

# S-LP12N10D2

## 100V P-Channel Power MOSFET

### 1. FEATURES

- Low thermal impedance.
- Fast switching speed.
- 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

- Power Tools
- DC-DC conversion
- Motor Control

### 3. DEVICE MARKING AND RESISTOR VALUES

Device	Marking	Shipping
S-LP12N10D2	12N10	2500pcs/Tape&Reel

### 4. MAXIMUM RATINGS

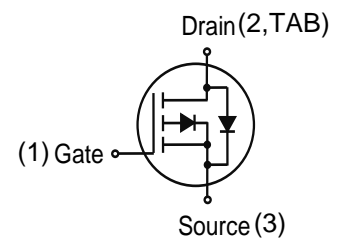
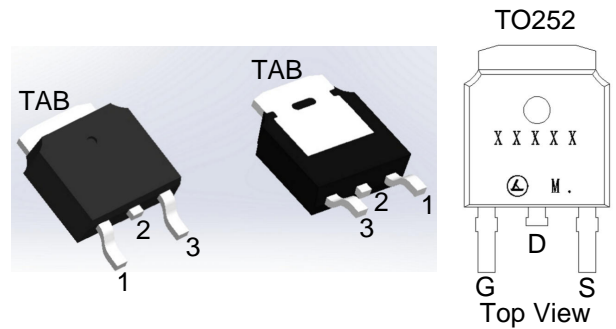
Parameter		Symbol	Limits	Unit
Drain-to-Source Voltage		VDS	-100	V
Gate-to-Source Voltage		VGS	± 20	V
Continuous Drain Current(Note 1)	TC=25°C	ID	-12	A
	TC=100°C		-8	
Pulsed Drain Current (Note 2)		IDM	-48	A
Avalanche Current		IAS	4.9	A
Avalanche Energy(L=0.1mH)		EAS	1.2	mJ
Power Dissipation(Note 1)	TC=25°C	PD	62.5	W
	TC=100°C		25	
Operating Junction and Storage Temperature Range		Tj/Tstg	-55~+150	°C

### 5. THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Junction-to-Ambient(Note 1)	RθJA	60	°C/W
Junction-to-Case	RθJC	2	

Note:1.Surface mounted on "1.5in x 1.5in" FR4 board using 1\*1 in pad, 2 oz Cu.

2.Pulse width limited by maximum junction temperature.

