Features

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

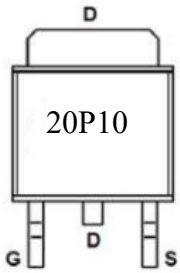
Bvdss	Rdson	ID
-100V	80mΩ	-20A

Application

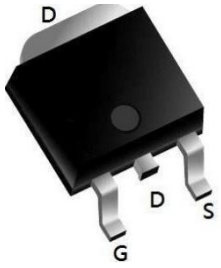
RoHS

- PWM applications
- Load Switch
- Power management

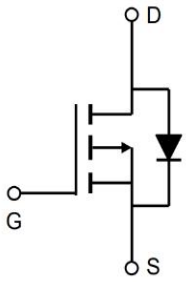
Package



Marking and pin assignment



TO252-3L top view



Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
20P10	20P10	TO252-3L	2500

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current,V_{GS}@-10V	I_D@T_C=25℃	-20	A
	I_D@T_C=100℃	-11	A
Pulsed Drain Current[1]	I_{DM}	-72	A
Single Pulse Avalanche Energy[2]	EAS	132.25	mJ
Avalanche Current	I_{AS}	-	A
Total Power Dissipation	P_D	70	W
Storage Temperature Range	T_{STG}	-55 ~ 150	℃
Operating Junction Temperature Range	T_J	-55 ~ 150	℃

Thermal Resistance Ratings

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	-	75	℃/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	-	1.78	℃/W

Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	D	S	
HL20P10	TO252-3L	1	2	3	Tape Reel

Electrical Characteristics (T_J=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=-250μA	-100	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-100V,V_{GS}=0V	-	-	-1	uA
Gate-body Leakage current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-1	-1.8	-2.5	V
Drain-Source On-Resistance[4]	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-10A	-	80	100	mΩ
		V_{GS}=-4.5V, I_D=-6A	-	88	120	mΩ
Forward Transconductance[4]	gfs	V_{DS}=-10V,I_D=-10A	-	30	-	S
Input Capacitance	C_{iss}	V_{DS}=-50V,V_{GS}=0V, f=1MHz	-	3985	-	pF
Output Capacitance	C_{oss}		-	85	-	
Reverse Transfer Capacitance	C_{rss}		-	71	-	
Gate resistance	G_g	f=1MHz	-	4	-	Ω
Total Gate Charge	Q_g	V_{GS}=-10V,I_D=-10A, V_{DS}=-50V	-	65	-	nC
Gate-Source Charge	Q_{gs}		-	10.2	-	
Gate-Drain Charge	Q_{gd}		-	13	-	
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-50V,R_G=3Ω, I_D=-10A,,V_{GS}=-10V	-	12.8	-	nS
Rise Time	t_r		-	30	-	
Turn-Off Delay Time	$t_{d(off)}$		-	82	-	
Fall Time	t_f		-	61	-	
Continuous Source Current	I_S	-	-	-	-20	A
Diode Forward Voltage[3]	V_{SD}	V_{GS}=0V,I_S=-10A	-	-	-1.2	V
Reverse Recovery Time	trr	I_F=-10A,dI/dt=100A/μs	-	62	-	ns
Reverse Recovery Charge	Qrr		-	56	-	nC

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150℃.
2. The EAS data shows Max. rating . The test condition is V_{DD}= -35V, V_{GS}= -10V,L= 0.5mH, I_{AS}=-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 Performance Characteristics

