



ULB4132

Preliminary

Power MOSFET

100A, 30V N-CHANNEL POWER MOSFET

DESCRIPTION

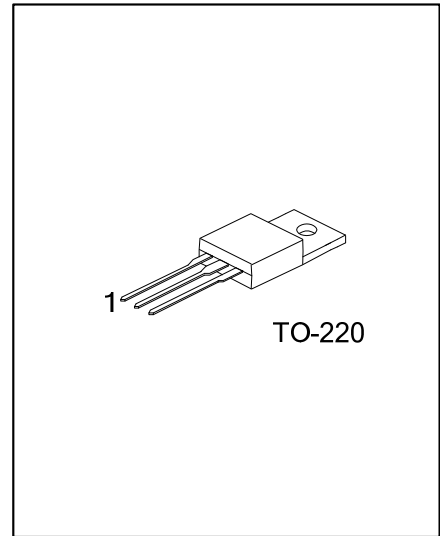
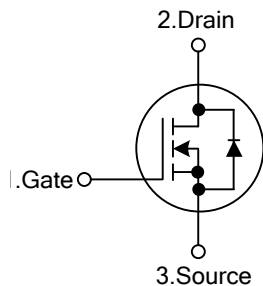
The **ULB4132** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

FEATURES

* $R_{DS(ON)}=3.05m\Omega @ V_{GS}=10V, I_D=50A$

$R_{DS(ON)}= 4.2m\Omega @ V_{GS}=4.5V, I_D=40A$

SYMBOL



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
ULB4132L-TA3-T	ULB4132G-TA3-T	TO-220	G	D	S	Tube

Note: Pin Assignment: G: Gate D: Drain S: Source

<p>ULB4132L-TA3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Free</p>	<p>(1) R: Tape Reel</p> <p>(2) TA3: TO-220</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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■ ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous	I_D	78	A
	Pulsed	I_{DM}	620	A
Single Pulsed Avalanche Energy		E_{AS}	310	mJ
Single Pulsed Avalanche Current		I_{AS}	35	A
Power Dissipation		P_D	83	W
Junction Temperature		T_J	+150	$^\circ\text{C}$
Strong Temperature		T_{STG}	-55 ~ +150	$^\circ\text{C}$

Note: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

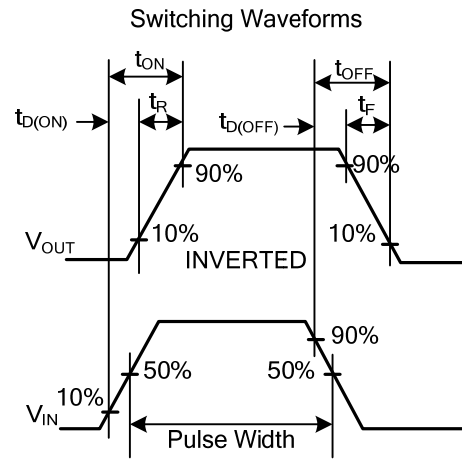
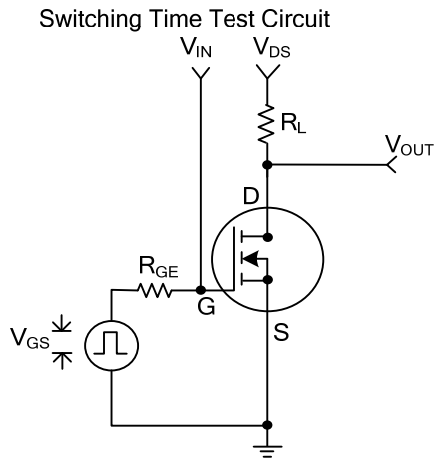
■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62.5	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	1.5	$^\circ\text{C/W}$