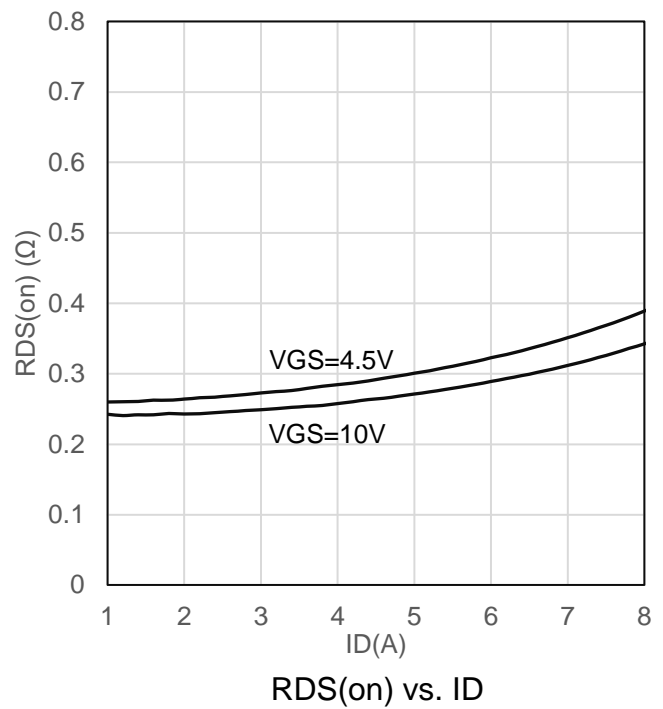
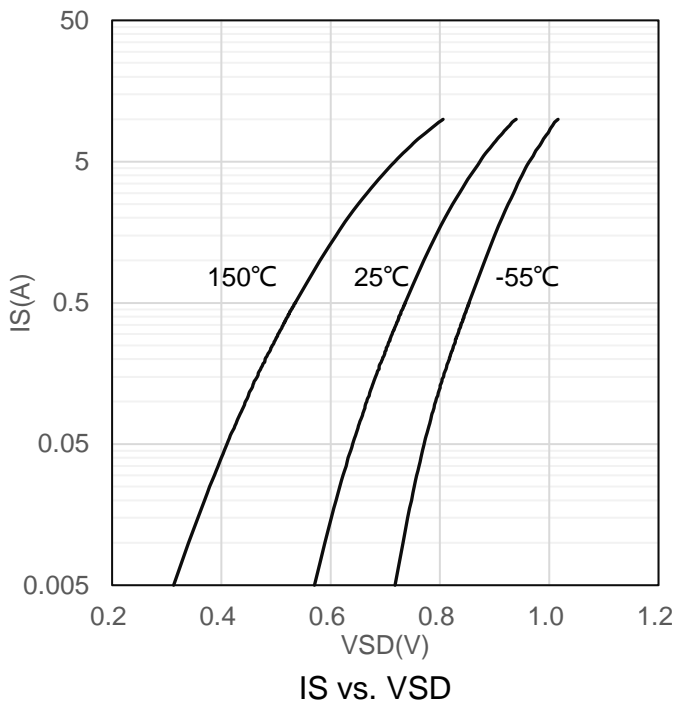
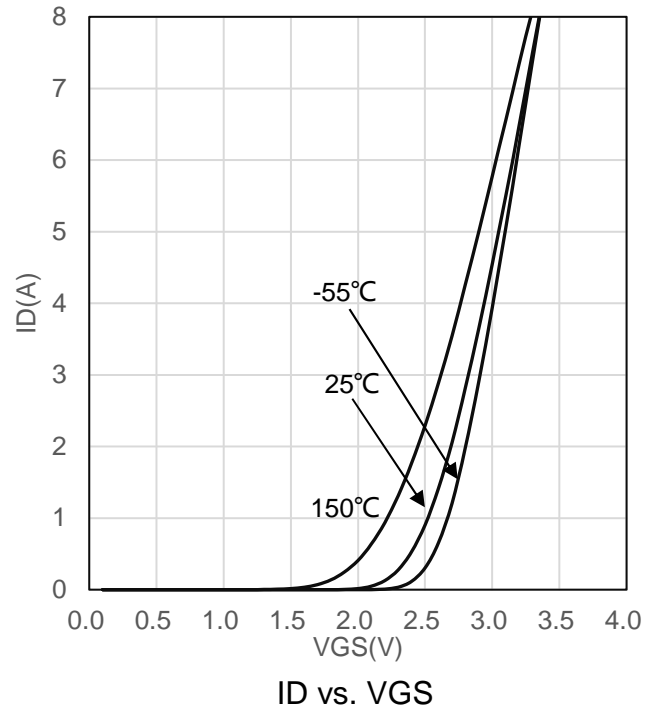
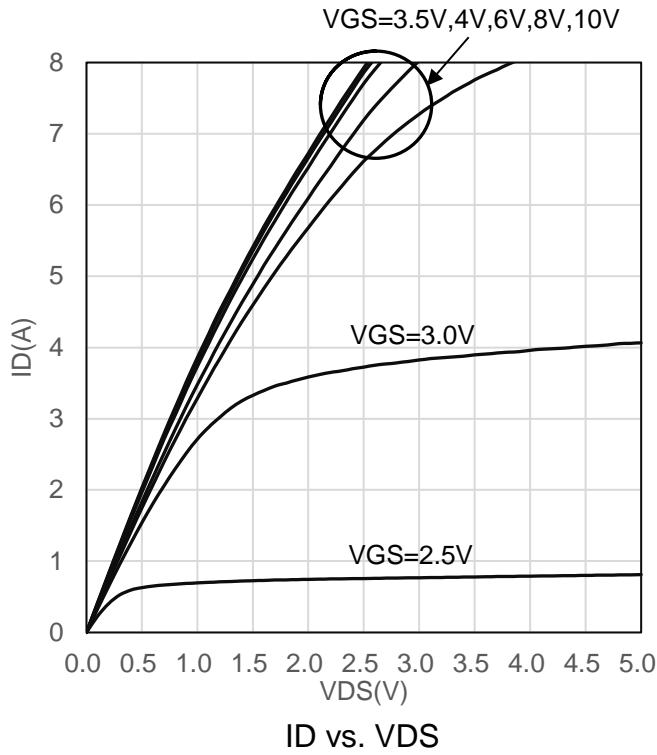


