

- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent Cdv/dt effect decline
- ★ Advanced high cell density Trench technology

Product Summary

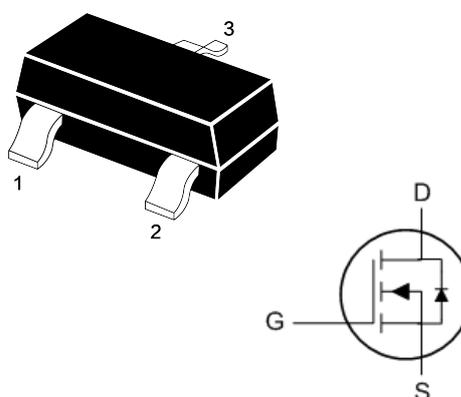


BVDSS	RDSON	ID
150V	245mΩ	4.0 A

Description

The JH4N150 is the high cell density trenched N-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications. The JH4N150 meet the RoHS and Green Product requirement with full function reliability approved.

SOT-23-3L Pin Configuration



Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	4.0
		$T_C=100^\circ\text{C}$	2.0
Pulsed Drain Current ¹	I_{DM}	15	A
Single Pulse Avalanche Energy ²	EAS	1.25	mJ
Total Power Dissipation	P_D	3	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient ³	$R_{\theta JA}$	85	$^\circ\text{C/W}$

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	150	-	-	V
Gate-body Leakage current	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T _J =25°C	V _{DS} = 150V, V _{GS} = 0V	-	-	1	μA
	T _J =100°C		-	-	100	
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.5	2	2.5	V
Drain-Source on-Resistance ⁴	R _{DS(on)}	V _{GS} = 10V, I _D = 4A	-	245	300	mΩ
Forward Transconductance ⁴	g _{fs}	V _{DS} = 10V, I _D = 4A	-	25	-	S
Dynamic Characteristics⁵						
Input Capacitance	C _{iss}	V _{DS} = 75V, V _{GS} = 0V, f = 1MHz	-	450	-	pF
Output Capacitance	C _{oss}		-	23	-	
Reverse Transfer Capacitance	C _{rss}		-	14	-	
Gate Resistance	R _g	f = 1MHz	-	1.5	-	Ω
Switching Characteristics⁵						
Total Gate Charge	Q _g	V _{GS} = 10V, V _{DS} = 75V, I _D = 1.5A	-	8.2	-	nC
Gate-Source Charge	Q _{gs}		-	1.5	-	
Gate-Drain Charge	Q _{gd}		-	2.2	-	
Turn-on Delay Time	t _{d(on)}	V _{GS} = 10V, V _{DD} = 75V, R _G = 6Ω, I _D = 1A, R _G = 75Ω	-	8.2	-	ns
Rise Time	t _r		-	10.2	-	
Turn-off Delay Time	t _{d(off)}		-	20.5	-	
Fall Time	t _f		-	15.3	-	
Drain-Source Body Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	I _S = 1A, V _{GS} = 0V	-	-	1.2	V
Continuous Source Current	I _S	T _C = 25°C	-	-	4.0	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)} = 150°C.
2. The EAS data shows Max. rating . The test condition is V_{DD} = 25V, V_{GS} = 10V, L = 0.1mH, I_{AS} = 5A.
3. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper, The value in any given application depends on the 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

