

preliminary

CMA15002PL-23

20V P-Channel MOSFET

Features

- Trench Power LV MOSFET technology
- LOW $R_{DS(on)}$
- High Speed switching
- 100% EAS Guaranteed
- Green product

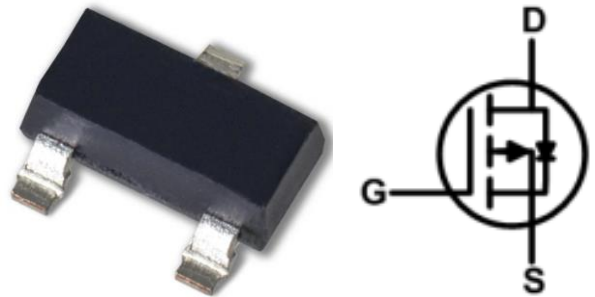
Product Summary

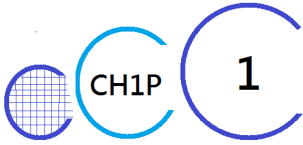
Item	Typical Value	Unit
V_{DS}	-20	V
$R_{DS(on)}$ @ $V_{GS} = -4.5V$ (Max)	21	m Ω
I_D	-9	A

Applications

- PWM Application
- Load Switch
- Power Management

SOT23 Pin Configuration





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Absolute Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current, $T_C = 25^\circ\text{C}/70^\circ\text{C}$	I_D	-9/-5	A
Pulsed Drain Current	I_{DM}	-15	A
Total Power Dissipation	P_D	1.8	W
Junction Temperature Maximum	T_{JMAX}	80	$^\circ\text{C}$
Storage Temperature	$T_{Storage}$	-55 to 150	$^\circ\text{C}$

Electrical Characteristics

Static (T _J =25°C unless otherwise specified)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = -250uA	-20	---	---	V
Gate-Source Leakage	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	---	---	± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -20V, V _{GS} = 0V, T _J =25°C	---	---	-1	uA
		V _{DS} = -20V, V _{GS} = 0V, T _J =55°C	---	---	-5	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = -4.5V, I _D = -4A	---	---	21	mΩ
		V _{GS} = -2.5V, I _D = -3A	---	---	28	
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250uA	-0.4	---	-1.0	V
Dynamic (T _J =25°C unless otherwise specified)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -10V, f = 1MHz	---	1200	---	pF
Output Capacitance	C _{oss}		---	230	---	
Reverse Transfer Capacitance	C _{rss}		---	90	---	
Total Gate Charge	Q _g	V _{DS} = -16V, I _D = -9A, V _{GS} = -4.5V	---	15	---	nC
Gate-Source Charge	Q _{gs}		---	4	---	
Gate-Drain Charge	Q _{gd}		---	6	---	
Turn-on delay time	T _{d(on)}	V _{DS} = -10V, I _D = -1A, V _{GS} = -4.5V, R _G = 10Ω,	---	11	---	ns
Rise time	T _r		---	18	---	
Turn-off delay time	T _{d(off)}		---	30	---	
Fall time	T _f		---	10	---	
Transconductance	g _{fs}	V _{DS} = -5V, I _D = -6.7A	20	---	---	S
Reverse Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _F = -8A	---	---	-1.2	V

