

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

## Product Summary

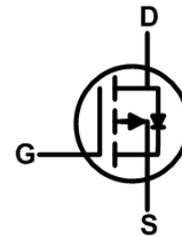
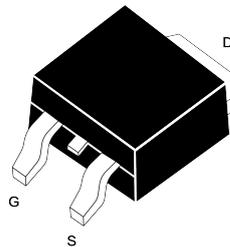


BVDSS	RDSON	ID
-100V	80mΩ	-20A

## Description

The JH20P10 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 JH20P10 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

## TO-252 Pin Configuration



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_C = 25^\circ\text{C}$	-20
		$T_C = 100^\circ\text{C}$	-11
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	-72	A
Single Pulse Avalanche Energy <sup>2</sup>	<b>EAS</b>	132.25	mJ
Total Power Dissipation	$P_D$	70	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 <sup>3</sup>	$R_{\theta JA}$	75	$^\circ\text{C/W}$
Thermal Resistance from Junction-to-Case	$R_{\theta JC}$	1.78	$^\circ\text{C/W}$

## Electrical Characteristics (T<sub>J</sub> = 25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-100	-	-	V
Gate-body Leakage current	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T <sub>J</sub> = 25°C	V <sub>DS</sub> = -100V, V <sub>GS</sub> = 0V	-	-	-1	μA
	T <sub>J</sub> = 100°C		-	-	-100	
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-1	-1.8	-2.5	V
Drain-Source On-Resistance <sup>4</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -10A	-	80	100	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -6A	-	88	120	
Forward Transconductance <sup>4</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -10V, I <sub>D</sub> = -10A	-	30	-	S
<b>Dynamic Characteristics<sup>5</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -50V, V <sub>GS</sub> = 0V, f = 1MHz	-	3985	-	pF
Output Capacitance	C <sub>oss</sub>		-	85	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	71	-	
Gate Resistance	R <sub>g</sub>	f = 1MHz	-	4	-	Ω
<b>Switching Characteristics<sup>5</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> = -10V, V <sub>DS</sub> = -50V, I <sub>D</sub> = -10A	-	65	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	10.2	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	13	-	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> = -10V, V <sub>DD</sub> = -50V, R <sub>G</sub> = 3Ω, I <sub>D</sub> = -10A	-	12.8	-	ns
Rise Time	t <sub>r</sub>		-	30	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	82	-	
Fall Time	t <sub>f</sub>		-	61	-	
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = -10A, dI/dt = 100A/μs	-	62	-	ns
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>		-	56	-	nC
<b>Drain-Source Body Diode Characteristics</b>						
Diode Forward Voltage <sup>4</sup>	V <sub>SD</sub>	I <sub>S</sub> = -10A, V <sub>GS</sub> = 0V	-	-	-1.2	V
Continuous Source Current	I <sub>S</sub>	T <sub>C</sub> = 25°C	-	-	-20	A

### Notes:

1. Repetitive rating, pulse width limited by junction temperature T<sub>J(MAX)</sub> = 150°C.
2. The EAS data shows Max. rating . The test condition is V<sub>DD</sub> = -35V, V<sub>GS</sub> = -10V, L = 0.5mH, I<sub>AS</sub> = -23A
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

