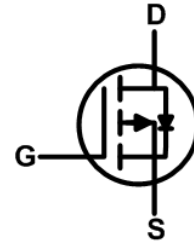




- ★ Super Low Gate Charge
- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

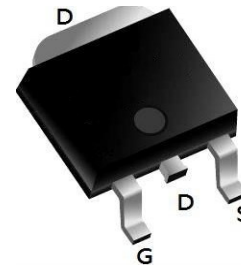


Description

The WLU20P10 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 WLU20P10 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

TO252 Pin Configuration



Product Summary

BVDSS	RDSON	ID
-100V	80mΩ	-20A

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

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V _{DS}	-100	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current	T _C = 25°C	I _D	-20	A
	T _C = 100°C		-11	
Pulsed Drain Current ¹		I _{DM}	-72	A
Single Pulse Avalanche Energy ²		EAS	132.25	mJ
Total Power Dissipation	T _C = 25°C	P _D	70	W
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150	°C

Thermal Characteristics

Thermal Resistance from Junction-to-Ambient ³	R _{θJA}	75	°C/W
Thermal Resistance from Junction-to-Case	R _{θJC}	1.78	°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	-100	-	-	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} = -100V, V _{GS} = 0V	-	-	-1	μA
	T _J = 100°C		-	-	-100	
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	
Forward Transconductance ⁴	g_{fs}	V _{DS} = -10V, I _D = -10A	-	30	-	S
Dynamic Characteristics⁵						
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	R_g	f = 1MHz	-	4	-	Ω
Switching Characteristics⁵						
Total Gate Charge	Q_g	V _{GS} = -10V, V _{DS} = -50V, I _D = -10A	-	65	-	nC
Gate-Source Charge	Q_{gs}		-	10.2	-	
Gate-Drain Charge	Q_{gd}		-	13	-	
Turn-On Delay Time	t_{d(on)}	V _{GS} = -10V, V _{DD} = -50V, R _G = 3Ω, I _D = -10A	-	12.8	-	ns
Rise Time	t_r		-	30	-	
Turn-Off Delay Time	t_{d(off)}		-	82	-	
Fall Time	t_f		-	61	-	
Body Diode Reverse Recovery Time	t_{rr}	I _F = -10A, di/dt = 100A/μs	-	62	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	56	-	nC
Drain-Source Body Diode Characteristics						
Diode Forward Voltage ⁴	V_{SD}	I _S = -10A, V _{GS} = 0V	-	-	-1.2	V
Continuous Source Current	T _C = 25°C	I_S	-	-	-20	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} = -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 Characteristics