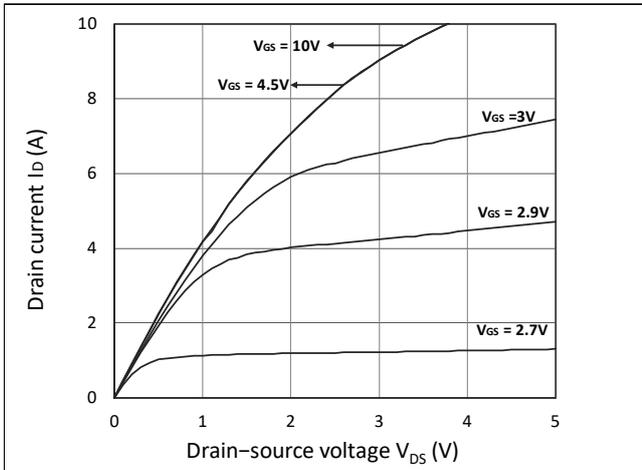


Figure 1. Output Characteristics

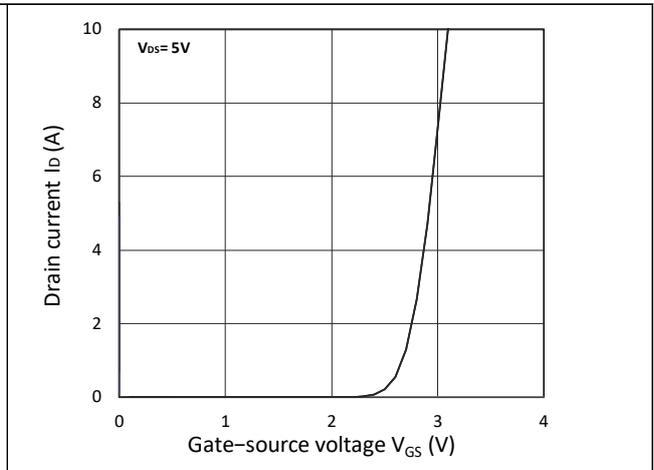


Figure 2. Transfer Characteristics

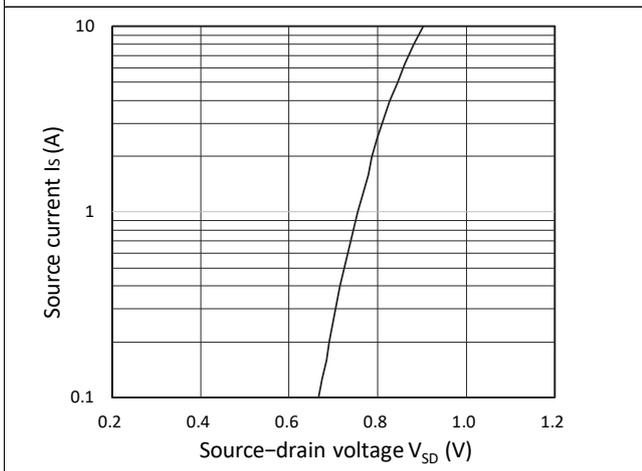


Figure 3. Forward Characteristics of Reverse

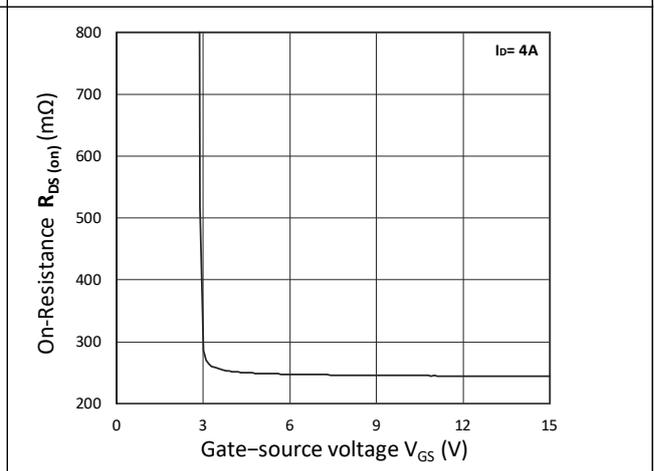