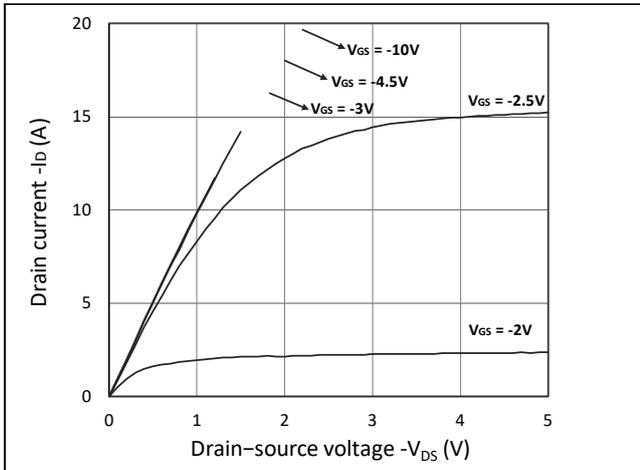


Figure 1. Output Characteristics

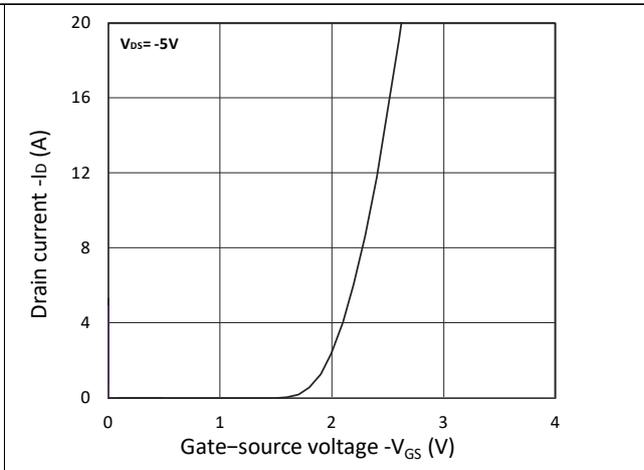


Figure 2. Transfer Characteristics

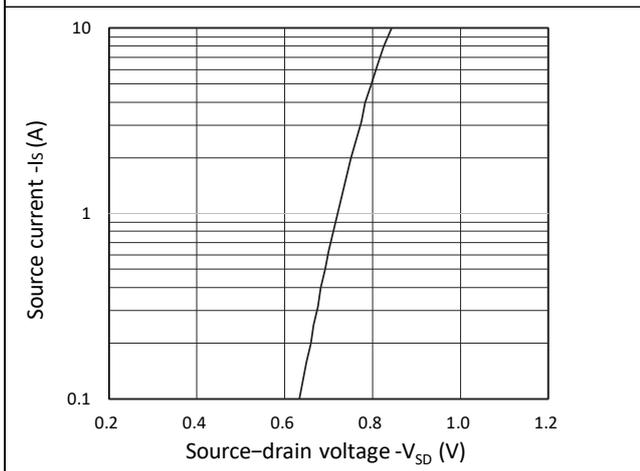


Figure 3. Forward Characteristics of Reverse

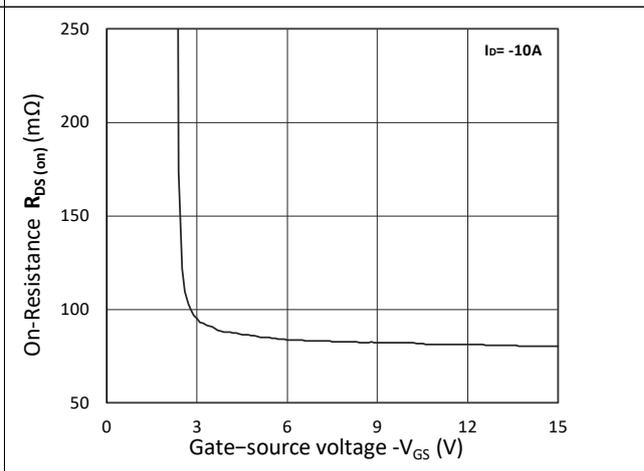


