Features

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low RDS(ON）

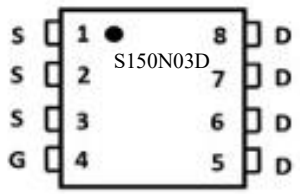
Bvdss	Rdson	ID
30V	1.4mΩ	150A

RoHS

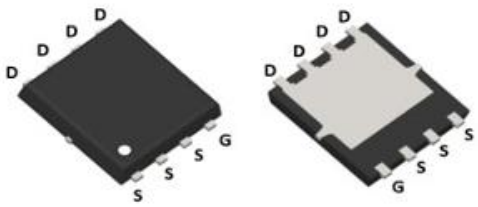
Application

- DC-DC converter
- Power management functions
- Synchronous-rectification applications

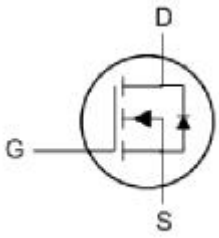
Package



1.Marking and pin assignment



2. PDFN3*3-8L top view



3.Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
150N03	S150N03D	PDFN3*3-8L	5000

Absolute Maximum Ratings (T_C=25℃unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{Gs}	±20	V
Continuous Drain Current VGS	(T_C =25℃)	I_D	150	A
	(T_C =100℃)	I_D	95	A
Pulsed Drain Current (1）		I_{DM}	600	A
Single Pulsed Avalanche Energy (2)		E_{As}	180	mJ
Power Dissipation		P_d	66	W
Junction Temperature		T_J	-55~+150	℃
Storage Temperature		T_{STG}	-55~+150	℃

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to case	$R_{\theta JC}$	1.9	℃/W
Junction to ambient（3）	$R_{\theta JA}$	60	℃/W

Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	D	S	
HLS150N03D	PDFN3*3-8L	4	5,6,7,8	1,2,3	Tape Reel

Electrical Characteristics (T_J = 25°C, unless otherwise noted)

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	30	-	-	V
Gate-body Leakage Current		I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	TJ=25° C	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V	-	-	1	μA
	TJ=100° C			-	-	100	
Gate-Threshold Voltage		$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.2	1.7	2.2	V
Drain-Source On-Resistance（4）		$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A	-	1.4	1.9	mΩ
			V_{GS} = 4.5V, I_D =15A	-	2.1	2.8	
Forward Transconductance（4）		gfs	V_{DS} = 10V, I_D = 20A	-	85	-	S
Dynamic Characteristics（5）							
Input Capacitance		Ciss	V_{DS} = 15V, V_{GS} =0V, f =1MHz	-	2554	-	pF
Output Capacitance		Coss		-	924	-	
Reverse Transfer Capacitance		Crss		-	73.5	-	
Gate Resistance		Rg	f = 1MHz	-	0.98	-	Ω
Switching Characteristics（5）							
Total Gate Charge		Qg	V_{GS} = 10V, V_{DS} = 15V, I_D = 20A	-	39.1	-	nC
Gate-Source Charge		Qgs		-	6.7	-	
Gate-Drain Charge		Qgd		-	5.9	-	
Turn-On Delay Time		td(on)	V_{GS} =10V, V_{DD} = 15V, R_G = 3Ω, I_D = 20A	-	10	-	ns
Rise Time		tr		-	7.3	-	
Turn-Off Delay Time		td(off)		-	38.6	-	
Fall Time		tf		-	16.4	-	

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Body Diode Reverse Recovery Charge		Qrr	I_F=20A, dI/dt=100A/μs	-	27	-	nC
Body Diode Reverse Recovery Time		trr		-	54	-	ns
Drain-Source Body Diode Characteristics							
Diode Forward Voltage（4）		V_{SD}	I_S = 20A, V_{GS} = 0V	-	-	1.2	V
Continuous Source Current	TC=25° C	I_S	-	-	-	150	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150° C.
2. The test condition is V_{DD}=25V,V_{GS}=10V,L=0.4mH，IAS=30A.
3. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in user's specific board design.
4. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