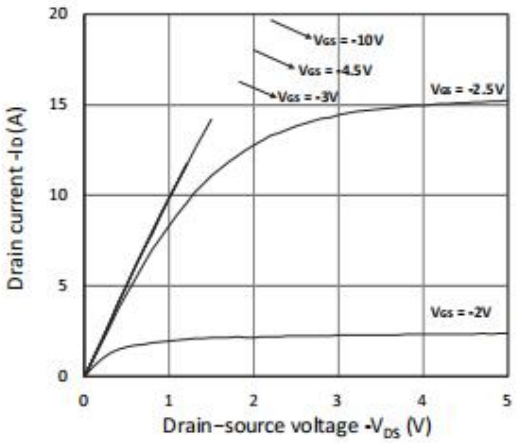


Figure 1. Output Characteristics

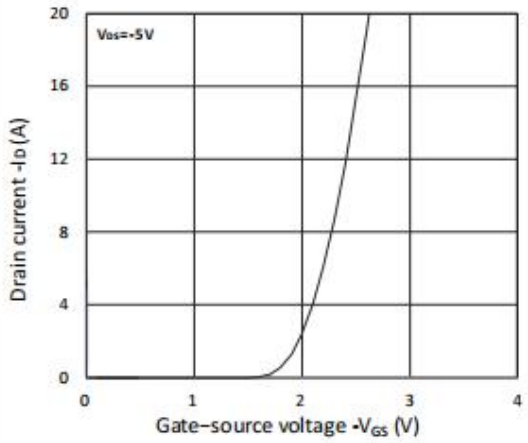


Figure 2. Transfer Characteristics

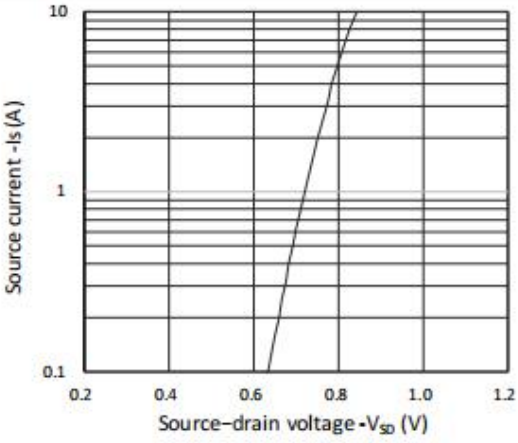


Figure 3. Forward Characteristics of Reverse

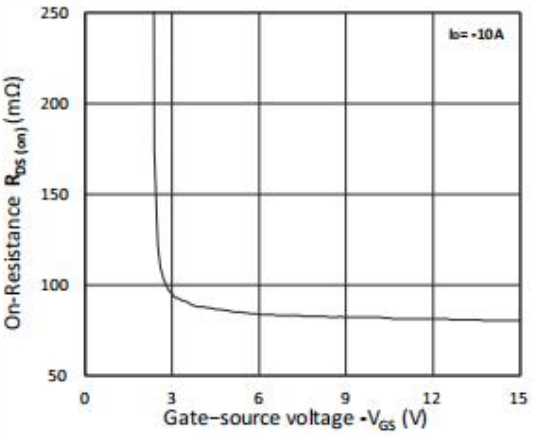


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

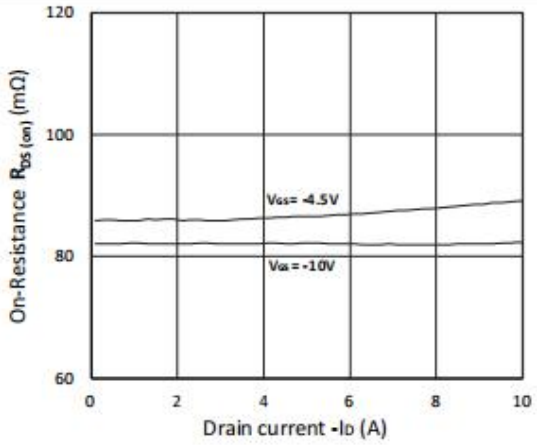


