JS1P15AD3S

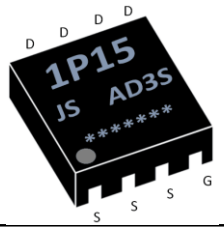
JS Silicon P-Channel Power MOSFET

General Description:

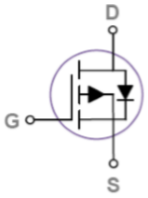
The JS1P15AD3S uses advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of applications. The package form is DFN3.3*3.3, which accords with the RoHS standard.

V_{DSS}	-150	V
I_D	-1	A
P_D	15	W
$R_{DS(ON)}$ TYPE	0.650	Ω

DFN3.3*3.3



Inner Equivalent Principium Chart



Features:

- Fast Switching
- Low Gate Charge and Rdson
- Low Reverse transfer capacitances

Applications:

- Power switching application
- Hard switched and high frequency circuits

Package Marking and Ordering Information:

Device Marking	Device	Device Package	Quantity
JS1P15AD3S	JS1P15AD3S	DFN3.3*3.3	5000 units

Absolute Maximum Ratings (TA= 25℃ unless otherwise specified):

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	-150	V
I_D	Continuous Drain Current T_A = 25 °C	-1	A
	Continuous Drain Current T_A = 100 °C	-0.63	A
I_{DM}	Pulsed Drain Current	-4	A
V_{GS}	Gate-to-Source Voltage	±20	V
P_D	Power Dissipation (Note 1)	15	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150, −55 to 175	℃
T_L	Maximum Temperature for Soldering	300	℃

Note: Drain current limited by maximum junction temperature

Electrical Characteristics (Tc= 25℃ unless otherwise specified):

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	V_{GS}=0V, I_D=-250μA	-150	--	--	V
I_{DSS}	Drain to Source Leakage Current	V_{DS} = -150V, V_{GS}= 0V, T_J = 25℃	--	--	-1	μA
		V_{DS} =-120V, V_{GS}= 0V, T_J = 125℃	--	--	-10	
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS} =+20V, V_{DS}= 0V	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS} =-20V, V_{DS}= 0V	--	--	-100	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	V_{GS}=-10V, I_D=-1.0A	--	650	800	mΩ
$R_{DS(ON)}$	Drain-to-Source On-Resistance	V_{GS}=-6V, I_D=-0.5A	--	700	950	mΩ
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D =-250μA	-2.0	-3.0	-4.0	V
g_{fs}	Forward Transconductance	V_{DS}=-10V, I_D =-1A	--	2	--	S
R_g	Gate Resistance	V_{DS}=0V, V_{GS}=0V f=1MHz	--	30	--	Ω

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	V_{GS} = 0V V_{DS} = -25V f = 1.0MHz	--	430	--	pF
C_{oss}	Output Capacitance		--	38	--	
C_{rss}	Reverse Transfer Capacitance		--	28	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	I_D =-1A, V_{DS} = -75V V_{GS} =-10V ,R_G = 10Ω (Note 2, 3)	--	12.5	--	ns
tr	Rise Time		--	9	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	17.3	--	
t_f	Fall Time		--	11.5	--	
Q_g	Total Gate Charge	I_D =-1A ,V_{DS} = -75V V_{GS} =0~-10V (Note 2, 3)	--	4.4	--	nC
Q_{gs}	Gate to Source Charge		--	0.7	--	
Q_{gd}	Gate to Drain (“Miller”) Charge		--	1.5	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)		--	--	-1	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	-2	A
V_{SD}	Diode Forward Voltage	I_S=-1A, V_{GS}=0V	--	--	-1.2	V

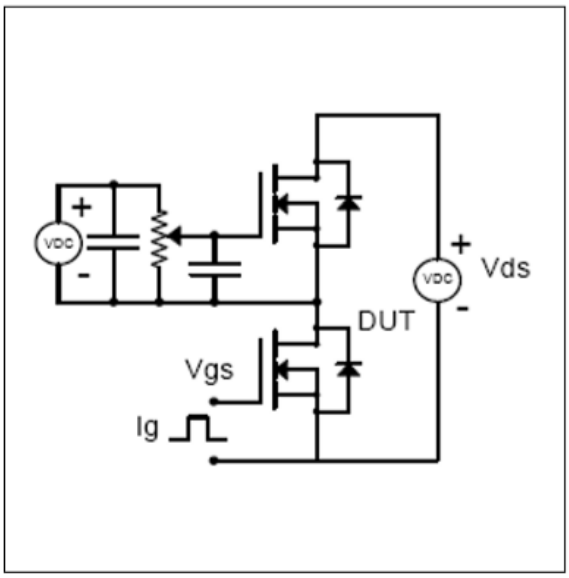
Notes:
1. The power dissipation PD is based on TJ(MAX)=150°C, using ≤ 10s junction-to-ambient thermal resistance
2. Pulse Test: Pulse width ≤ 300us, Duty Cycle ≤ 2%
3. Essentially Independent of Operating Temperature Typical Characteristics