**6. ELECTRICAL CHARACTERISTICS**

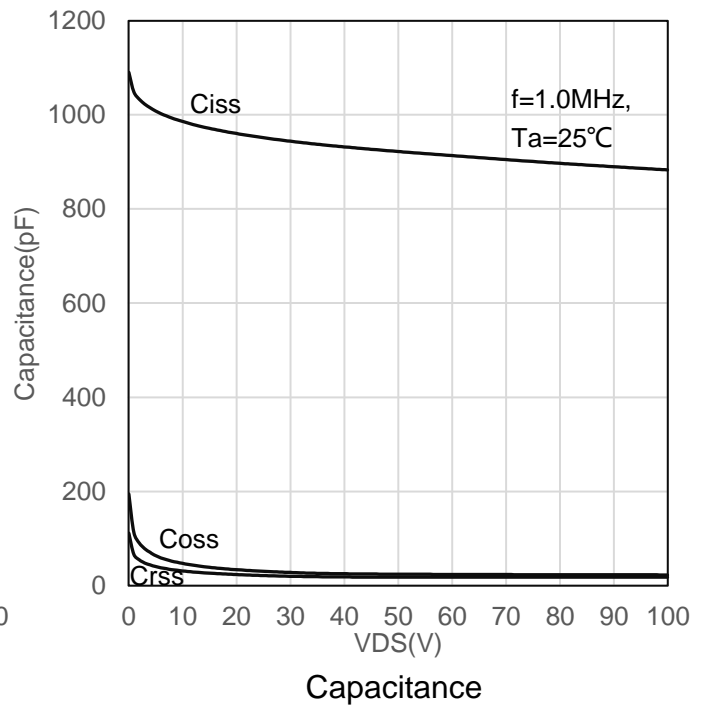
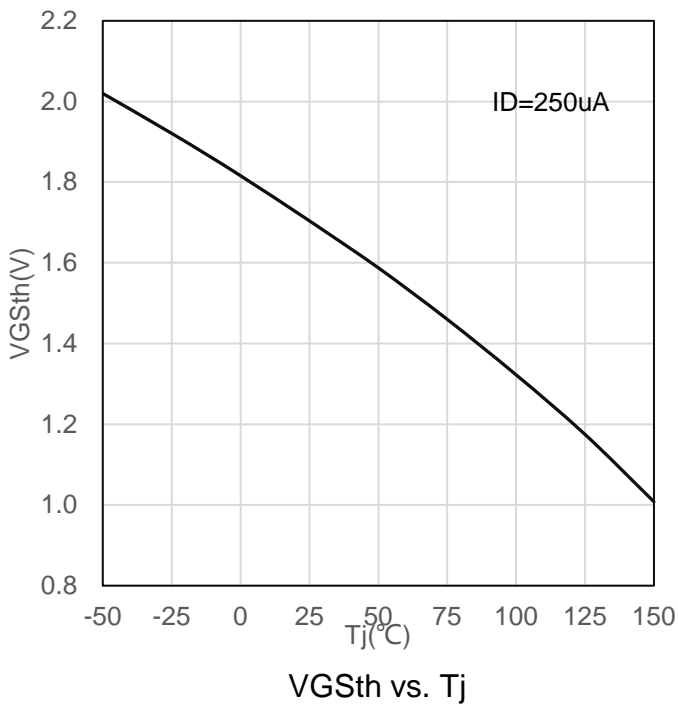
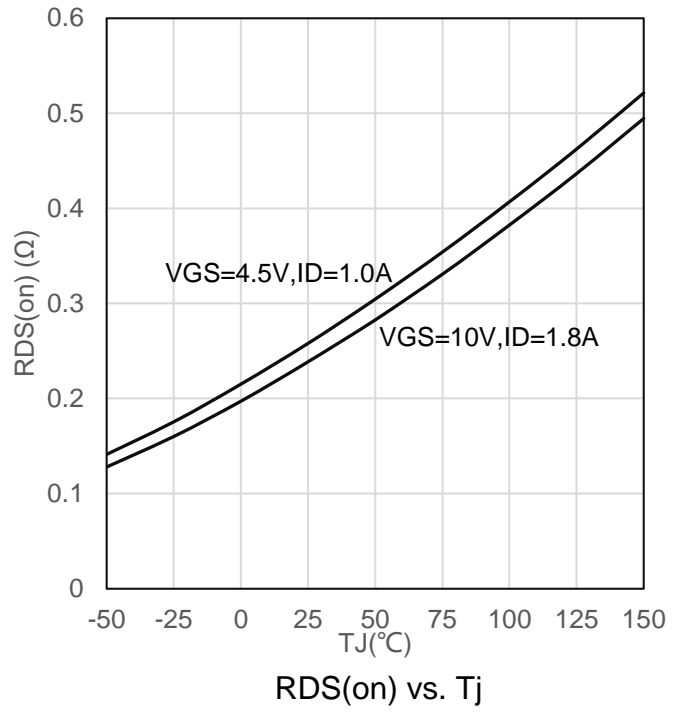
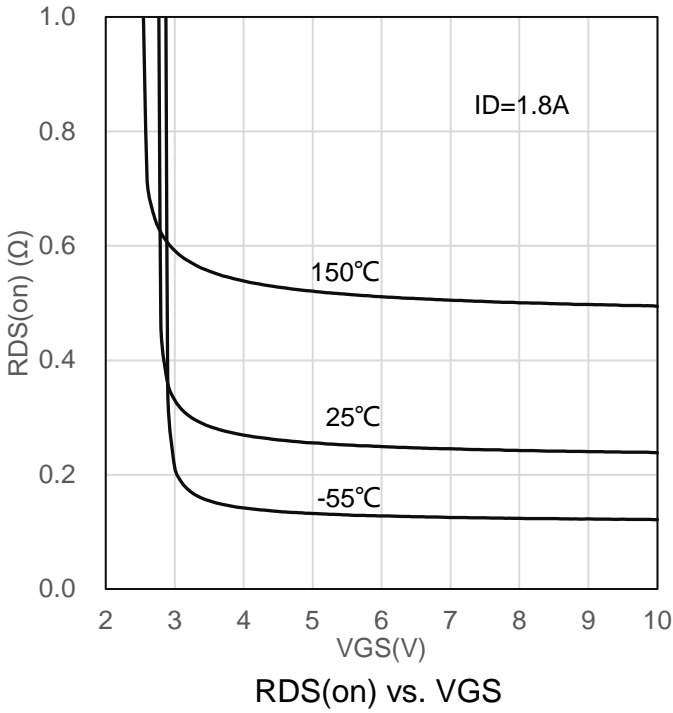
Characteristic	Symbol	Min.	Typ.	Max.	Unit
<b>STATIC</b>					
Drain–Source Breakdown Voltage (VGS = 0 V, ID = -250 $\mu$ A)	VBRDSS	-100	-	-	V
Gate Threshold Voltage (VDS = VGS, ID = -250 $\mu$ A)	VGS(th)	-1.1	-	-3	V
Gate-Body leakage current (VDS = 0 V, VGS = $\pm$ 20 V)	IGSS	-	-	$\pm$ 100	nA
Zero Gate Voltage Drain Current (VDS = -80 V, VGS = 0 V)	IDSS	-	-	-1	$\mu$ A
Drain-to-Source On-Resistance (Note 3) (VGS = -10 V, ID = -1.8 A) (VGS = -4.5 V, ID = -1 A)	RDS(on)	-	-	270 340	m $\Omega$
Diode Forward Voltage (IS = -1 A, VGS = 0 V)	VSD	-	-	-1.2	V
<b>DYNAMIC</b>					
Input Capacitance	(VGS = 0 V, VDS = -50 V, f = 1MHz)	Ciss	-	861	pF
Output Capacitance		Coss	-	25.8	
Reverse Transfer Capacitance		Crss	-	17	
Total Gate Charge	(VDS = -50 V, VGS = -10 V, ID = -1 A)	Qg	-	14.8	nC
Gate Source Charge		Qgs	-	2.4	
Gate Drain Charge		Qgd	-	4	
Turn-On DelayTime	(VDS = -50 V, RL = 5 $\Omega$ , ID = -10 A, VGEN = -10 V, RGEN = 6 $\Omega$ )	td(on)	-	6.3	ns
Turn-On Rise Time		tr	-	9.5	
Turn-Off DelayTime		td(off)	-	43	
Turn-Off Fall Time		tf	-	16	
Gate Resistance (VDS = 0 V, VGS = 0 V, f = 1.0MHz)	Rg	-	22	-	$\Omega$