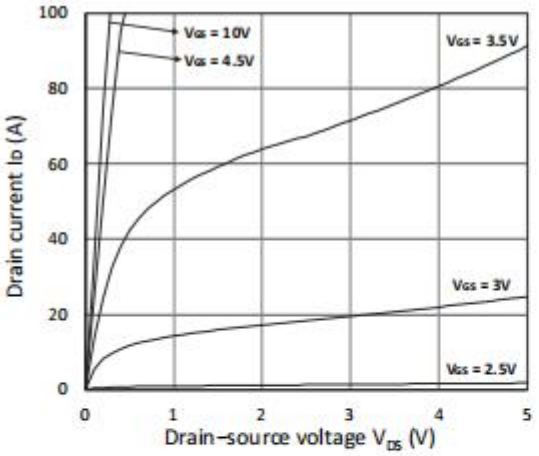


Figure 1. Output Characteristics

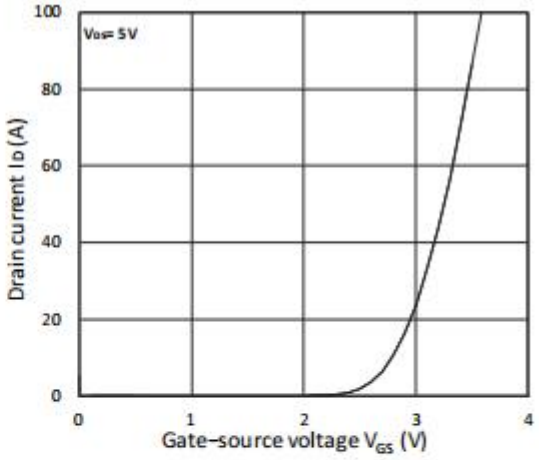


Figure 2. Transfer Characteristics

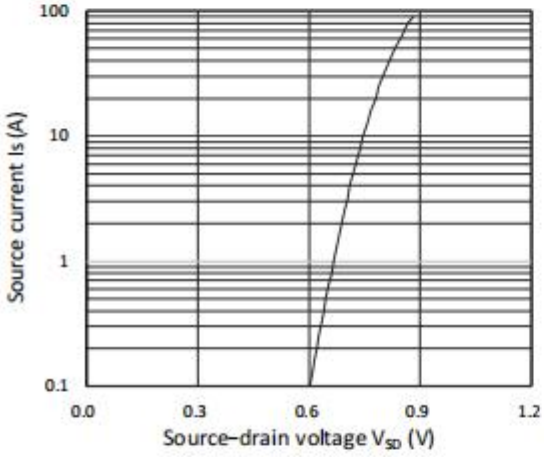


Figure 3. Forward Characteristics of Reverse

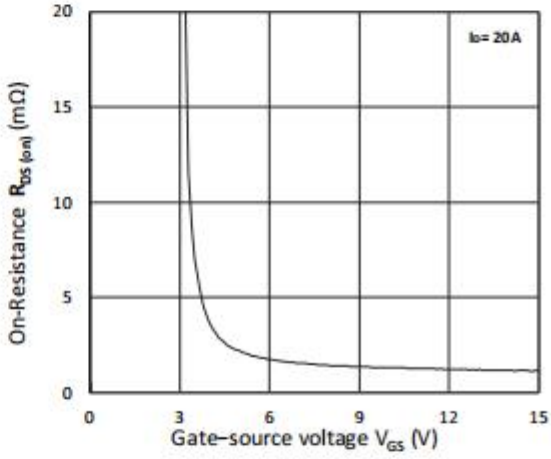