Figure 4.  $R_{DS(ON)}$  vs.  $V_{GS}$

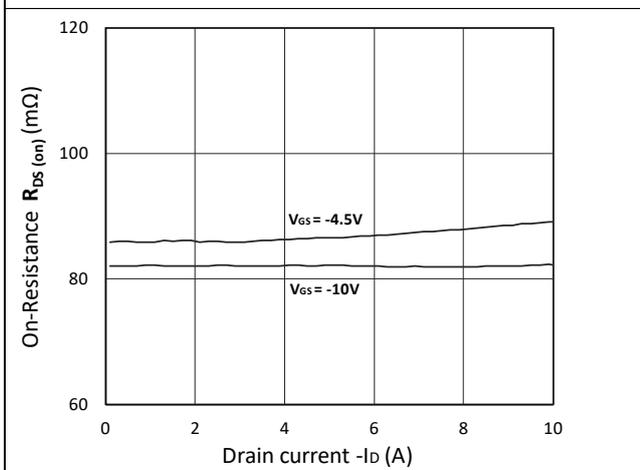


Figure 5.  $R_{DS(ON)}$  vs.  $I_D$

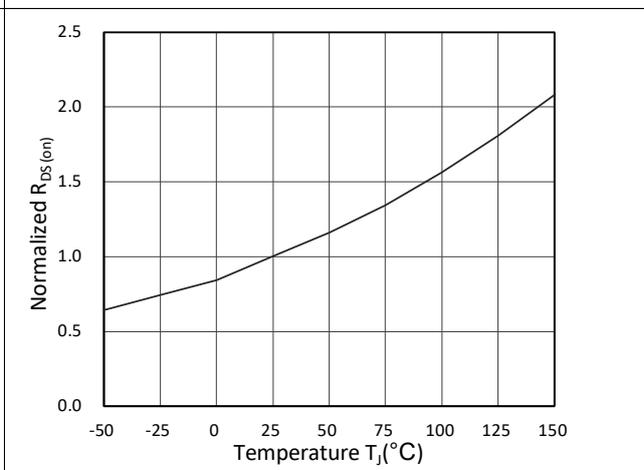


Figure 6. Normalized  $R_{DS(ON)}$  vs. Temperature

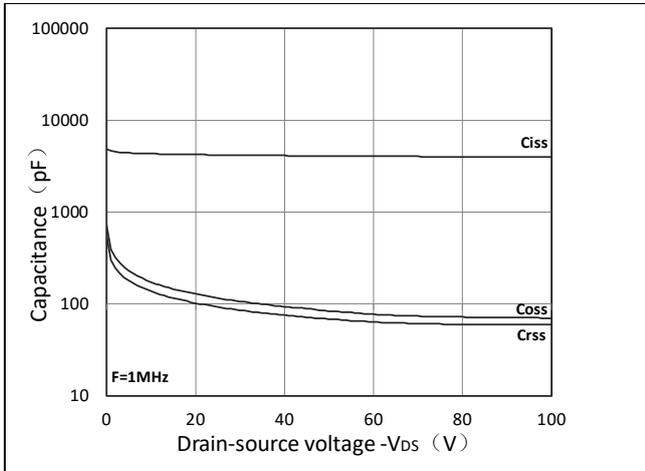


Figure 7. Capacitance Characteristics