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

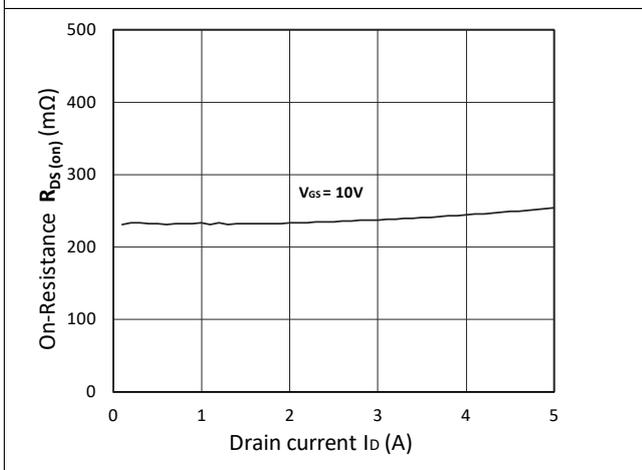


Figure 5. $R_{DS(ON)}$ vs. I_D

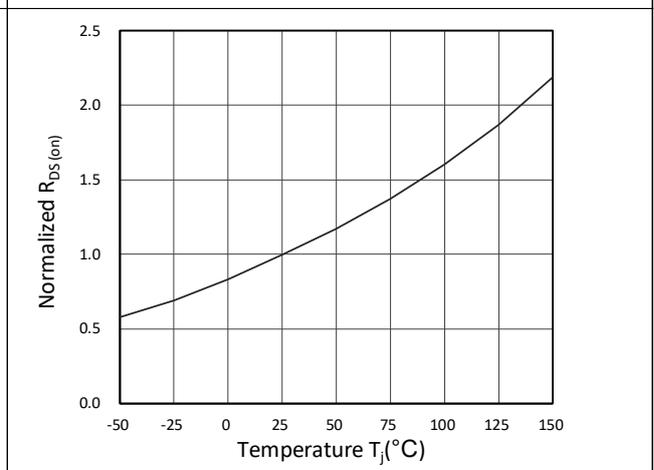


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

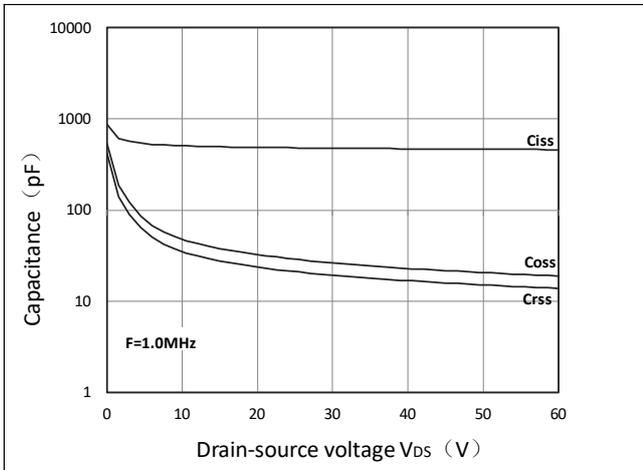


Figure 7. Capacitance Characteristics

