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

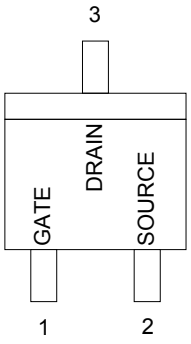
- -20V/-2.3A ,$R_{DS(ON)}$=130 mΩ@VGS=-4.5V
- -20V/-1.9A ,$R_{DS(ON)}$=190 mΩ@VGS=-2.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3 package design

APPLICATIONS

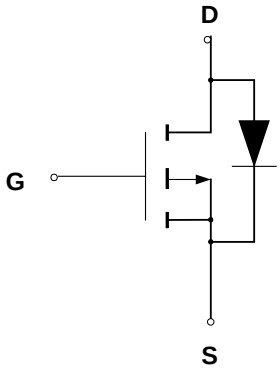
- Power Management in Notebook
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

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

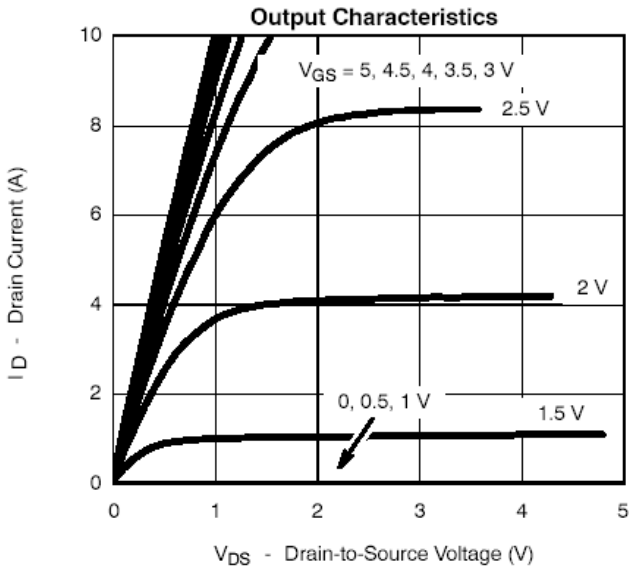
Rating		Symbol	Value	Unit
Drain- to- Source Voltage		V_{DSS}	-20	V
Gate-to-Source Voltage		V_{GSS}	±8	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	-2.5	A
	T_A=70℃		-1.5	
Pulsed Drain Current		I_{DM}	-10	A
Continuous Source Current(Diode Conduction)		I_S	-1.6	A
Power Dissipation	T_A=25℃	P_D	1.25	W
	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

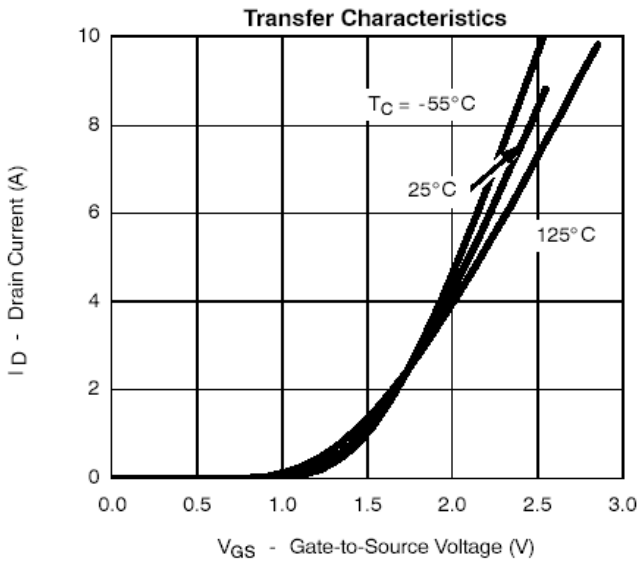
ELECTRICAL CHARACTERISTICS

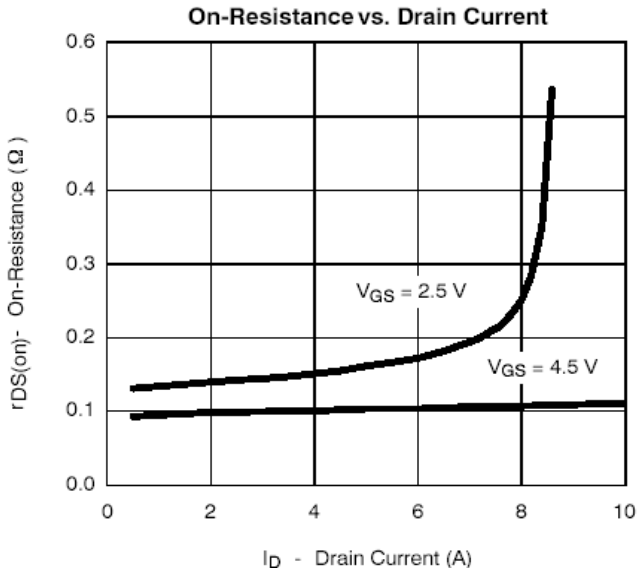
Unless otherwise specified, T_J = 25℃.

