★ 100% EAS Guaranteed
★ Green Device Available
★ Super Low Gate Charge
★ Excellent CdV/dt effect decline
★ Advanced high cell density Trench technology

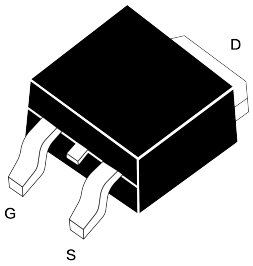
Product Summary

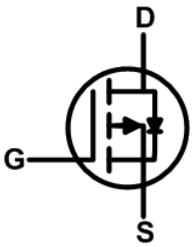
BVDSS	RDSON	ID
-20V	12mΩ	-40A

Description

The JH40P02 is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.
The JH40P02 meet the RoHS and Gree Product requirement 100% EAS guaranteed with full function reliability approved.

TO-252 Pin Configuration





Absolute Maximum Ratings (T_A = 25°C, unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current	T_A= 25°C	I_D	-40	A
	T_A= 100°C		-15.7	
Pulsed Drain Current[1]		I_{DM}	-66	A
Single Pulse Avalanche Energy[2]		EAS	28.8	mJ
Total Power Dissipation	T_A= 25°C	P_D	30	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient[3]	$R_{\theta JA}$	41.6	°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	-20	-	-	V
Gate-body Leakage current		I_{GSS}	V_{DS} = 0V, V_{GS} = ±12V	-	-	±100	nA
Zero Gate Voltage Drain Current	T_J= 25°C	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V	-	-	-1	μA
	T_J= 100°C			-	-	-100	
Gate-Threshold Voltage		$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.4	-0.65	-1	V
Drain-Source On-Resistance[4]		$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -8A	-	12.0	18	mΩ
			V_{GS} = -2.5V, I_D = -6A	-	17	23	
Forward Transconductance[4]		g_{fs}	V_{DS} = -4.5V, I_D = -8A	-	36	-	S
Dynamic Characteristics[5]							
Input Capacitance		C_{iss}	V_{DS} = -10V, V_{GS} = 0V, f = 1MHz	-	1630	-	pF
Output Capacitance		C_{oss}		-	211	-	
Reverse Transfer Capacitance		C_{rss}		-	187	-	
Gate Resistance		R_g	f = 1MHz	-	10	-	Ω
Switching Characteristics[5]							
Total Gate Charge		Q_g	V_{GS} = -4.5V, V_{DS} = -10V, I_D= -8A	-	12	-	nC
Gate-Source Charge		Q_{gs}		-	1.8	-	
Gate-Drain Charge		Q_{gd}		-	3.2	-	
Turn-On Delay Time		$t_{d(on)}$	V_{GS} = -4.5V, V_{DD} = -10V, R_G = 3Ω, I_D= -8A	-	17	-	ns
Rise Time		t_r		-	25.5	-	
Turn-Off Delay Time		$t_{d(off)}$		-	32	-	
Fall Time		t_f		-	15	-	
Drain-Source Body Diode Characteristics							
Diode Forward Voltage[4]		V_{SD}	I_S = -8A, V_{GS} = 0V	-	-	-1.2	V
Continuous Source Current	T_A= 25°C	I_S	-	-	-	-40	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}= -24A
3. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ 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