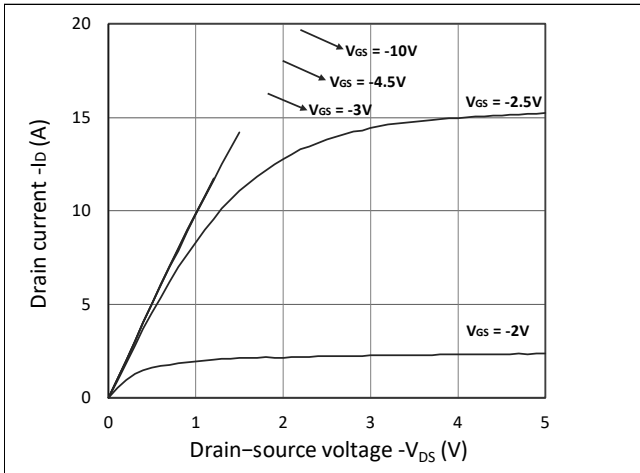


Figure 1. Output Characteristics

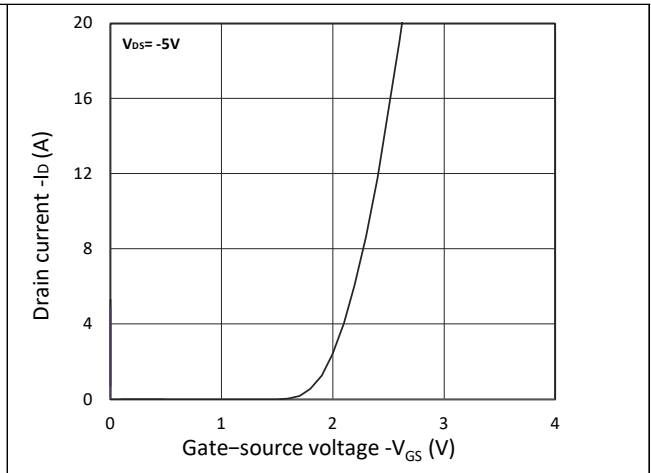


Figure 2. Transfer Characteristics

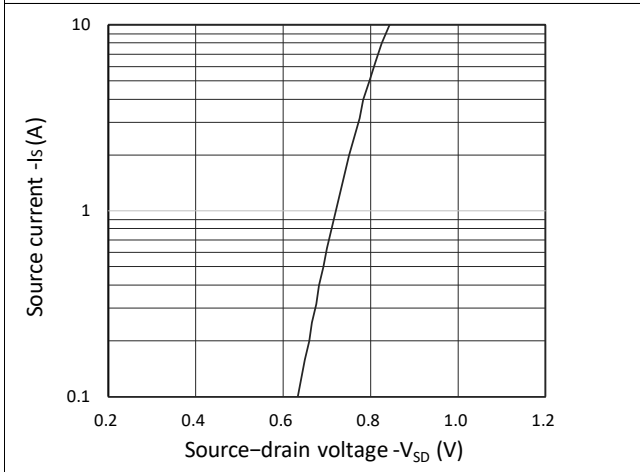


Figure 3. Forward Characteristics of Reverse

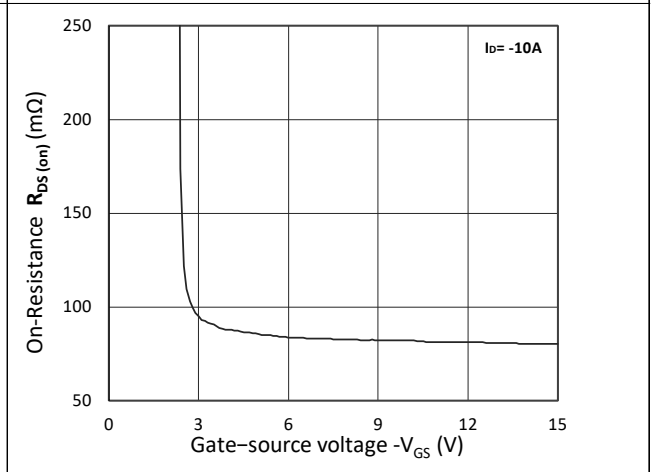


Figure 4. $R_{DS(on)}$ vs. V_{GS}

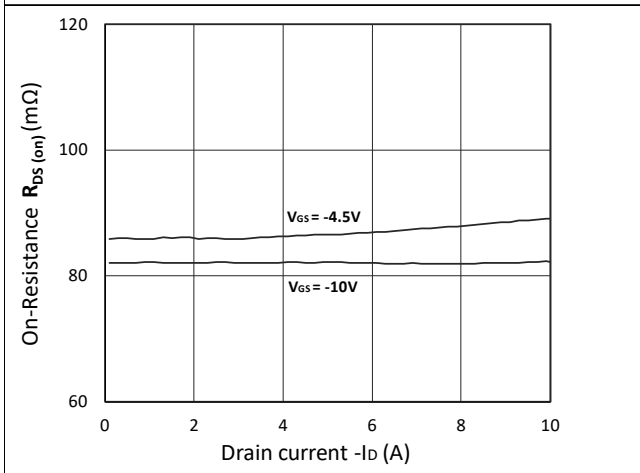


Figure 5. $R_{DS(on)}$ vs. I_D

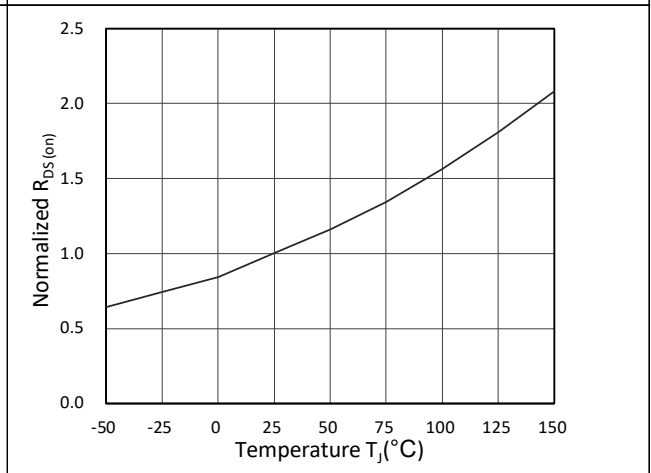