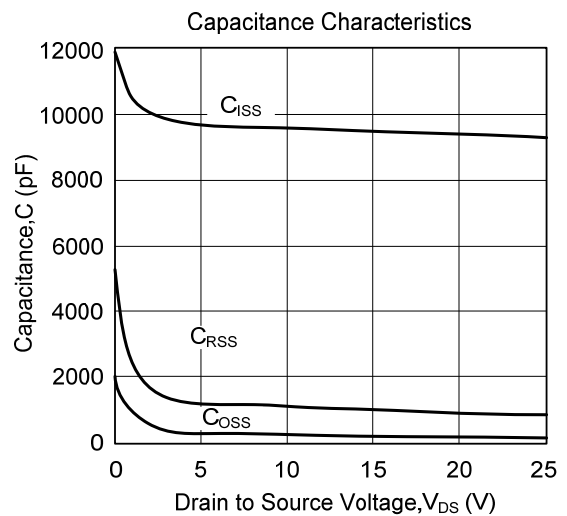
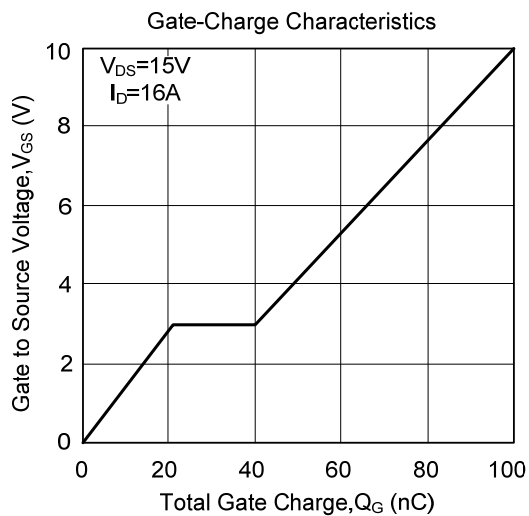
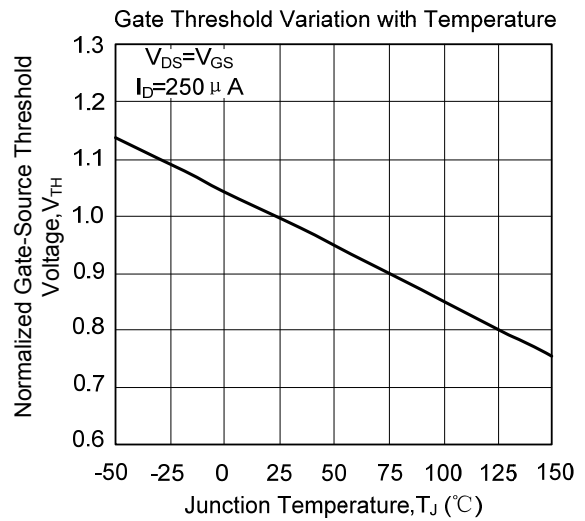
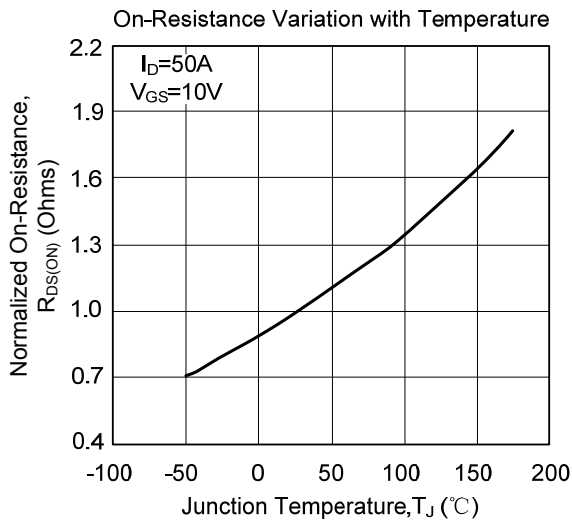
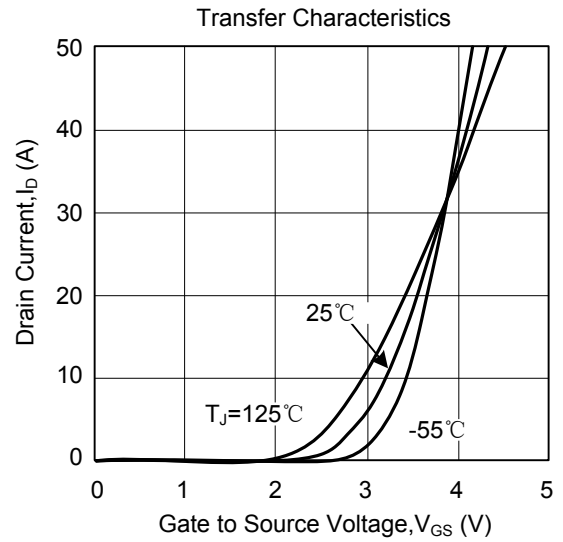
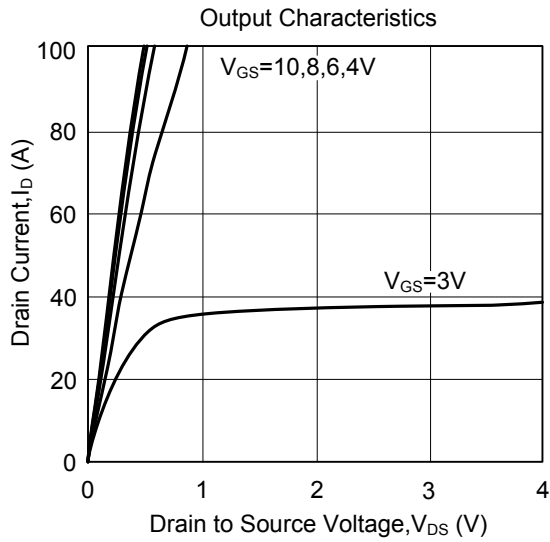
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise noted)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	30			V
Drain-Source Leakage Current		I_{DSS}	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$			1	μA
Gate-Source Leakage Current		I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Gate-Source Leakage Current	Forward	I_{GSS}	$V_{GS} = +20\text{ V}, V_{DS} = 0\text{ V}$			+100	nA
	Reverse		$V_{GS} = -20\text{ V}, V_{DS} = 0\text{ V}$			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 100\ \mu\text{A}$	1.35	1.8	2.35	V
Static Drain-Source On-Resistance		$R_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_D = 50\text{ A}$		3.05	5.3	m Ω
			$V_{GS} = 4.5\text{ V}, I_D = 40\text{ A}$		4.2	8	
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	$V_{DS} = 15\text{ V}, V_{GS} = 0\text{ V}, f = 1.0\text{ MHz}$		5110		pF
Output Capacitance		C_{OSS}			960		
Reverse Transfer Capacitance		C_{RSS}			440		
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	$V_{DS} = 15\text{ V}, I_D = 32\text{ A}, I_G = 3.33\text{ mA}, V_{GS} = 5\text{ V}$		36	54	nC
Gate Source Charge		Q_{GS}			9.1		
Gate Drain Charge		Q_{GD}			13		
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DD} = 15\text{ V}, I_D = 32\text{ A}, R_G = 1.8\ \Omega, V_{GS} = 10\text{ V}$		23		ns
Turn-ON Rise Time		t_R			95		
Turn-OFF Delay Time		$t_{D(OFF)}$			25		
Turn-OFF Fall-Time		t_F			36		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I_S		150			A
Maximum Body-Diode Pulsed Current		I_{SM}		620			A
Drain-Source Diode Forward Voltage		V_{SD}	$I_S = 32\text{ A}, V_{GS} = 0\text{ V}$			1	V