 3. Pulse test: PW  $\leq$  300us duty cycle  $\leq$  2%.

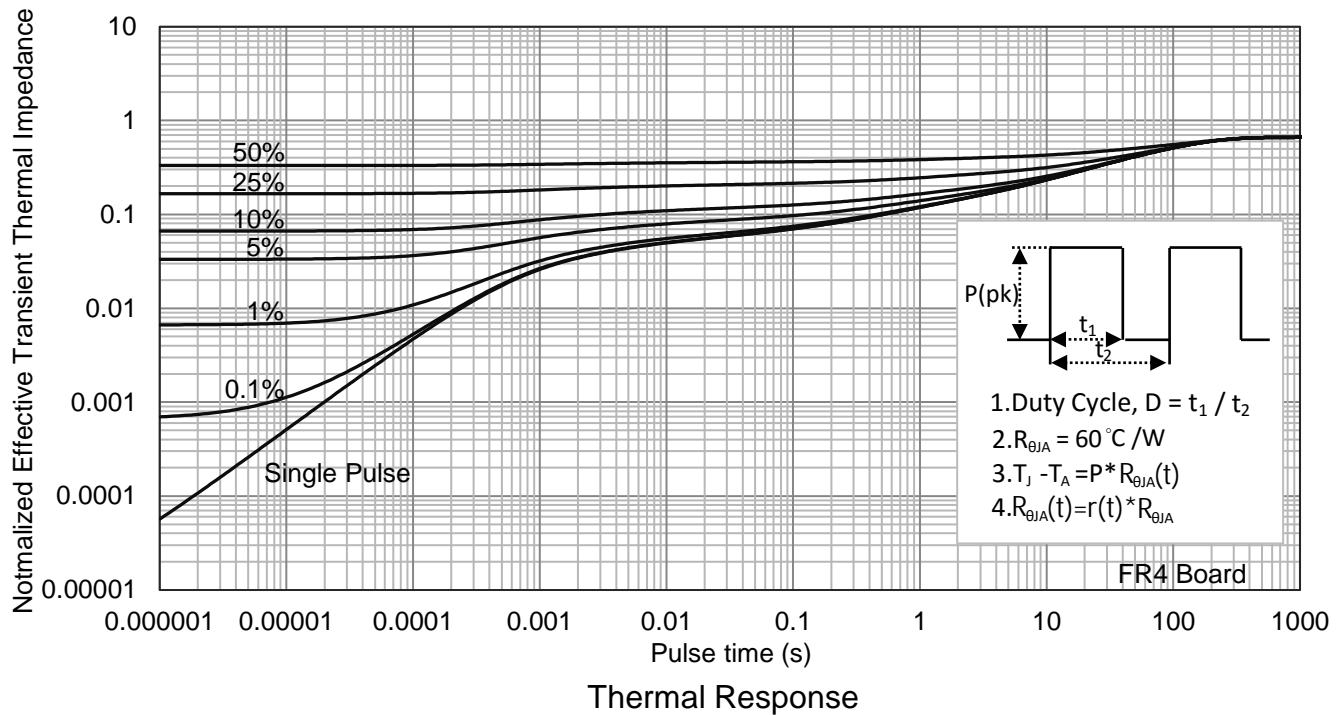
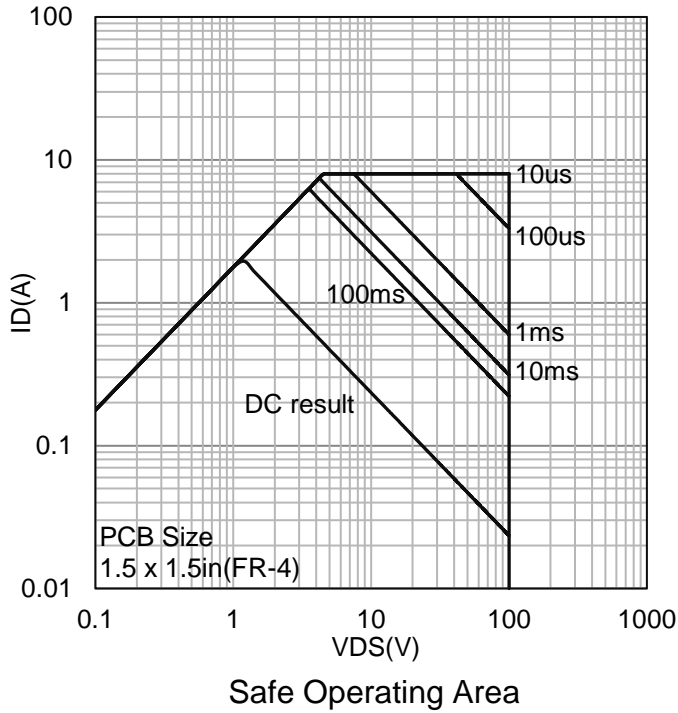
### 7. ELECTRICAL CHARACTERISTICS CURVES