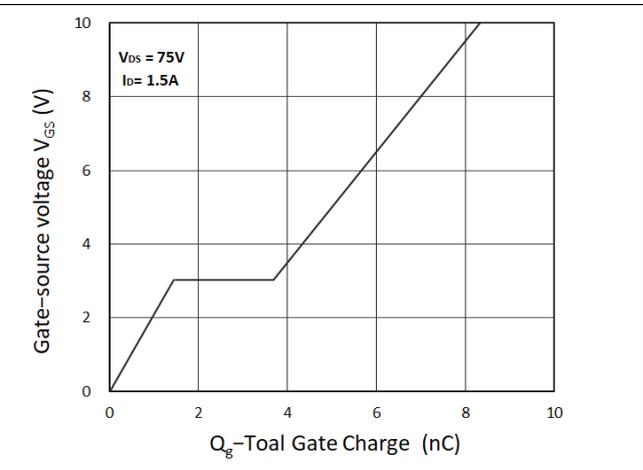


Figure 8. Gate Charge Characteristics

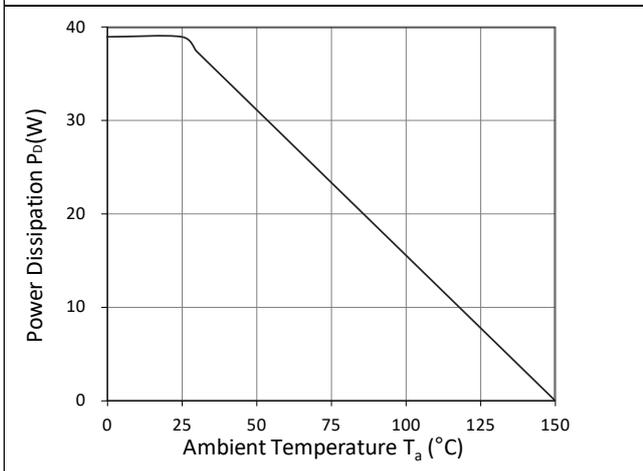


Figure 9. Power Dissipation

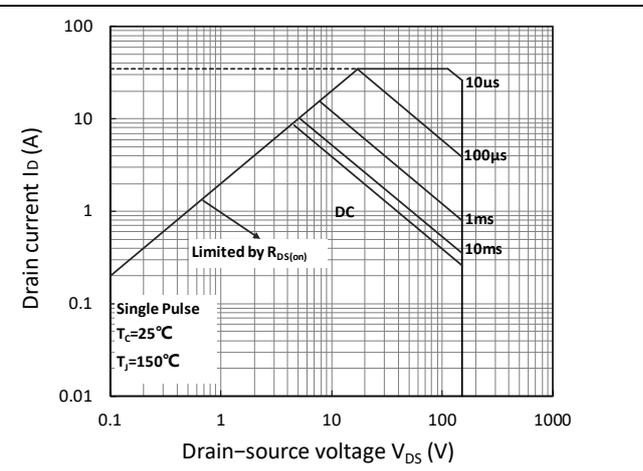


Figure 10. Safe Operating Area

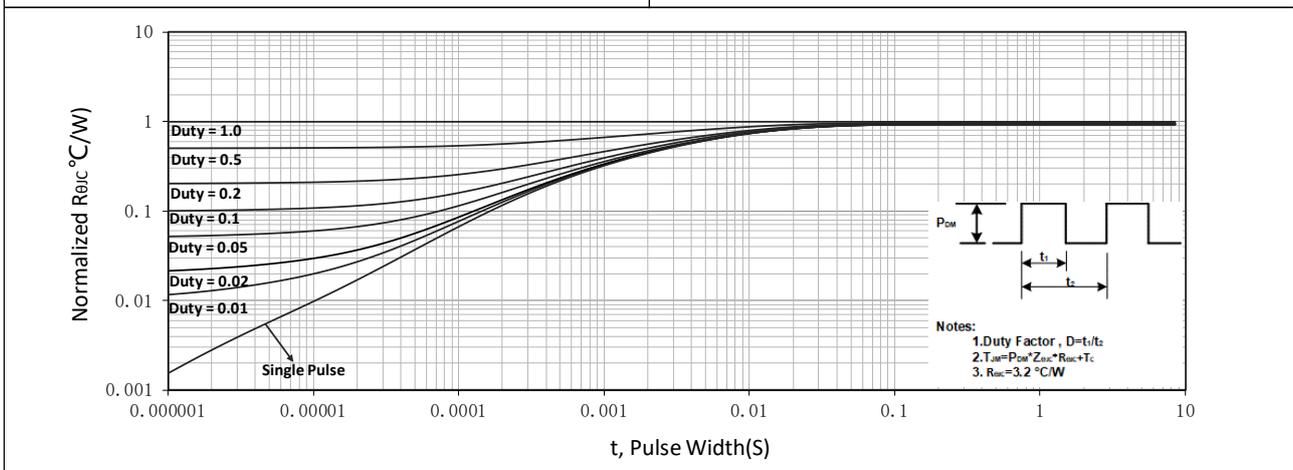


Figure 11. Normalized Maximum Transient Thermal Impedance

