CMT2301

P-CHANNEL ENHANCEMENT MODE MOSFET

GENERAL DESCRIPTION

The CMT2301 is the P-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

FEATURES

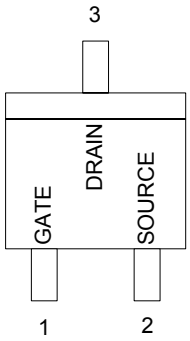
- -20V/-2.3A ,$R_{DS(ON)}$=130 mΩ@VGS=-4.5V
- -20V/-1.9A ,$R_{DS(ON)}$=190 mΩ@VGS=-2.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3 package design

APPLICATIONS

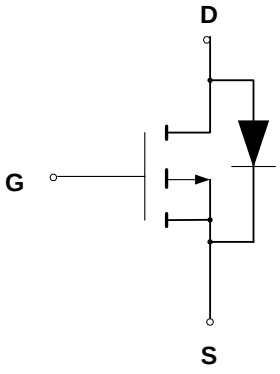
- Power Management in Notebook
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

PIN CONFIGURATION

SOT-23-3
Top View



SYMBOL



P-Channel MOSFET

ORDERING INFORMATION

Part Number	Package
CMT2301M233	SOT-23-3
CMT2301GM233*	SOT-23-3

***Note:** G : Suffix for Pb Free Product

ABSOLUTE MAXIMUM RATINGS

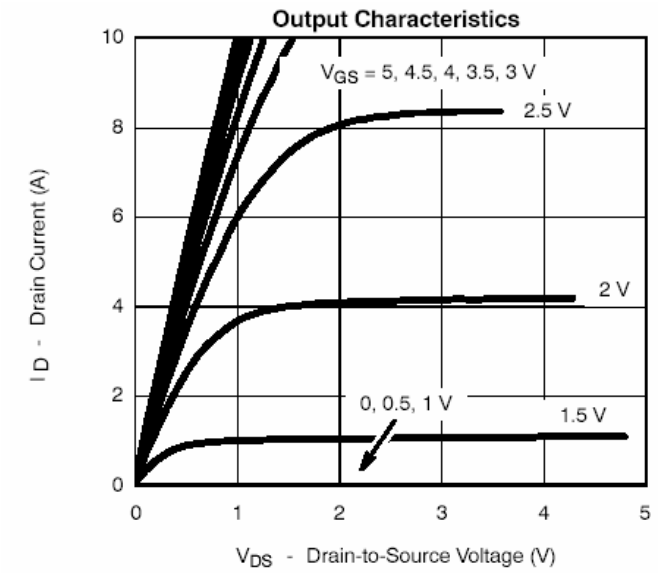
Rating		Symbol	Value	Unit
Drain- to- Source Voltage		V_{DSS}	-20	V
Gate-to-Source Voltage		V_{GSS}	±8	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	-2.5	A
	T_A=70℃		-1.5	
Pulsed Drain Current		I_{DM}	-10	A
Continuous Source Current(Diode Conduction)		I_S	-1.6	A
Power Dissipation	T_A=25℃	P_D	1.25	W
	T_A=70℃		0.8	
Operating Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	120	℃/W