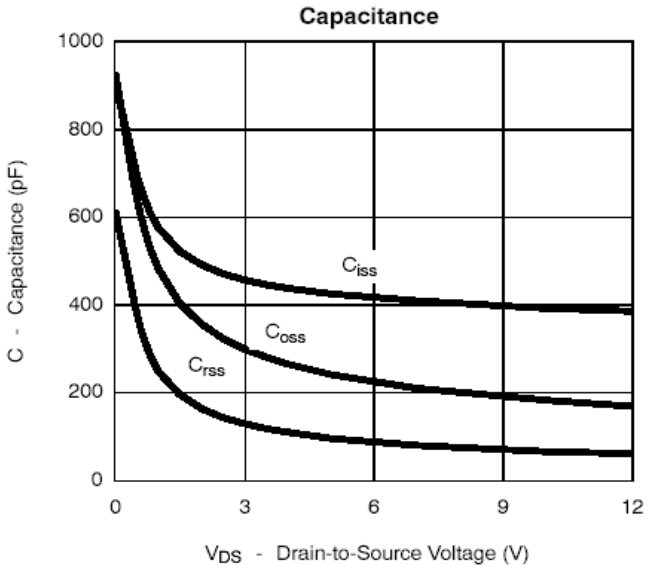
			CMT2301			
Characteristic		Symbol	Min	Typ	Max	Units
Static						
Drain-Source Breakdown Voltage (V_{GS} = 0 V, I_D = -250 μA)		$V_{(BR)DSS}$	-20			V
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = -250 μA)		$V_{GS(th)}$	-0.45		-1.5	V
Gate Leakage Current (V_{DS} =0 V, V_{GS} = ±8 V)		I_{GSS}			±100	nA
Zero Gate Voltage Drain Current (V_{DS} = -20 V, V_{GS} = 0 V)		I_{DSS}			-1	μA
(V_{DS} = -20 V, V_{GS} = 0 V, T_J = 55℃)					-10	
On-State Drain Current (V_{DS} ≤ -5 V, V_{GS} = -4.5V)		$I_{D(on)}$	-6			A
(V_{DS} ≤ -5 V, V_{GS} = -2.5V)			-3			
Drain-Source On-Resistance (V_{GS} = -4.5 V, I_D = -2.8A)		$R_{DS(on)}$		0.105	0.13	Ω
(V_{GS} = -2.5 V, I_D = -2.0A)				0.145	0.19	
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