Typical Characteristics

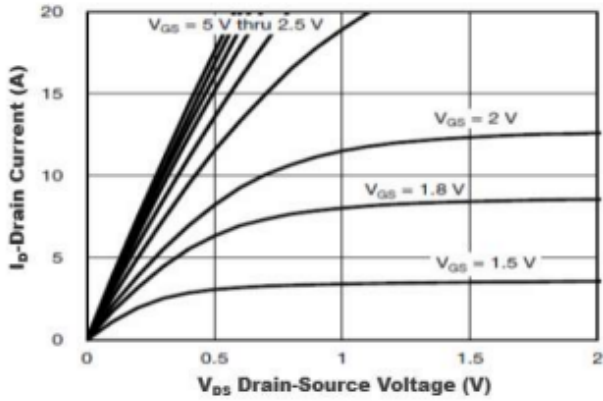


Figure1. Output Characteristics

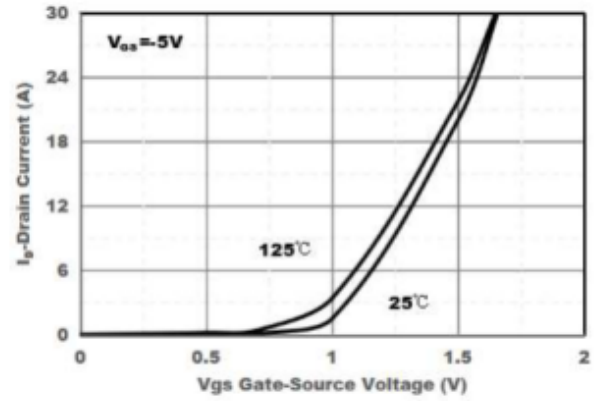


Figure2. Transfer Characteristics

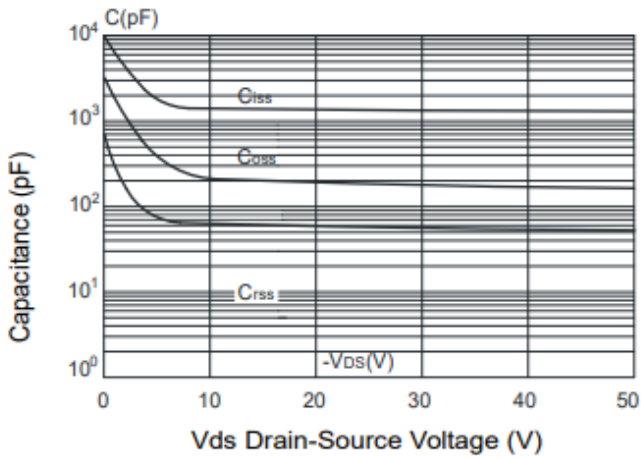


Figure3. Capacitance Characteristics

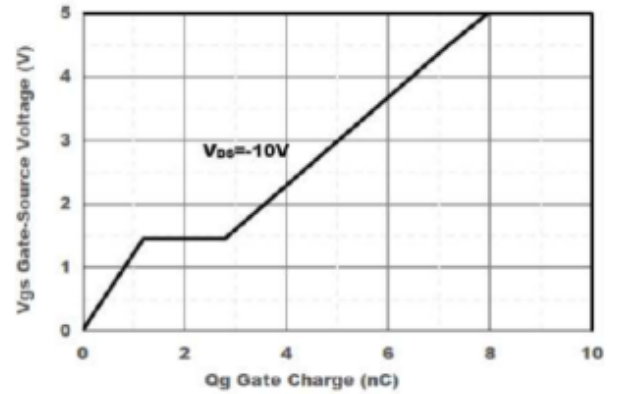


Figure4. Gate Charge

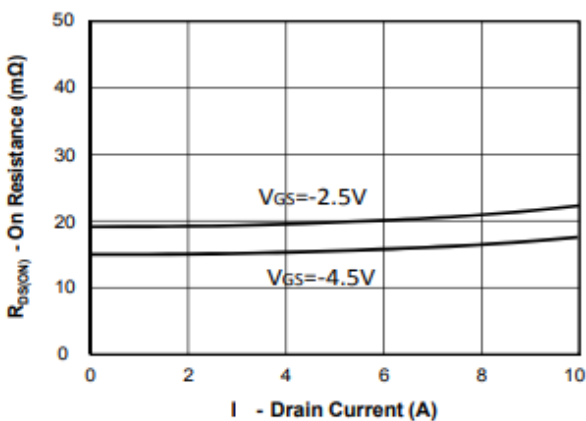