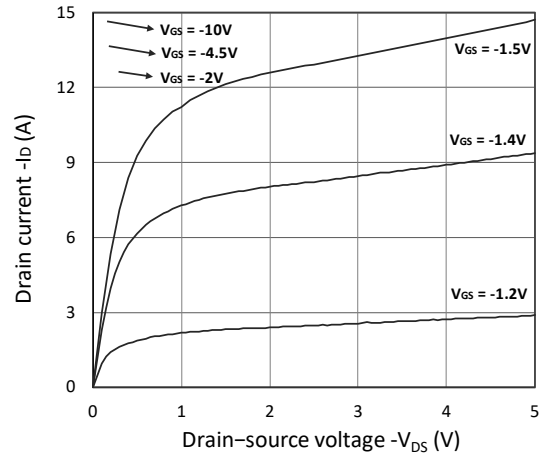


Figure 1. Output Characteristics

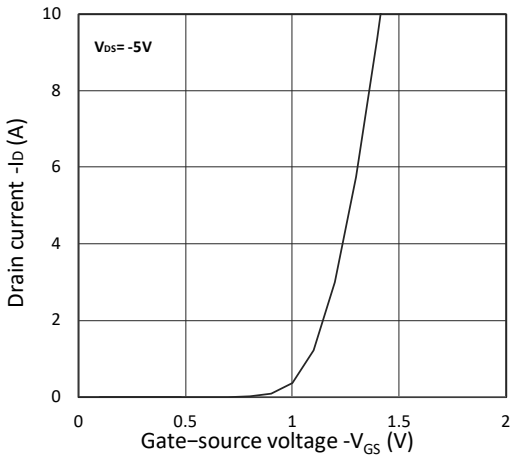


Figure 2. Transfer Characteristics

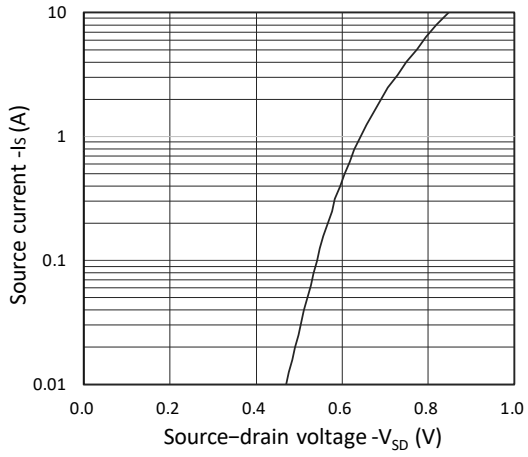


Figure 3. Forward Characteristics of Reverse

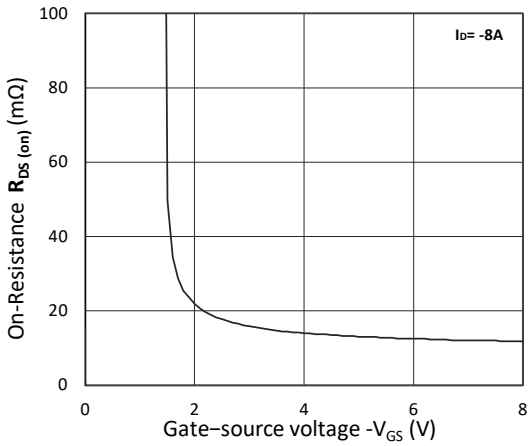


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