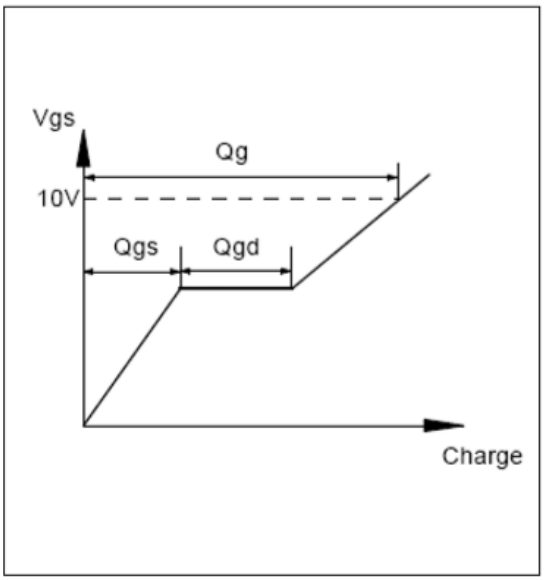
Thermal Characteristics

Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case	8	℃/W
$R_{\theta JA}$	Junction-to-Ambient	40	℃/W

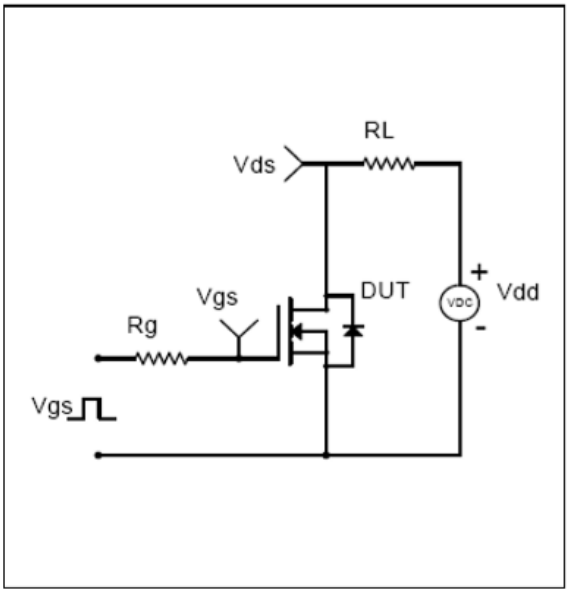
Test Circuit and Waveform

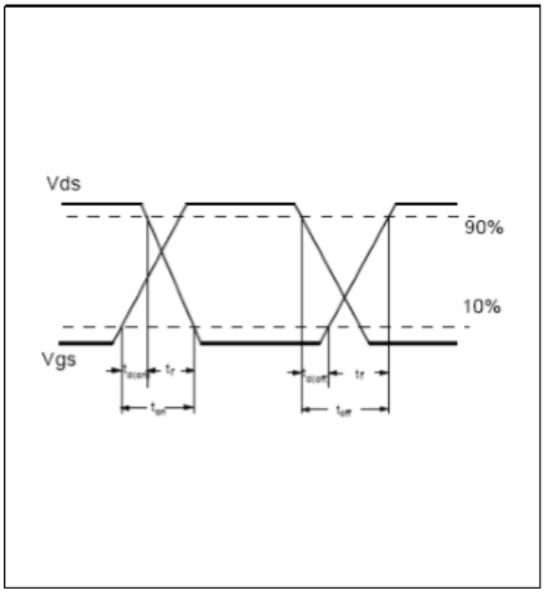