Test Circuit

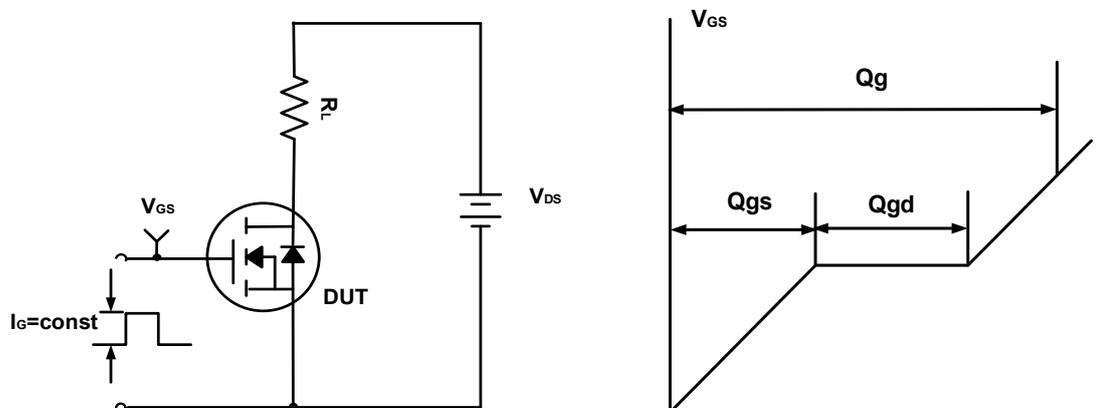


Figure A. Gate Charge Test Circuit & Waveforms

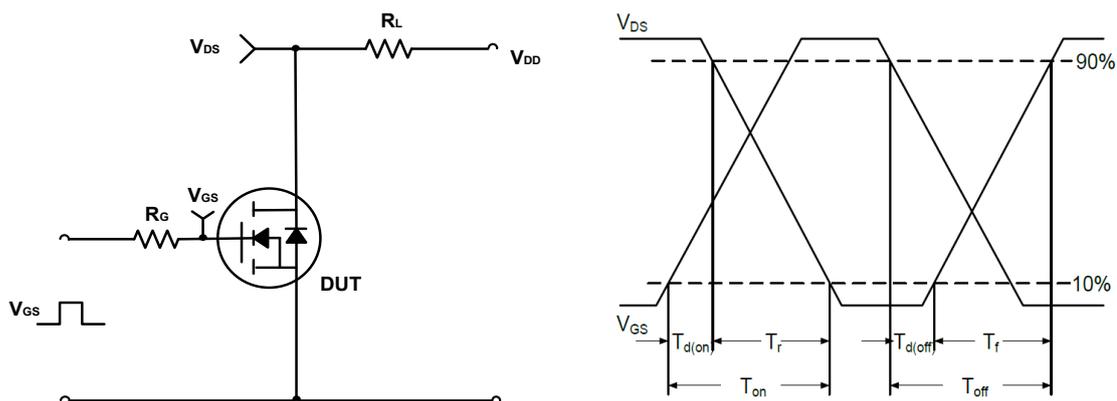


Figure B. Switching Test Circuit & Waveforms

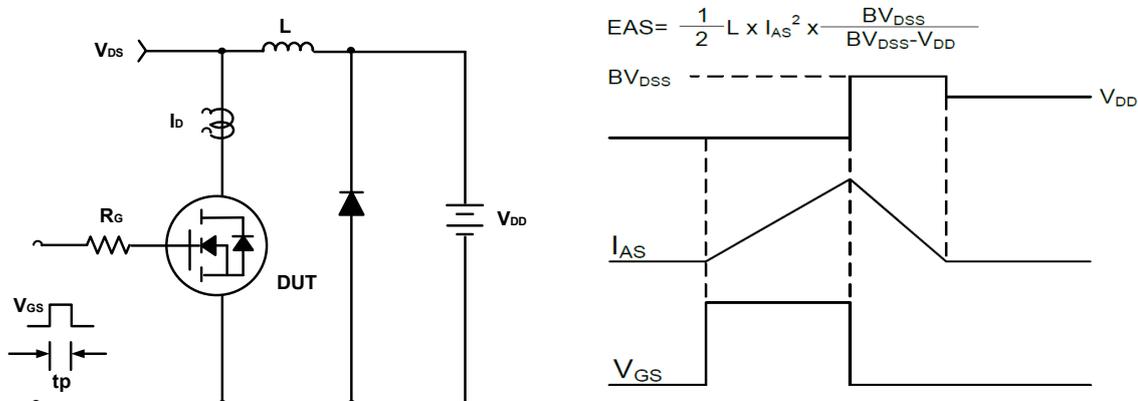
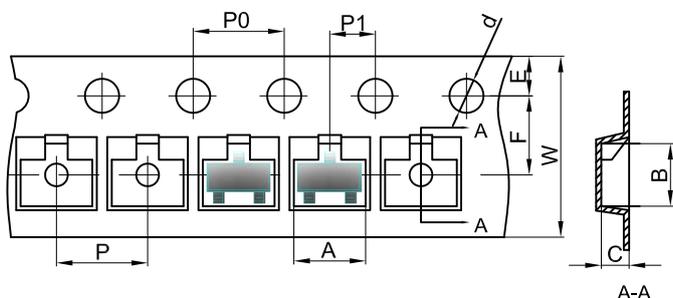