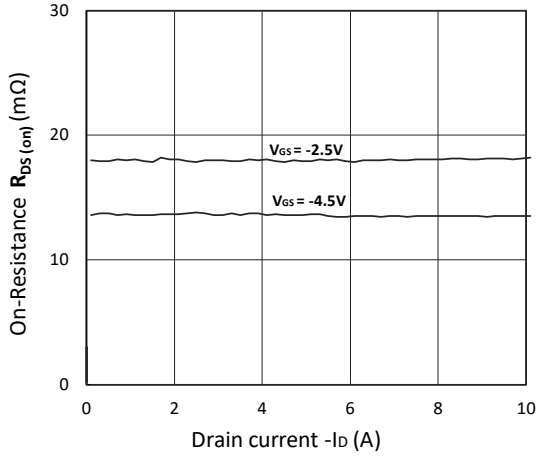


Figure 5. $R_{DS(ON)}$ vs. I_D

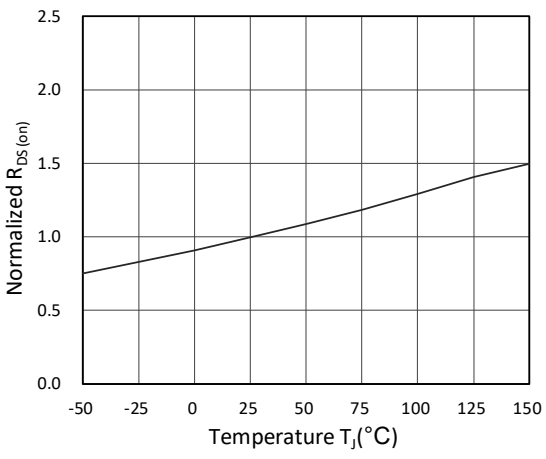


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

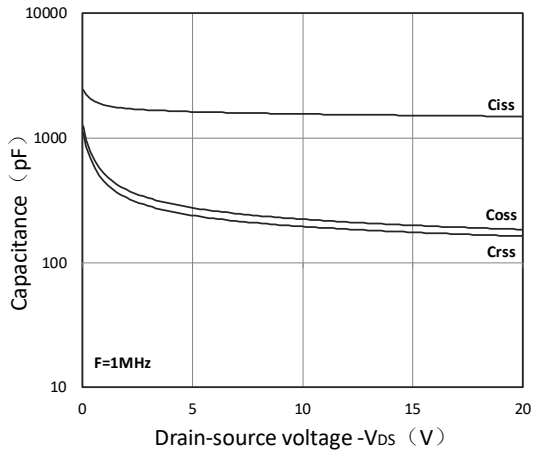


Figure 7. Capacitance Characteristics

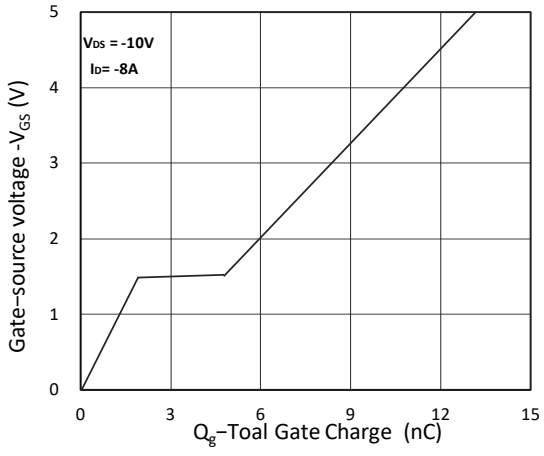


Figure 8. Gate Charge Characteristics

