

Description

The LMTL2N02 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

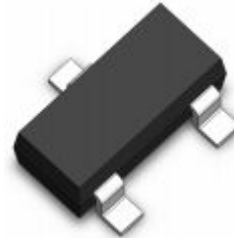
$V_{DS} = 20V$ $I_D = 2.3A$

$R_{DS(ON)} < 56m\Omega @ V_{GS}=4.5V$

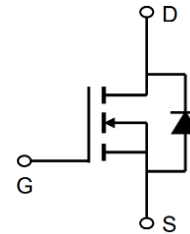
Application

- Battery protection
- Load switch
- Uninterruptible power supply

Dimensions SOT-23



Pin Configuration



Package Marking and Ordering Information

Device	Device Marking	Device Package	Reel Size	Tape width	Quantity
LMTL2N02	A2SHB	SOT-23	Ø180mm	8 mm	3000 units

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

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-source Voltage	20	V
V_{GS}	Gate-source Voltage	±12	V
$I_{D@ TA=25^{\circ}C}$	Continuous Drain Current $V_{GS} @ 4.5V$	2.3	A
$I_{D@ TA=70^{\circ}C}$	Continuous Drain Current $V_{GS} @ 4.5V$	1.8	A
IDM	Pulsed Drain Current ^A	14	A
P_D	Total Power Dissipation @ $T_A=25^{\circ}C$	0.7	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient@Steady State	178	°C/W
T_J, T_{STG}	Junction and Storage Temperature Range	-55~+150	°C

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D =250μA	20	21		V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V, T _C =25°C			1	μA
IGSS	Gate-Body Leakage Current	V _{GS} = ±12V, V _{DS} =0V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	0.52	0.66	0.9	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} = 4.5V, I _D =2.0A		43	56	mΩ
		V _{GS} = 2.5V, I _D =1.5A		58	78	
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHZ		280		pF
C _{oss}	Output Capacitance			46		
C _{rss}	Reverse Transfer Capacitance			29		
Q _g	Total Gate Charge	V _{GS} =4.5V, V _{DS} =10V, I _D =3.0A		2.9		nC
Q _{gs}	Gate Source Charge			0.4		
Q _{gd}	Gate Drain Charge			0.6		
t _{D(on)}	Turn-on Delay Time	V _{GS} =4.5V, V _{DD} =10V, R _L =1.5Ω, R _{GEN} =3Ω		13		ns
t _r	Turn-on Rise Time			54		
t _{D(off)}	Turn-off Delay Time			18		
t _f	Turn-off Fall Time			11		
I _S	Maximum Body-Diode Continuous Current				3.0	A
V _{SD}	Diode Forward Voltage	I _S =3.0A, V _{GS} =0V			1.2	V

Note:

- 1、Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.
- 2、Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Characteristics