Figure C. Unclamped Inductive Switching Circuit & Waveforms

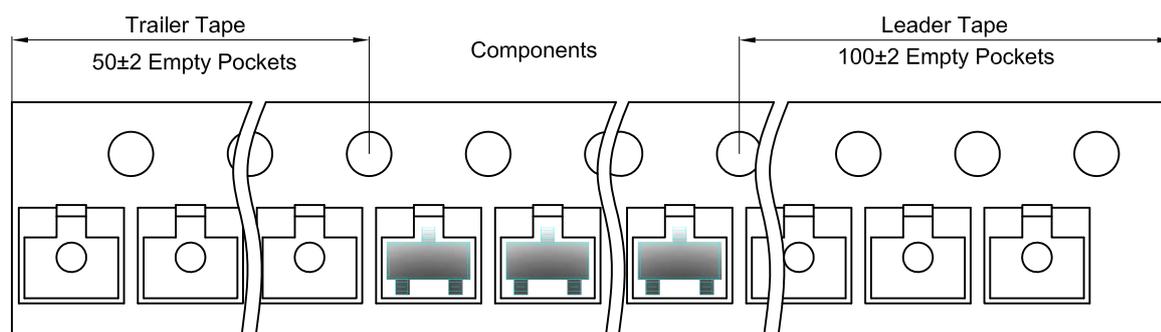
SOT-23-3L Tape and Reel

SOT-23-3L Embossed Carrier Tape

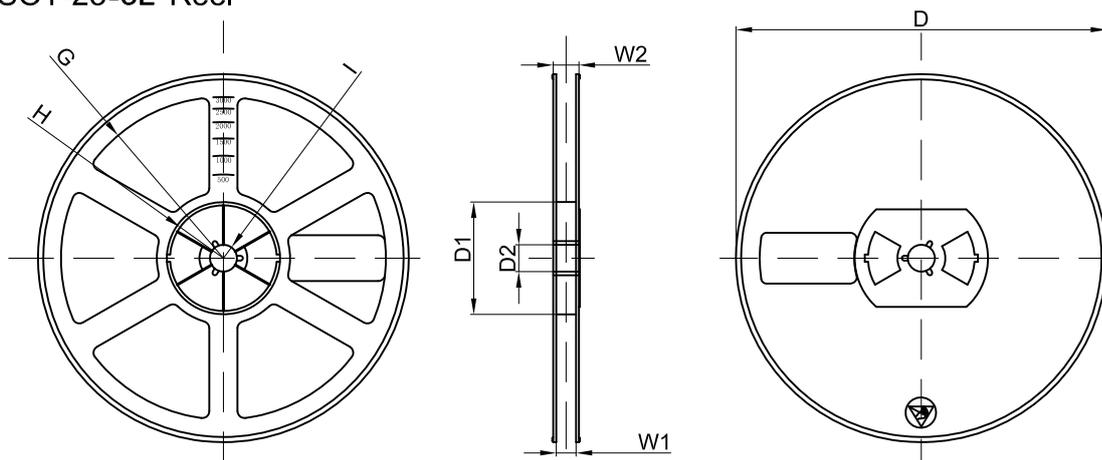


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23-3L Tape Leader and Trailer