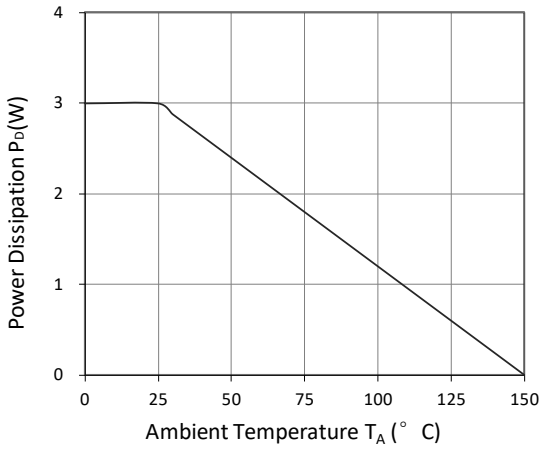


Figure 9. Power Dissipation

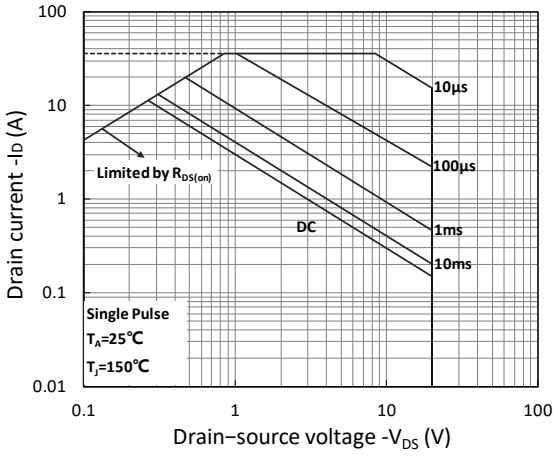


Figure10. Safe Operating Area

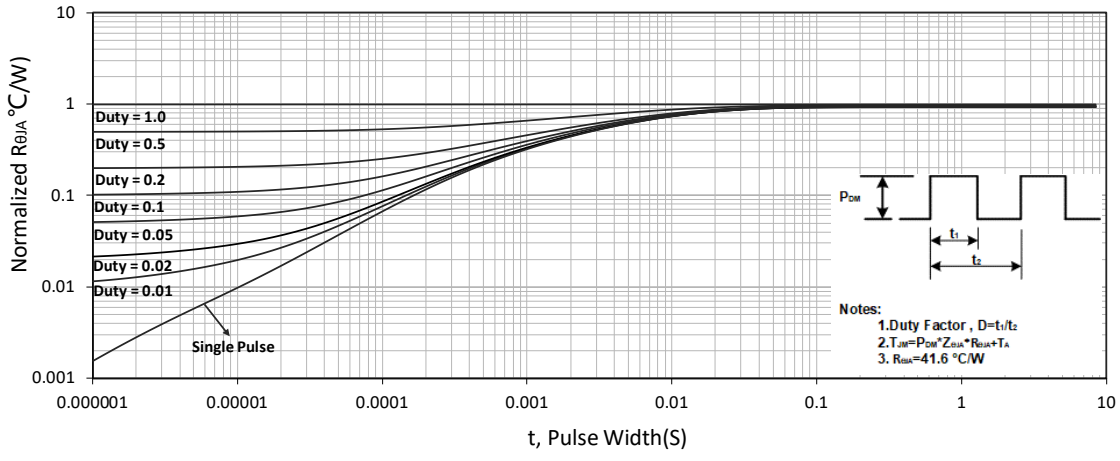
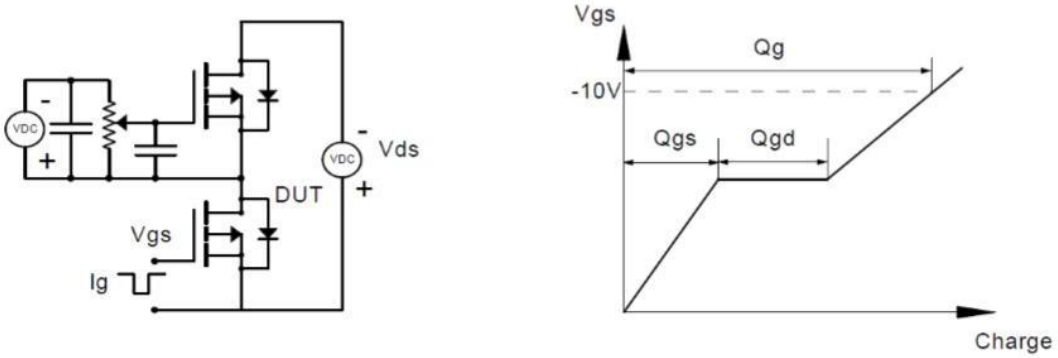


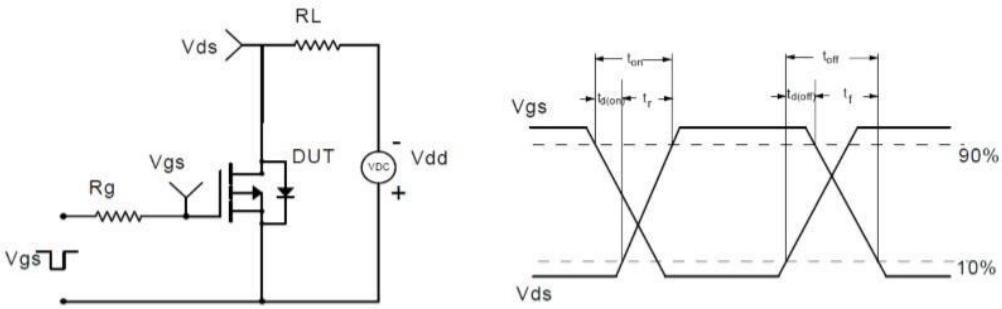
Figure 11. Normalized Maximum Transient Thermal Impedance