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

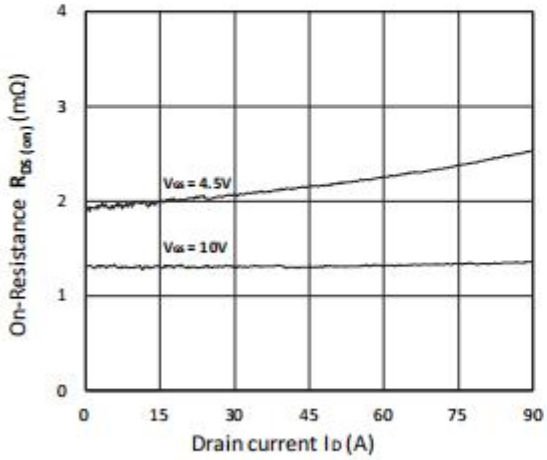


Figure 5. $R_{DS(ON)}$ vs. I_D

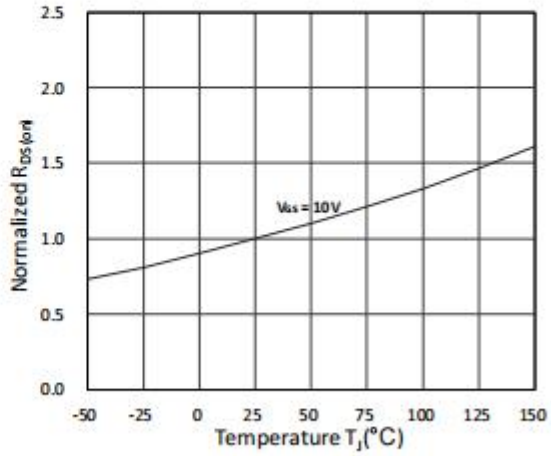


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

Typical Characteristics

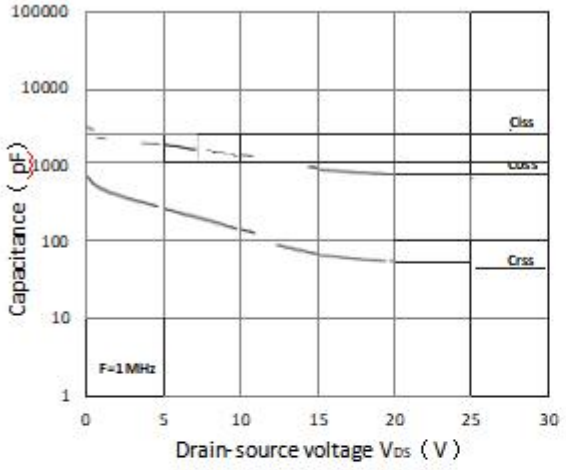


Figure 7. Capacitance Characteristics