Gate Charge Test Circuit and Waveform



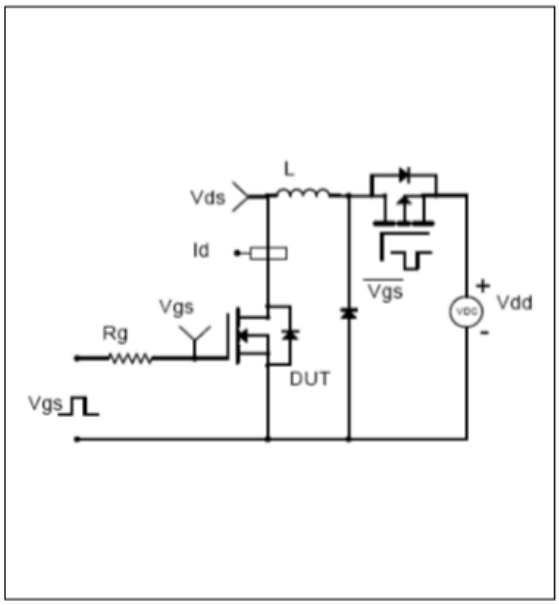


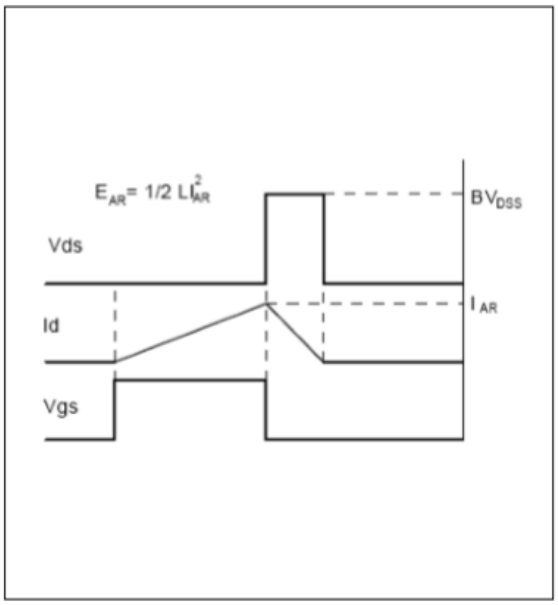
Resistive Switching Test Circuit and Waveforms



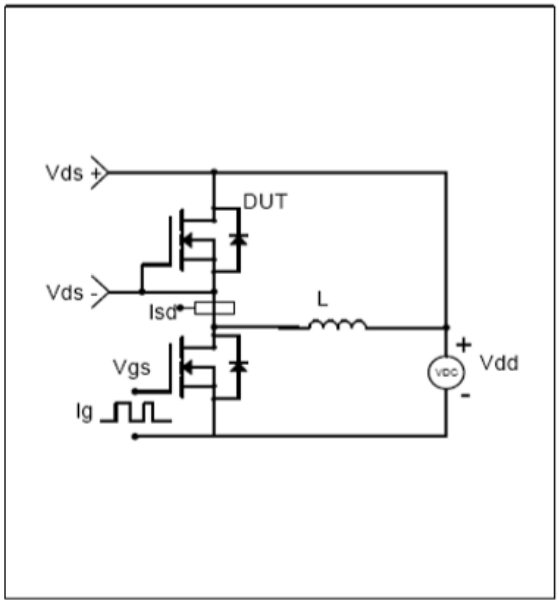


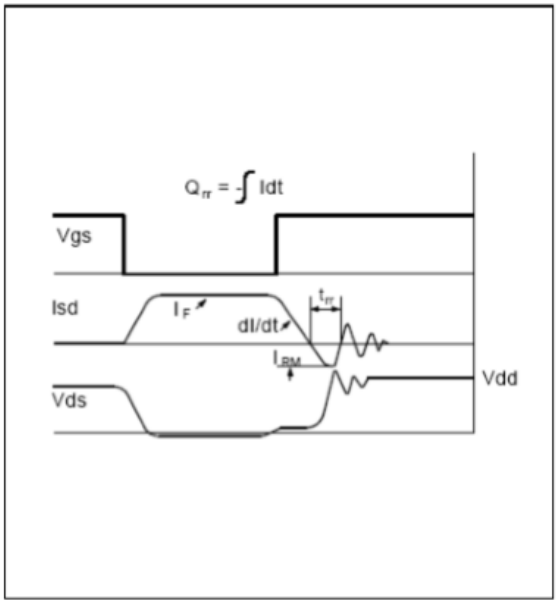
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms





