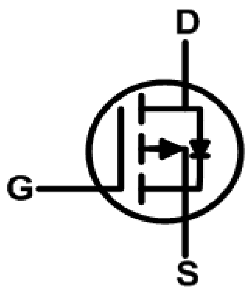
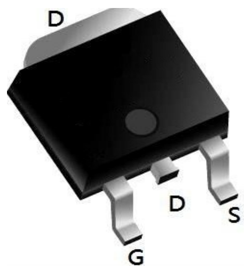
★ 100% EAS Guaranteed
★ Green Device Available
★ Super Low Gate Charge
★ Excellent CdV/dt effect decline
★ Advanced high cell density Trench technology



Description

The WLU40P02 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 WLU40P02 meet the RoHS and Gree Product requirement 100% EAS guaranteed with full function reliability approved.

TO252 Pin Configuration



Product Summary

BVDSS	RDSON	ID
-20V	12mΩ	-40A

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

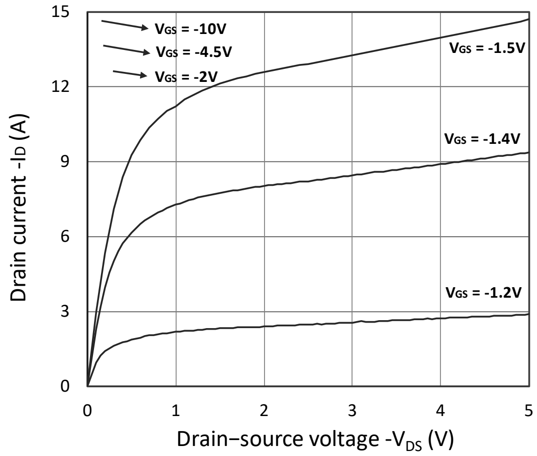


Figure 1. Output Characteristics

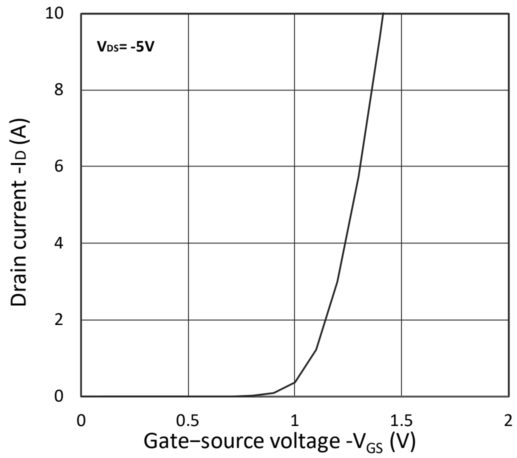


Figure 2. Transfer Characteristics

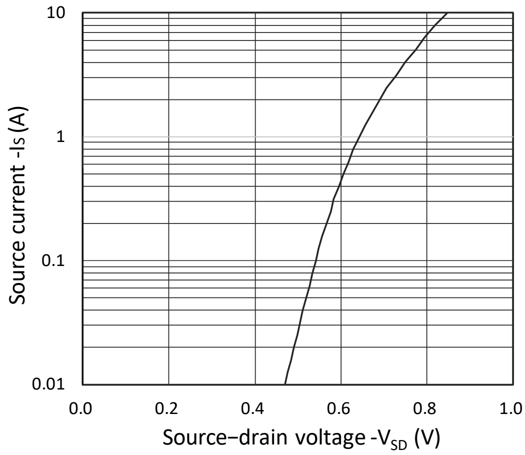


Figure 3. Forward Characteristics of Reverse

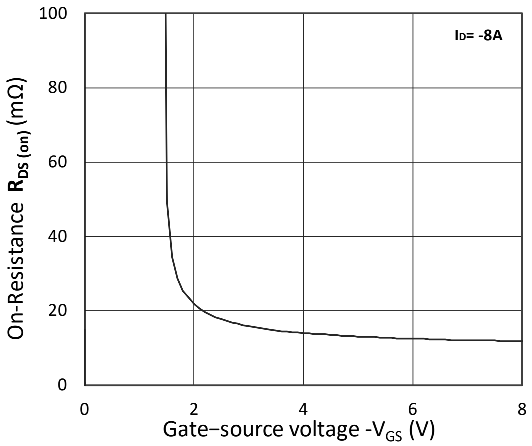


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

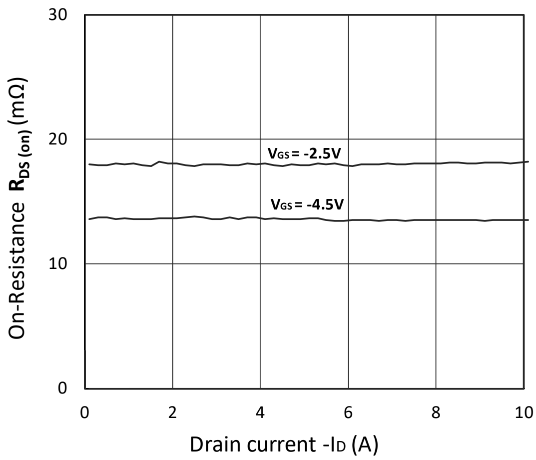


Figure 5. $R_{DS(ON)}$ vs. I_D

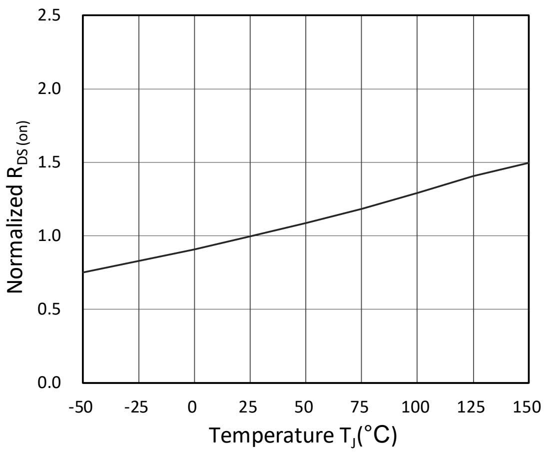