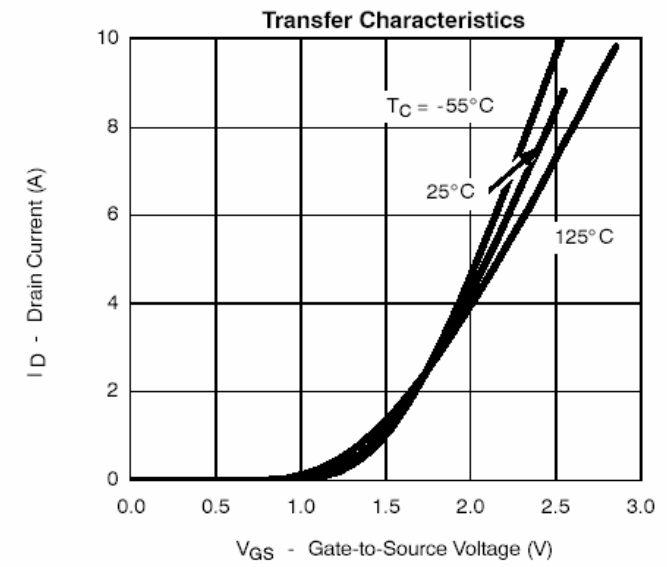
ELECTRICAL CHARACTERISTICS

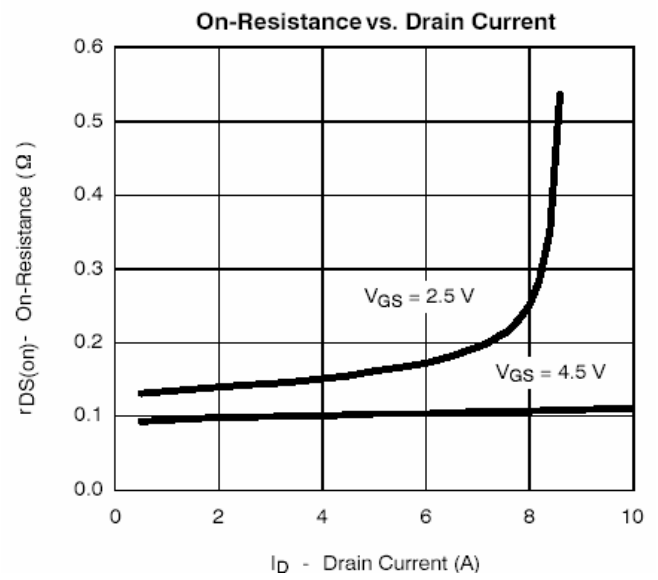
Unless otherwise specified, T_J = 25℃.

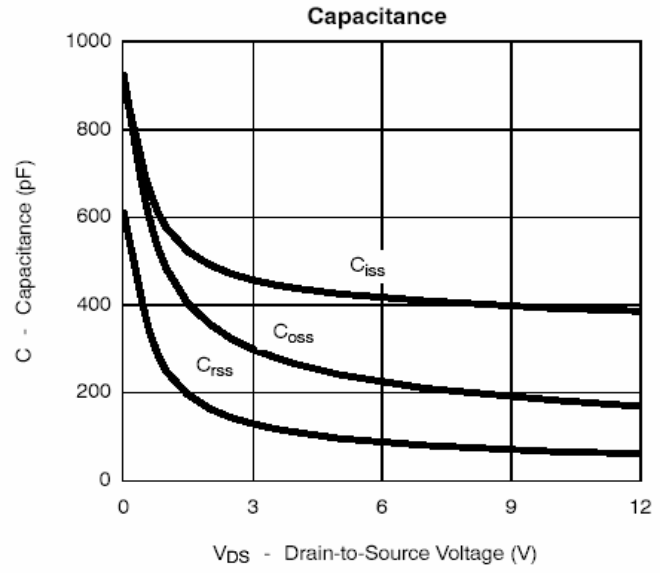
			CMT2301			
Characteristic		Symbol	Min	Typ	Max	Units
Static						
Drain-Source Breakdown Voltage (V_{GS} = 0 V, I_D = -250 μA)		$V_{(BR)DSS}$	-20			V
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = -250 μA)		$V_{GS(th)}$	-0.45		-1.5	V
Gate Leakage Current (V_{DS} =0 V, V_{GS} = ±8 V)		I_{GSS}			±100	nA
Zero Gate Voltage Drain Current (V_{DS} = -20 V, V_{GS} = 0 V) (V_{DS} = -20 V, V_{GS} = 0 V, T_J = 55℃)		I_{DSS}			-1 -10	μA
On-State Drain Current (V_{DS} ≤ -5 V, V_{GS} = -4.5V) (V_{DS} ≤ -5 V, V_{GS} = -2.5V)		$I_{D(on)}$	-6 -3			A
Drain-Source On-Resistance (V_{GS} = -4.5 V, I_D = -2.8A) (V_{GS} = -2.5 V, I_D = -2.0A)		$R_{DS(on)}$		0.105 0.145	0.13 0.19	Ω
Forward Transconductance (V_{DS} = -5 V, I_D = -2.8V)		g_{FS}		6.5		S
Diode Forward Voltage (I_S=-1.6A,V_{GS}=0V)		V_{SD}		-0.8	-1.2	V
Dynamic						
Input Capacitance	(V_{DS} = -6 V, V_{GS} =-0V, f = 1.0 MHz)	C_{iss}		415		pF
Output Capacitance		C_{oss}		223		
Reverse Transfer Capacitance		C_{rss}		87		
Turn-On Time	(V_{DD} = -6 V,R_L=6Ω I_D = -1.0 A,V_{GEN} = -4.5 V, R_G = 6Ω)	$t_{d(on)}$		13	25	ns
		tr		36	60	
Turn-Off Time		$t_{d(off)}$		42	70	
		tf		34	60	
Total Gate Charge	(V_{DS} = -6 V, I_D = -2.8 A, V_{GS} =-4.5V)	Q_g		5.8	10	nC
Gate-Source Charge		Q_{gs}		0.85		
Gate-Drain Charge		Q_{gd}		1.7		