Figure5. Drain-Source on Resistance

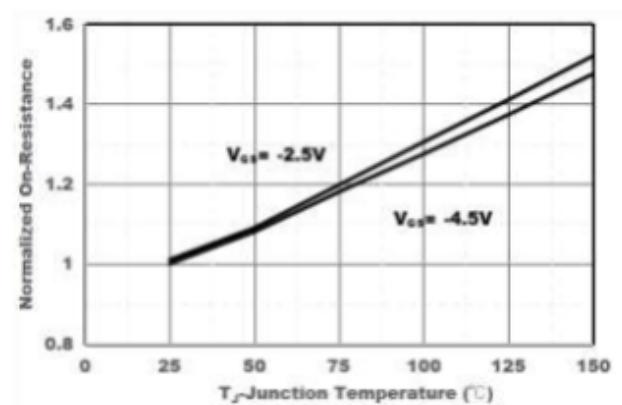


Figure6. Drain-Source on Resistance

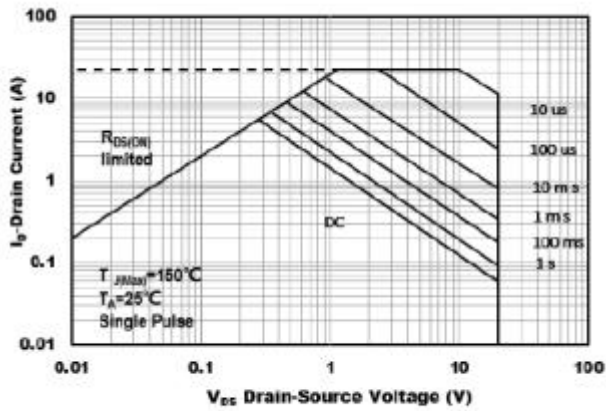


Figure7. Safe Operation Area

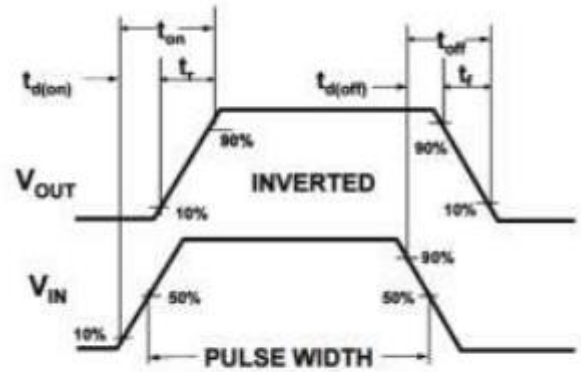
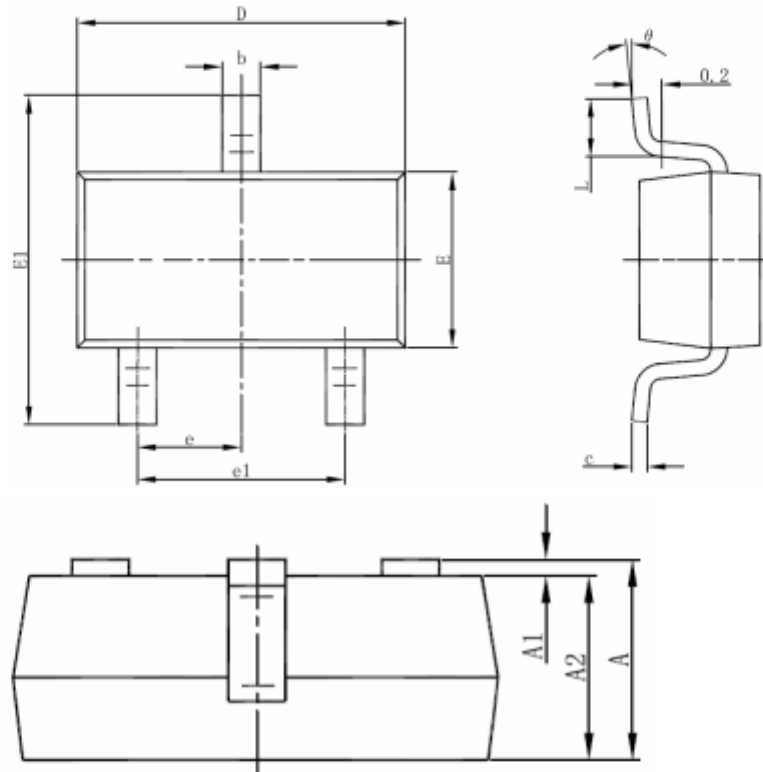


Figure8. Switching wave

SOT-23-3L PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°