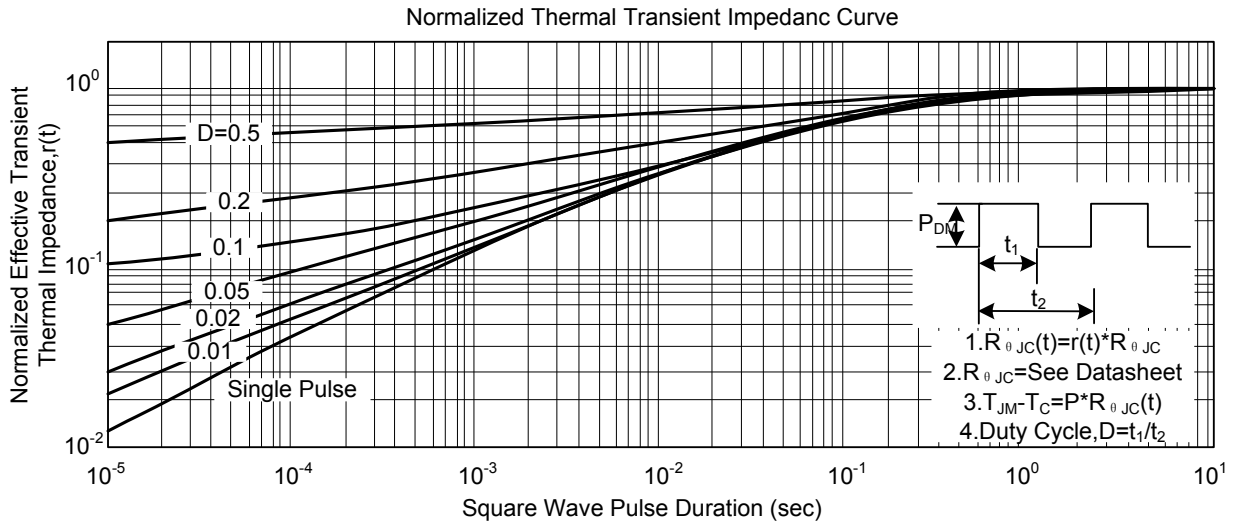
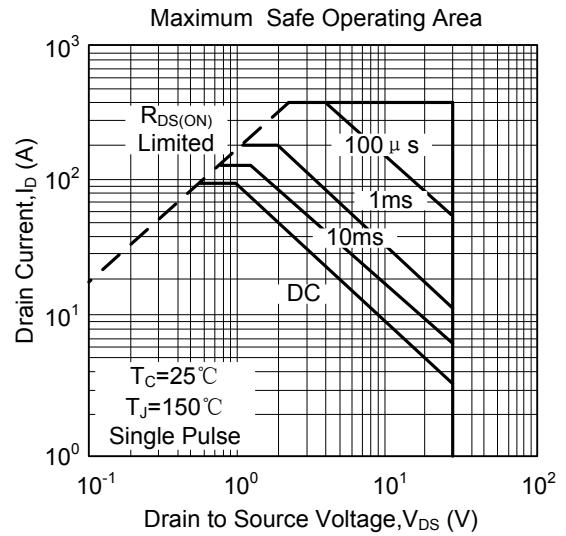
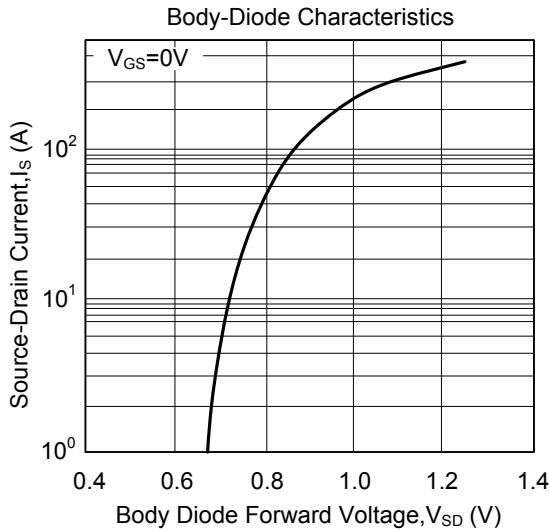
■ TEST CIRCUIT AND WAVEFORM



■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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