Test Circuit

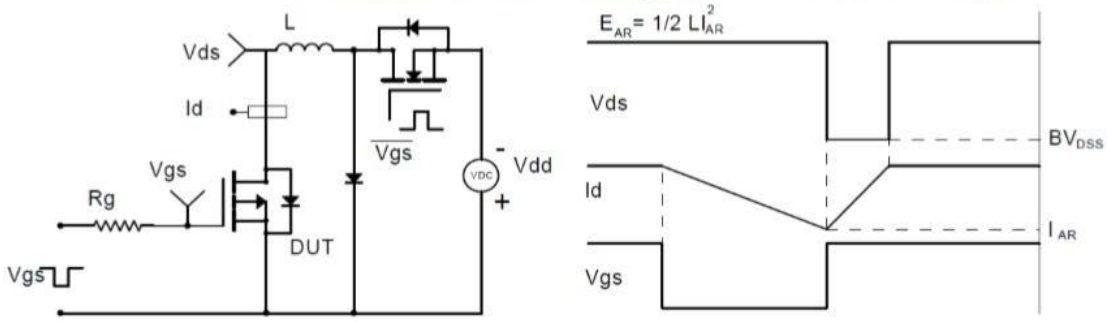
Gate Charge Test Circuit & Waveform



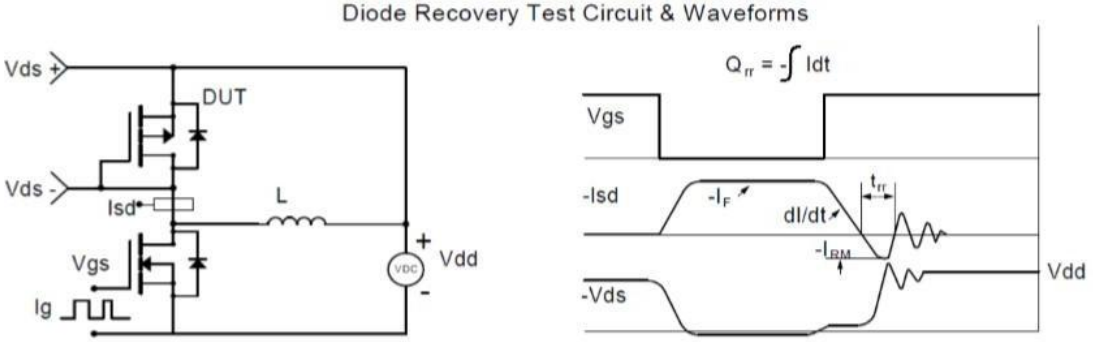
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