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

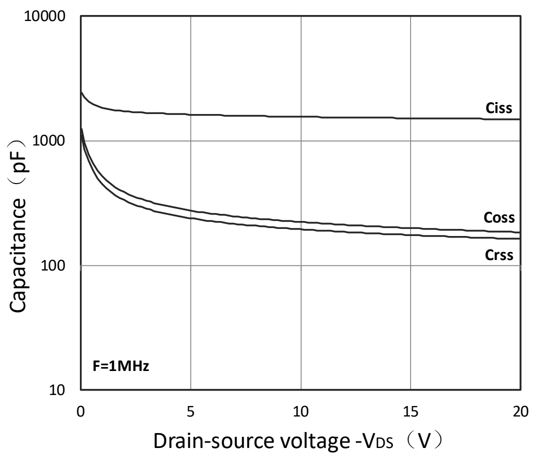


Figure 7. Capacitance Characteristics

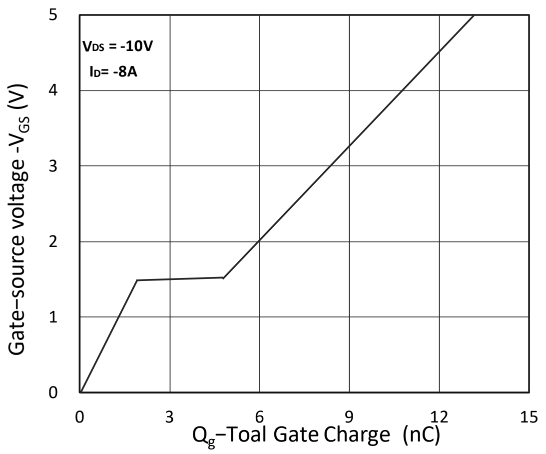


Figure 8. Gate Charge Characteristics

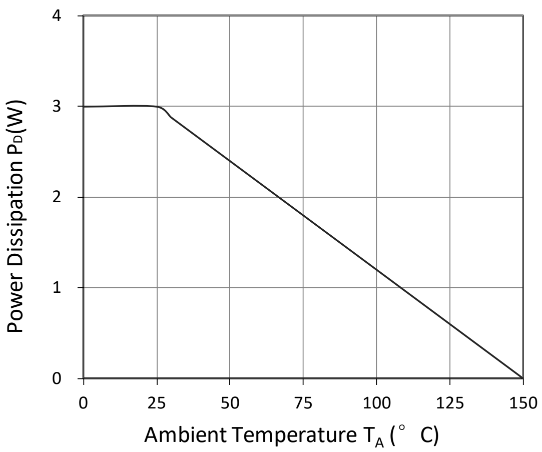


Figure 9. Power Dissipation

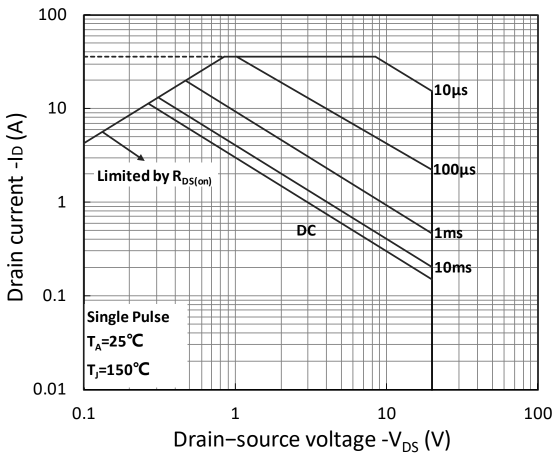


Figure10. Safe Operating Area

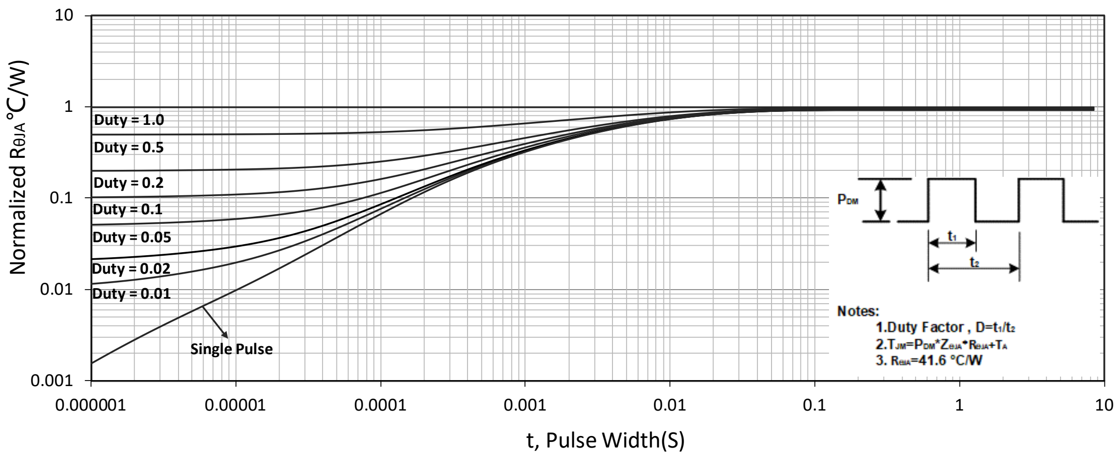
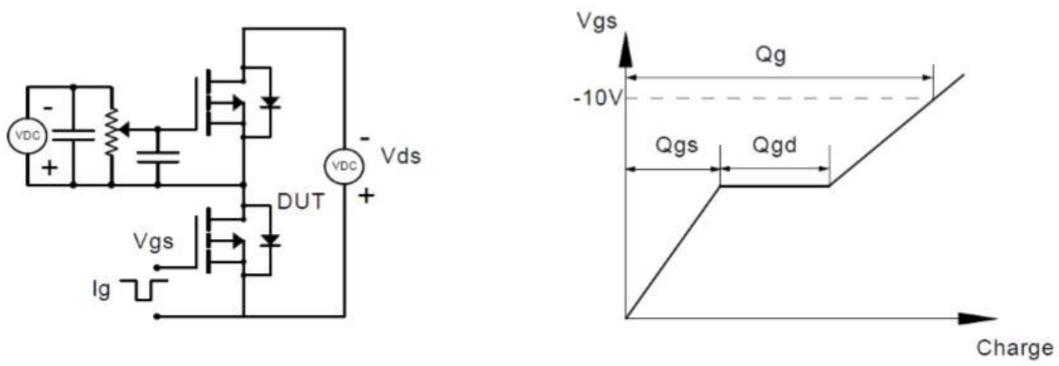


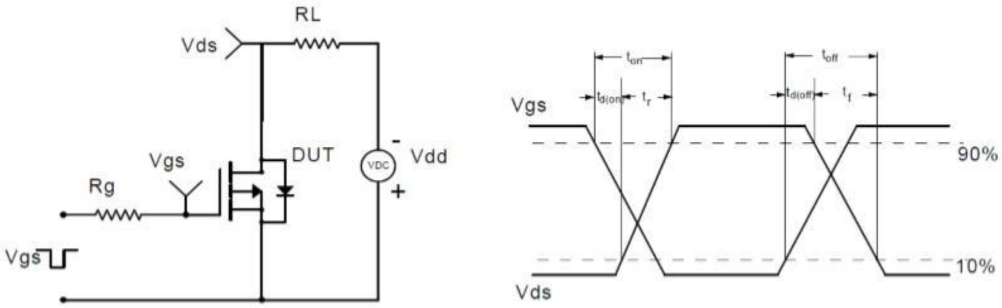
Figure 11. Normalized Maximum Transient Thermal Impedance