Diode Recovery Test Circuit & Waveforms





Typical Performance Characteristics

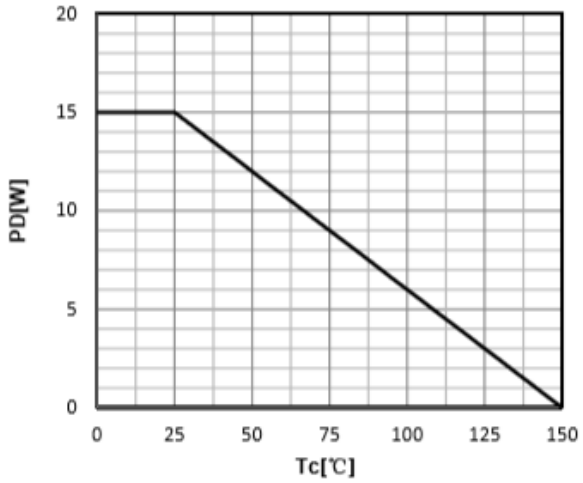


Figure 1: Power Dissipation

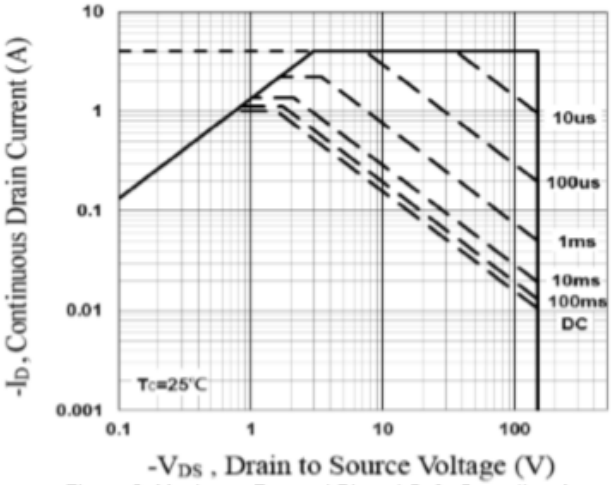


Figure 2: Maximum Forward Biased Safe Operating Area

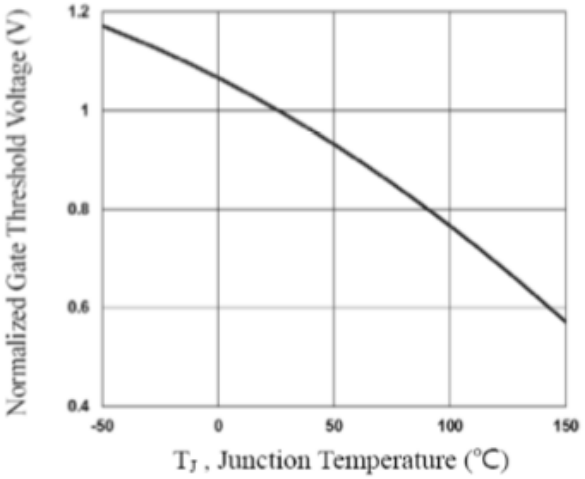


Figure 3: Vth vs Junction Temperature

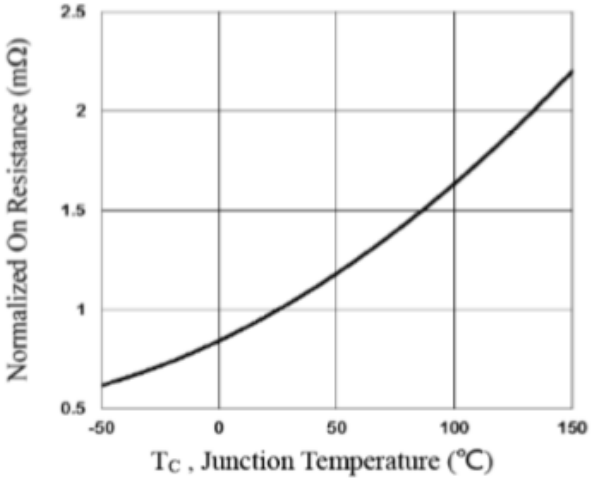


