



UML2502

Power MOSFET

N-CHANNEL POWER MOSFET

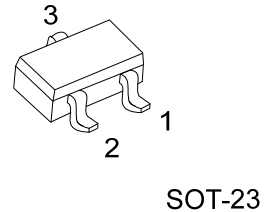
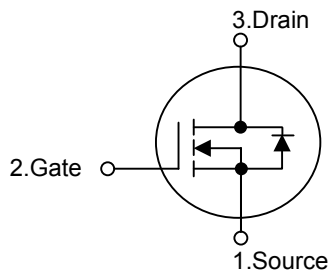
DESCRIPTION

The **UML2502** 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

- * $R_{DS(ON)} < 45m\Omega @ V_{GS} = 4.5V$
- * $R_{DS(ON)} < 80m\Omega @ V_{GS} = 2.5V$
- * Ultra Low Gate Charge (Max. 12nC)
- * Low Reverse Transfer Capacitance (C_{RSS} = Typical 66pF)
- * Fast Switching Capability
- * Avalanche Energy Specified
- * Improved dv/dt Capability

SYMBOL

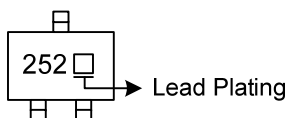


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free Plating	Halogen Free		1	2	3	
UML2502L-AE3-R	UML2502G-AE3-R	SOT-23	S	G	D	Tape Reel

UML2502L-AE3-R (1)Packing Type (2)Package Type (3)Lead Plating	(1) R: Tape Reel (2) AE3: SOT-23 (3) L: Lead Free Plating, G: Halogen Free
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MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current $V_{GS}=4.5\text{V}$	I_D	4.2	A
Pulsed Drain Current (Note 2)	I_{DM}	33	A
Maximum Power Dissipation	P_D	1.25	W
Linear Derating Factor		0.01	W/ $^\circ\text{C}$
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage 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.