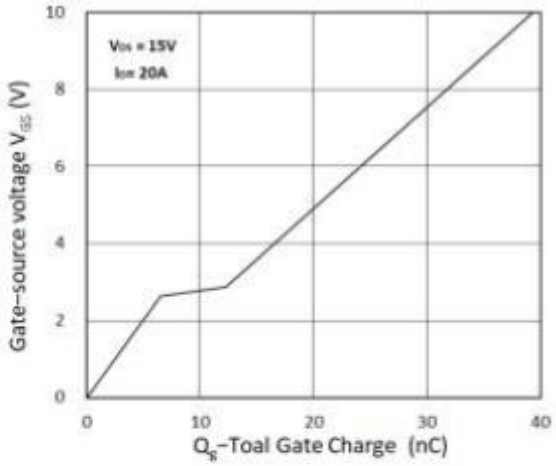


Figure 8. Gate Charge Characteristics

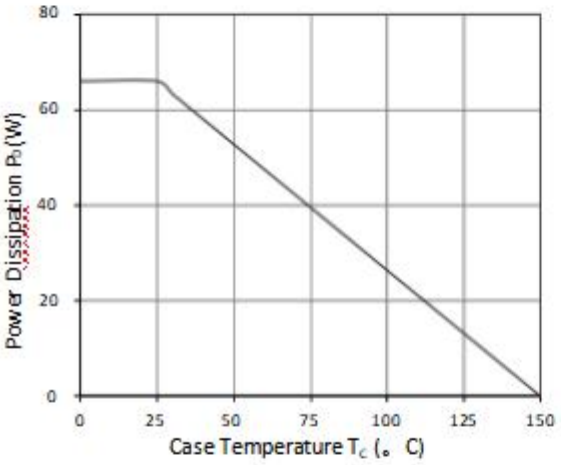


Figure 9. Power Dissipation

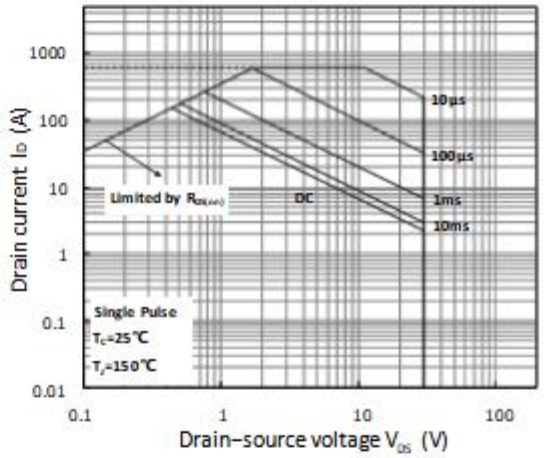


Figure10. Safe Operating Area

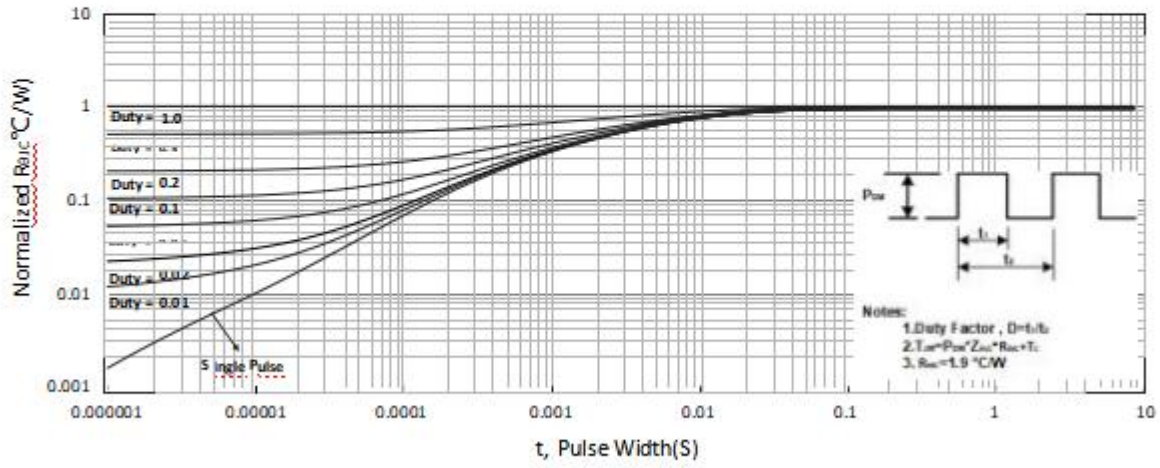


Figure 11. Normalized Maximum Transient Thermal Impedance