Figure 4: On-Resistance vs Junction Temperature

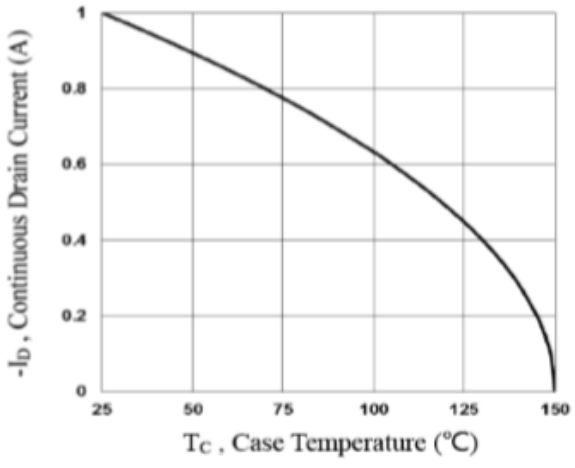


Figure 5: Drain Current vs Case Temperature

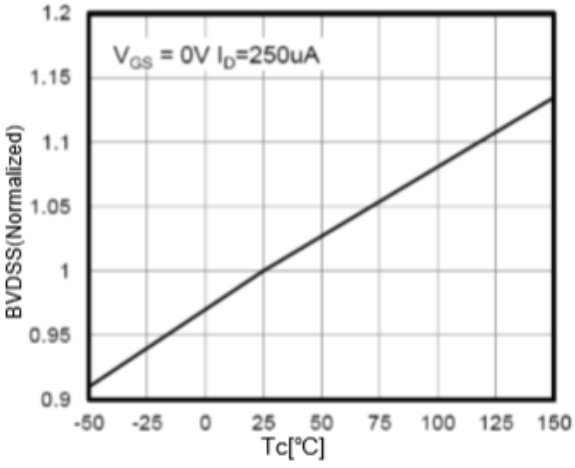


Figure 6: Drain-Source Breakdown Voltage

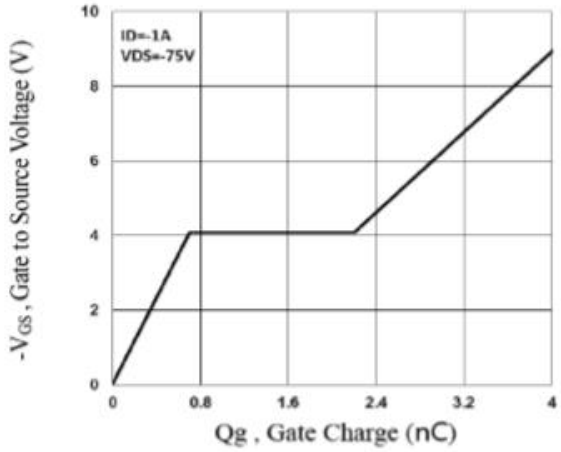


Figure 7: Gate-Charge Characteristics

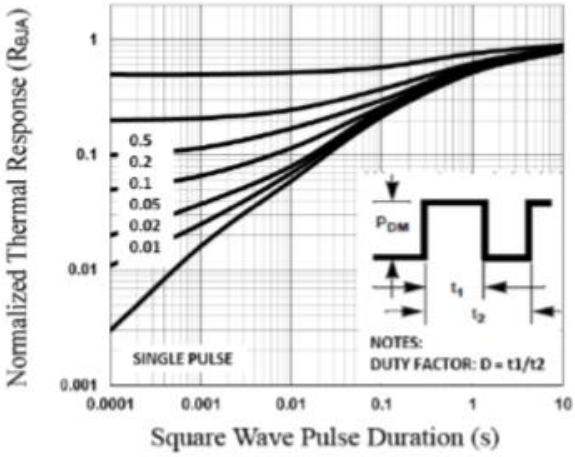
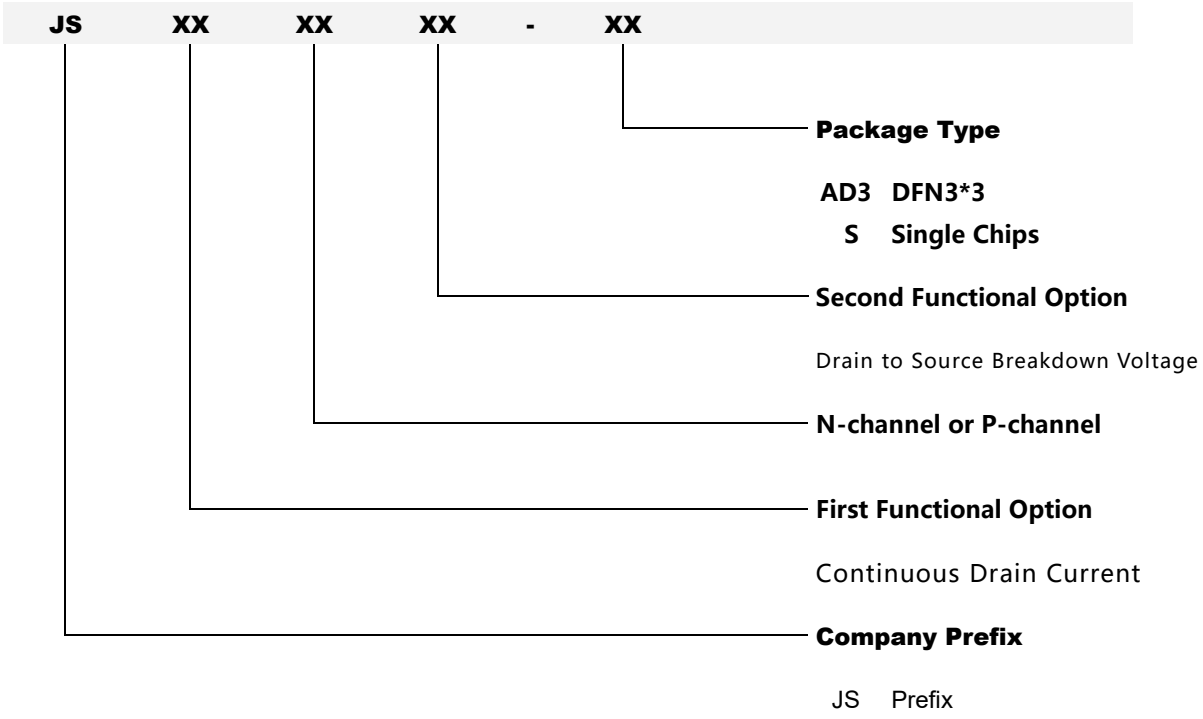