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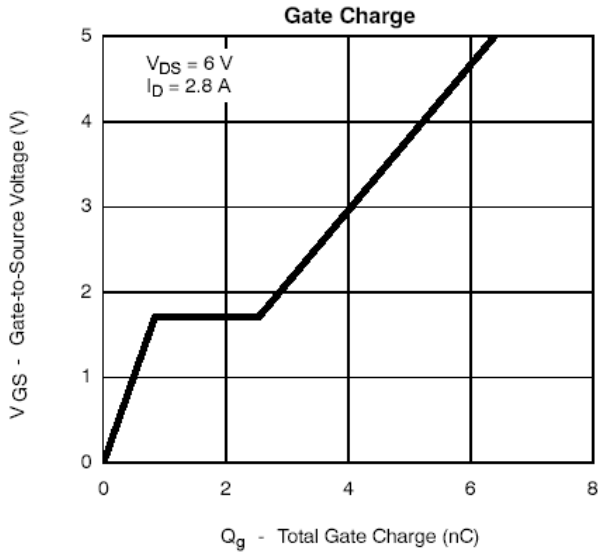
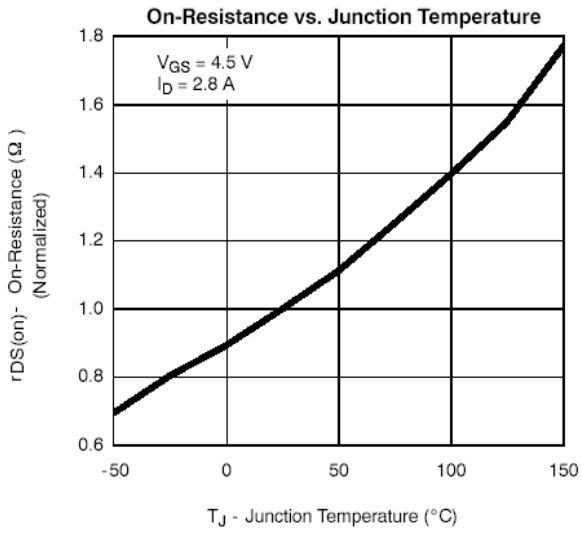
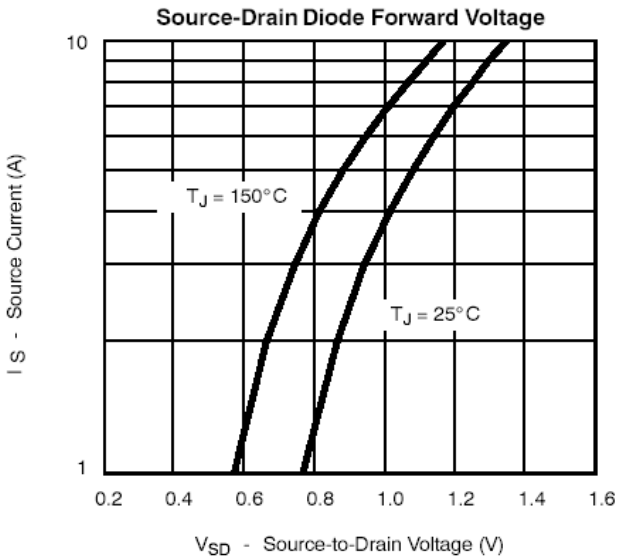
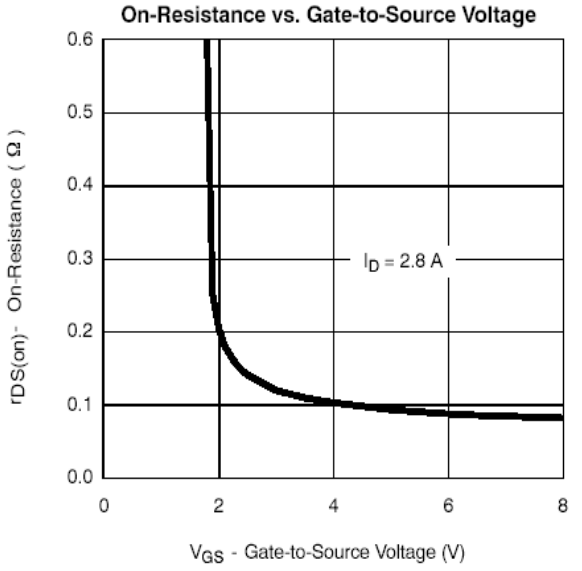
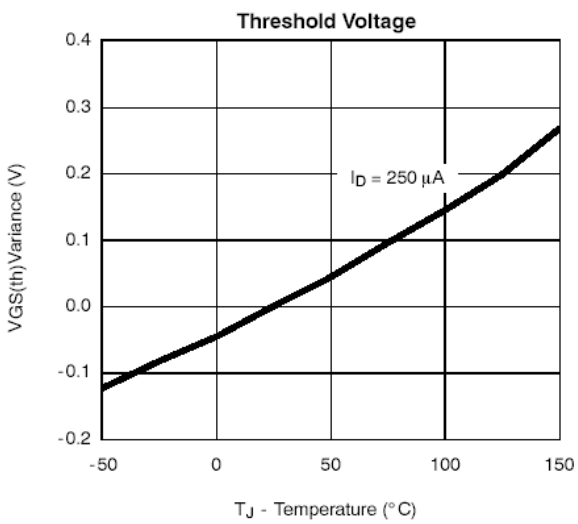