Test Circuit

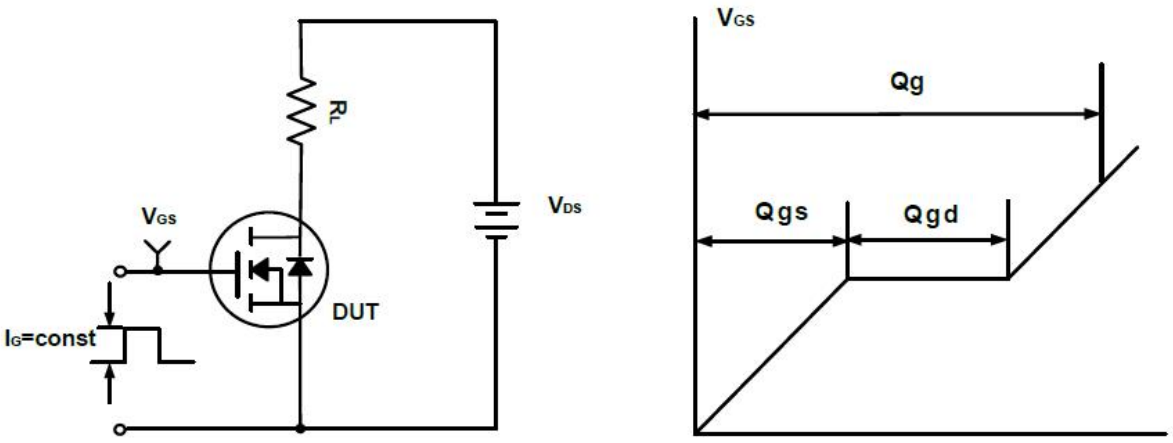


Figure A. Gate Charge Test Circuit & Waveforms

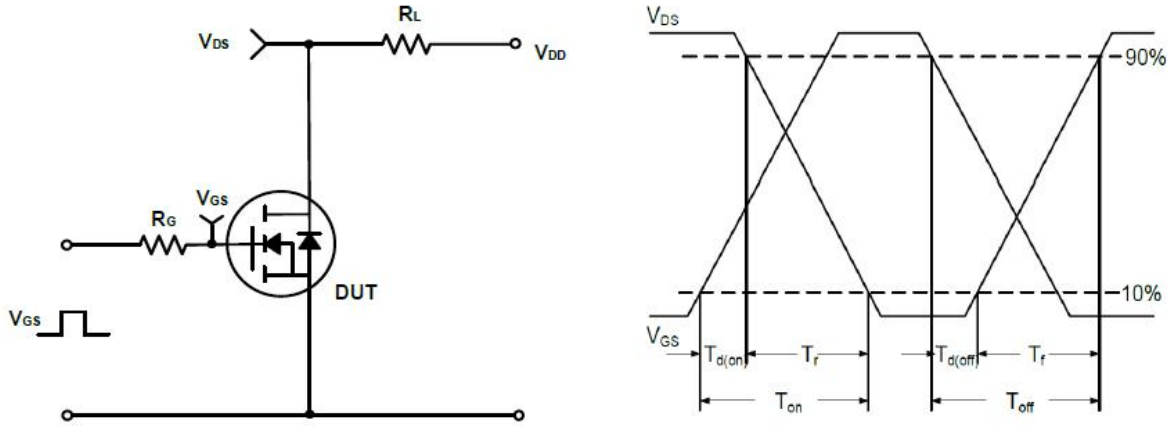


Figure B. Switching Test Circuit & Waveforms

Test Circuit

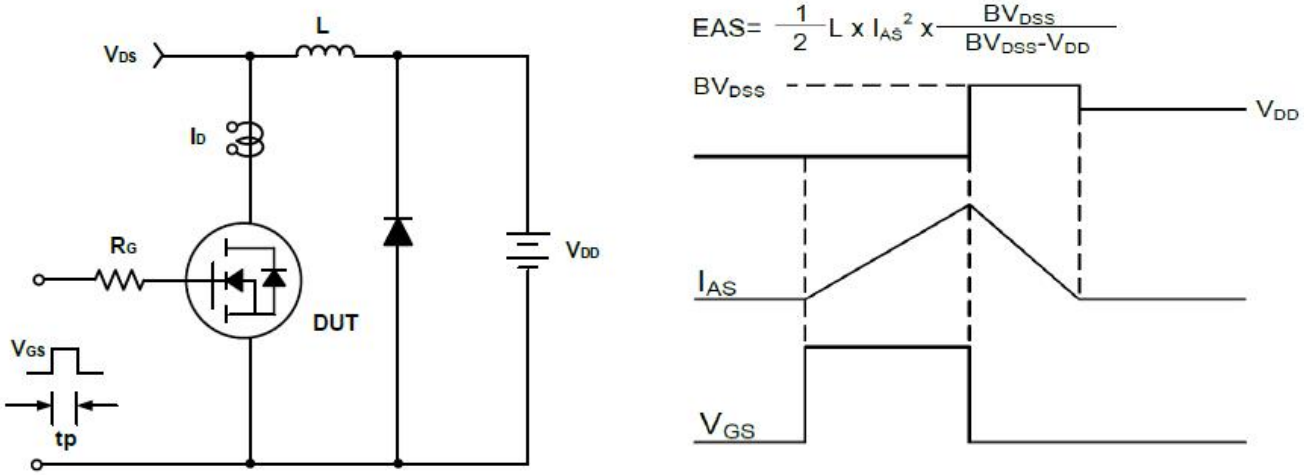
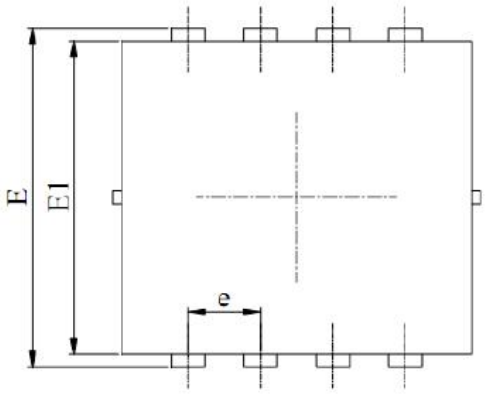