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

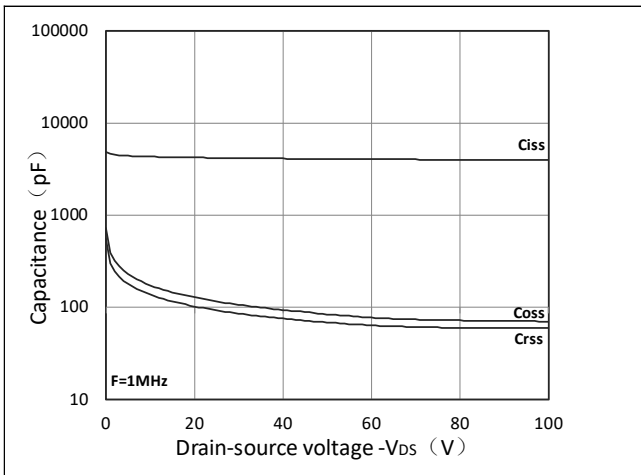


Figure 7. Capacitance Characteristics

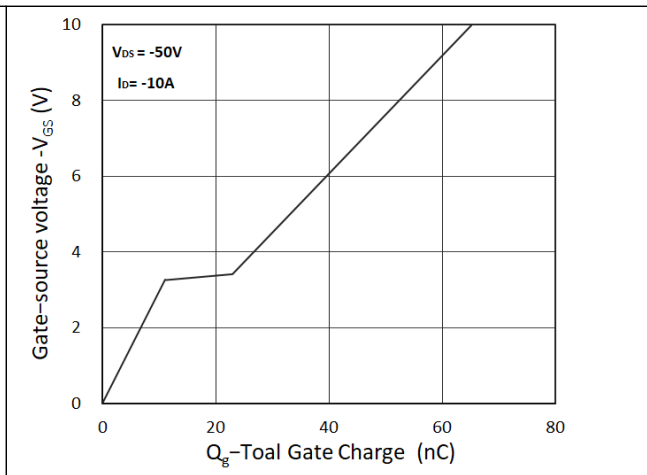


Figure 8. Gate Charge Characteristics

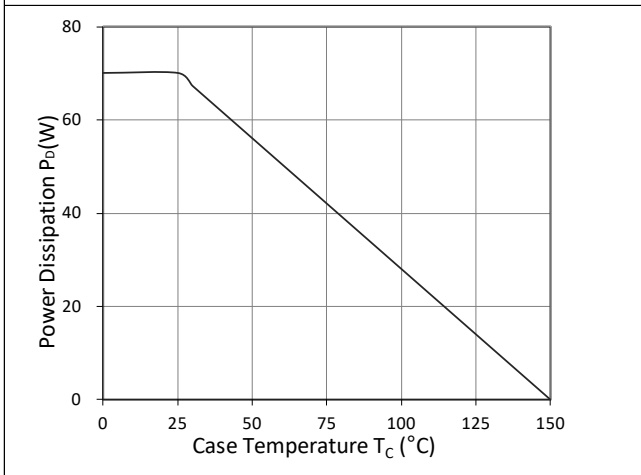


Figure 9. Power Dissipation

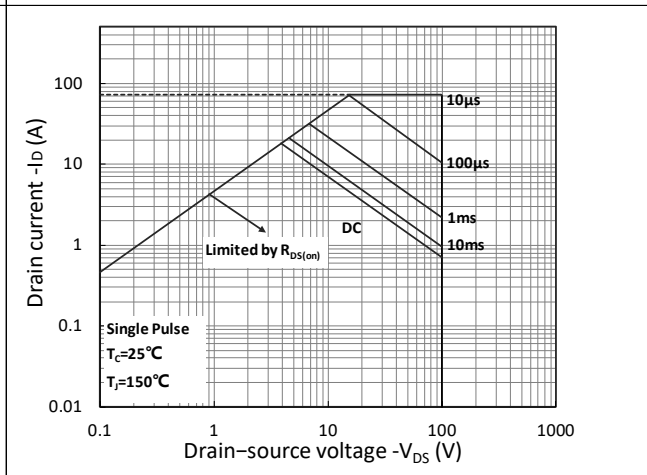


Figure 10. Safe Operating Area

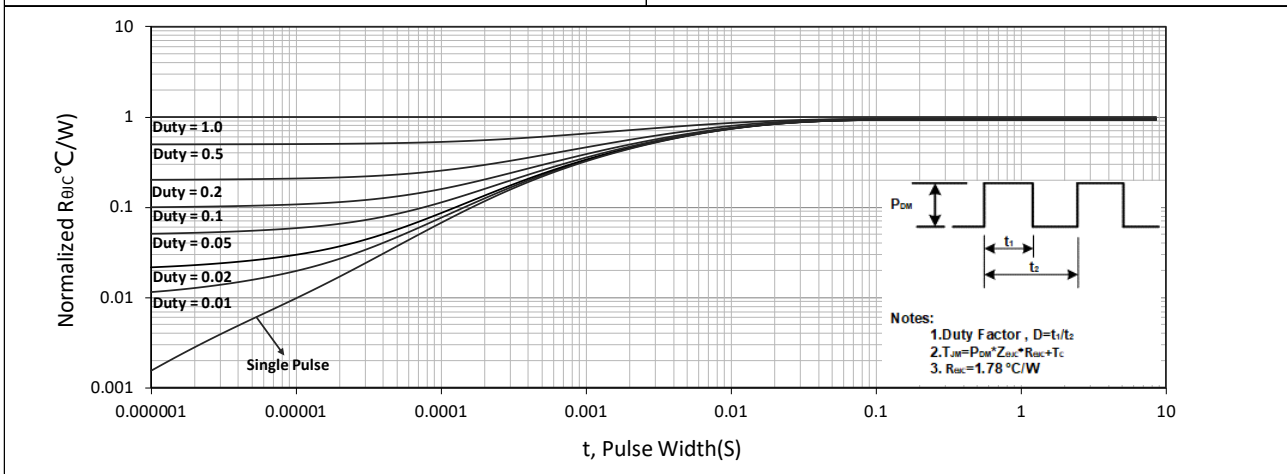
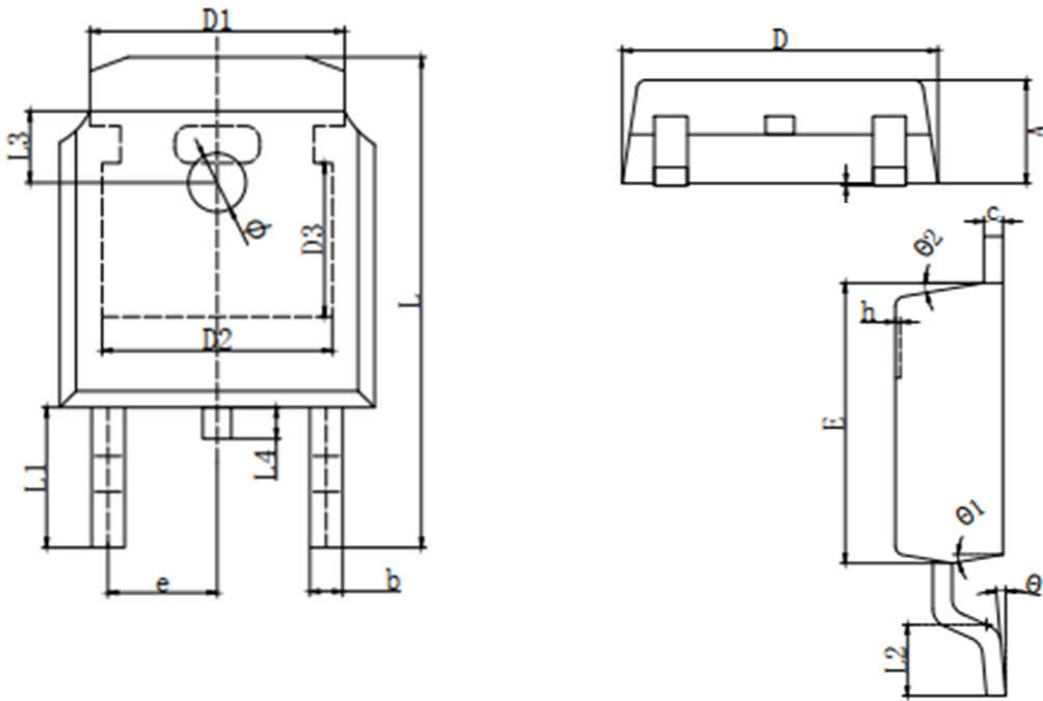


Figure 11. Normalized Maximum Transient Thermal Impedance



TO-252 Package outline



SYMBOL	MILLIMETER		SYMBOL	MILLIMETER	
	MIN	MAX		MIN	MAX
A	2.200	2.400	h	0.000	0.200
A1	0.000	0.127	L	9.900	10.30
b	0.640	0.740	L1	2.898 REF	
c	0.460	0.580	L2	1.400	1.700
D	6.500	6.700	L3	1.600 REF	
D1	5.334 REF		L4	0.600	1.000
D2	4.826 REF		ϕ	1.100	1.300
D3	3.166 REF		θ	0°	8°
E	6.000	6.200	$\theta 1$	9° TYP2	
e	2.286 TYP		$\theta 2$	9° TYP	



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