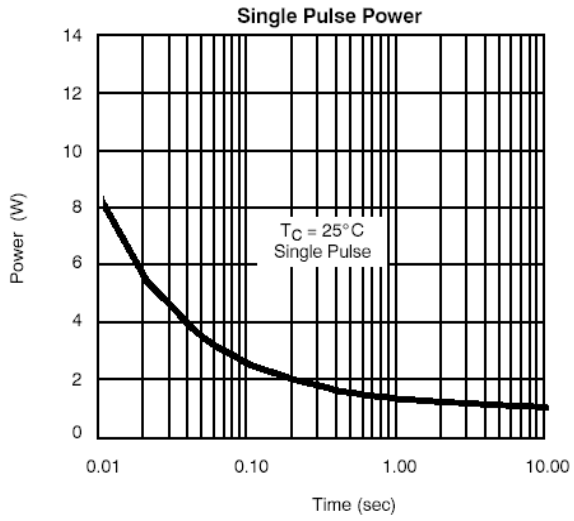


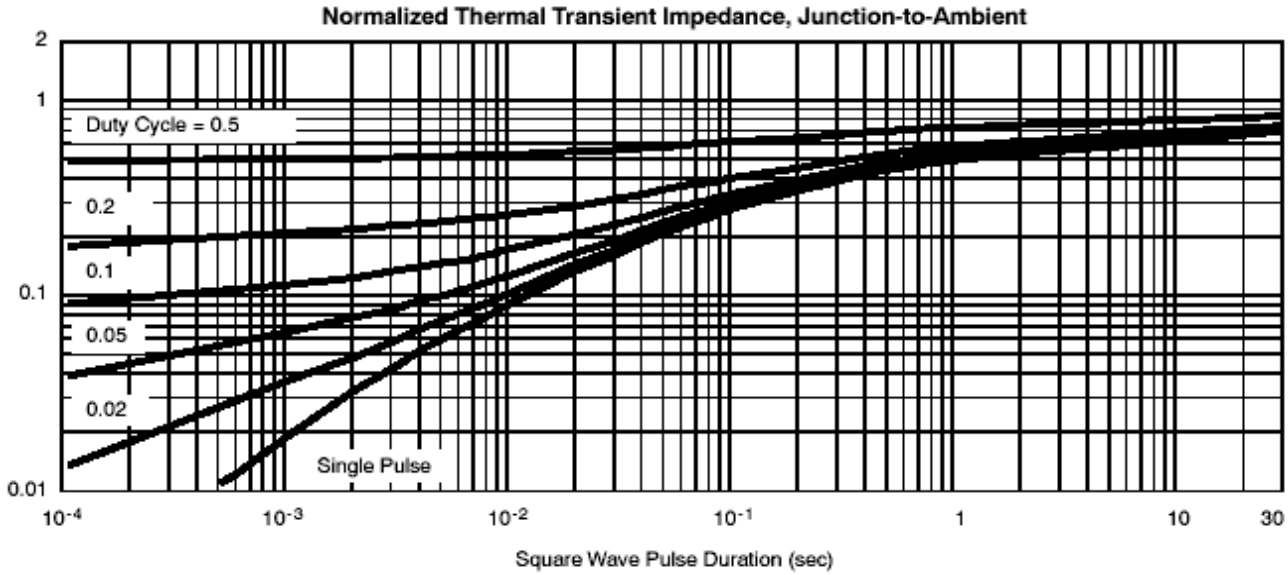




TYPICAL CHARACTERISTICS

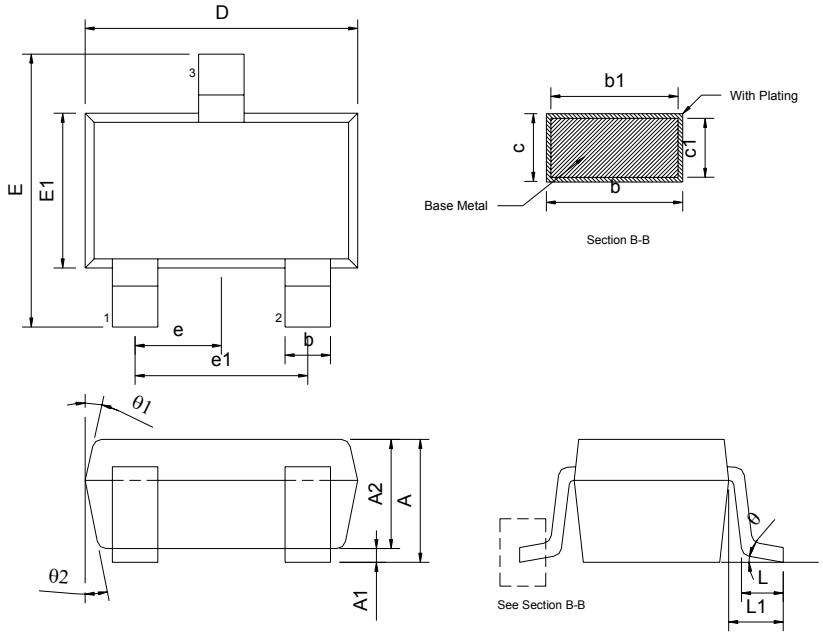






PACKAGE DIMENSION

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

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