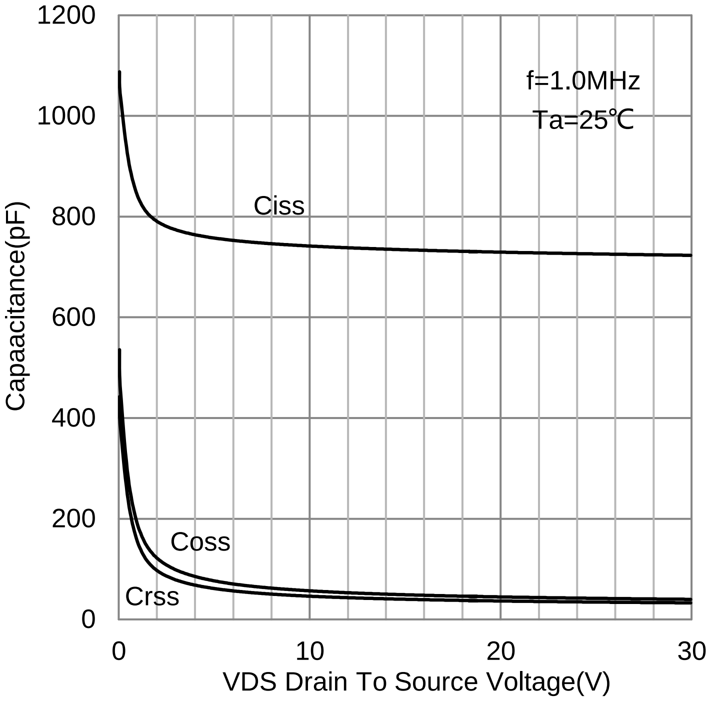
RDS(on) vs. VGS



RDS(on) vs. Tj

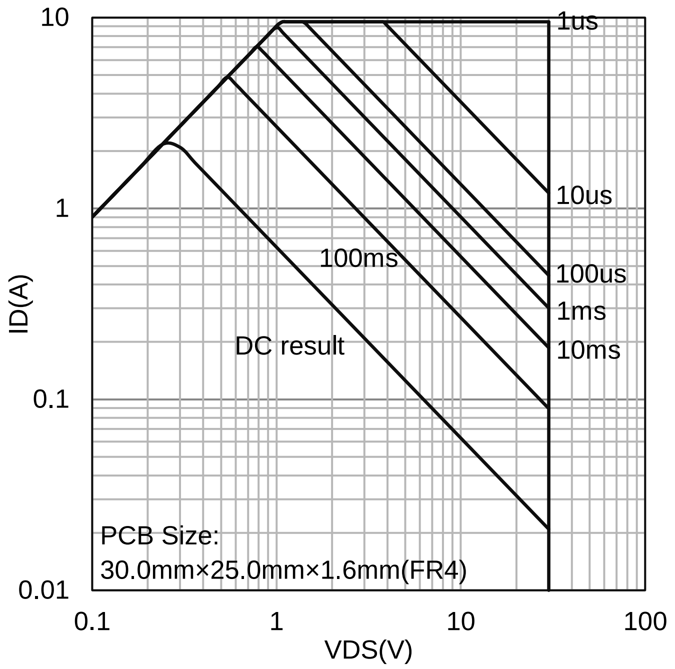


VGSTH vs. Tj

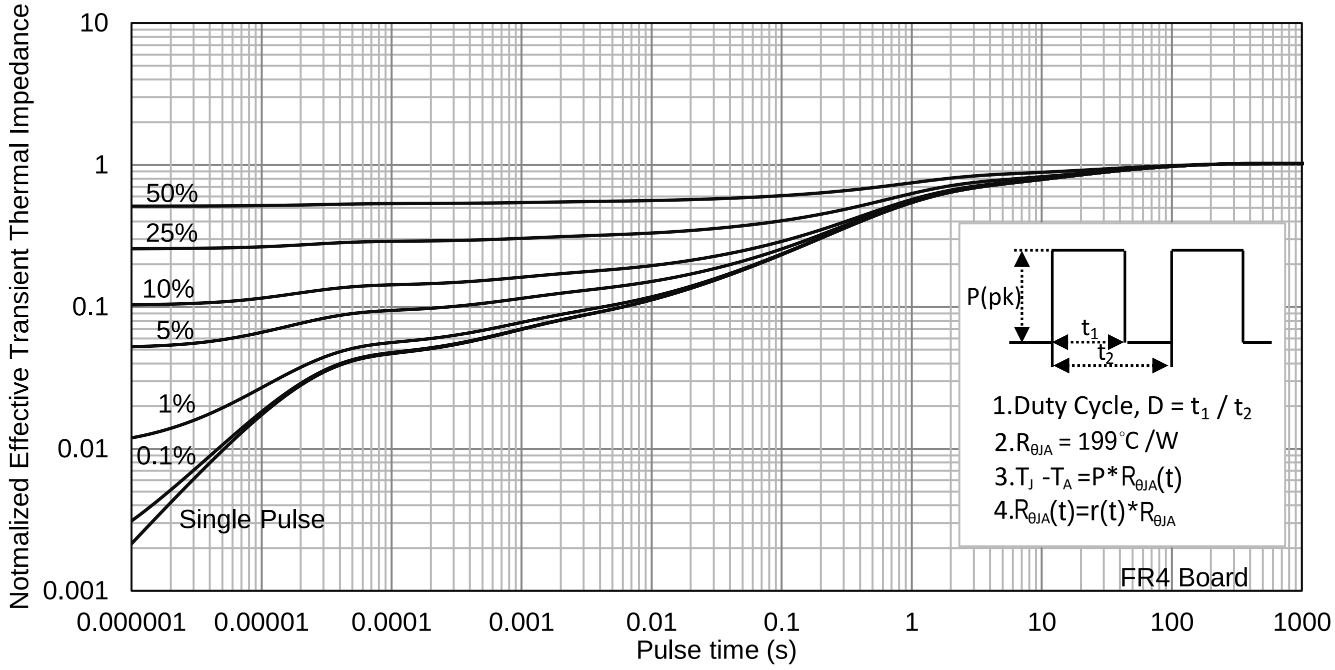


Capacitance

7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



Safe Operating Area



1.Duty Cycle, D = t_1 / t_2

2.$R_{θJA}$ = 199℃ /W

3.T_J -T_A =P*$R_{θJA}(t)$

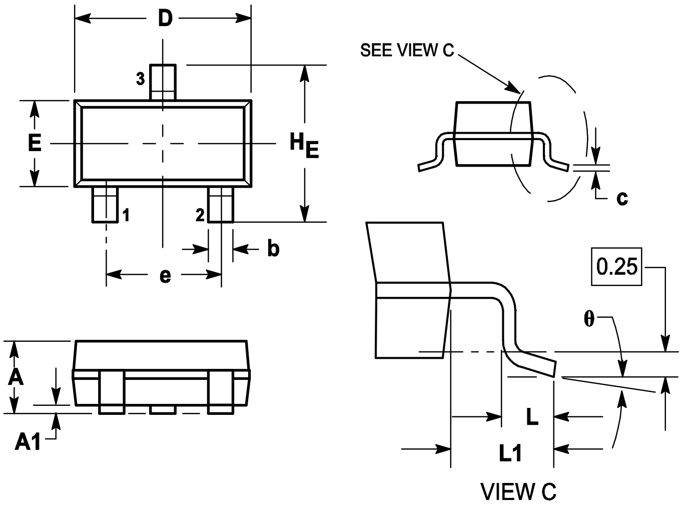
4.$R_{θJA}(t)$=r(t)*$R_{θJA}$

Thermal Response

8.OUTLINE AND DIMENSIONS

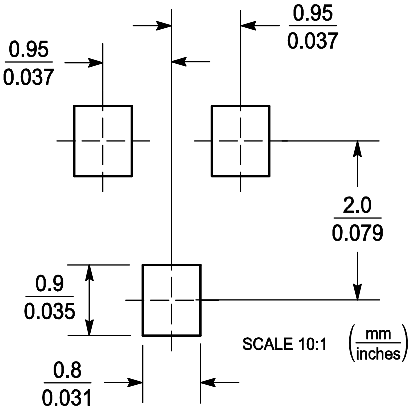
Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1	1.11	0.035	0.04	0.044
A1	0.01	0.06	0.1	0.001	0.002	0.004
b	0.37	0.44	0.5	0.015	0.018	0.02
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.9	3.04	0.11	0.114	0.12
E	1.20	1.3	1.4	0.047	0.051	0.055
e	1.78	1.9	2.04	0.07	0.075	0.081
L	0.10	0.2	0.3	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
H_E	2.10	2.4	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

9.SOLDERING FOOTPRINT



DISCLAIMER

- Curve guarantee in the specification. The curve of test items with electric parameter is used as quality guarantee. The curve of test items without electric parameter is used as reference only.

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