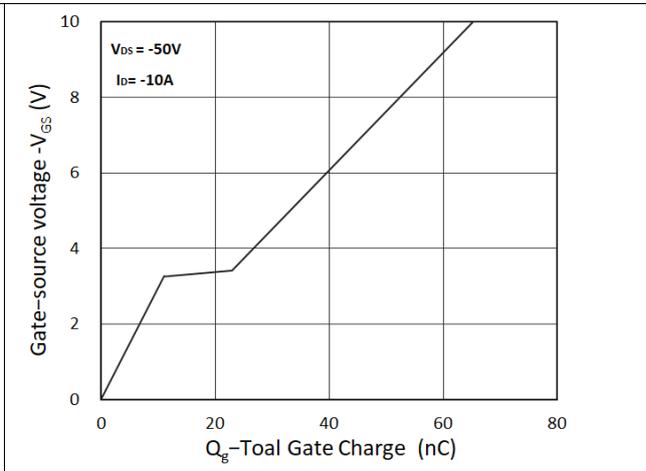


Figure 8. Gate Charge Characteristics

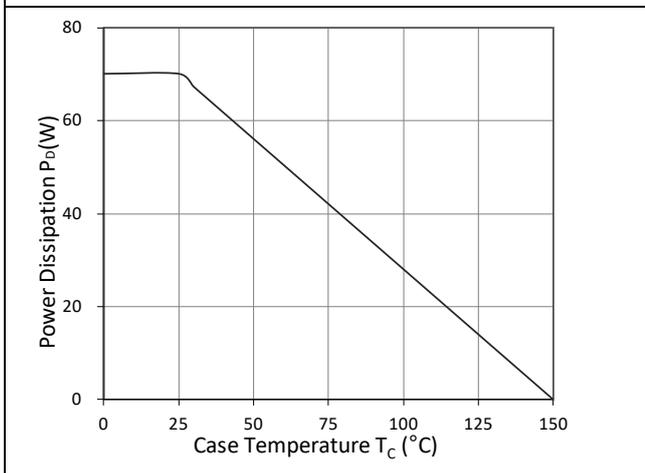


Figure 9. Power Dissipation

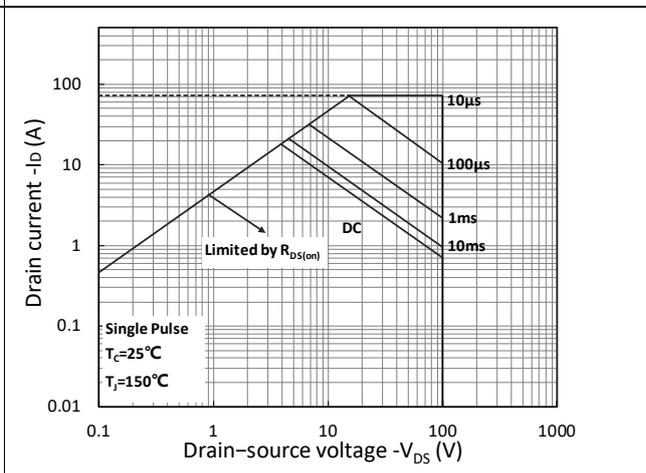


Figure 10. Safe Operating Area

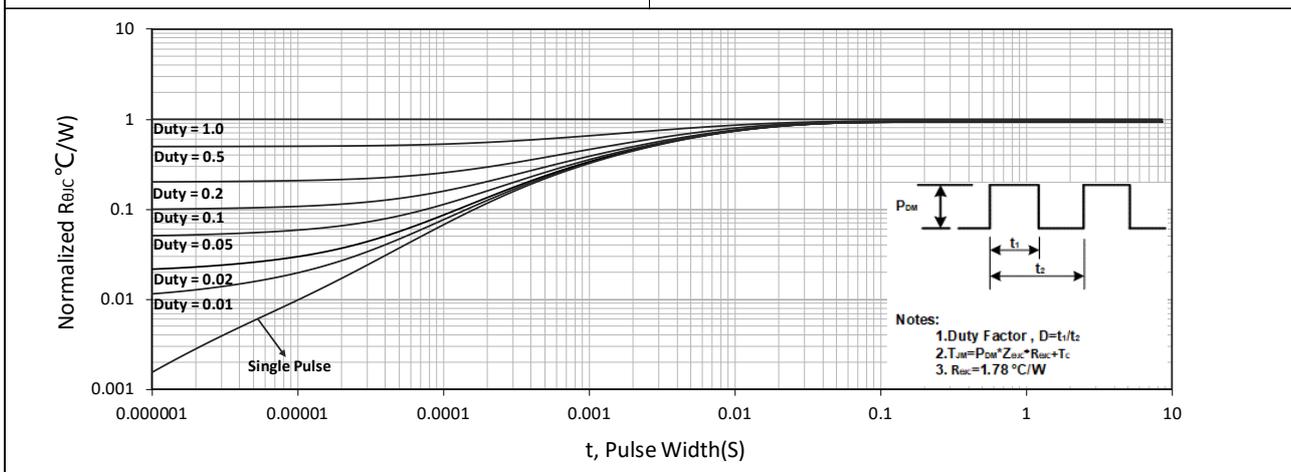
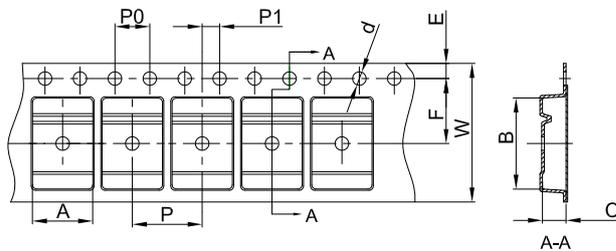