TYPICAL CHARACTERISTICS

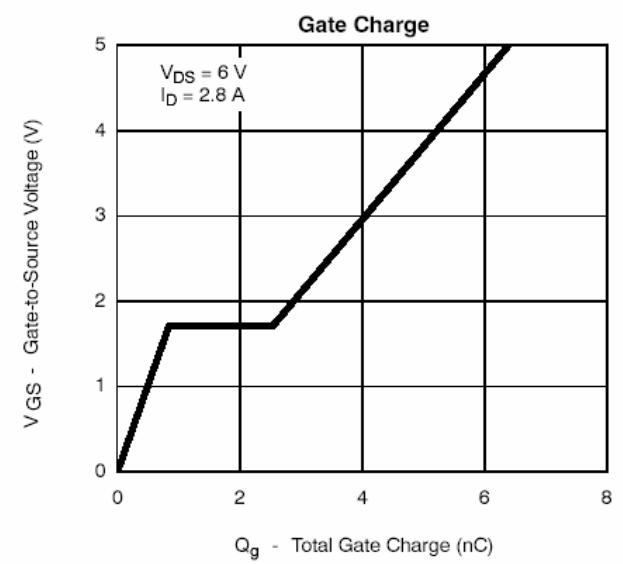


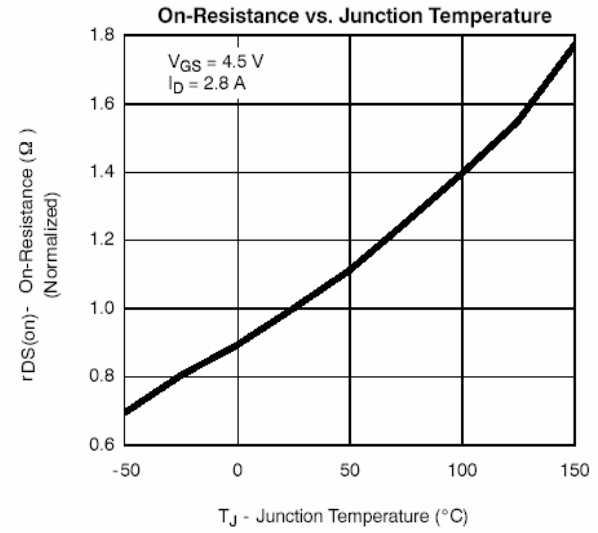


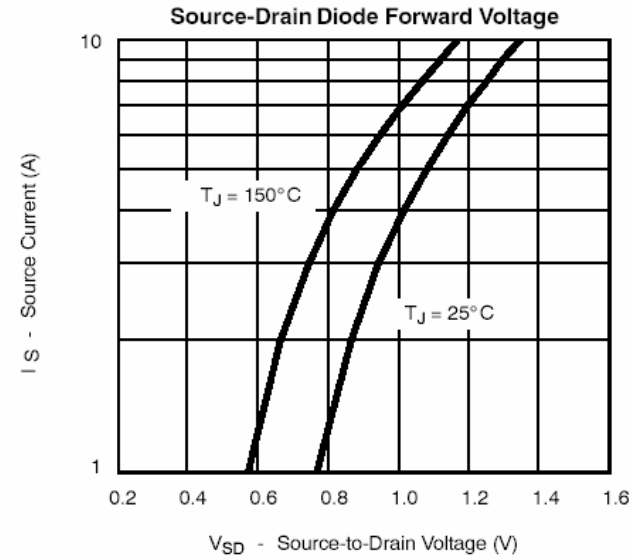


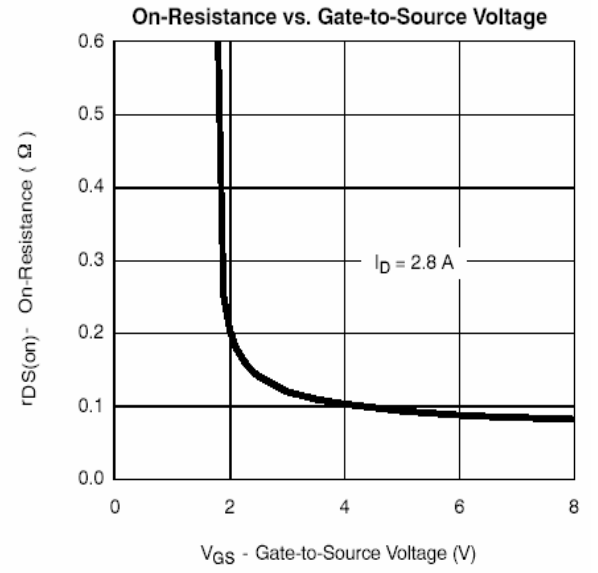


TYPICAL CHARACTERISTICS

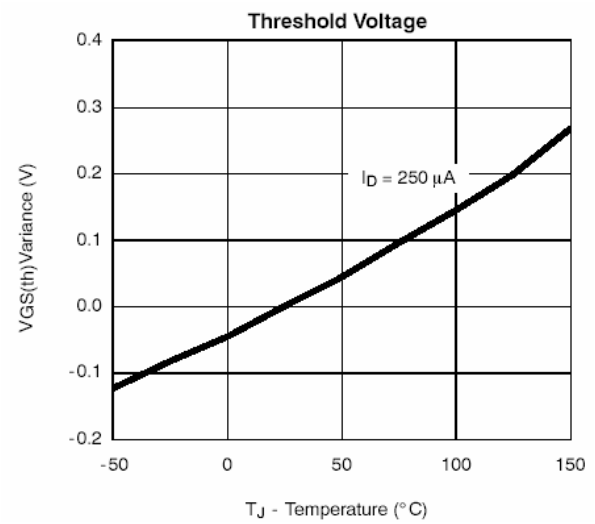


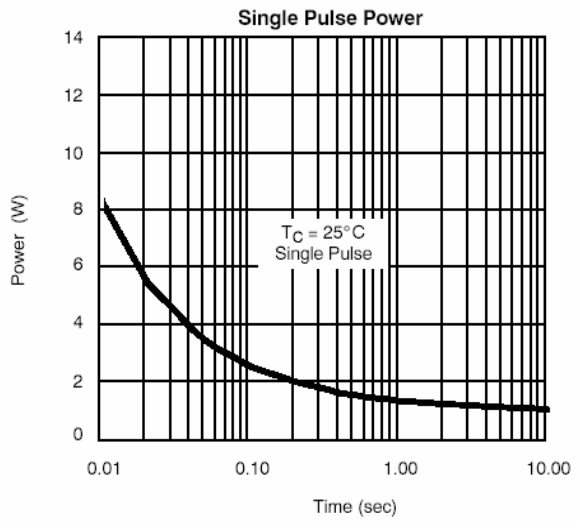


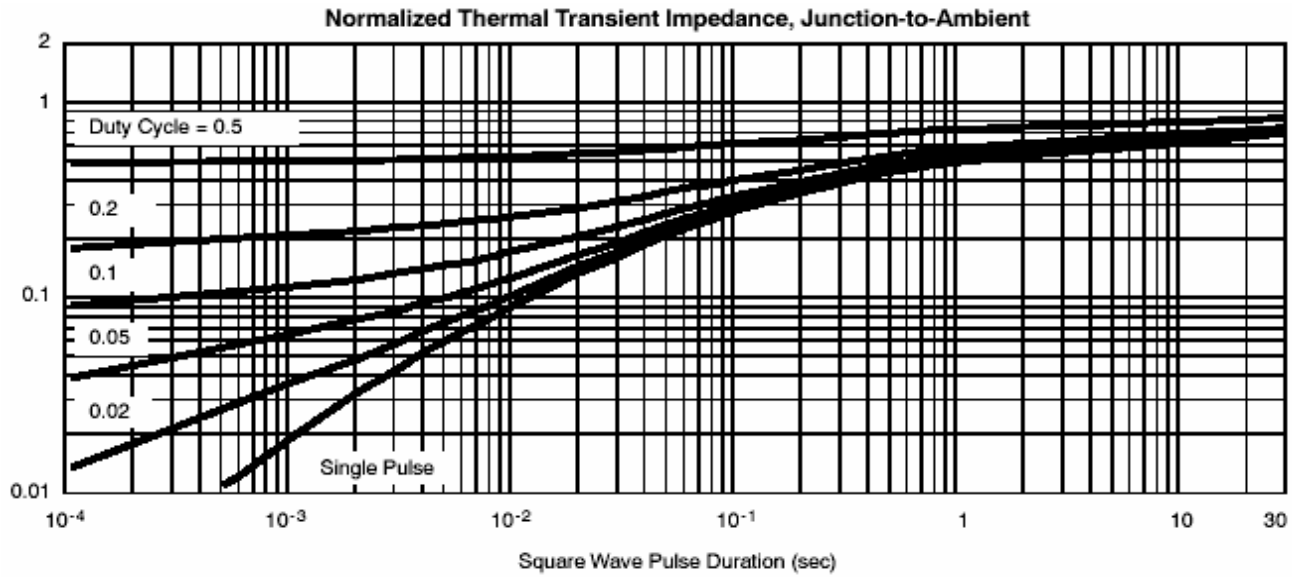




TYPICAL CHARACTERISTICS

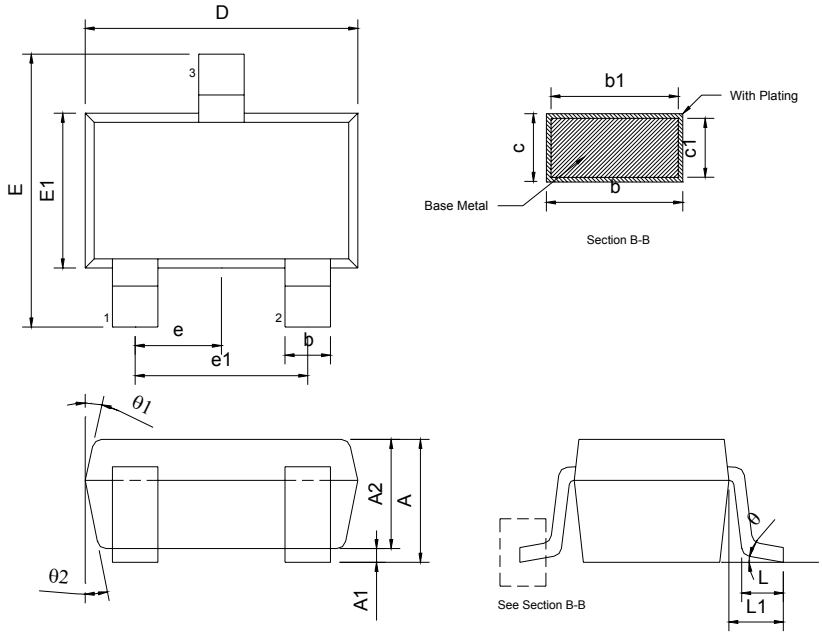






PACKAGE DIMENSION

SOT-23-3



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.05	---	1.35	0.041	---	0.053
A1	0.05	---	0.15	0.002	---	0.006
A2	1.00	1.10	1.20	0.039	0.043	0.047
b	0.25	---	0.50	0.010	---	0.020
