



ULB4132

Power MOSFET

78A, 30V N-CHANNEL POWER MOSFET

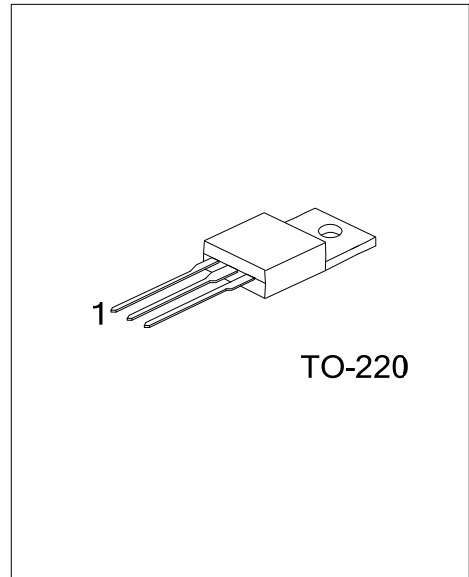
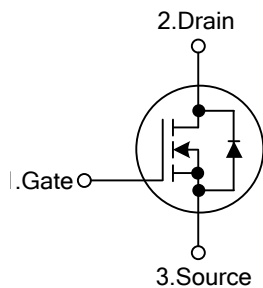
DESCRIPTION

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

- * $R_{DS(ON)} \leq 5.3 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=50\text{A}$
- $R_{DS(ON)} \leq 8.0 \text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=40\text{A}$

SYMBOL



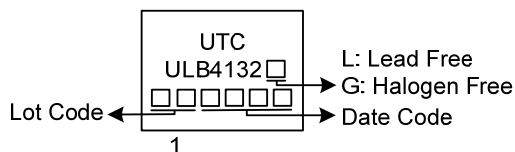
ORDERING INFORMATION

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>ULB4132G-TA3-T</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Green Package 	<ul style="list-style-type: none"> (1) T: Tube (2) TA3: TO-220 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING



■ 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
	Pulsed	I_{DM}	156
Single Pulsed Avalanche Energy (Note 3)	E_{AS}	48	mJ
Single Pulsed Avalanche Current	I_{AS}	31	A
Power Dissipation	P_D	60	W
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Strong Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

- Notes: 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.
 2. Pulse width limited by maximum junction temperature
 3. $L = 0.1\text{mH}$, $I_{AS} = 31\text{A}$, $V_{DD} = 20\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^{\circ}\text{C}$

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62.5	$^{\circ}\text{C/W}$
Junction to Case	θ_{JC}	2.08	$^{\circ}\text{C/W}$

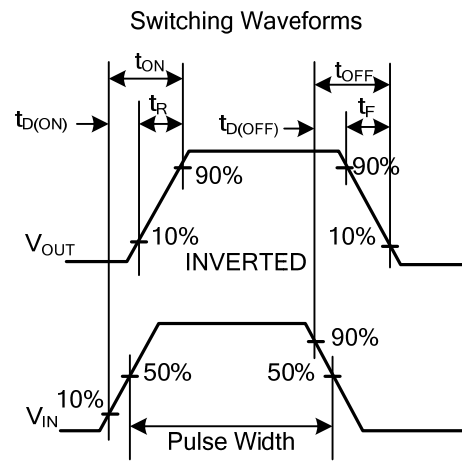
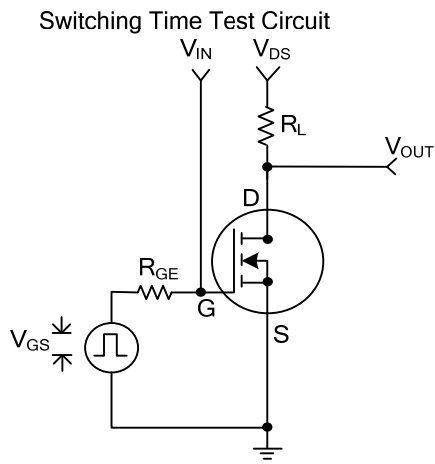
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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