Figure 5. $R_{DS(ON)}$ vs. I_D

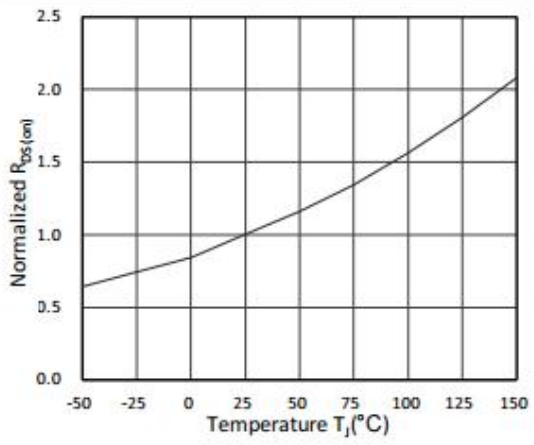


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

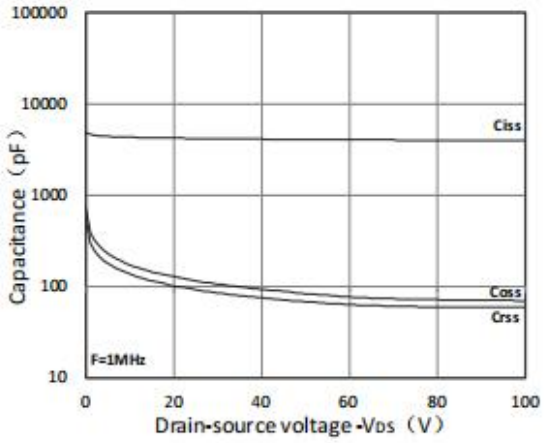


Figure 7. Capacitance Characteristics

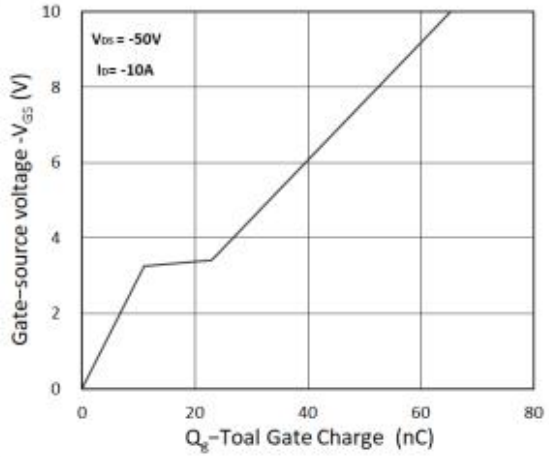


Figure 8. Gate Charge Characteristics

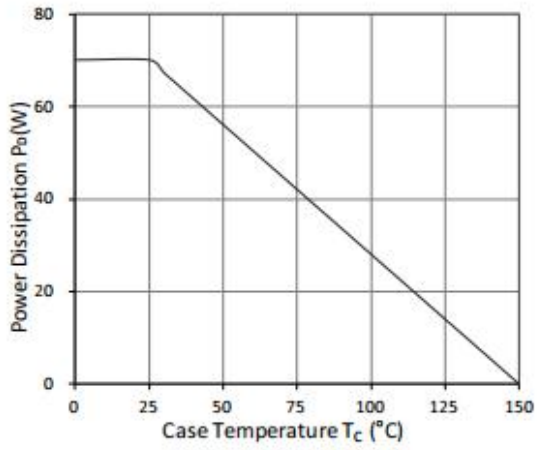


Figure 9. Power Dissipation