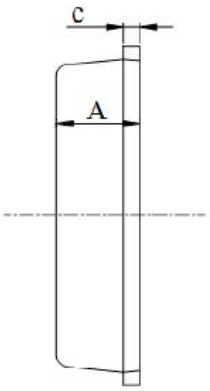
Figure C. Unclamped Inductive Switching Circuit & Waveforms

Package Dimensions

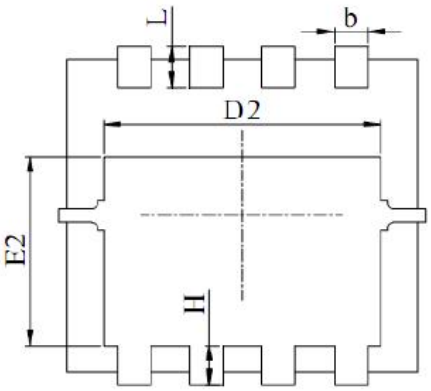
➢ PDFN3*3-8L



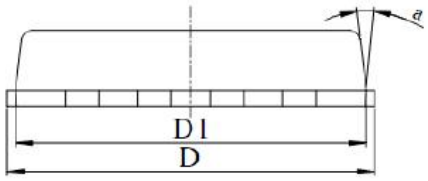
Top View



Side View



Bottom View

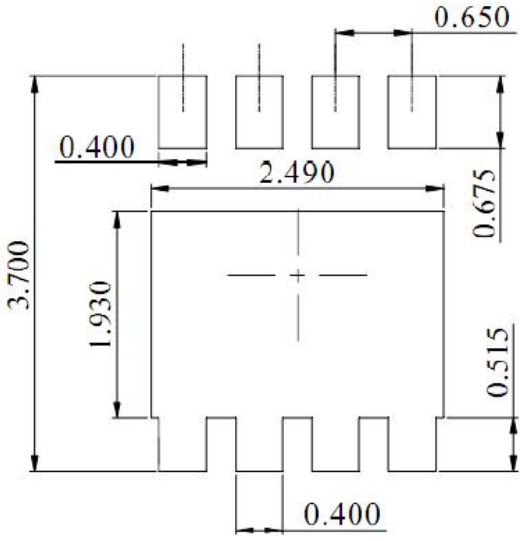


Front View

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
2. ALL DIMNESIONS IN MILLIMETER (ANNGLE IN DEGREE).
3. DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS.

DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.20	0.25
D	3.00	3.15	3.25
D1	2.95	3.05	3.15
D2	2.39	2.49	2.59
E	3.20	3.30	3.40
E1	2.95	3.05	3.15
E2	1.70	1.80	1.90
e	0.65 BSC		
H	0.30	0.40	0.50
L	0.25	0.40	0.50
a	---	---	15°



DIMENSIONS:MILLIMETERS

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