2. Pulse width limited by $T_{J(MAX)}$

■ THERMAL DATA

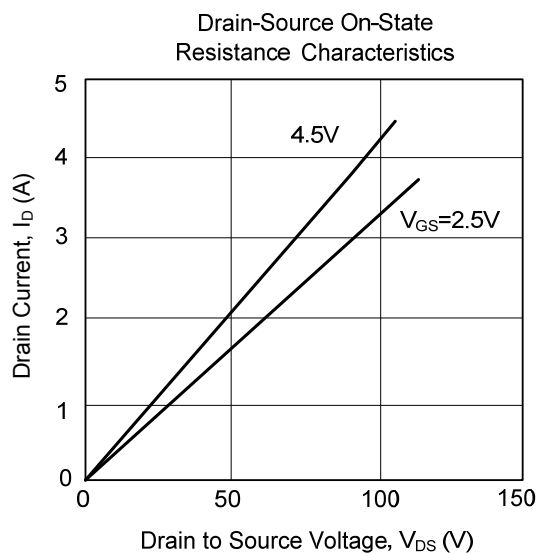
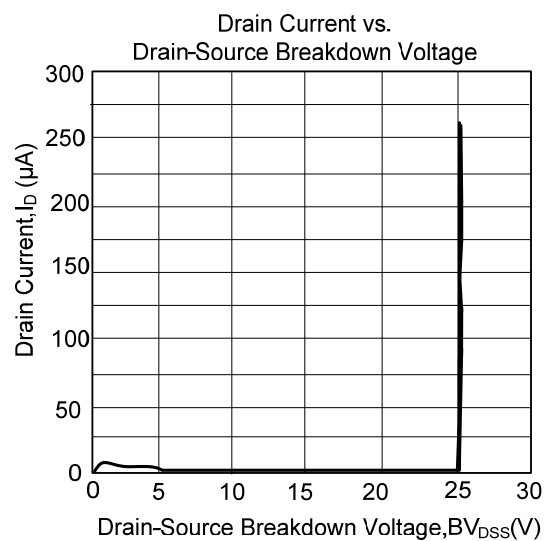
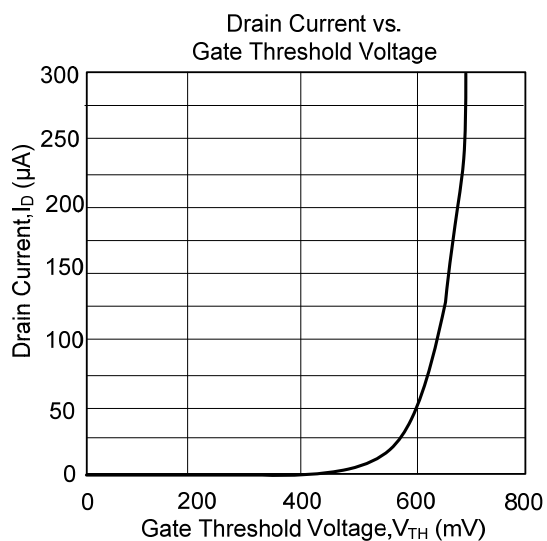
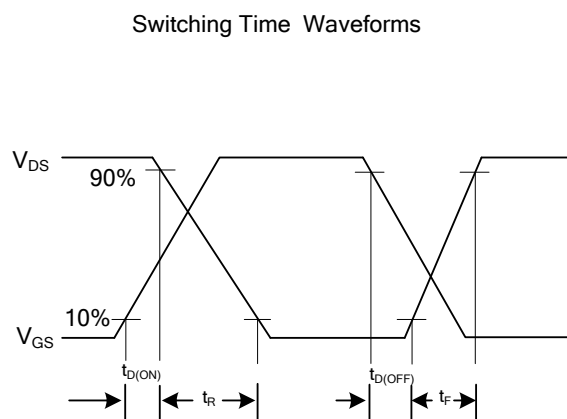
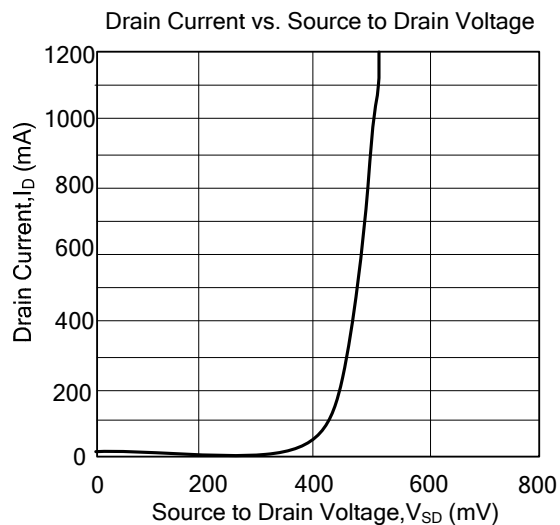
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	75 ~ 100	$^\circ\text{C}/\text{W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	20			V
Drain-Source Leakage Current	I _{DSS}	V _{GS} =0V, V _{DS} =16V			1.0	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V			±100	nA
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25℃, I _D =1mA		0.01		V/℃
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.6		1.2	V
Drain-Source On-State Resistance (Note)	R _{DS(ON)}	V _{GS} =4.5V, I _D =4.2A		35	45	mΩ
		V _{GS} =2.5V, I _D =3.6A		50	80	
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =15V, f=1.0MHz		740		pF
Output Capacitance	C _{OSS}			90		pF
Reverse Transfer Capacitance	C _{RSS}			66		pF
SWITCHING PARAMETERS						
Turn-ON Delay Time (Note)	t _{D(ON)}	V _{DS} =10V, R _G =6Ω, R _D =10Ω, I _D =1.0A		7.5		ns
Turn-ON Rise Time	t _R			10		ns
Turn-OFF Delay Time	t _{D(OFF)}			54		ns
Turn-OFF Fall-Time	t _F			26		ns
Total Gate Charge (Note)	Q _G	V _{GS} =5.0V, V _{DS} =10V, I _D =4.0A		8.0	12	nC
Gate Source Charge	Q _{GS}			1.8	2.7	nC
Gate Drain Charge	Q _{GD}			1.7	2.6	nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1.3A, T _J =25℃ (Note)			1.2	V
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				33	A
Maximum Continuous Drain-Source Diode Forward Current	I _S				1.3	A
Reverse Recovery Time	t _{RR}	I _F =1.3A, dI/dt=100A/μs, T _J =25℃ (Note)		16	24	ns
Reverse Recovery Charge	Q _{RR}			8.6	13	nC

Notes: Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.

■ TYPICAL CHARACTERISTICS



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