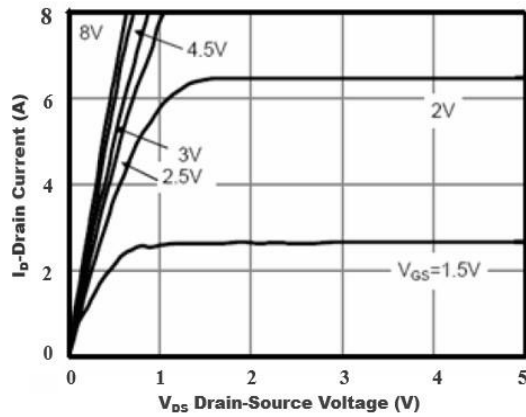


Figure1. Output Characteristics

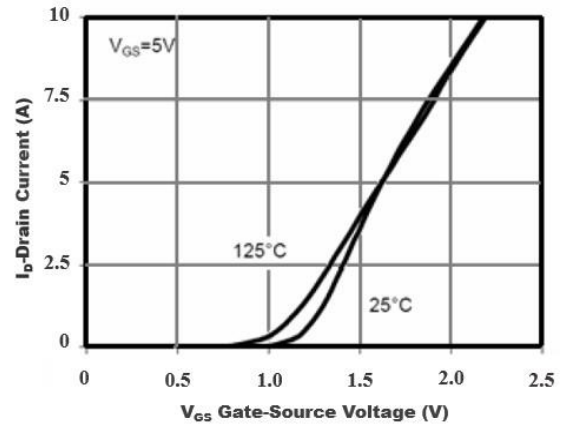


Figure2. Transfer Characteristics

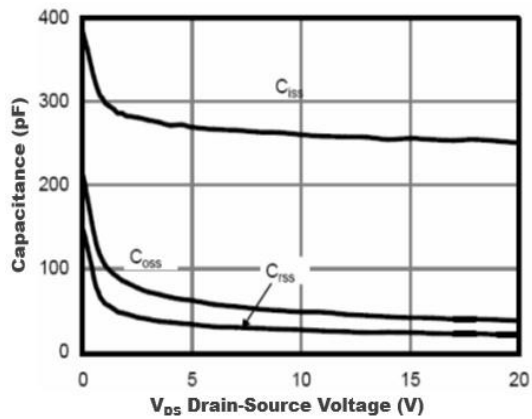


Figure3. Capacitance Characteristics

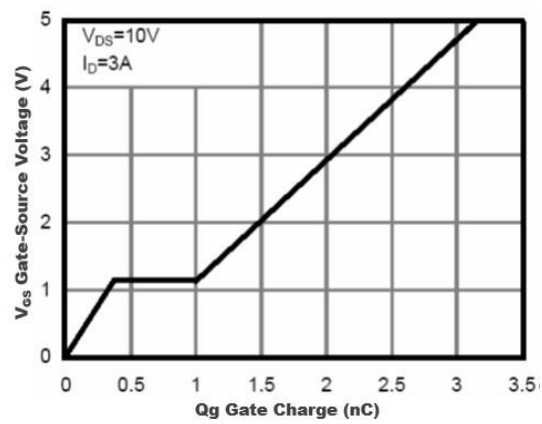


Figure4. Gate Charge

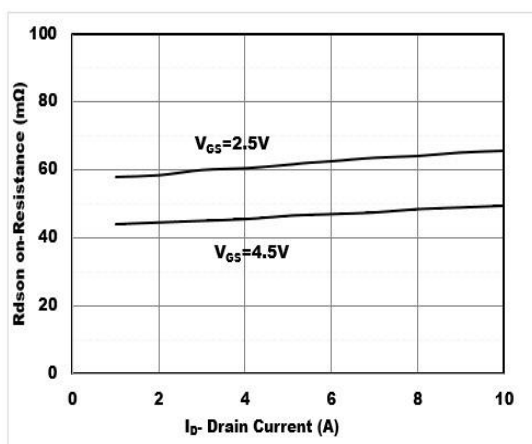


Figure5. Drain-Source on Resistance

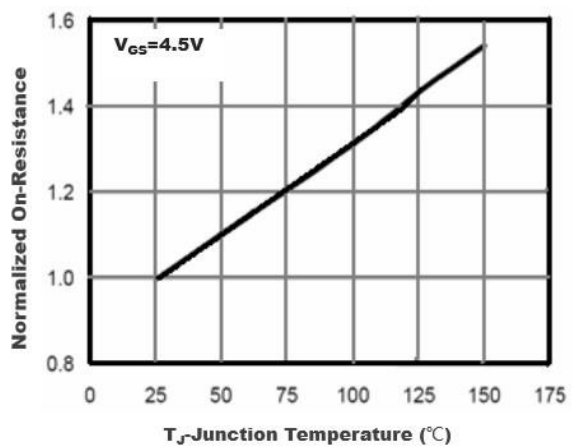


Figure6. Drain-Source on Resistance

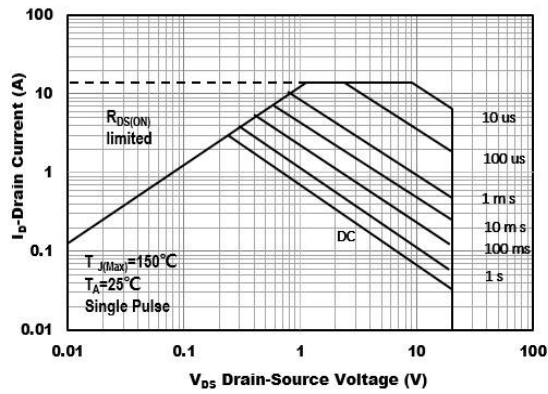


Figure7. Safe Operation Area

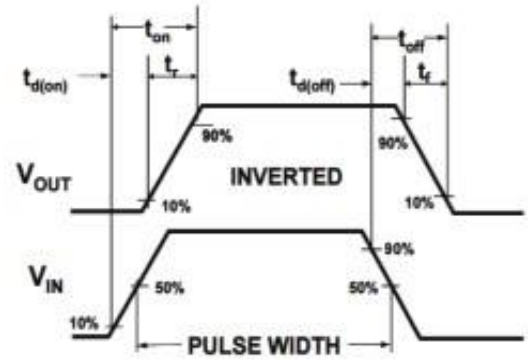
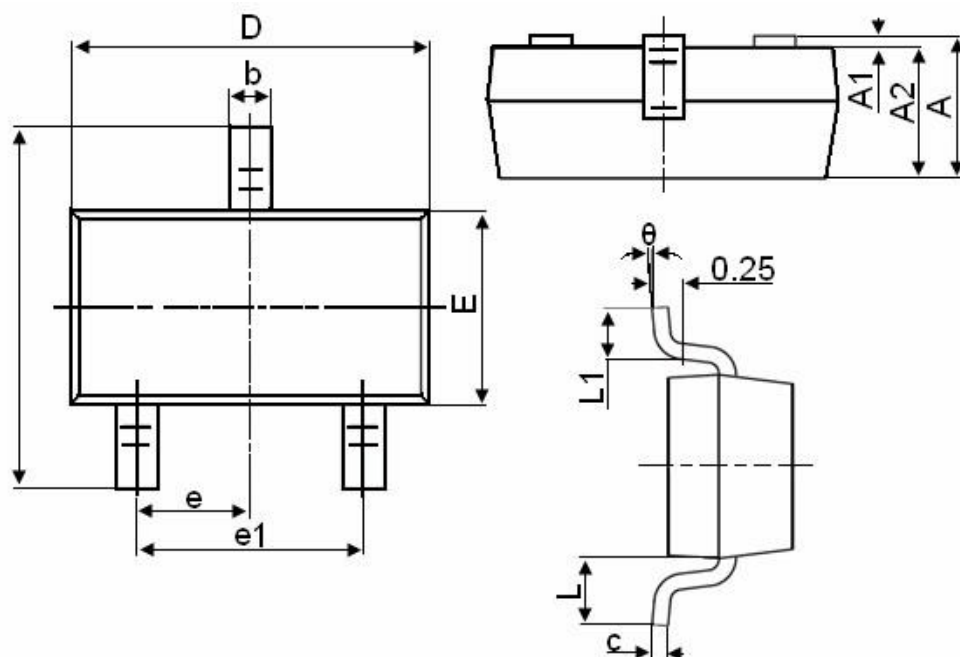


Figure8. Switching wave

Package Mechanical Data:SOT-23



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°