Figure 8: Normalized Transient Thermal Impedance

Marking Information

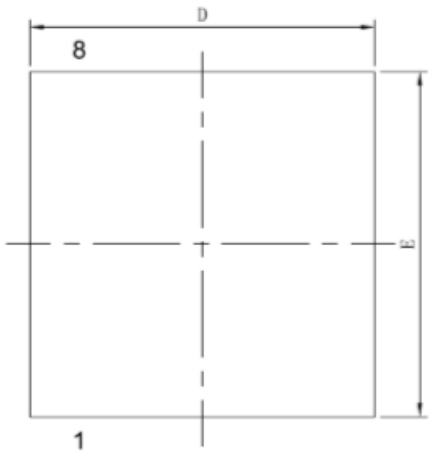


Part NO.

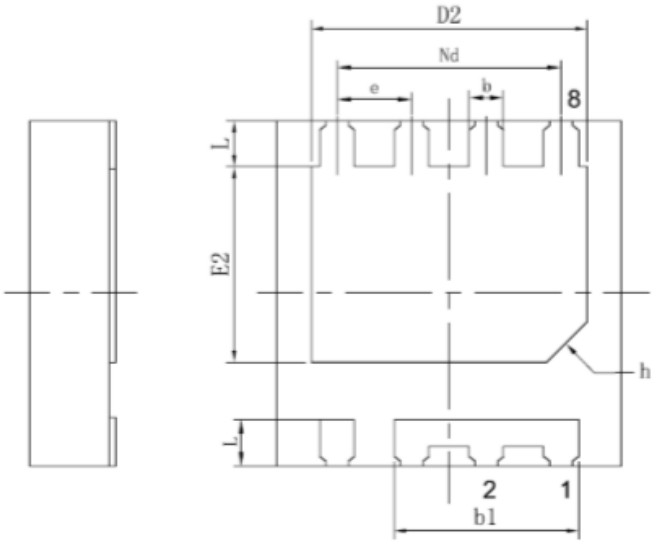
● Y M W SN

Part NO.	JS1P15AD3S
●	Pin 1 Indicator
Lot NO.	Y: Year; M: Month; W: Week; SN: Pipeline Code

Package Information



TOP VIEW



BOTTOM VIEW

SIDE VIEW

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
b	0.25	0.30	0.35
b1	1.55	1.60	1.65
c	0.19	0.20	0.21
D	2.90	3.00	3.10
D2	2.30	2.40	2.50
Nd	1.90	1.95	2.00
E	2.90	3.00	3.10
E2	1.60	1.70	1.80
e	0.65BSC		
L	0.35	0.40	0.45
h	0.30	0.35	0.40
载体尺寸（mil）	106X83		

Revision History

Revision	Date	Descriptions
REV.1.1	Dec., 2018	"Typical Performance Characteristics" Update
REV.1.0	July, 2017	Initial Version