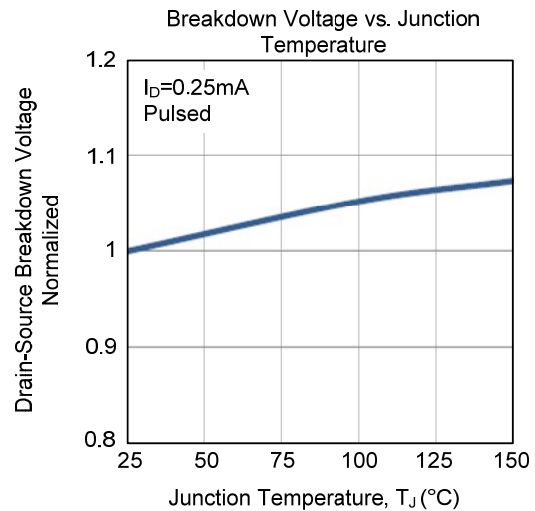
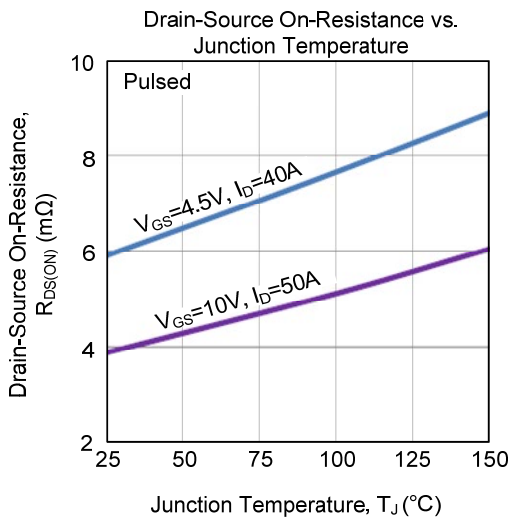
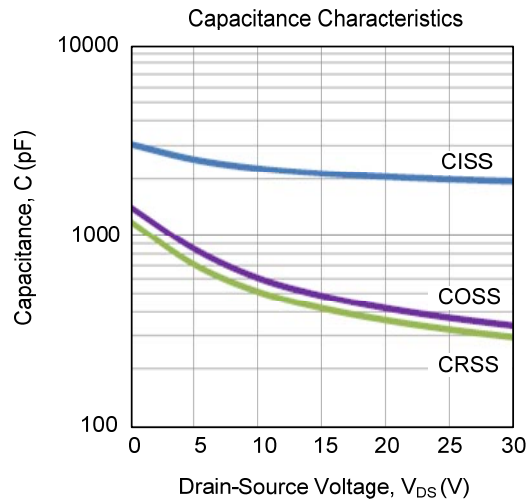
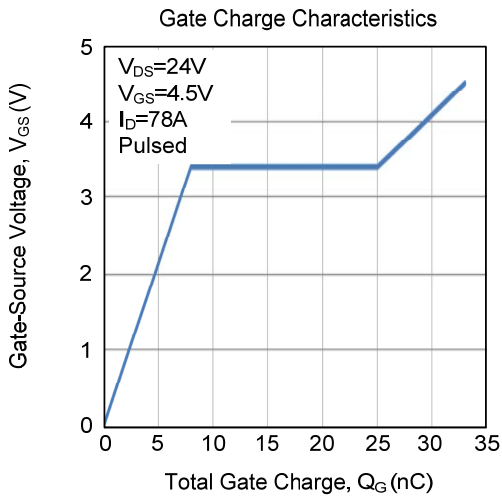
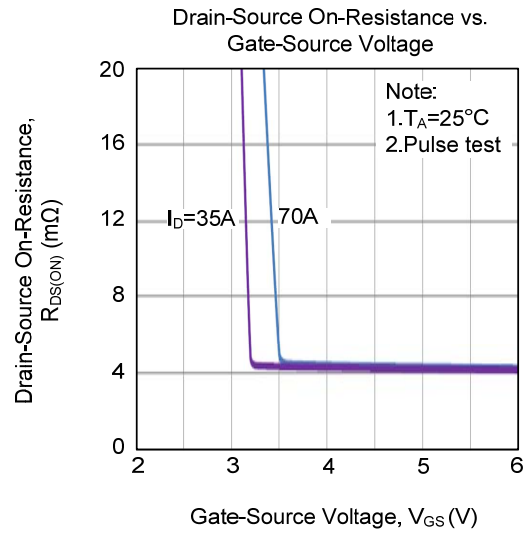
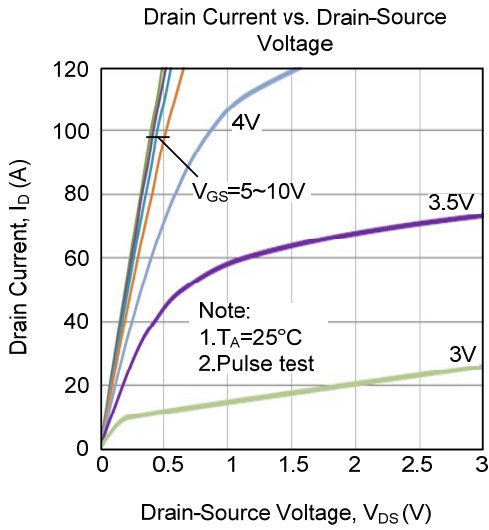
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}$, $I_D=250\mu\text{A}$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$			± 100	nA
Gate-Source Leakage Current	Forward	$V_{GS}=+20\text{V}$, $V_{DS}=0\text{V}$			+100	nA
	Reverse	$V_{GS}=-20\text{V}$, $V_{DS}=0\text{V}$			-100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=100\mu\text{A}$	1.0		3.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=50\text{A}$			5.3	m Ω
		$V_{GS}=4.5\text{V}$, $I_D=40\text{A}$			8.0	
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS}=15\text{V}$, $V_{GS}=0\text{V}$, $f=1.0\text{MHz}$		2140		pF
Output Capacitance	C_{OSS}			490		
Reverse Transfer Capacitance	C_{RSS}			425		
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{DS}=24\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=78\text{A}$		33		nC
Gate Source Charge	Q_{GS}			8		
Gate Drain Charge	Q_{GD}			17		
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=15\text{V}$, $V_{GS}=10\text{V}$, $I_D=78\text{A}$, $R_G=1.8\Omega$		19		ns
Turn-ON Rise Time	t_R			26		
Turn-OFF Delay Time	$t_{D(OFF)}$			35		
Turn-OFF Fall-Time	t_F			33		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				78	A
Maximum Body-Diode Pulsed Current	I_{SM}				156	A
Drain-Source Diode Forward Voltage	V_{SD}	$I_S=32\text{A}$, $V_{GS}=0\text{V}$			1	V

- Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.
 2. Essentially independent of operating ambient temperature.

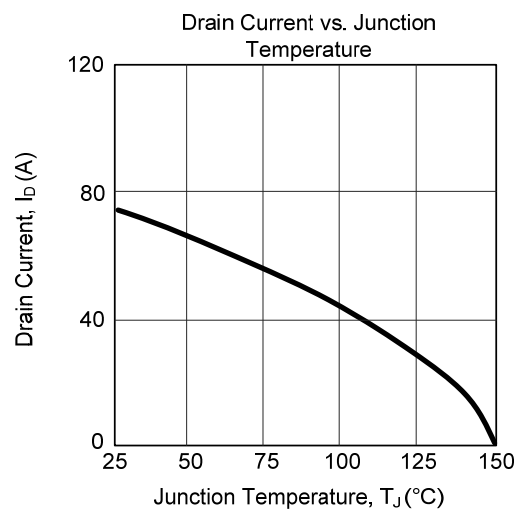
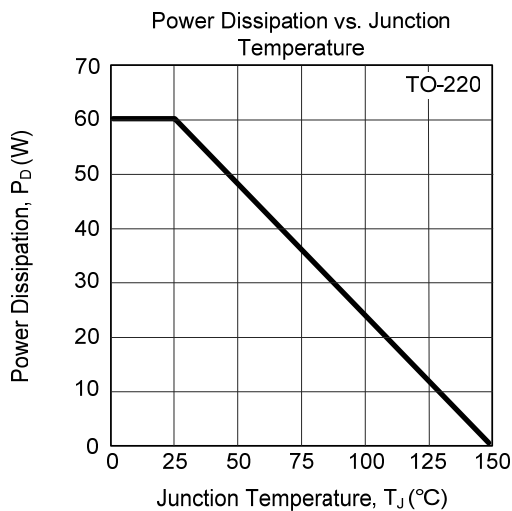
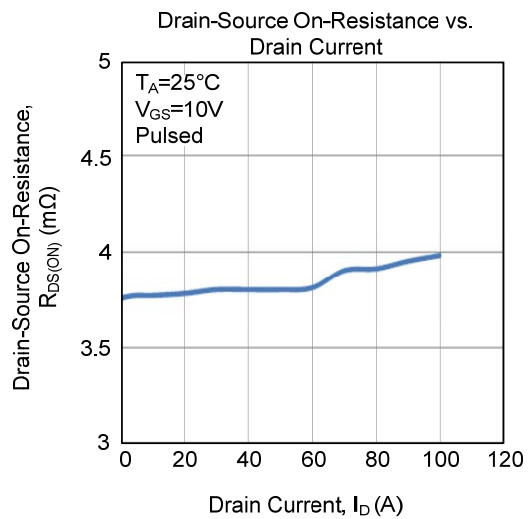
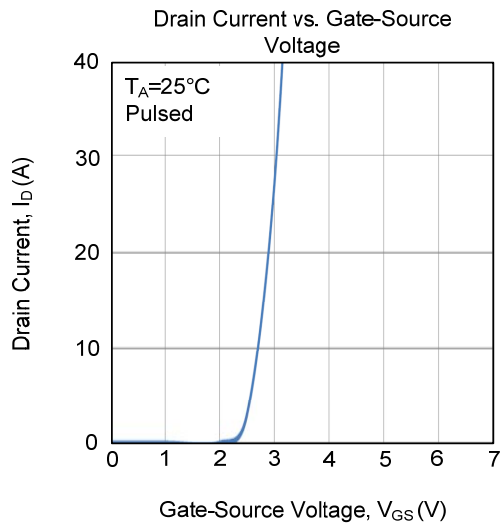
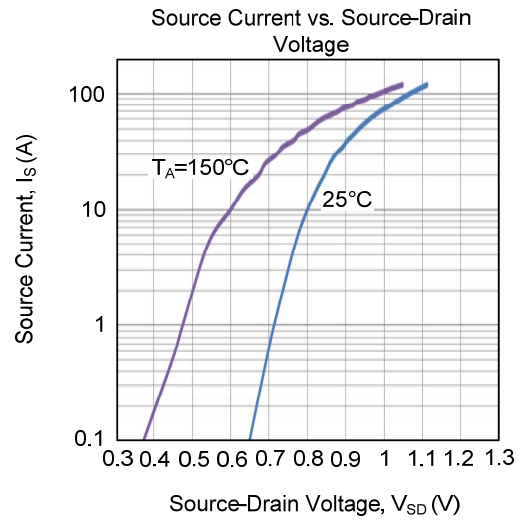
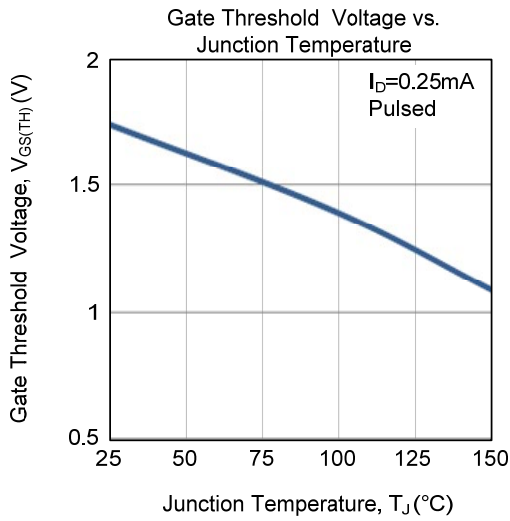
■ TEST CIRCUIT AND WAVEFORM



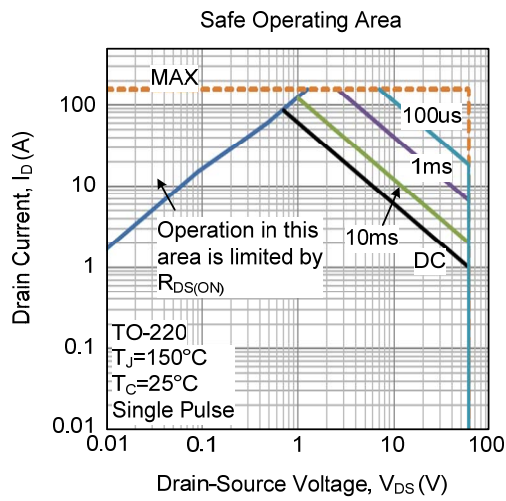
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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