Figure 11. Normalized Maximum Transient Thermal Impedance

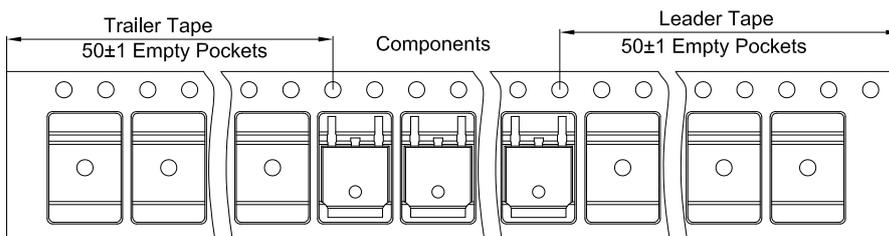
## TO-252-2L Tape and Reel

### TO-252 Embossed Carrier Tape

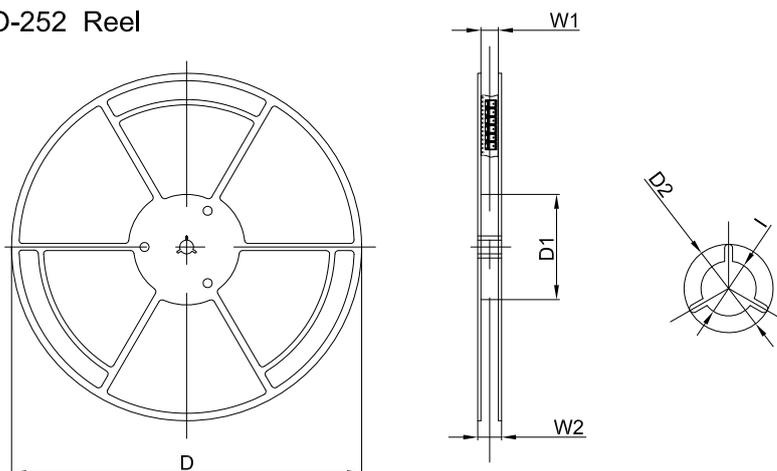


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
TO-252	6.90	10.50	2.70	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00

### TO-252 Tape Leader and Trailer

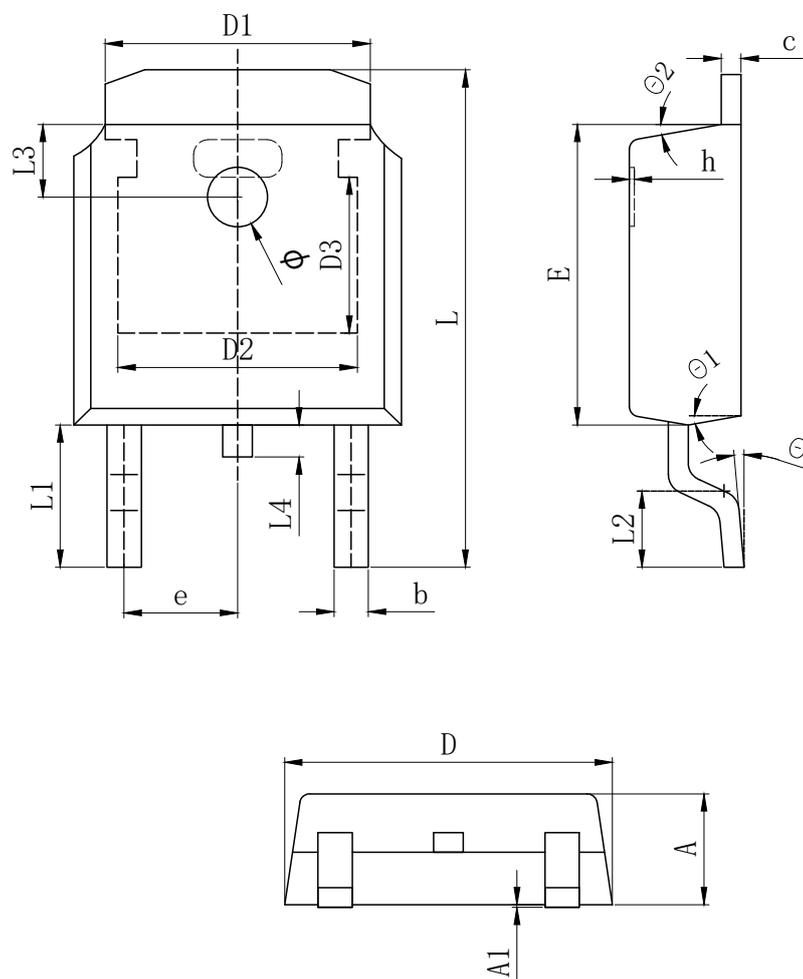


### TO-252 Reel



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°
θ 1	9° TYP		
θ 2	9° TYP		

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