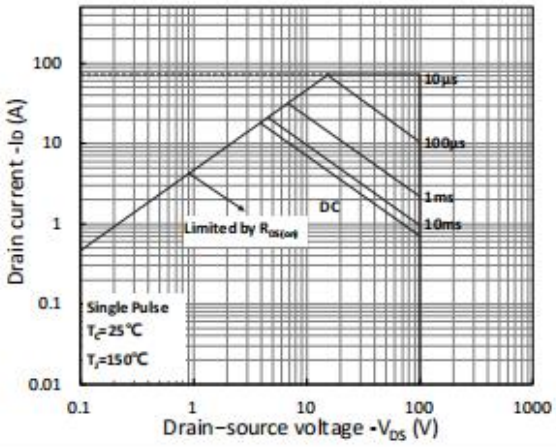


Figure10. Safe Operating Area

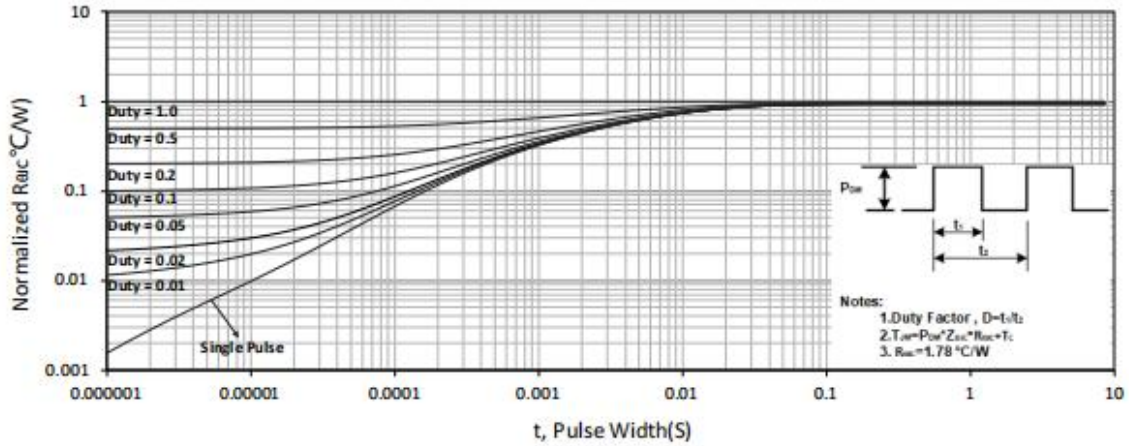
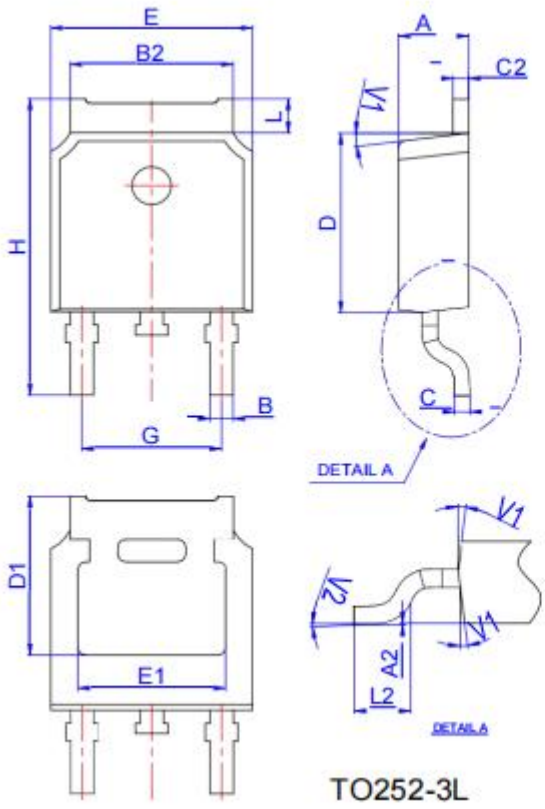


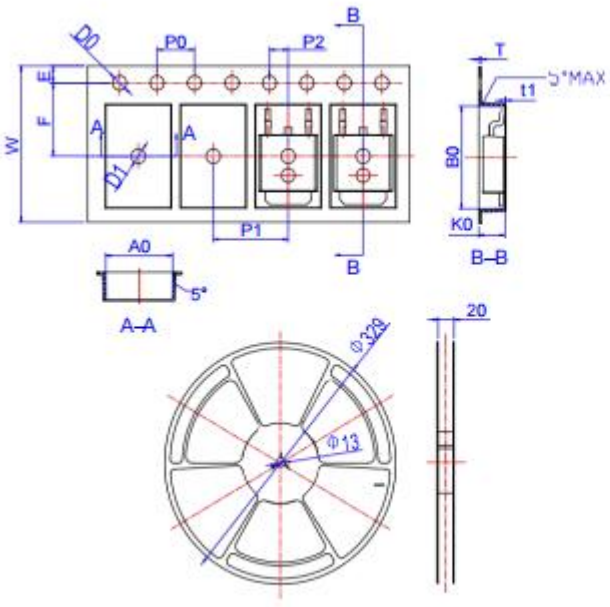
Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data TO252-3L



TO252-3L

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583

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