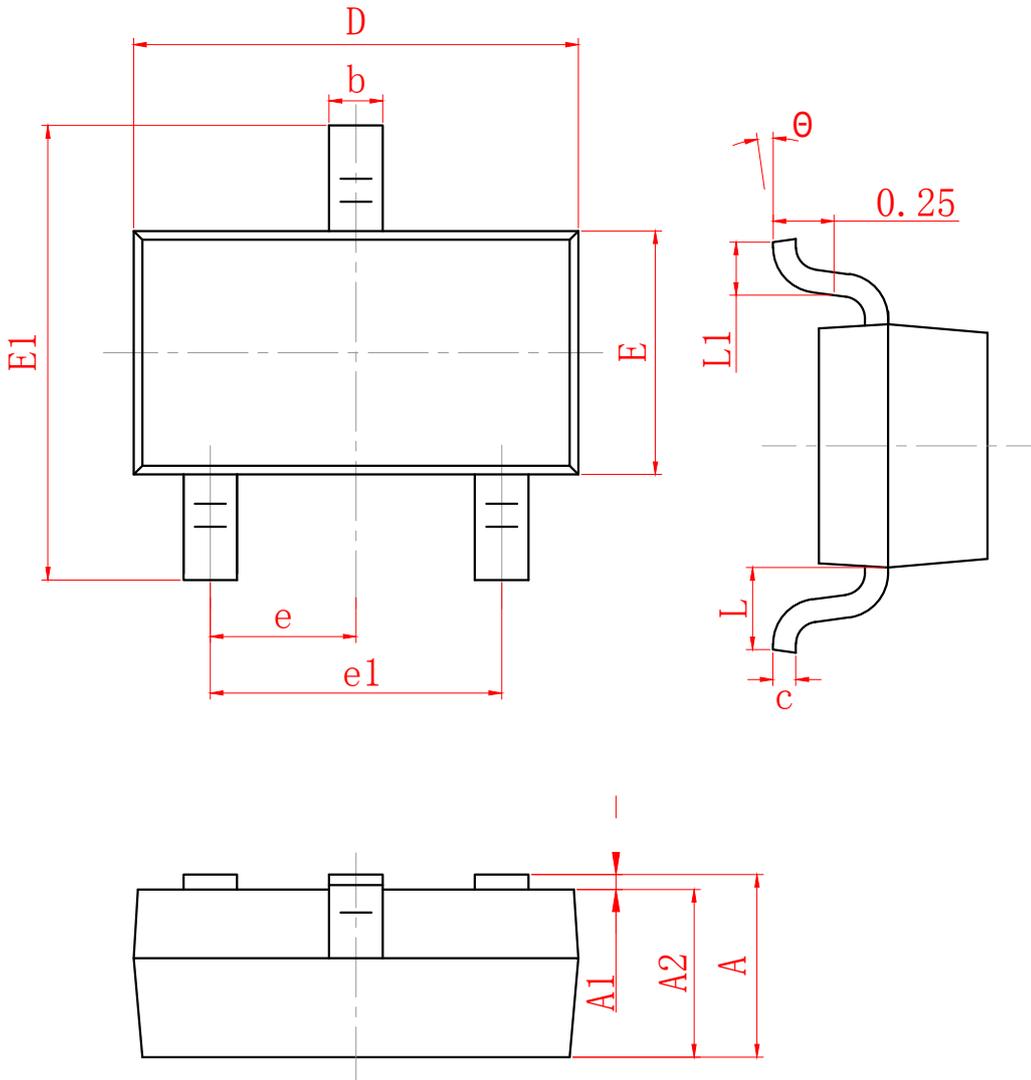


SOT-23-3L Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	



SYMBOL	MILLIMETER	
	MIN	MAX
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950 TYP	
e1	1.800	2.000
L	0.550 REF	
L1	0.300	0.500
θ	0°	8°

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