Test Circuit

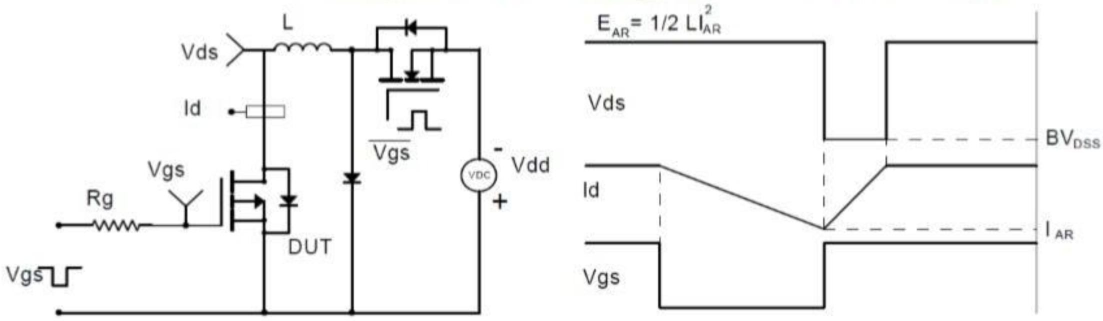
Gate Charge Test Circuit & Waveform



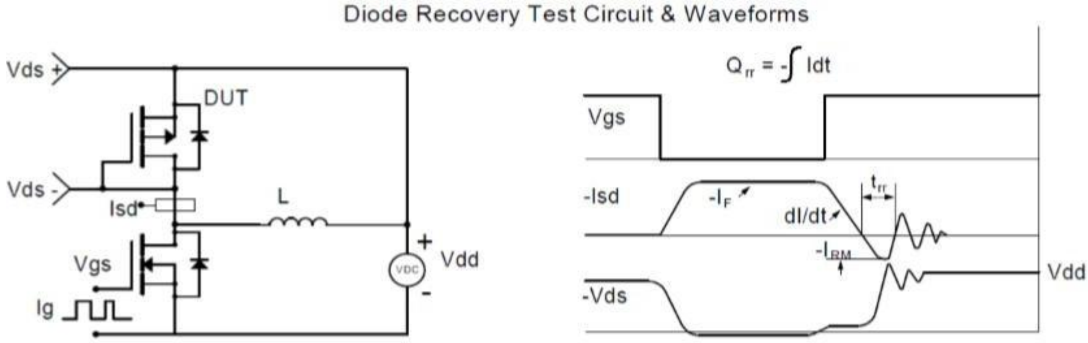
Resistive Switching Test Circuit & Waveforms



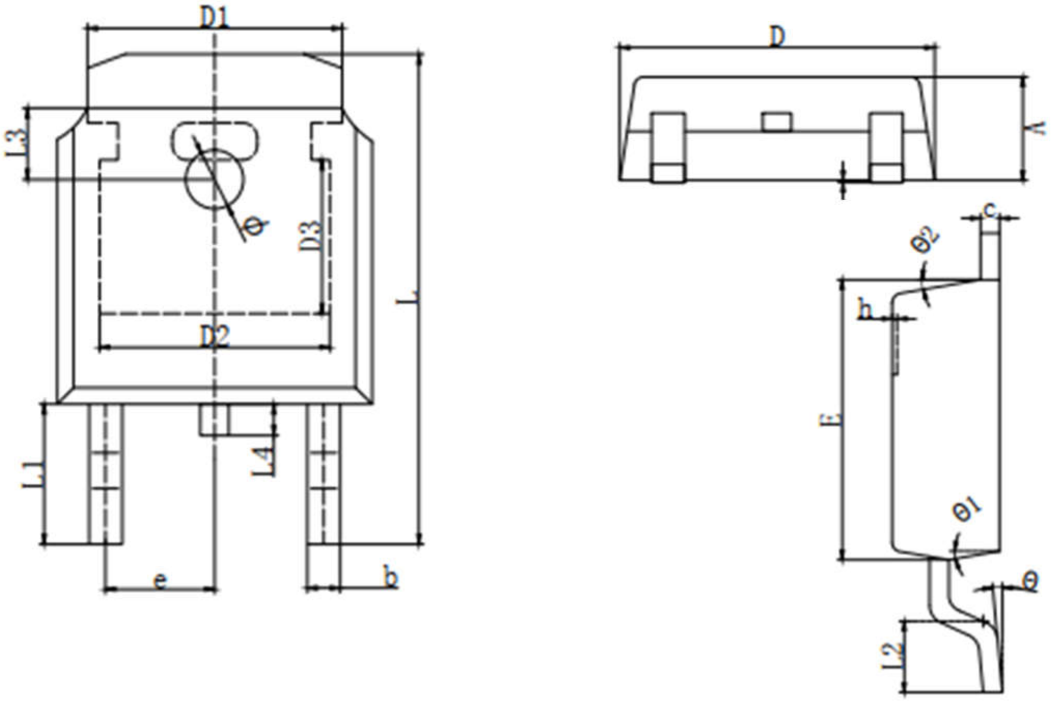
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



TO-252 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. 888 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	θ1	9° TYP2	
e	2. 286 TYP		θ2	9° TYP	

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