b1	0.25	0.40	0.45	0.010	0.016	0.018
c	0.08	---	0.20	0.003	---	0.008
c1	0.08	0.11	0.15	0.003	0.004	0.006
D	2.70	2.90	3.00	0.106	0.114	0.118
E	2.60	2.80	3.00	0.102	0.110	0.118
E1	1.50	1.60	1.70	0.059	0.063	0.067
L	0.35	0.45	0.55	0.014	0.018	0.022
L1	0.60 REF			0.024 REF		
e	0.95 BSC			0.037 BSC		
e1	1.90 BSC			0.075 BSC		
θ	0°	5°	10°	0°	5°	10°
θ1	3°	5°	7°	3°	5°	7°
θ2	6°	8°	10°	6°	8°	10°

IMPORTANT NOTICE

Champion Microelectronic Corporation (CMC) reserves the right to make changes to its products or to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

A few applications using integrated circuit products may involve potential risks of death, personal injury, or severe property or environmental damage. CMC integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life-support applications, devices or systems or other critical applications. Use of CMC products in such applications is understood to be fully at the risk of the customer. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

HsinChu Headquarter

5F, No. 11, Park Avenue II,
Science-Based Industrial Park,
HsinChu City, Taiwan
TEL: +886-3-567 9979
FAX: +886-3-567 9909

Sales & Marketing

7F-6, No.32, Sec. 1, Chenggong Rd., Nangang District, Taipei City 115, Taiwan
TEL: +886-2-2788 0558
FAX: +886-2-2788 2985