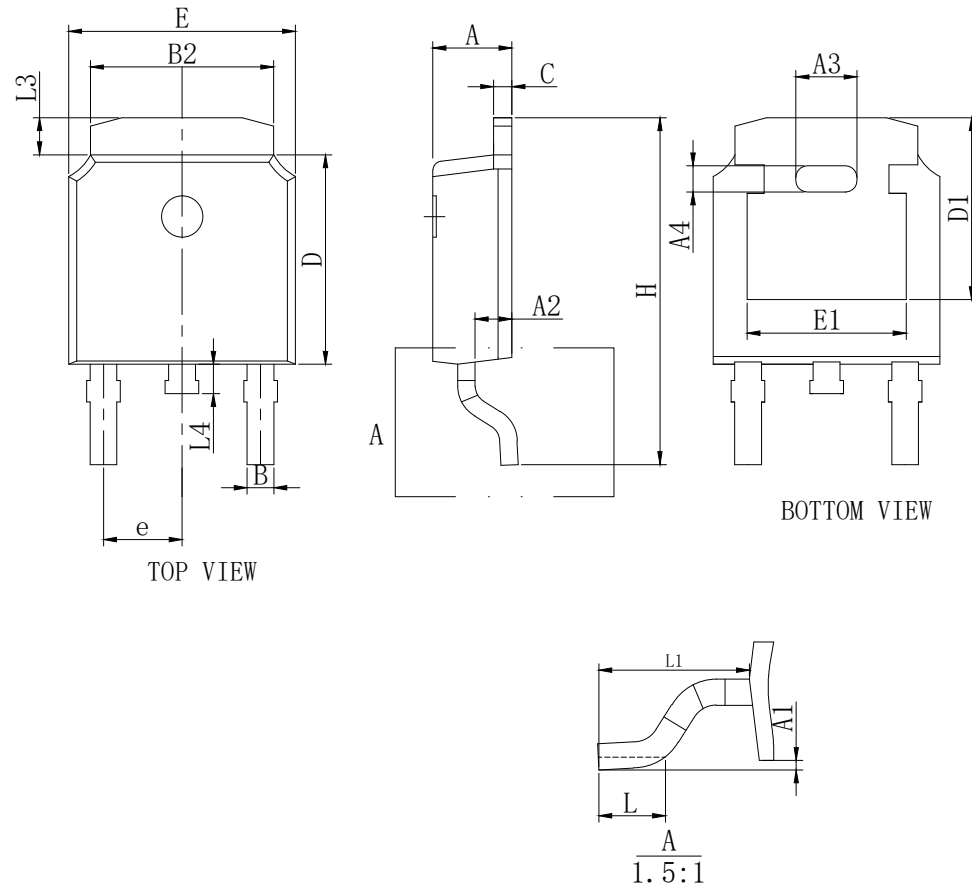
**7. ELECTRICAL CHARACTERISTICS CURVES(Con.)**



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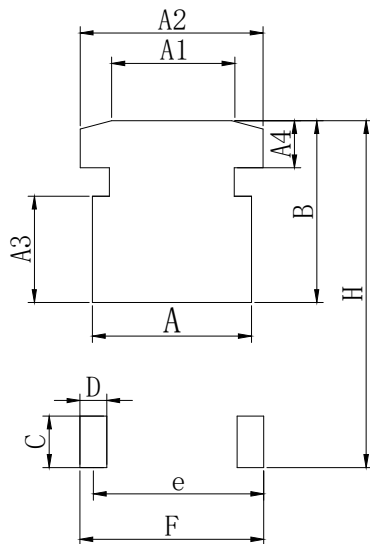


### 8.OUTLINE AND DIMENSIONS



DIM	MILLIMETERS		
	MIN	NOM	MAX
A	2.15	2.30	2.45
A1	0	-	0.20
A2	0.90	1.07	1.17
A3	1.58	1.78	1.98
A4	0.56	0.76	0.96
B	0.68	0.78	0.88
B2	5.20	5.33	5.46
C	0.49	-	0.58
D	5.90	6.10	6.30
D1	5.30REF		
E	6.40	6.60	6.80
E1	4.63	4.83	5.03
e	2.286BSC		
H	9.8	10.10	10.4
L	1.09	1.29	1.49
L1	2.90REF		
L3	0.88	1.08	1.28
L4	0.55	0.80	1.05

### 9.SOLDERING FOOTPRINT



DIM	MIN(mm)
A	6.03
A1	4.50
A2	6.46
A3	4.10
A4	2.37
B	6.50
C	2.50
D	1.68
e	4.80
H	12.35
F	5.95

## **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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