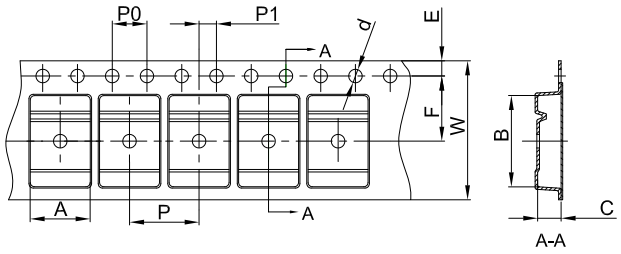


Diode Recovery Test Circuit & Waveforms



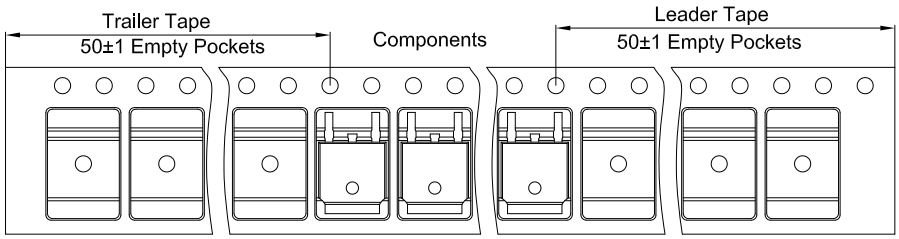
TO-252-2L Tape and Reel

TO-252 Embossed Carrier Tape

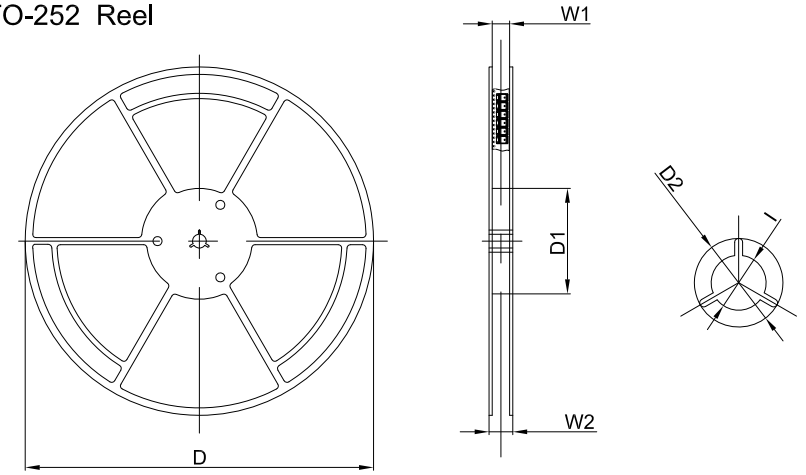


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
TO-252	6.90	10.50	2.70	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00

TO-252 Tape Leader and Trailer

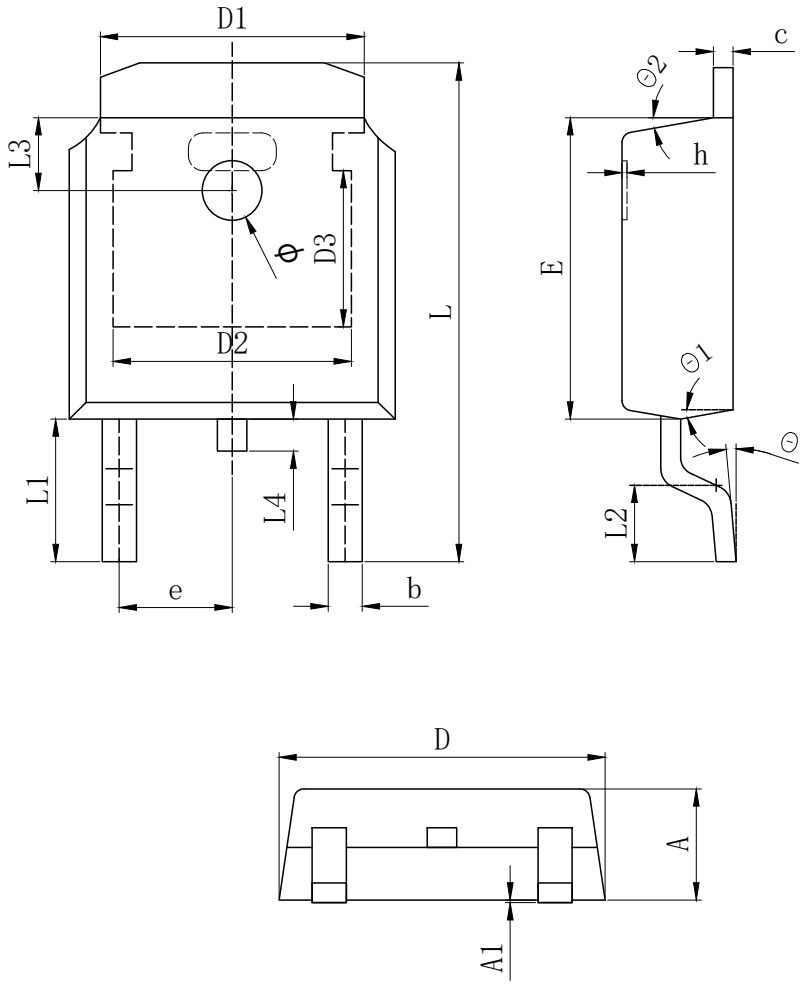


TO-252 Reel



Dimensions are in millimeter						
Reel Option	D	D1	D2	W1	W2	I
13"Dia	330.00	100.00	Ø21.00	16.40	21.00	Ø13.00

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
2,500 pcs	13inch	2,500 pcs	340×336×29	25,000 pcs	353×346×365	



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c(电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
Φ	1.100	1.200	1.300
θ	0°		8°
θ1	9° TYP		
θ2	9° TYP		

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